Volume 1
Divisions 00 - 13

PROJECT

New Modular Police Building and Employee Housing

Black Lake, Saskatchewan

PROJECT No.	SET No.
S-03-2014	
DATE	
2015-12-04	

Volume 2
Divisions 21-33

PROJECT

New Modular Police Building and Employee Housing

Black Lake, Saskatchewan

PROJECT No.	SET No.
S-03-2014	
DATE	
2015-12-04	

LIST OF DRAWINGS

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	ARCHITECTURAL	
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A0.3	CONSTRUCITON ASSEMBLY SCHEDULES DOOR, FRAME AND WINDOW TYPE SCHEDULES	0 / 2015.12.04
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A2.1	CRAWLSPACE FLOOR PLAN / DETAILS	0 / 2015.12.04
A2.2	MAIN FLOOR PLAN / WALL TYPES / PARTITION TYPES	0 / 2015.12.04
A2.3	REFLECTED CEILING PLAN	0 / 2015.12.04
A2.4	ROOF PLAN	0 / 2015.12.04
A2.5	MODULE FLOOR PLANS AND REFLECTED CEILING PLANS – MODULES 1 AND 2	0 / 2015.12.04
A2.6	MODULE FLOOR PLANS AND REFLECTED CEILING PLANS – MODULES 3 AND 4	0 / 2015.12.04
A2.7	MODULE FLOOR PLANS AND REFLECTED CEILING PLANS – MODULES 5 AND 6	0 / 2015.12.04
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A6.1	MILLWORK DETAILS	0 / 2015.12.04
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PART 1 General

1.1 GEOTECHNICAL REPORT

.1 A copy of a detailed geotechnical investigation report with respect to the building site is included as follows:

.1 Title: "Geotechnical Report, Proposed RCMP Detachment, Black Lake, Saskatchewan. File No. S1981"

.2 Date: December 5, 2013

.3 Prepared by: Clifton Associates Ltd., 340 Maxwell Crescent, Regina, SK, S4N 5Y5.

.2 This report records properties of the soils and recommendations for the design of foundations, prepared primarily for the use of the Consultant. The recommendations given shall not be construed as a requirement of this Contract unless also contained in the Contract Documents.

.3 The geotechnical report, by its nature, cannot reveal all conditions that exist or can occur on the site. Should subsurface conditions, in the opinion of the Consultant, be found to vary substantially from the report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to the Owner.

.4 Direct all questions pertaining to the geotechnical investigation report to the Departmental Representative.

PART 2 Products

2.1 NOT USED

.1 Not used.

PART 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Geotechnical Report
Proposed RCMP Detachment
Black Lake, Saskatchewan

RCMP

File S1981 05 December 2013

Clifton Associates Ltd.
engineering science technology

05 December 2013
File S1981

RCMP
National Project Delivery Office
PO Box 6500
Regina, Saskatchewan
S4P 3J7

Attention: Mr. Corey Schneider

Dear Corey:

Subject: Geotechnical Report
New RCMP Detachment
Black Lake, Saskatchewan

We are pleased to present to you our final geotechnical report regarding the above subject.

If you have any questions regarding this report, please contact me.

Yours truly,

Clifton Associates Ltd.

Jon Osback, P.Eng.

Distribution: RCMP — 1 electronic (PDF) copy
2 bound copies
Clifton Associates Ltd. — 2 bound copies

340 Maxwell Crescent
Regina, Saskatchewan
Canada S4N 5Y5

Tel: 306 721.7611
Fax: 306 721.8128

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1.0 Introduction

This report presents results of a geotechnical investigation conducted for the new RCMP Detachment Facility and employee housing to be constructed in Black Lake, Saskatchewan. The site has an area of approximately 2.8 acres and is located along Boneleye Drive, as shown on Drawing No. S1981-01. Authorization to proceed was provided by RCMP Contract No. 7190203, which was provided by email to Jon Osback of Clifton Associates Ltd. (Clifton) on 04 September 2013 by Bonny Manz, Senior Contracting Officer, RCMP.

In general, the objectives of this work were:

- To define the subsurface soil strata and groundwater conditions in the area of the proposed development.
- To provide recommendations for suitable methods of foundation support for proposed structures.
- To provide roadway surfacing structure recommendations.
- To provide recommendations for excavations, backfill and drainage.
- To provide general site development criteria.
- To provide commentary on pertinent geotechnical issues identified during the subsurface investigation.

2.0 Description of the Site and Proposed Structures

It is our understanding that the new detachment facility will consist of a modular structure with a footprint of about 803 m^2, along with three separate modular structures with footprints of approximately 100 m^2, which will be used for employee housing. The detachment and employee housing will be single storey structures on a heated crawlspace. Approximate locations of the proposed structures, as indicated in the sketches provided to us, are shown on Drawing No. S1981-02.

The area investigated was generally level and is currently forested, with trees of varying size and spacing. Tree clearing was required in order to access the borehole locations with the drilling rig. The site is bordered by Boneleye Drive on the west, and Father Porte Memorial Dene School on the east. The north and south of the site is forested, with a cut line running approximately east-west along the north border.

General foundation recommendations contained herein are provided for the proposed structures. These recommendations can be revised for specific loadings or configurations, if required, once additional details are known. This office must be advised of any changes so that the applicability of these recommendations can be assessed.

3.0 Field and Laboratory Investigation

Subsurface conditions were investigated by six boreholes drilled at the site as shown on Drawing No. S1981-02. Boreholes were drilled on 02 and 03 October 2013 using a track mounted Acker MP5 drilling rig equipped with 125 mm diameter solid stem auger. All boreholes were drilled to refusal on bedrock. The maximum depth of exploration was 2.25 m. Core samples of sandstone bedrock were recovered from Borehole BH106 using a diamond core barrel.

Representative disturbed samples were recovered for laboratory analysis. Sampling was started at a depth of 0.75 m and continued at a 0.75 m interval to the maximum depth explored. Standard penetration testing (SPT) was conducted in three boreholes to estimate the in-situ density of the local soils. Disturbed cutting samples were collected in the remaining three boreholes.

No groundwater was encountered; piezometers were not installed.

The natural water content of each sample was determined. Other testing included determination of grain size distribution and water soluble sulphate content of selected representative samples. SPT data was used along with empirical correlations in order to estimate the soil undrained shear strength. Bedrock core samples were tested for compressive strength.

Observations made during the field investigation, visual descriptions and the results of laboratory tests are recorded in the Borehole Logs, and the Summary of Sampling and Laboratory Test Data which are appended to this report. An explanation of the symbols and terms used in the borehole logs is included in the Symbols and Terms section of this report.

Laboratory testing was conducted in accordance with procedures and methodologies described in ASTM standards.

4.0 Analysis

4.1 Stratigraphy

Stratigraphy consisted of sand overlying bedrock sandstone. Approximately 80 mm of organic topsoil was encountered. Sand was light brown in colour and fine grained and extended to a depth of 1.0 m to 2.25 m below ground surface. Sand had from 21% to 50% silt and clay sized particles with a trace of gravel. SPT N-values in the sand ranged from about 6 to 18 blows for 300 mm penetration, corresponding to loose to compact density. It should be noted that some higher SPT-N values were observed; however, these higher numbers were interpreted to be due to the SPT sampler hitting gravel, cobbles, or bedrock. The maximum dry density and optimum water content of the sand determined in accordance with the standard Proctor test were 2008 kg/m^3 and 7.9%, respectively. The estimated CBR for surficial sand is 12.0 based on its grain size distribution and calculated Group Index.

Bedrock, composed of sandstones belonging to the Manitou Falls Formation of the Athabasca Group, was encountered below the sand. The sandstone was comprised of an assemblage well sorted, well rounded, generally medium grained quartz arenites. The sandstones were generally well cemented displaying a variable degree of faulting and jointing. The uniaxial compressive strength of two samples tested was 75 MPa and 111 MPa.

4.2 Groundwater Regime

No seepage was encountered in the investigation. However, groundwater levels are expected to fluctuate with the level of development in the area, as well as seasonal changes in precipitation, infiltration and evaporation.

5.0 General Discussion

The major geotechnical issues associated with this project are:

- Frost penetration;
- Foundations to support the proposed structures;
- Excavations;
- Roadway surfacing; and,

- Site development criteria.

5.1 Frost

Sand with little silt and clay sized particles will be frost susceptible. The depth of freezing in this area will vary depending on air temperature, ground cover, the type of any fill material utilized during development and other factors. The depth of freezing will be greatest for sand with low water content. Where groundwater is not present or is present at great depth, the risk of ice segregation and associated heave is reduced. Frost heave can be an issue for unheated structures. In general, frost heave will be a potential issue for foundations constructed less than about 3 m from surface. At this site, this risk can be minimized by constructing footings directly on bedrock or below the depth of freezing.

The depth of the foundation can be reduced if the foundation is insulated. This will only apply to a structure without a crawlspace, or a heated crawlspace. Insulation can be incorporated into an unheated structure, although the amount of insulation required can be substantial.

5.2 Foundation Alternatives

Issues related to foundation construction will include:

- Potential for frost heave in sand;
- Depth of frost;
- Cobbles and boulders within the sand; and,
- Potential settlement of shallow spread footings.

Spread footings are a suitable foundation for the proposed structures. Footings may be constructed on sand or bedrock.

Spread Footings

The estimated net allowable bearing capacity of sand at this Site is 120 kPa. The amount of differential and total settlement will depend on the size of the footing and applied bearing pressure. A minimum footing size of 410 mm is recommended. The amount of settlement can be minimized by constructing footings directly on bedrock. The estimated bearing capacity of the sandstone bedrock is 7.5 MPa.

Some settlement of shallow spread footings constructed on sand is expected. The estimated total settlement for the allowable bearing capacity provided will be 25 mm. The magnitude of settlement can be controlled by adjusting footing dimensions to limit settlement and by ensuring good subgrade preparation. The amount of settlement will increase as the size of the footing increases for a constant bearing pressure. The bearing pressure utilized will be controlled by settlement rather than bearing failure. Additional discussion follows in subsequent sections.

5.3 Coefficient of Earth Pressure

Active and passive earth pressure can be calculated using active earth pressure coefficients. Table 5.1 provides a summary of these properties.

Table 5.1
Earth Pressure Coefficients

Material	Angle of Internal Friction (°)	Total Unit Weight (kN/m^3)	Earth Pressure Coefficients		
			Active	At-Rest	Passive
Sand	30	18.0	0.33	0.5	3.0

5.4 Coefficient of Friction for Sliding

The friction angle between concrete and soil for concrete poured directly on soil can be assumed to be equal to the angle of internal friction for soil provided in Table 5.1. This assumes a rough contact surface between soil and concrete. For smooth concrete against soil, the tangent of the angle of internal friction should be reduced by 20 percent.

5.5 Modulus of Subgrade Reaction

The modulus of subgrade reaction, k_s (MPa), was estimated on the basis of correlation with the CBR value of 12.0. On this basis, a value of 50 MN/m3 may be assumed. The value for the modulus of subgrade reaction should be varied over a range of about ±50% to assess the sensitivity of performance to the assumed value.

5.6 Permeability

The permeability or hydraulic conductivity of sand has been estimated to be about 10^{-2} m/s to 10^{-3} m/s, based on the measured grain size distribution.

5.7 Potential for Liquefaction

Factors influencing liquefaction include soil type, relative density, confining pressure, soil drainage conditions, and seismic conditions. Sand can be susceptible to liquefaction if it is loose and has poor drainage, and if ground accelerations associated with an earthquake or other event is sufficient.

An assessment of liquefaction compares the cyclic shear stress developed by the design earthquake (cyclic stress ratio, CSR) and the resistance to liquefaction possessed by the soil due to its density (cyclic resistance ratio, CRR). The factor of safety against liquefaction is assumed to be the ratio, CRR/CSR.

In simplified terms, the cyclic shear stress caused by an earthquake is assumed to be proportional to the peak ground surface acceleration, which is 0.036 for Black Lake. For this site, CSR is calculated to be less than 0.005. As a comparison, the CSR for Richmond, British Columbia would be at least about 15 times higher, or about 0.075, depending on factors such as depth and effective stress.

For the Black Lake site, sand is loose to compact, with an estimated SPT N blow count of about 12. This suggests a CRR of about 0.1 to 0.2. As a comparison, the estimated CRR for loose Fraser River sand is about 0.085.

On this basis, the estimated factor of safety against liquefaction for the site is about 20 or higher. This suggests that even though soil may be considered to be susceptible to liquefaction, it is unlikely that sufficient seismic activity is present that would result in liquefaction.

5.8 Floors

It is our understanding that the proposed structures will have heated crawlspaces. Structurally supported floors are addressed in section 8.0 of this report.

5.9 Excavations

Significant dewatering is not expected for excavations. This may change seasonally, or as a result of precipitation and infiltration.

Soil in this area will be a type 3 soil as defined by Occupational Health and Safety regulations. In general, excavations should be no steeper than about 1 horizontal to 1 vertical (1:1). Although excavations through these materials may stand in the short term at steeper angles, oversteepened slopes will slough and collapse if they are left open for long periods of time or if water is allowed to infiltrate. Failure may be sudden and may endanger personnel and equipment working in the vicinity.

5.10 Roadway Surfacing Structures

The subgrade soil available at this site is loose to compact sand. A design CBR value of 12.0 for this subgrade soil has been assumed because of the presence of as much as 50% of fines.

The existing sand subgrade at this site will perform similarly to a roadway sub base material. For a gravel surface, 100 mm to 150 mm thickness of crushed base course or traffic gravel can be placed on the existing subgrade in order to prepare driving surfaces in the area of the detachment and housing. This type of structure will require periodic maintenance, including blading and reapplication of a gravel surface.

5.11 General Site Development

Construction Equipment

Standard excavation equipment may be used for site development; no unusual excavation conditions are anticipated.

Large vibratory smooth steel drum compacting equipment should be used to compact sand and granular soil.

Topsoil, Cobbles and Boulders

Organic topsoil should be removed prior to placement of any fill to minimize the potential for settlement. The average topsoil thickness was estimated to be about 80 mm.

Cobbles were occasionally encountered during drilling. Cobbles and boulders can be expected in excavations.

Groundwater

Groundwater is not expected in excavations, although some seepage may occur as water infiltrates the ground surface and flows vertically and horizontally through the sand, or along the surface of bedrock. Groundwater levels are expected to fluctuate seasonally and with precipitation.

Suitability of On-Site Soil for Compacted Fill

Sand at this site should be an acceptable material for construction of embankments or fills, although it may be sensitive to small changes in water content when compacting.

Shrinkage Factors

For estimates of earthwork volumes, a shrinkage factor of 15% to 20% may be used for sand.

Engineered Fill

If required, engineered fills supporting important structures should utilize local sand or pit run gravel. Specifications for pit run gravel and sand, and crushed base course material are appended to this report.

Cut or Fill Slopes

Cut or fill slopes in sand will possess long term stability at slopes of 2 horizontal to 1 vertical (2:1), but may be subject to increased rates of erosion. Flatter slopes are preferred for landscaping purposes. Vegetation can be used to maintain slopes. Where vegetation is not desirable, a gravel surface with a minimum thickness of 150 mm is recommended on these slopes to reduce the potential for erosion.

Drainage swales and ditches should be constructed with gentle slopes, if possible, as the soil will be easily eroded, particularly if water velocities are greater than 2 m/s.

It is desirable to have road subgrades at least 1.0 m above natural ground on fill sections or to have at least a 1.0 m ditch in cut-fill sections. The surface of the subgrade should have enough cross-slope to ensure positive surface drainage prior to surfacing, nominally 5%.

Site Grading

The site should be graded to ensure positive drainage throughout the construction phase. Grades should be created to direct water away from excavations and trenches. Within

excavations, the subgrade should be graded with a cross slope so that any accumulated water can be removed by pumping. Similarly, if the base of excavations meets bedrock, the bedrock surface should be roughly graded or channeled to allow pumping of excess water.

Proper site grading design is critical to ensure good long term performance of shallow footings. Grades should ensure that water from precipitation or snowmelt does not accumulate near structures. A positive slope away from structures of at least 5% for about 3 m is recommended. Infiltration rate into the sand is expected to be high. Consideration should be given to the potential of water running along the bedrock surface towards site structures. If possible, the bedrock surface should be prepared in order to direct water away from buildings. Otherwise, interceptor drainage channels can be constructed along the bedrock surface, with excess water being removed by pumping.

5.12 Compaction Specifications

Compaction specifications must consider the desired properties of the fill. Specifications will typically require compaction to a percentage of the maximum dry density determined in accordance with the standard Proctor test and may include a range of water contents that are desirable. Depending on the desired properties for the compacted soil, the water content is often provided as a guide to the contractor, since the compactive effort will usually be minimized if the soil is compacted close to the optimum water content determined in accordance with the standard Proctor test. If the soil is wet of optimum, it will be possible to attain a specified density if greater compactive effort or more work is applied to the soil.

The compaction water content will have an impact on the properties of the compacted soil. Soil strength and compressibility is better if the water content is lower than optimum. Soil compacted wet of optimum to the necessary density may be more compressible under low pressure and may have reduced strength. The swelling potential and permeability of a soil will generally be reduced; however, if the soil is compacted wet of optimum.

The following recommendations are provided for compaction.

- The excavated subgrade should be uniformly compacted to 95% of its maximum dry density determined in accordance with ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort [12,400 ft-lbf/ft^3 (600 kN-m/m^3)]. The water content of the subgrade should be close to optimum water content.

- Soft areas in the subgrade should be subcut and backfilled with local sand or well graded pit run gravel that is uniformly compacted to at least 100% of its maximum dry density determined in accordance with ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort [12,400 ft-lbf/ft^3 (600 kN-m/m^3)].

- If considered, granular pads for shallow spread footings should be constructed with local sand or a well graded pit run gravel that conforms to the recommended gradations for granular materials appended to this report. The material should be compacted to a minimum average 98% of maximum dry density for four (4) consecutive tests, with no single test less than 96%, determined in accordance with the standard Proctor test. Lift thickness should not exceed 200 mm.

- Crushed base course that will be under a floor slab, spread footing or paved area should be compacted to a minimum 98% of its maximum dry density determined in accordance with the standard Proctor test.

- Fill material that will be under a parking area or roadway should be compacted to a minimum 98% of maximum dry density determined in accordance with the standard Proctor test in lifts no thicker than 150 mm in compacted thickness. Fill under landscaped areas does not generally require high density, although some compaction is required to reduce the amount of settlement. A suggested level of compaction is a minimum 90% of maximum dry density determined in accordance with the standard Proctor test.

- Backfill of trenches in areas that already have been compacted should be with new subbase material as specified previously and compacted to a minimum 98% of maximum dry density determined in accordance with the standard Proctor test.

- Backfill and compact simultaneously each side of walls in layers of 300 mm to ensure that excessive pressure is not applied to one side of the wall.

5.13 Potential for Sulphate Attack

Water soluble sulphate content was measured to be 0.01% in Boreholes BH101 and BH102. According to CSA A23.1, the potential for sulphate attack is low. Therefore, General Use (Type GU) cement may be used for concrete.

5.14 Corrosion Potential

Sample numbers MN01 and MN11, from boreholes BH101 and BH104, respectively, were submitted to ALS Laboratory Group in Saskatoon for determination of pH. The pH was 5.73 for MN01 and 5.83 for MN11. Corrosive conditions are considered to be present if the pH is less than 5.5; therefore, corrosive conditions are not expected. The laboratory Certificate of Analysis for the pH testing is included in Appendix B.

6.0 Discussion of Foundations

Foundation alternatives at this site include shallow spread footings constructed on sand or sandstone bedrock.

6.1 General

The sand at this site is loose to compact and possesses an allowable bearing capacity of 120 kPa. The bearing capacity of bedrock sandstone is high, and is estimated to be 7.5 MPa.

Shallow foundations are typically constructed below the depth of frost. The depth of freezing around heated buildings will be reduced as a result of heat loss from the structure. The foundation for a structure with a grade supported floor can be constructed at a shallower depth if insulation is incorporated in the design, or if the building has a heated crawlspace. Insulation can be incorporated into an unheated structure, although the amount of insulation required can be substantial.

6.2 Settlement

For a spread footing, the allowable bearing pressure provided ensures that a gross failure of the foundation does not occur. Settlement considerations will typically govern the selection of an appropriate bearing pressure. As the size of a footing increases, the volume of soil stressed increases, resulting in an increase in settlement at a constant bearing pressure. The performance of existing foundations should be considered in the design of new foundations.

Settlement of foundations designed with the allowable bearing pressure values provided is expected to be less than about 25 mm when placed on a well prepared subgrade, with a differential settlement of about one third to one half of the total settlement. Settlement can be minimized by constructing footings directly on bedrock.

6.3 Subgrade Preparation

The subgrade should be prepared by removing topsoil and any soft soil. The subgrade should be proof rolled with a heavy roller or other equipment to verify uniformity of the subgrade. Any failed or soft areas should be excavated an additional 600 mm, minimum and the area backfilled with compacted local sand or pit run gravel. Pit run gravel should be compacted to a minimum 100% of its maximum dry density to minimize the potential for differential settlement. Sand should be compacted in place using a heavy, vibratory compactor.

The width of any large excavations for major foundations should extend a minimum 1.5 m plus the depth of excavation beyond the edge of the foundation to ensure that the subgrade can be prepared and fill can be properly placed and compacted.

7.0 General Foundation Recommendations

The following recommendations are made for a shallow spread footing:

1. Sand or sandstone bedrock will be the load bearing stratum. The surface of an excavation in sand should be prepared by removing any pockets of soft soil or soft fill to a uniform bearing surface. The surface must be maintained in an undisturbed state. The excavated surface can be protected with a mudslab placed within 24 hours of completion of excavation.

2. Overexcavated areas may be filled with a lean concrete mix or with a well graded pit run gravel that conforms to the Recommended Specifications for Granular Materials appended to this report. The material must be compacted to 100% of its maximum dry density determined in accordance with ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort [12,400 ft lbf/ft^3 (600 kN m/m^3)].

3. The foundation must be adequately reinforced to distribute the applied loads and also have sufficient stiffness to distribute local overstresses.

4. A shallow spread footing constructed as specified above may be designed on the basis of an allowable bearing capacity of 120 kPa on sand. This can be increased to 7.5 MPa for foundations constructed on sandstone bedrock.

5. Foundations may also be constructed on a granular pad constructed with local sand or a well graded pit run gravel that conforms to the recommended gradations for granular materials appended to this report. The material should be compacted to 100% of its maximum dry density in accordance with ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort [12,400 ft lbf/ft^3 (600 kN m/m^3)] in lifts not exceeding 200 mm (8 in) in thickness.

6. Footings should have a minimum width of 410 mm.

7. Bedrock should be excavated/prepared as a flat and level surface prior to footing construction.

8.0 Floor Considerations

The following procedures are recommended for the construction of a structurally supported floor:

1. The subgrade or bedrock surface should be positively graded to a sump to remove water, which may inadvertently pond beneath the floor.

2. Migration of moisture from the soil should be prevented by installing 150 μm (minimum) thick polyethylene vapour barrier covered with 50 mm of sand.

3. Floors designed as a structurally supported system with a crawl space between the floor and the subgrade should have some provision to ventilate the crawl space, particularly during the summer months.

4. As an alternative to a crawl space, the floor may be cast upon waxed cardboard carton 'void form' that is designed to degrade following the placement of the concrete. The cardboard cartons must have a strength sufficient to support the fresh concrete until it has sufficient strength to be self-supporting. Great care is required during construction of such floor systems to ensure that the collapse of the cartons does not take place, resulting in a grade supported slab. Careful inspection of these

floors during construction is required to ensure that the void does not collapse during the placement of the floor. Further, care must be taken during selection of 'void form' used. Materials which depend upon biologic degradation should be avoided.

9.0 Excavation Considerations

The stability of cut slopes and the stability of any adjacent structure must be considered for any excavations on the site. The anticipated sideslopes for the excavation will depend on the soil texture, water content and length of time that the excavation is left open.

Some seepage originating from surface infiltration associated with precipitation or irrigation may be expected. Seepage can likely be collected in open sumps and pumped away from the excavation.

Excavations should be performed in compliance with provincial safety regulations. If construction personnel will be in the excavation, then sideslopes for the excavation should not be steeper than 1:1 for safety as stated in provincial safety guidelines. Sideslopes may have to be adjusted in the field as excavation progresses, depending upon conditions encountered. Continuous inspection is recommended since slope failure could be sudden.

All loose material on the sides of the excavation should be trimmed. The excavation should be left open for the minimum amount of time required for construction. Some loss of strength in the soil can be expected with the passing of time, resulting in sloughing and local slope failures.

As described in Occupational Health and Safety Regulations, a competent worker should be stationed on the surface to alert any worker in the excavation about the development of any potentially unsafe conditions. Machinery and heavy equipment should not be allowed closer to the excavation than one half of the depth of the excavation, unless precautions are implemented to ensure that workers in the excavation are safe. Spoil material should not be piled closer than 3 m from the edge of the excavation and with sideslopes no steeper than 1:1.

Infiltration of water into the soil around the excavation can result in loss of strength and collapse of the excavation walls. It is recommended that workers not be in the excavation during rainfall and that excavation walls be carefully inspected for cracking, sloughing and potential failures after rainfall before work continues in the excavation.

10.0 Closure

This report was prepared by Clifton Associates Ltd. for the use of the RCMP and their agents for specific application to the proposed RCMP Detachment and employee housing in Black Lake, Saskatchewan. The material in it reflects Clifton Associates Ltd. best judgment available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Clifton Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

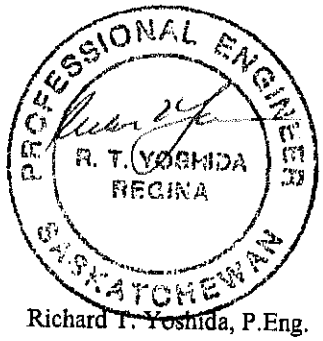
This report has been prepared with generally accepted engineering practices common to the local area. No other warranty, expressed or implied, is made.

Our conclusions and recommendations are preliminary and based upon the information obtained from the referenced subsurface exploration. The borings and associated laboratory testing indicate subsurface and groundwater conditions only at the specific locations and times investigated, only to the depth penetrated and only for the soil properties tested. The subsurface and groundwater conditions may vary between the boreholes and with time. The subsurface interpretation provided is a professional opinion of conditions and not a certification of the site conditions. The nature and extent of subsurface variation may not become evident until construction or further investigation. If variations or other latent conditions do become evident, Clifton Associates Ltd. should be notified immediately so that we may re-evaluate our conclusions and recommendations. Although subsurface conditions have been explored, we have not conducted analytical laboratory testing on samples obtained nor evaluated the site with respect to the potential presence of contaminated soil or groundwater.

The enclosed report contains the results of our investigation as well as certain recommendations arising out of such investigations. Our recommendations do not constitute a design, in whole or in part, of any elements of the proposed work. Incorporation of any or all of our recommendations into the design of any such element does not constitute us as designers or co-designers of such elements, nor does it mean that the design is appropriate in geotechnical terms. The designers of such elements must consider the appropriateness of our recommendations in light of all design criteria known to them, many of which may not be known to us. Our mandate has been to investigate and recommend which we have completed by means of this report. We have had no mandate to design, or review the design, of any elements of the proposed work and accept no responsibility for such design or design review.

Clifton Associates Ltd.

Jon Osback, P.Eng.



Richard T. Yoshida, P.Eng.

Association of Professional
Engineers and Geoscientists of Saskatchewan
Certificate of Authorization No. 238

Clifton Associates Ltd. engineering science technology	Symbols and Terms

Soil Descriptive Terms

A soil description for geotechnical applications includes a description of the following properties:

- texture
- color, oxidation
- consistency and condition
- primary and secondary structure

Texture

The soil texture refers to the size, size distribution and shape of the individual soil particles which comprise the soil. The Unified Soil Classification System (ASTM D2487-00) is a quantitative method of describing the soil texture. The basis of this system is presented overleaf. The following terms are commonly used to describe the soil texture.

Particle Size (ASTM D2487-00)

Boulder	300 mm plus
Cobble	75 - 300 mm
Gravel	4.75 - 75 mm
Coarse	19 - 75 mm
Fine	4.75 - 19 mm
Sand	0.075 - 4.75 mm
Coarse	2 - 4.75 mm
Medium	0.425 - 2 mm
Fine	0.075 - 0.425 mm
Silt and Clay	Smaller than 0.075 mm

Relative Proportions (CFEM, 3rd Ed., 1992)

Trace	1 - 10 %
Some	10 - 20 %
Gravelly, sandy, silty, clayey, etc.	20 - 35 %
And	>35 %
Gravel, Sand, Silt, Clay	>35 % and main fraction

Gradation

Well Graded	Having a wide range of grain sizes and substantial amount of all intermediate sizes.
Uniform or Poorly Graded	Possessing particles of predominantly one size.
Gap Graded	Possessing particles of two distinct sizes.

Particle Shape

Angular	Sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Similar to 'angular' but have rounded edges.
Subrounded	Well-rounded corners and edges, nearly plane sides.
Rounded	No edges and smoothly curved sides.

Also may be flat, elongated or both.

The term "TILL" may be used as a textural term to describe a soil which has been deposited by glaciers and contains an unsorted, wide range of particle sizes.

Color And Oxidation

The soil color at its natural moisture content is described by common colors and, quantitatively, in terms of the Munsell color notation; (eg. 5Y 3/1). The notation combines three variables, hue, value and chroma to describe the soil color. The hue indicates its relation to red, yellow, green, blue and purple. The value indicates its lightness. The chroma indicates its strength of departure from a neutral of the same lightness.

Departure of the soil color from a neutral color indicates the soil has been oxidized. Oxidation of a soil occurs in a oxygen rich environment where most commonly metallic iron, oxidizes and turns a neutral colored soil 'rusty' or reddish brown. Oxidized manganese gives a purplish tinge to the soil. Oxidation may occur throughout the entire soil mass or on fracture/joint/fissure surfaces.

Classification of Soils for Engineering Purposes

ASTM Designation D 2487-00 (Unified Soil Classification System)

Major divisions			Group Symbols	Typical names	Classification criteria
Coarse-grained soils: More than 50% retained on No. 200 sieve* (>0.075 mm)	Gravels: More than 50% of coarse fraction retained on No. 4 sieve(≥4.75 mm)	Clean gravels <5% fines	GW	Well-graded gravel	$C_u = \frac{D_{60}}{D_{10}} \geq 4$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravel	Not meeting either C_u or C_c criteria for GW
		Gravels with fines >12% fines	GM	Silty gravel	Atterberg limits below "A" line or PI less than 4: Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravel	Atterberg limits on or above "A" line and PI > 7: If fines are organic add "with orgnic fines" to group name
	Sands: 50% or more of coarse fraction passes No. 4 sieve(<4.75 mm)	Clean sands <5% fines	SW	Well-graded sand	$C_u = \frac{D_{60}}{D_{10}} \geq 6$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sand	Not meeting either C_u or C_c criteria for SW
		Sands with fines >12% fines	SM	Silty sand	Atterberg limits below "A" line or PI less than 4: Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sand	Atterberg limits on or above "A" line and PI > 7: If fines are organic add "with orgnic fines" to group name
Fine-grained soils: 50% or more passes No. 200 sieve* (≤0.075 mm)	Silts and Clays: Liquid limit <50%	Inorganic	ML	Silt	
			CL	Lean Clay -low plasticity	
		Organic	OL	Organic clay or silt (Clay plots above 'A' Line)	
	Silts and Clays: Liquid limit ≥50%	Inorganic	MH	Elastic silt	
			CH	Fat Clay -high plasticity	
		Organic	OH	Organic clay or silt (Clay plots above 'A' Line)	
	Highly organic soils		PT	Peat, muck and other highly organic soils	

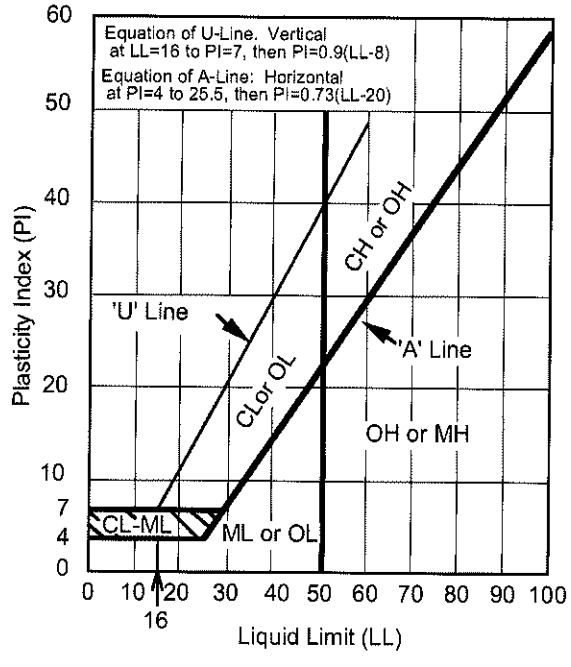
If ≥ 15% sand add "with sand" to group name

If ≥ 15% gravel add "with gravel to group name

Classification on basis of percentage of fines
Less than 5% pass No. 200 sieve.....GW, GP, SW, SP
More than 12% pass No. 200 sieve.....GM, GC, SM, SC
5 to 12% pass No. 200 sieve.....Borderline classifications requiring use of dual symbols

If 15 to 29% coarse-grained, add "with sand" or "with gravel" as appropriate
If > 30% coarse-grained , add "sandy" or "gravelly" as appropriate
Class as organic when oven dried liquid limit is < 75% of undried liquid limit

Plasticity Chart



*Based on the material passing the 3 in.(75 mm) sieve, if field samples contain cobbles or boulders, add "with cobbles or boulders" to group name

Consistency And Condition

The consistency of a cohesive soil is a qualitative description of its resistance to deformation and can be correlated with the undrained shear strength of the soil. The condition of a coarse grained soil qualitatively describes the soil compactness and can be correlated with the standard penetration resistance (ASTM D1586-99).

Consistency Of Cohesive Soil (CFEM, 3rd Edit., 1992)

Consistency	Undrained Shear Strength (kPa) (CFEM, 3rd Edt., 1992)	Field Identification (ASTM D 2488-00)
Very Soft	<12	Thumb will penetrate soil more than 25 mm.
Soft	12-25	Thumb will penetrate soil about 25 mm.
Firm	25-50	Thumb will indent soil about 6 mm.
Stiff	50-100	Thumb will indent, but penetrate only with great effort (CFEM).
Very Stiff	100-200	Readily indented by thumbnail (CFEM).
Hard	>200	Thumb will not indent soil but readily indented with thumbnail.
Very Hard	N/A	Thumbnail will not indent soil.

Condition Of Coarse Grained Soil (CFEM, 3rd Edt., 1992)

Compactness Condition	SPT N - Index (Blows/300mm)
Very Loose	0 - 4
Loose	4 - 10
Compact	10 - 30
Dense	30 - 50
Very Dense	over 50

Moisture Conditions (ASTM D2488-00)

Description	Criteria
Dry	Absence of moisture, dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible, free water, usually soil is below water table

Structure

The soil structure is the manner in which the individual soil particles are assembled to form the soil mass. The primary soil structure is the arrangement of soil particles as originally deposited. The secondary soil structure refers to any rearrangement of the soil such as deformation and cracking which has taken place since deposition.

Primary Soil Structure (Depositional)

A. Geometry

Stratum	-	A single sedimentary 'layer', greater than 10 mm in thickness, visibly separable from other strata by a discrete change in lithology and/or sharp physical break.
Homogeneous	-	Same color and appearance throughout.
Stratified	-	Consisting of a sequence of layers which are generally of contrasting texture or color.
Laminated	-	Stratified with layer thicknesses between 2 mm and 10 mm.
Thinly laminated	-	Stratified with layer thickness less than 2 mm.
Bedded	-	Stratified with layer thicknesses greater than 10 mm.
Very Thinly Bedded (Flaggy)	-	Stratified with layer thicknesses between 10 and 50 mm.
Thinly Bedded (Slabby)	-	Stratified with layer thicknesses between 50 and 600 mm.
Thickly Bedded (Blocky)	-	Stratified with layer thicknesses between 600 and 1200 mm.
Thick-Bedded (Massive)	-	Stratified with layer thicknesses greater than 1200 mm.
Lensed	-	Inclusions of small pockets of different soils, such as small lenses of sand material throughout a mass of clay.

B. Bedding Structures

Cross-bedding	-	Internal 'bedding' inclined to the general bedding plane.
Ripple-bedding	-	Internal 'wavy bedding'.
Graded-bedding	-	Internal gradation of grain size from coarse at base to finer at top of bed.
Horizontal bedded	-	Internal bedding is parallel and flat lying

Secondary Soil Structure (Post-Depositional)

A. Accretionary Structures

Includes nodules, concretions, crystal aggregates, veinlets, color banding and

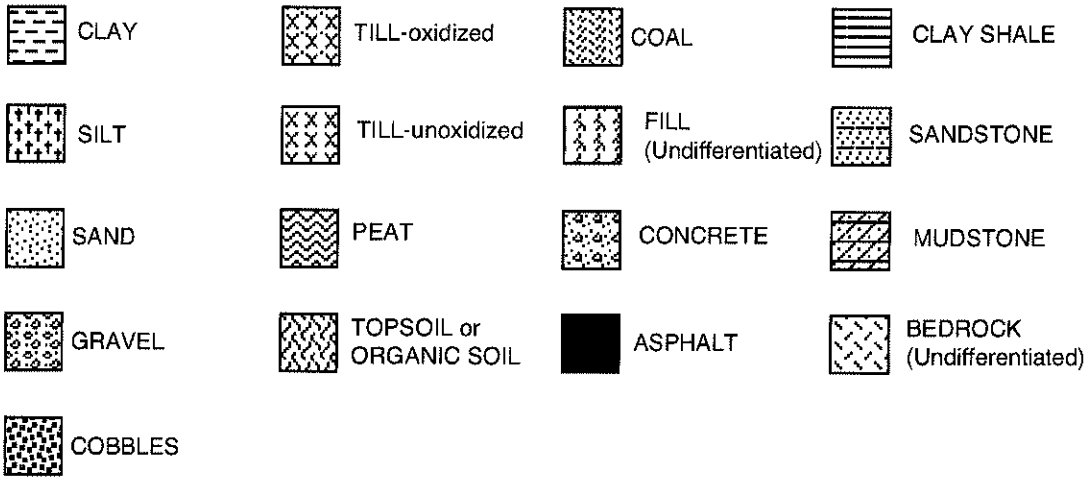
Cementation	-	Chemically precipitated material, commonly calcite ($CaCO_3$), binds the grains of soil, usually sandstone. Described as weak, moderate, strong (ASTM D2488-00).
Salt Crystals	-	Groundwater flowing through the soil/rock often precipitates visible amounts of salts. Calcite ($CaCO_3$), glauber salts ($Na_2Ca(SO_4)_2$), and gypsum ($CaSO_4*2H_2O$) are common.

B. Fracture Structures

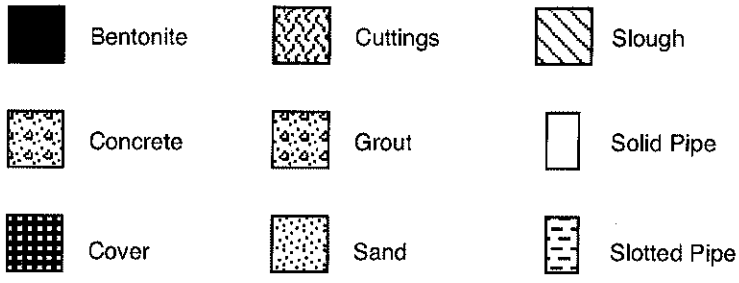
Fracture	-	A break or discontinuity in the soil or rock mass caused by stress exceeding the materials strength.
Joint	-	A fracture along which no displacement has occurred.
Fissure	-	A gapped fracture, which may open and close seasonally. Usually an extensive network of closely spaced fractures, giving the soil a 'nuggetty' structure.
Slickensides	-	Fractures in a clay that are slick and glossy in appearance, caused by shear movements.
Brecciated	-	Contains randomly oriented angular fragments in a finer mass, usually associated with shear displacements in soils.
Fault	-	A fracture or fracture zone along which there has been displacement.
Blocky	-	A cohesive soil that can be broken down into small angular lumps which resist further breakdown.

Symbols Used on Bore Hole Logs

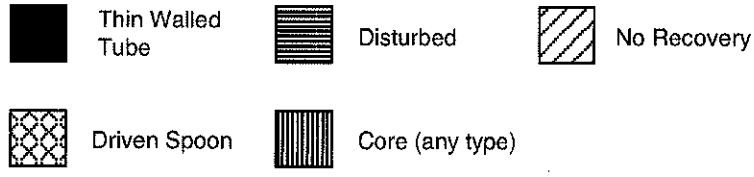
Lithology Type



Borehole Completion and Backfill Materials



Soil Sample Type



Groundwater Symbols

▼ Piezometric elevation as determined by a piezometer installation

▽ Water levels measured in borings at the time and under the conditions noted

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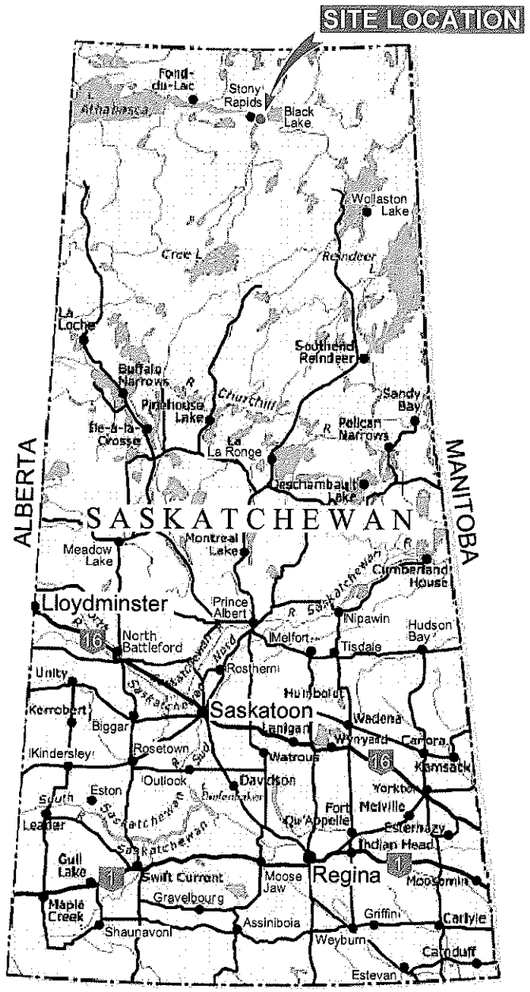
Drawings



KEY PLAN
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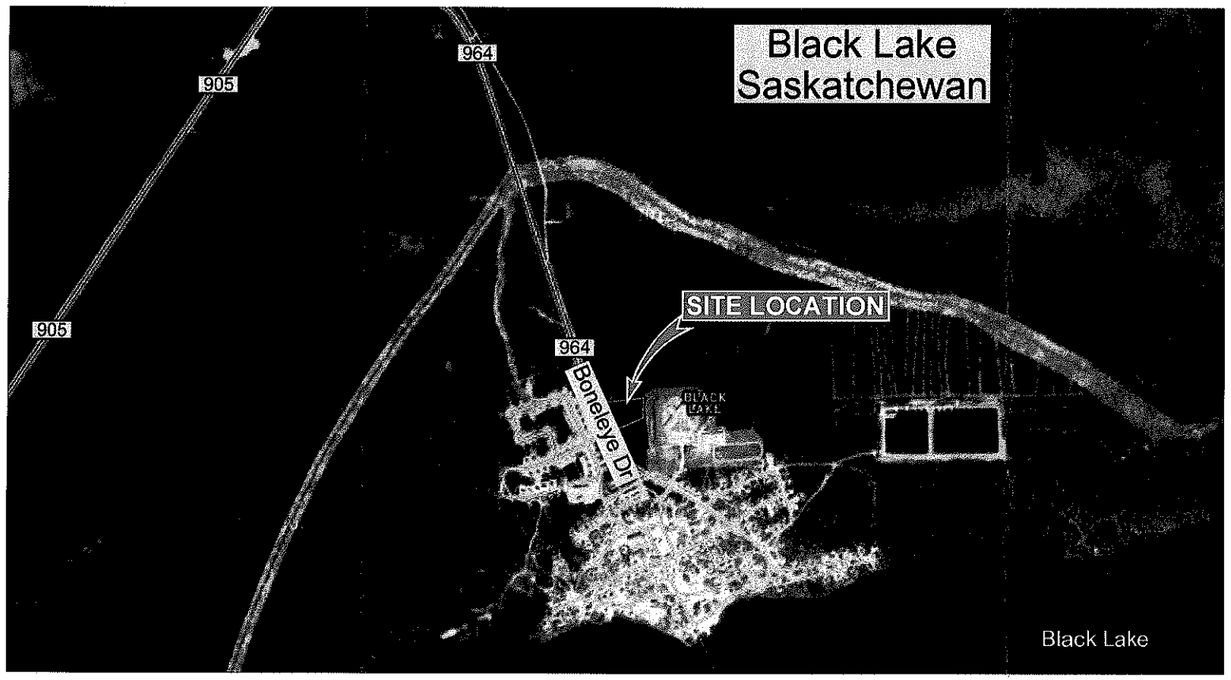
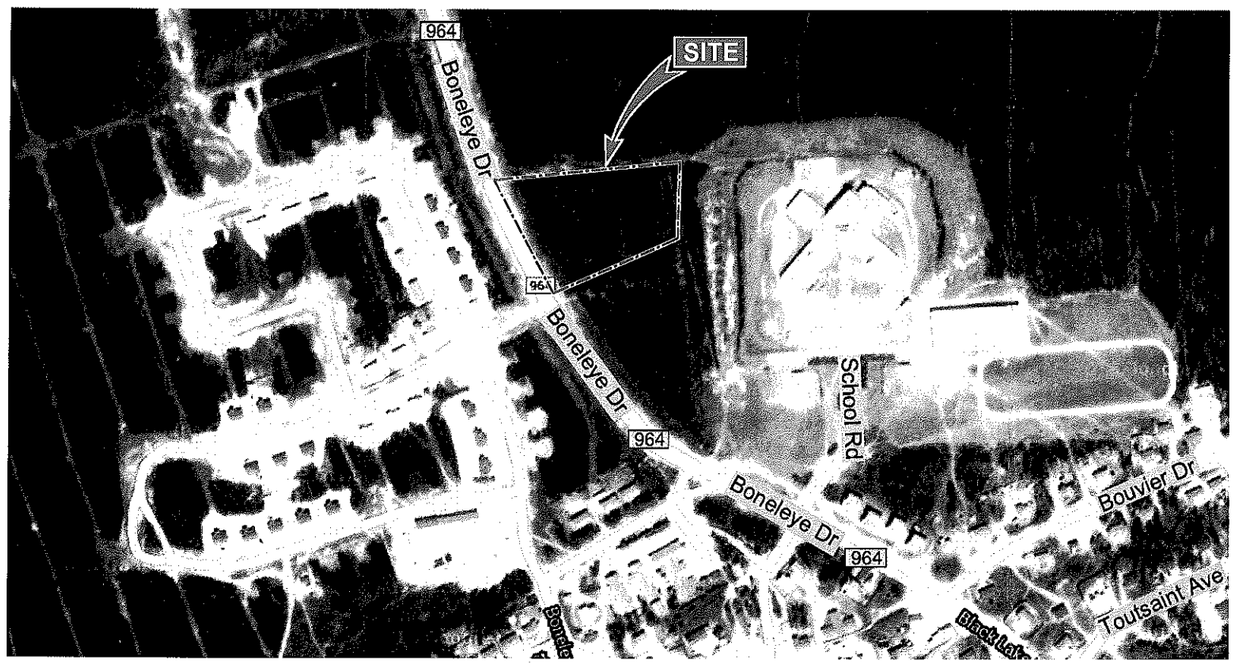


LOCATION PLAN
SCALE 1:20,000 APPROX.



SITE PLAN
SCALE 1:5,000 APPROX.

LEGEND :

SITE BOUNDARY

NOTES :

1. SITE PLAN IMAGE DOWNLOADED FROM GOOGLE MAP http://maps.google.ca/ Imagery ©2013 Cnes/Spot Image. DigitalGlobe. Map data ©2013 Google

DRAWING REVISIONS			
6			
5			
4			
3			
2			
1			
NO.	DD/MM/YY	DESCRIPTION	BY

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CLIENT
ROYAL CANADIAN MOUNTED POLICE

PROJECT TITLE
GEOTECHNICAL INVESTIGATION
NEW RCMP DETACHMENT FACILITY
AND EMPLOYEE HOUSING
BLACK LAKE, SASKATCHEWAN

DRAWING TITLE
SITE LOCATION PLAN

PROJECT NO.		FILE NO.	
S1981		S1981.dwg	
DATE	SCALE	DWG. NO.	REV.
NOV., 2013	AS SHOWN	S1981-01	
DRAWN	CHECKED		
MNG	CD/JO		

P:\Saskatoon Projects\S1981 - R.C.M.P. - Black Lake - Geotechnical Investigation\S1981.dwg

BORE HOLE LOCATION

SCALE 1:1,000 APPROX.

LEGEND :

SITE BOUNDARY

BORE HOLE LOCATION

NOTES :

1. SITE PLAN IMAGE DOWNLOADED FROM GOOGLE MAP http://maps.google.ca/ Imagery ©2013 Cnes/Spot Image. DigitalGlobe. Map data ©2013 Google
2. ALL DIMENSIONS ARE IN METER.

DRAWING REVISIONS			
6			
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CLIENT
ROYAL CANADIAN MOUNTED POLICE

PROJECT TITLE
GEOTECHNICAL INVESTIGATION
NEW RCMP DETACHMENT FACILITY
AND EMPLOYEE HOUSING
BLACK LAKE, SASKATCHEWAN

DRAWING TITLE
BORE HOLE LOCATION PLAN

PROJECT NO.		FILE NO.	
S1981		S1981.dwg	
DATE	SCALE	DWG. NO.	REV.
NOV., 2013	1:1000	S1981-02	
DRAWN	CHECKED		
MNG	CD/JO		

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Bore Hole Logs and Laboratory Test Data

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BOREHOLE LOG

BOREHOLE: 101
Page: 1 of 1

Client: Royal Canadian Mounted Police
Project: Detachment Geotechnical Investigation
Location: Black Lake, Saskatchewan
Project No.: S1981

Northing: 6555101
Easting: 465244
Ground Elev.:
Top Casing Elevation:

Date Drilled: 10/02/2013
Drill:Acker MP5
Drilling Method: Solid Stem Auger
Logged by: MN

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	Sample SPT 'N'	USCS	% Sulphate	Moisture Content (%) PL / Natural Moisture / LL (0 50 100)	Shear Strength (kPa) Unconf. Pocket Pen Lab Vane (0 100 200 300 400)	Monitoring Well Construction Detail
0		ORGANIC SOIL: 80mm organic topsoil. Sandy. Deep Brown. Moist.		MN1	1/ 5/ 5					
1		SAND: Fine-grained, silty, trace clay, trace gravel. Olive yellow (2.5Y 6/6). Oxidized. Calcareous. Moist. Loose. Trace organics. Homogenous.								
2		@1.5 m: Becomes pale brown (10YR 6/3). SPT refusal.		MN2	38/ 50/		.01			
		SANDSTONE.		MN3						
3		Notes: Refusal at 2.25 m. Initial refusal at 2.1m. Five additional holes were drilled within 1m for maximum refusal depth of 2.25m.								
4										
5										
6										
7										
8										
9										
10										

Summary of Sampling and Laboratory Test Data

Sample				Water Content	Consistency				Gradation				Sulphate Content	Shear Strength			Dry Density
Depth	Number	Type	Recovery		Plastic Limit	Liquid Limit	Plasticity Index	USC	Gravel	Sand	Silt	Clay		Compression Test	Lab Vane	Pocket Penetrometer	
meters			mm	%	%	%	%		%	%	%	%	%	kPa	kPa	kPa	kg/m^3
0.30	MN1	Spt		12.5													
1.52	MN2	Spt		4.0									0.01				
2.13	MN3	Bag		3.5													

Remarks:

Approved by:

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Project	Black Lake RCMP
Location	Black Lake, SK
Project No.	S1981

Borehole No.

101

Clifton Associates Ltd.
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BOREHOLE LOG

BOREHOLE: 102
Page: 1 of 1

Client: Royal Canadian Mounted Police
Project: Detachment Geotechnical Investigation
Location: Black Lake, Saskatchewan
Project No.: S1981

Northing: 6555081
Easting: 465250
Ground Elev.:
Top Casing Elevation:

Date Drilled: 10/02/2013
Drill:Acker MP5
Drilling Method: Solid Stem Auger
Logged by: MN

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	Sample SPT 'N'	USCS	% Sulphate	Moisture Content (%) PL / Natural Moisture / LL (0 – 50 – 100)	Shear Strength (kPa) Unconf. / Pocket Pen / Lab Vane (0 – 100 – 200 – 300 – 400)	Monitoring Well Construction Detail
0		ORGANIC SOIL: 80mm organic topsoil and moss. Sandy. Dark Brown.		MN4	2/ 16/ 12					
1		SAND: Fine-grained sand and silt, trace clay, trace gravel. Light yellowish brown (10YR 6/4). Oxidized. Calcareous. Moist. Compact. Homogeneous. @0.75 m: Becomes pale brown (10YR 6/3). Dense		MN6	16/ 24/ 26					
2		@1.5 m: Becomes silty. Light brownish gray (10YR 6/2)		MN5	7/ 20/ 26		.01			
3		Notes: Refusal at 2.1 m. Initial refusal at 2.1m. One additional hole was drilled within 1.5m with refusal at 2.1m.								
4										
5										
6										
7										
8										
9										
10										

Summary of Sampling and Laboratory Test Data

Sample				Water Content	Consistency				Gradation				Sulphate Content	Shear Strength			Dry Density
Depth	Number	Type	Recovery		Plastic Limit	Liquid Limit	Plasticity Index	USC	Gravel	Sand	Silt	Clay		Compression Test	Lab Vane	Pocket Penetrometer	
meters			mm	%	%	%	%		%	%	%	%	%	kPa	kPa	kPa	kg/m^3
0.30	MN4	Spt		6.2					5.4	61.3	33.3						
1.52	MN5	Spt		2.7					4.1	71.8	24.1		0.01				
0.76	MN6	Spt		5.1					4.6	44.8	50.6						

Remarks:

Approved by:

Clifton Associates Ltd.
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Project	Black Lake RCMP
Location	Black Lake, SK
Project No.	S1981

Borehole No.

102

Clifton Associates Ltd.
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BOREHOLE LOG

BOREHOLE: 103
Page: 1 of 1

Client: Royal Canadian Mounted Police
Project: Detachment Geotechnical Investigation
Location: Black Lake, Saskatchewan
Project No.: S1981

Northing: 6555105
Easting: 465325
Ground Elev.:
Top Casing Elevation:

Date Drilled: 10/02/2013
Drill:Acker MP5
Drilling Method: Solid Stem Auger
Logged by: MN

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	Sample SPT 'N'	USCS	% Sulphate	Moisture Content (%) PL / Natural Moisture / LL (0, 50, 100)	Shear Strength (kPa) Unconf. Pocket Pen Lab Vane (0, 100, 200, 300, 400)	Monitoring Well Construction Detail
0		ORGANIC SOIL: 80mm organic topsoil and moss. Sandy.		MN7	1/ 3/					
1		SAND: Fine-grained, some silt, trace clay, trace gravel. Yellowish brown (10YR 5/4). Oxidized. Calcareous. Moist. Loose. Homogenous. @0.85 m: SPT refusal. Becomes pale brown (10YR 6/3)		MN8	3 9/ 9/					
		@1.2 m: Sandstone pieces. White Notes: Refusal at 1.2 m. Initial refusal at 1.2m. One additional hole was drilled within 2m with refusal at 1.2m.		MN9						
2										
3										
4										
5										
6										
7										
8										
9										
10										

Summary of Sampling and Laboratory Test Data

Sample				Water Content	Consistency				Gradation				Sulphate Content	Shear Strength			Dry Density
Depth	Number	Type	Recovery		Plastic Limit	Liquid Limit	Plasticity Index	USC	Gravel	Sand	Silt	Clay		Compression Test	Lab Vane	Pocket Penetrometer	
meters			mm	%	%	%	%		%	%	%	%	%	kPa	kPa	kPa	kg/m^3
0.30	MN7	Spt		7.2													
0.76	MN8	Spt		4.0													
1.22	MN9	Bag		-													

Remarks:

Approved by:

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Project Black Lake RCMP
Location Black Lake, SK
Project No. S1981

Borehole No.
103

Clifton Associates Ltd.
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BOREHOLE LOG

BOREHOLE: 104
Page: 1 of 1

Client: Royal Canadian Mounted Police
Project: Detachment Geotechnical Investigation
Location: Black Lake, Saskatchewan
Project No.: S1981

Northing: 6555065
Easting: 465367
Ground Elev.:
Top Casing Elevation:

Date Drilled: 10/03/2013
Drill:Acker MP5
Drilling Method: Solid Stem Auger
Logged by: MN

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USCS	% Sulphate	Moisture Content (%) PL / Natural Moisture / LL (0, 50, 100)	Shear Strength (kPa) Unconf. Pocket Pen Lab Vane (0, 100, 200, 300, 400)	Monitoring Well Construction Detail
0		ORGANIC SOIL: 130mm organic topsoil and peat. Sandy.		MN10						
1		SAND: Fine grained, some silt, trace clay, trace gravel. Light yellowish brown (10Yr 6/4). Oxidized. Calcareous. Moist. Loose. Homogeneous. @0.85 m: Becomes silty. Pale brown (10YR 6/3) @1.15 m: Becomes dense before SPT refusal 1.15m. White sandstone pieces in SPT sampler		MN11						
2				MN12						
3										
4										
5										
6										
7										
8										
9										
10										

Notes: Refusal at 1.35 m. Initial refusal at 1.35m. One additional hole was drilled within 1.5m with refusal at 1.35m.

Summary of Sampling and Laboratory Test Data

Sample				Water Content	Consistency				Gradation				Sulphate Content	Shear Strength			Dry Density
Depth	Number	Type	Recovery		Plastic Limit	Liquid Limit	Plasticity Index	USC	Gravel	Sand	Silt	Clay		Compression Test	Lab Vane	Pocket Penetrometer	
meters			mm	%	%	%	%		%	%	%	%	%	kPa	kPa	kPa	kg/m^3
0.30	MN10	Spt		5.6													
0.76	MN11	Spt		4.1													
1.37	MN12	Bag		3.3													

Remarks:

Approved by:

Clifton Associates Ltd.
engineering science technology

Project Black Lake RCMP
Location Black Lake, SK
Project No. S1981

Borehole No.
104

Clifton Associates Ltd.
engineering science technology

BOREHOLE LOG

BOREHOLE: 105
Page: 1 of 1

Client: Royal Canadian Mounted Police
Project: Detachment Geotechnical Investigation
Location: Black Lake, Saskatchewan
Project No.: S1981

Northing: 6555087
Easting: 465305
Ground Elev.:
Top Casing Elevation:

Date Drilled: 10/03/2013
Drill:Acker MP5
Drilling Method: Solid Stem Auger
Logged by: MN

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USCS	% Sulphate	Moisture Content (%) PL / Natural Moisture / LL (0, 50, 100)	Shear Strength (kPa) Unconf. Pocket Pen Lab Vane (0, 100, 200, 300, 400)	Monitoring Well Construction Detail
0		ORGANIC SOIL: 130mm organic topsoil and peat. Sandy. Moist.		MN13						
		SAND: Fine-grained, some silt, trace clay. Light yellowish brown (10YR 6/4). Oxidized. Calcareous. Moist. Loose. Homogeneous.		MN14						
1		@0.75 m: Trace gravel. Becomes compact		MN15						
		Notes: Refusal at 1.05 m. Initial refusal at 1.05m. One additonal hole was drilled within 1.5m with refusal at 1.05m.								
2										
3										
4										
5										
6										
7										
8										
9										
10										

Summary of Sampling and Laboratory Test Data

Sample				Water Content	Consistency				Gradation				Sulphate Content	Shear Strength			Dry Density
Depth	Number	Type	Recovery		Plastic Limit	Liquid Limit	Plasticity Index	USC	Gravel	Sand	Silt	Clay		Compression Test	Lab Vane	Pocket Penetrometer	
meters			mm	%	%	%	%		%	%	%	%	%	kPa	kPa	kPa	kg/m^3
0.30	MN13	Spt		5.8													
0.76	MN14	Spt		3.9													
1.07	MN15	Bag		4.3					9.9	68.6	21.4						

Remarks:

Approved by:

Clifton Associates Ltd.
engineering science technology

Project Black Lake RCMP
Location Black Lake, SK
Project No. S1981

Borehole No.
105

Clifton Associates Ltd.
engineering science technology

BOREHOLE LOG

BOREHOLE: 106
Page: 1 of 1

Client: Royal Canadian Mounted Police
Project: Detachment Geotechnical Investigation
Location: Black Lake, Saskatchewan
Project No.: S1981

Northing: 6555104
Easting: 465308
Ground Elev.:
Top Casing Elevation:

Date Drilled: 10/03/2013
Drill:Acker MP5
Drilling Method: Diamond
Logged by: MN

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	Sample SPT 'N'	USCS	% Sulphate	Moisture Content (%) PL / Natural Moisture / LL (0 50 100)	Shear Strength (kPa) Unconf. / Pocket Pen / Lab Vane (0 100 200 300 400)	Monitoring Well Construction Detail
1		SAND: No sample recovery in core barrel.								
2		SANDSTONE: White near surface, becomes grayish with depth. Fractured. Iron and manganese staining. @1.65 m: Core 1 Compressive Strength = 111 MPa		Core 1						
3		@2.95 m: Core 2 Compressive Strength = 75 MPa		Core 2						
4		Notes: End of hole at 3.65 m.								
5										
6										
7										
8										
9										
10										

Summary of Sampling and Laboratory Test Data

Sample				Water Content	Consistency				Gradation				Sulphate Content	Shear Strength			Dry Density
Depth	Number	Type	Recovery		Plastic Limit	Liquid Limit	Plasticity Index	USC	Gravel	Sand	Silt	Clay		Compression Test	Lab Vane	Pocket Penetrometer	
meters			mm	%	%	%	%		%	%	%	%	%	Mpa	kPa	kPa	kg/m^3
1.01	Core 1	Spt												111			
2.44	Core 2	Spt												75			

Remarks: Proctor results for composite sample: 2008 kg/m^3 at 7.8%.

Approved by:

Clifton Associates Ltd.
engineering science technology

Project Black Lake RCMP
Location Black Lake, SK
Project No. S1981

Borehole No.
106

Clifton Associates Ltd.
engineering science technology

Appendix A

Recommended Specifications For Granular Materials

1. Granular materials shall be composed of fragments of durable rock free from undesirable quantities of soft or flaky particles, topsoil, organic matter, clay or silt lumps, lumps of frozen granular soil, ice, snow or construction rubble.

2. The Pit Run Fill shall have a plasticity index less than 10 percent. The Crushed Base Course shall have a plasticity index less than 6 percent.

3. For Pit Run Sand, $\frac{D_{60}}{D_{10}} > 6$, and $1 < \frac{(D_{30})^2}{D_{10} x D_{60}} < 3$. For Pit Run Gravel, $\frac{D_{60}}{D_{10}} > 4$, and $1 < \frac{(D_{30})^2}{D_{10} x D_{60}} < 3$.

4. Granular materials shall be excavated, loaded, hauled, placed and levelled in such a manner to prevent contamination with undesirable materials described in Point 1 above and to prevent excessive segregation of coarse and fine particles.

5. Granular material shall conform to the following gradation specifications:

	Percent by Weight Passing U.S. Standard Sieve Series						
			Crushed Base Course				
Sieve	Pit Run Gravel Fill	Pit Run Sand Fill	32	33	34	35	36
50.0 mm	100						
25.0 mm	85 - 100		100				
18.0 mm	80 - 100		87 - 100	100	100	100	100
12.5 mm	70 - 100	100	79 - 93	81 - 100	91 - 100	81 - 100	91 - 100
5.0 mm	50 - 85	75 - 100	47 - 77	50 - 80	70 - 85	50 - 85	70 - 85
2.0 mm	35 - 75	50 - 90	29 - 56	32 - 52	45 - 65	32 - 65	45 - 70
900 µm	25 - 50	30 - 75	18 - 39	20 - 35	28 - 43	20 - 43	28 - 51
400 µm	15 - 35	15 - 50	13 - 26	15 - 25	20 - 30	15 - 30	20 - 35
160 µm	8 - 22	5 - 30	7 - 16	8 - 15	11 - 18	8 - 18	11 - 21
71 µm	0 - 13	0 - 15	6 - 11	7 - 10	8 - 12	7 - 12	8 - 13

Clifton Associates Ltd. engineering science technology	**Appendix B**

CLIFTON ASSOCIATES LTD
ATTN: CATLAN DALLAIRE
4 - 1925 1ST AVE. NORTH
SASKATOON SK S7L 6M6

Date Received: 07-NOV-13
Report Date: 15-NOV-13 11:04 (MT)
Version: FINAL

Client Phone: 306-975-0401

Certificate of Analysis

Lab Work Order #: L1389187
Project P.O. #: NOT SUBMITTED
Job Reference: 51981
C of C Numbers: 10-351111
Legal Site Desc:

B. Morgan

Brian Morgan
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1389187-1 BH 101 MN01 @ 1'							
Sampled By: CLIENT on 07-NOV-13							
Matrix: SOIL							
Miscellaneous Parameters							
pH in Saturated Paste	5.73		0.10	pH	08-NOV-13	09-NOV-13	R2737748
L1389187-2 BH 104 MN11 @ 2.5'							
Sampled By: CLIENT on 07-NOV-13							
Matrix: SOIL							
Miscellaneous Parameters							
pH in Saturated Paste	5.83		0.10	pH	08-NOV-13	09-NOV-13	R2737748

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PH-SAR-SK	Soil	pH (Saturated Paste)	CSSS 18.2.2/CSSC 3.14

pH of a saturated soil paste is measured using a pH meter. After equilibration, an extract is obtained by vacuum filtration with conductivity of the extract measured by a conductivity meter.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA

Chain of Custody Numbers:

10-351111

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L1389187-COFC

10- 351111

ALS Er...

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		**Report Format / Distribution**		**Service Request:** (Rush subject to availability - Contact ALS to confirm TAT)
Company:	Clifton Associates	Standard: X Other (specify):		X Regular (Standard Turnaround Times - Business Days)
Contact:	Cathan Dallaire	Select: PDF X Excel Digital Fax		Priority (2-4 Business Days) - 50% surcharge - Contact ALS to confirm TAT
Address:	4-1925 1st Ave Saskatoon	Email 1: cathan_dallaire@clifton.ca		Emergency (1-2 Business Days) - 100% Surcharge - Contact ALS to confirm TAT
		Email 2:		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	306-975-0401 Fax:			
Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	**Client / Project Information**		**Analysis Request**
	Copy of Invoice with Report? (circle) Yes or No	Job #:	S1981	(Indicate Filtered or Preserved, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		**ALS Contact:**	BM	**Sampler:** CD

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	OH SAR	Number of Containers
	BH101 MW01 @ 1'	07 NOV 13		Soil	X	1
	BH104 MW11 @ 2.5'	07 NOV 13		Soil	X	1

Special Instructions / Regulation with water or land use (CCME-Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	07/11/13	1:20	BM	07/11/13	1:00	12 °C		7-11-13	1:00	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises:

.1 The construction, delivery and erection of a new single storey wood framed modular police building and two (2) new single storey wood-framed modular housing units on a new greenfield site in Black Lake, Saskatchewan. All associated site work, including site servicing for a total of four (4) modular housing units and the supply and installation of an above-ground fuel storage tank with spill containment, is included. Site construction of a single storey wood framed outbuilding on the Black Lake site is also required. The modular police building is approximately 932m² in area. The outbuilding is approximately 73 m² in area. The modular housing units sharing the site with the police building and outbuilding and are each approximately 93 m² in area.

1.2 WORK BY OTHERS FOR COORDINATION BY THIS CONTRACT

.1 The supply and installation of office systems furniture will be completed by others. Connections of systems furniture to building electrical system is to be completed under this contract.

1.3 WORK SEQUENCE

.1 The General Contractor will be responsible for the coordination of all work.

.2 While the buildings are being constructed in modules, complete as much of the site work as practically possible so that once the building is assembled on site, minimal site work remains to be completed.

.3 It is the owner's desire for work to be sequenced in the following order:

.1 Completion of site servicing and construction of modular units.

.2 Delivery, installation and completion of modular housing units.

.3 Delivery, installation and completion and occupancy of modular police building.

.4 Owner occupancy of modular housing units.

.5 All other work to occur concurrently as coordinated by the General Contractor.

1.4 CONTRACTOR USE OF PREMISES

.1 Coordinate use of premises under direction of Departmental Representative.

.2 Make arrangements with Departmental Representative for use of completed housing units as contractor housing during completion of the project.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.4 Obtain and pay for power and propane as necessary.

.5 Cooperate with other contractors employed by the Departmental Representative for other work on site.

.6 Coordinate all site activities with local Black Lake (Chicken) First Nation Band.

1.5 EXISTING SERVICES

.1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services carry out work at times as directed by governing authorities with minimum disturbance to pedestrian and vehicular traffic.

.3 Establish location and extent of service lines in area of work before starting Work. Locations of utilities shown on drawings are approximate. Notify Departmental Representative of findings.

.4 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.5 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.6 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.7 Record locations of maintained, re-routed, and abandoned service lines.

.8 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.6 PERMITS AND FEES

.1 The Contractor shall obtain and pay for all building permits. Obtain and pay for all other permits, licences, certificates, fees and governmental inspections or notices required for the performance of the work. Note: Permit drawings are the property of the owner. Contractor to forward “approved” permit drawings and a copy of the building permit to the Departmental Representative prior to the submission of the first request for progress payment.

END OF SECTION

Part 1 General

1.1 SPECIAL REQUIREMENTS

.1 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.2 Keep within limits of work and avenues of ingress and egress.

.3 Maintain services and access to the Black Lake (Chicken) First Nation community at all times.

.4 Refer to Section 13 42 00 for additional requirements.

1.2 RCMP SECURITY CLEARANCE REQUIREMENTS (LAW ENFORCEMENT CHECKS)

.1 Security forms and documents are appended at the end of this Section.

.2 After interim completion of the project, all personnel engaged in the execution of the work on the interior of an RCMP occupied and/or unoccupied building shall have at a minimum, the requisite RCMP Reliability (RRS) clearance.

.3 A minimum of four months prior to interim completion of the project, the Contractor shall prepare and submit the following attached requisite forms and documents for an RRS clearance, for each Contractor employee and sub-contractor employee to be engaged in the work on the interior of an occupied and/or unoccupied building after interim completion of the project:

.1 RCMP Contractor/Consultant Information Sheet

.2 TBS 330-23e – Personnel Screening, Consent and Authorization Form

.3 TBS 330-60e – Security Clearance Form

.4 Security/Reliability Interview Pre-Interview Questionnaire

.4 Also, contractor's employees and sub-contractor employees must include with their completed requisite forms, the following documents:

.1 Valid government issued photo identification: photocopy of front and back of document (photo must be clear), certified to be a true copy by their supervisor or colleague. Examples of government issued photo identification include Driver's License, Passport or Treaty card.

.2 Birth certificate: photocopy of front and back of document, certified to be a true copy by their supervisor or colleague.

.3 Two sets of roll and ink fingerprints on Form C-216 (Contractor cost): Fingerprints must be taken/obtained from a Corp of Commissionaires office.

.4 Two current Passport Style Photographs (Contractor cost).

.5 In addition to the requirements noted in .3 above, Contractor employees and sub-contractor employees must undertake the following additional clearance requirements to obtain the RCMP Reliability Status clearance:

.1 Undertaking of a Reliability interview as scheduled by the RCMP.

.6 To eliminate delays in the clearance process, all clearance forms/documents completed by the Contractor's employees and sub-contractor employees **MUST** be reviewed by the Contractor to ensure that all requested information has been provided, prior to submitting documents to the RCMP. The RCMP will not accept/cannot process documents with ANY requested information missing as per instruction sheets provided – NO EXCEPTIONS (ie. no abbreviations on documents anywhere ie. "AB", "CA"). *All incomplete forms will be returned to the Contractor (ensure instructions for completion of documents noted in .2 above are read and followed by each applicant, prior to submitting to the RCMP).*

.7 The Contractor should batch the fully completed submissions, based on priority work on site and allow for a minimum eighty (80) working days processing time in the project schedule for the review to occur (from the date the "fully completed" documents are received by the RCMP). The inability to submit the fully completed requisite forms and documents will not be reason for an extension to the project schedule or additional compensation.

.8 After interim completion of the project, the Contractor's employees and sub-contractor employees shall only mobilize in the interior of an occupied and/or unoccupied building, once the requisite RCMP RRS clearance has been granted.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions. No smoking will be allowed in or around the building. Smoking is allowed only in areas indicated by Departmental Representative.

END OF SECTION

RCMP National Project Delivery Office, Regina
Contractor/Consultant Information Sheet

PLEASE PRINT LEGIBLY / ALL INFORMATION MUST BE PROVIDED

NOTE: SUB-CONTRACTORS ARE TO CONTACT THE GENERAL CONTRACTOR FOR INSTRUCTIONS/QUESTIONS REGARDING COMPLETION OF FORMS - *NOT THE RCMP*

CONTRACTORS/CONSULTANTS MUST PROVIDE THE FOLLOWING INFORMATION:	
1. Your Complete Legal Name: *(First/Middle or "no Middle Name"/ Last Name)*	
2. Name of Company That You Work For:	
3. Company Telephone Number :	
4. Project That You Are Working On: (*Name of Project/Building/City/Province*)	Maidstone Det. Construction, Maidstone, SK SRCL #2014-11123144
5. Access Period (Start & End Dates): (*If exact dates unknown, estimated dates*)	

CONTRACTORS/CONSULTANTS MUST PROVIDE PHOTOCOPIES OF:	
	MARK YES / NO:
1. **Driver's License** (a clear copy of both the front and back of the document on the same page, **certified to be a true copy by their supervisor or colleague** as follows (handwrite/print): 'Certified True Copy"; thereafter, the person certifying true copy would print and sign their First and Last Name. 2. ***Note:*** If you do not have a Driver's License, please provide other government issued photo identification (passport, treaty card).	
3. **Birth Certificate** (a clear copy of both the front and back of the document on one page, **certified to be a true copy by their supervisor or colleague** as follows (handwrite/print): 'Certified True Copy"; thereafter, the person certifying true copy would print and sign their First and Last Name.	

CONTRACTORS/CONSULTANTS MUST PROVIDE THE FOLLOWING DOCUMENTS WITH THEIR COMPLETED:

1. TBS 330-23E,

2. TBS 330-60E &

3. SECURITY/RELIABILITY PRE-INTERVIEW QUESTIONNAIRE:

DOCUMENTS ATTACHED:	**MARK YES / NO:**
1. **Two current Passport Style Photographs** (do not have to be certified)	
2. **Two sets of Fingerprints on Form C-216** ("Roll and Ink" style) – must be obtained from a Corp of Commissionaires office.	

CONTRACTORS / CONSULTANTS - PLEASE NOTE THE FOLLOWING:

Should an RCMP Access tag/card be issued to you, please note the following;

1) You are the sole user of the access tag and it must be visibly worn while working on the site.
2) The access tag is non-transferrable / cannot be used while working on projects other than the RCMP project it was issued for.
3) The access tag must be returned to the RCMP issuing office or site foreman (if approved) at the end of each day.
4) No access to areas that you have not been cleared will be allowed and if found in these areas your clearance will be revoked and you will be removed from the site.

Employee Signature:	Signed on Date:

EMPLOYER TO REVIEW (not employee applicant of this form), COMPLETE&SIGN:

In order to comply with Federal Government and RCMP policies and guidelines, in relation to the collection of personal information, the employer requesting the security checks must be satisfied that he/she can confirm the identity of the applicant.

The employer MUST ("employer" - your supervisor or a colleague of the company that you are employed by):

1) Request that their employees attend in person and provided two pieces of identification.
2) ID MUST include full date of birth and name of the individual ie, Driver's Licence - Birth Certificate, Passport, Firearms Licence. (One piece of ID must include the photograph and if using the Drivers Licence copy both the photo portion as well as the signature portion.)
3) If the employee has changed his/her name, ID MUST be provided with both the current as well as past names.

Type of ID: 1)_____**Number**_____

2)_____**Number**_____

Employers Name: _____
(First Name and Last Name)

Employers Signature: _____

Date of signature: _____

Government of Canada / Gouvernement du Canada

PROTECTED (when completed)

PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM

OFFICE USE ONLY		
Reference number	Department/Organization number	File number

NOTE: For *Privacy Act* Statement refer to Section C of this form and for completion instructions refer to attached instructions.
Please typewrite or print in block letters.

A ADMINISTRATIVE INFORMATION (To be completed by the Authorized Departmental/Agency/Organizational Official)

☐ **New** ☐ **Update** ☐ **Upgrade** ☐ **Transfer** ☐ **Supplemental** ☐ **Re-activation**

The requested level of reliability/security check(s)

☐ Reliability Status ☐ Level I (CONFIDENTIAL) ☐ Level II (SECRET) ☐ Level III (TOP SECRET)

☐ Other _____

PARTICULARS OF APPOINTMENT/ASSIGNMENT/CONTRACT

☐ Indeterminate ☐ Term ☐ Contract ☐ Industry ☐ Other (specify secondment, assignment, etc.) _____

Justification for security screening requirement

Position/Competition/Contract number	Title		Group/Level (Rank if applicable)
Employee ID number/PRI/Rank and Service number (if applicable)	If term or contract, indicate duration period ▶	From	To
Name and address of department / organization / agency	Name of official	Telephone number ( )	Facsimile number ( )

B BIOGRAPHICAL INFORMATION (To be completed by the applicant)

Surname (Last name)	Full given names (no initials) underline or circle usual name used	Family name at birth
All other names used (i.e. Nickname)	Sex ☐ Male ☐ Female	Date of birth Y M D

Country of birth	Date of entry into Canada if born outside Canada Y M D

RESIDENCE (provide addresses for the last five years, starting with the most current)
Home address

Daytime telephone number ( )	E-mail address

	Apartment number	Street number	Street name	Civic number (if applicable)	From Y M	To present
1						
	City	Province or state	Postal code	Country	Telephone number ( )	

	Apartment number	Street number	Street name	Civic number (if applicable)	From Y M	To Y M
2						
	City	Province or state	Postal code	Country	Telephone number ( )	

Have you previously completed a Government of Canada security screening form? ☐ Yes ☐ No	If yes, give name of employer, level and year of screening. Y

CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA (see instructions)

Have you ever been convicted of a criminal offence for which you have not been granted a pardon? ☐ Yes ☐ No	If yes, give details. (charge(s), name of police force, city, province/state, country and date of conviction) ▼

Charge(s)	Name of police force	City

Province/State	Country	Date of conviction ▶ Y M D

Government of Canada / Gouvernement du Canada

PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM

PROTECTED (when completed)

Surname and full given names	Date of birth (Y M D)

C CONSENT AND VERIFICATION (To be completed by the applicant and authorized Departmental/Agency/Organizational Official)

Checks Required (See Instructions)	Applicant's initials	Name of official (print)	Official's initials	Official's Telephone number
1. ☐ Date of birth, address, education, professional qualifications, employment history, personal character references				( )
2. ☐ Criminal record check				( )
3. ☐ Credit check (financial assessment, including credit records check)				( )
4. ☐ Loyalty (security assessment only)				
5. ☐ Other (Law Enforcement Records Checks)				( )

The Privacy Act Statement

The information on this form is required for the purpose of providing a security screening assessment. It is collected under the authority of subsection 7(1) of the *Financial Administration Act* and the Government Security Policy (GSP) of the Government of Canada, and is protected by the provisions of the *Privacy Act* in institutions that are covered by the *Privacy Act*. Its collection is mandatory. A refusal to provide information will lead to a review of whether the person is eligible to hold the position or perform the contract that is associated with this Personnel Screening Request. Depending on the level of security screening required, the information collected by the government institution may be disclosed to the Royal Canadian Mounted Police (RCMP) and the Canadian Security Intelligence Service (CSIS), which conduct the requisite checks and/or investigation in accordance with the GSP and to entities outside the federal government (e.g. credit bureaus). It is used to support decisions on individuals working or applying to work through appointment, assignment or contract, transfers or promotions. It may also be used in the context of updating, or reviewing for cause, the reliability status, security clearance or site access, all of which may lead to a re-assessment of the applicable type of security screening. Information collected by the government institution, and information gathered from the requisite checks and/or investigation, may be used to support decisions, which may lead to discipline and/or termination of employment or contractual agreements. The personal information collected is described in Standard PIB PSU 917 (Personnel Security Screening) which is used by all government agencies, except the Department of National Defence PIB DND/PPE 834 (Personnel Security Investigation File), RCMP PIB CMP PPU 065 (Security/Reliability Screening Records), CSIS PIB SIS PPE 815 (Employee Security), and PWGSC PIB PWGSC PPU 015 (Personnel Clearance and Reliability Records) used for Canadian Industry Personnel. Personal information related to security assessments is also described in the CSIS PIB SIS PPU 005 (Security Assessments/Advice).

I, the undersigned, do consent to the disclosure of the preceding information including my photograph for its subsequent verification and/or use in an investigation for the purpose of providing a security screening assessment. By consenting to the above, I acknowledge that the verification and/or use in an investigation of the preceding information may also occur when the reliability status, security clearance or site access are updated or otherwise reviewed for cause under the Government Security Policy. My consent will remain valid until I no longer require a reliability status, a security clearance or a site access clearance, my employment or contract is terminated, or until I otherwise revoke my consent, in writing, to the authorized security official.

Signature _____ Date (Y/M/D) _____

D REVIEW (To be completed by the authorized Departmental/Agency/Organizational Official responsible for ensuring the completion of sections A, B and C)

Name and title	Telephone number
Address	Facsimile number

E APPROVAL (To be completed by authorized Departmental/Agency/Organizational Security Official only)

I, the undersigned, as the authorized security official, do hereby approve the following level of screening.

Reliability Status

☐ Approved Reliability Status ☐ Not approved

Name and title _____

Signature _____ Date (Y/M/D) _____

Security Clearance (if applicable)

☐ Level I ☐ Level II ☐ Level III ☐ Not recommended

Name and title _____

Signature _____ Date (Y/M/D) _____

Comments

PHOTO (for Level III T.S., and/or upon request - see instructions)

Government of Canada / Gouvernement du Canada

INSTRUCTIONS FOR PERSONNEL SCREENING CONSENT AND AUTHORIZATION FORM TBS/SCT 330-23E (Rev. 2002/02)
Once completed, this form shall be safeguarded and handled at the level of Protected A.

General:
If space allotted in any portion is insufficient please use separate sheet using same format.

1. Section A (Administrative Information) Authorized Departmental/Agency/Organizational Official
The Official, based on instructions issued by the Departmental Security Officer, may be responsible for determining, based on five year background history, what constitutes sufficient verification of personal data, educational and professional qualifications, and employment history. References are to be limited to those provided on the application for employment or equivalent forms.

SUPPLEMENTAL INFORMATION REQUIREMENTS
Persons who presently hold a SECURITY CLEARANCE and subsequently marry, remarry or commence a common-law partnership, in addition to having to update sections of the *Security Clearance Form (TBS/SCT 330-60)*, are required to submit an original *Personnel Screening, Consent and Authorization Form*, with the following parts completed:

Part A - As set forth in each question
Part B - As set forth in each question, excluding CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA.
Part C - Applicant's signature and date only are required

"Other". This should be used to identify if the security screening is for Site Access, NATO, SIGINT etc.

2. Section B (Biographical Information)
To be completed by the ***applicant***. If more space is required use a separate sheet of paper. Each sheet must be signed.

Country of Birth - For "NEW" requests, if born abroad of Canadian parents, please provide a copy of your Certificate of Registration of Birth Abroad. If you arrived in Canada less than five years ago, provide a copy of the Immigration Visa, Record of Landing document or a copy of passport.

- List only criminal convictions for which a pardon has NOT been granted. Include on a separate attached sheet of paper, if more than one conviction. Applicant must include those convictions outside Canada.
- Offences under the *National Defence Act* are to be included as well as convictions by courts-martial are to be recorded.

3. Section C (Consent and Verification)
A copy of Section "C" may be released to institutions to provide acknowledgement of consent.

Criminal record checks (fingerprints may be required) and credit checks are to be arranged through the Departmental Security Office or the delegated Officer.

Consent: may be given only by an applicant who has reached the age of majority, otherwise, the signature of a parent or guardian is mandatory.

The age of majority is:
19 years in NFLD., N.S., N.B., B.C., Yukon, Northwest Territories and Nunavut;
18 years in P.E.I., Que., Ont., Man., Sask. and Alta.

The applicant will provide initials in the " applicant's initials box".

The official who carried out the verification of the information will print their name, insert their initials and telephone number in the required space.
- Reliability Screening (for all types of screening identified within Section A): complete numbers 1 and 2 and 3 if applicable.
- Security Clearance (for all types of screening identified within Section A): complete numbers 1 to 4 and 5 where applicable.
- Other: number 5 is used only where prior Treasury Board of Canada Secretariat approval has been obtained.

4. Section D (Review)
To be completed by authorized Departmental/Agency/Organizational Official who is responsible for ensuring the completion of sections A to C as requested.

5. Section E (Approval)
Authorized Departmental/Agency/Organizational Security Official refers to the individuals as determined by departments, agencies, and organizations that may verify reliability information and/or approve/not approve reliability status and/or security clearances. Approved Reliability Status and Level I, II and III, as well as the signature of the authorized security official or manager are added for Government of Canada use only. Applicants are to be briefed, acknowledge, and be provided with a copy of the "Security Screening Certificate and Briefing Form (TBS/SCT 330-47)".
Note: Private sector organizations do not have the authority to approve any level of security screening.

Photographs: Departments/Agencies/Organizations are responsible for ensuring that three colour photographs of passport size are attached to the form for the investigating agency. Maximum dimensions are 50mm x 70mm and minimum are 43mm x 54mm. The face length from chin to crown of head must be between 25mm x 35mm. The photographs must be signed by the applicant and an authorized security official. The photographs must have been taken within the last six months. It is required for new or upgrade Level III security clearances for identification of the applicant during the security screening investigation by the investigating agency. The investigating agency may in specific incidents request a photograph for a Level I or II clearances when an investigation is required.

Surname	Date of birth

RESIDENCE (Additional Information)

	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
3	City	Province or state	Postal code	Country	Telephone number	
4	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
5	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
6	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
7	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
8	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
9	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
10	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
11	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
12	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	
13	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
	City	Province or state	Postal code	Country	Telephone number	

ADDITIONAL INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM (Form No. TBS 330-23E)

NOTE:

All information requested on TBS 330-23E MUST be provided (do not leave any "blanks", provide partial information, and do not use any abbreviations - ie. CA for Canada).
Failure to provide requested information will result in forms being returned to applicants.

Page 1 of Form:

Section A. Administrative Information.: Do not complete (completed by the RCMP).

Section B. Biographical Info.: ***To be completed by applicant***:

1. Surname: Your Last Name that you currently use – ie. "Smith"

2. Full Given Names (no initials):
   a. Your First Name and Middle Name (s) ie. "Cameron John"
   **If you do not have a middle name, state "no middle name" on the form.
   **Circle or underline your usual name used (whether you go by your first name or middle name).

3. Family Name at Birth: Your Last Name when you were born - ie. "Smith" (do not include "Same")

4. All other names used: Abbreviation(s) of name(s) used (ie."Dave"/David, "Charlie"/Charles) or nicknames.

5. Sex: Place "x" in box beside male or female.

6. Date of Birth: provide the Year, Month and Day you were born ie. 2012-01-01 (must provide all in this format)

7. Country of Birth: - the Country that you were born in ie. Canada (no abbreviations such as "CA")

8. Date of entry into Canada if born outside Canada: - ie. 2012-01-01 (Year, Month, Day format)

9. Daytime telephone number: Your telephone number that the RCMP can reach you at in the daytime, including your area code.

10. E-mail address: Your e-mail address at work, or if you do not have one at work, your home e-mail address.

11. Residence(s): provide addresses where you have permanently or temporarily resided for the last **five years**, starting with the most current home address. Must be consecutive dates – no breaks in time periods.
    **Do not fill in address in grey/shaded area beside "Home address"; fill in current address in the boxes under "Home address".
    a. Apartment Number - fill in if you have one; if you do not live in an apartment, leave blank.

    b. Street Number – your house number ie. "421"

    c. Street Name – ie. "Smith Street/George Avenue; or "4th Street" if no name (no abbreviations)
    If you do not have a street address or you live on a farm/acreage, please provide your legal land descriptions (ie. SW-30-23-45-W4th) – **NO POST OFFICE BOX NUMBERS.

ADDITIONAL INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM (Form No. TBS 330-23E)

d. From – the year and month that you moved to your current / previous residence(s);
**If you cannot recall the month, please state above the M – "unknown"
e. To – "Present" or the year and month that you moved/vacated your previous residences (not current residence).
f. City – the name of the city or town that you currently and previously resided in.
g. Province or State – the name of the province or state that you currently and previously resided in (no abbreviations ie. "AB" or "SK").
h. Postal Code – your current and previous postal codes.
i. Country – the name of the country that you currently and previously resided in (no abbreviations).
j. Telephone Number – your current and previous home telephone numbers, including area code.

Note: i. If you do not have enough space on the attached form to list all addresses for the last five years, please use the attached form titled "TBS 330-23E Residence Additional Info".
ii. You must include your "Surname" and Date of Birth at the top of the page as requested.
NO POST OFFICE BOX NUMBERS;
DATES MUST BE CONSECUTIVE–NO BREAKS IN TIME PERIODS (as stated in 11.)

12. Have you previously completed a Government of Canada security screening form?:
a. "No" or
b. "Yes" – if "Yes", please provide details. If you cannot recall some or all of the details (ie. year of screening, state "cannot recall").

13. Criminal Convictions (for which a pardon has NOT been granted):
a. "No" OR
b. "Yes" - if "Yes", please provide details. If you cannot recall some or all of the details (ie. date of conviction, state "cannot recall").

Note: If more than one conviction, list additional criminal convictions in and outside of Canada, on a separate sheet of paper and sign this attached sheet of paper.

Page 2 of Form:

Top of Page 2: *To be completed by applicant*:

1. Surname (your last name) followed by a comma – ie. Smith,

2. Full given names – your first name and then your middle name
**If you do not have a middle name, state "no middle name" on the form.
**Circle or underline your usual name used (ie. whether you go by your first name or middle name).

3. Date of birth - provide – Year, Month, Day ie. 2012-01-01 (must provide all in this format / no blanks)

Section C. Consent and Verification: *To be completed by applicant:*

1. Initial under "Applicant's Initials" column – **numbers 1. to 5. (you must initial all boxes-1 to 5).**

2. Read the Privacy Act Statement and sign above "Signature" and "Date (Y/M/D)"

Section D. Review: do not complete (completed by RCMP)

Section E. Approval: do not complete (completed by RCMP)

NOTE: RCMP FACILITIES ACCESS LEVEL 2 CLEARANCE – Photographs ARE NOT required.
RCMP "RELIABILITY STATUS CLEARANCES" – Photographs ARE required.

SAMPLE OF COMPLETED DOCUMENT.

Government of Canada / Gouvernement du Canada

PROTECTED (when completed)

PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM

Reference number	Department/Organization number	File number

NOTE: For *Privacy Act* Statement refer to Section C of this form and for completion instructions refer to attached instructions. Please typewrite or print in block letters.

A ADMINISTRATIVE INFORMATION (To be completed by the Authorized Departmental/Agency/Organizational Official)

☐ New ☐ Update ☐ Upgrade ☐ Transfer ☐ Supplemental ☐ Re-activation

The requested level of reliability/security check(s)

☐ Reliability Status ☐ Level I (CONFIDENTIAL) ☐ Level II (SECRET) ☐ Level III (TOP SECRET)

☐ Other _____

PARTICULARS OF APPOINTMENT/ASSIGNMENT/CONTRACT

☐ Indeterminate ☐ Term ☐ Contract ☐ Industry ☐ Other (specify secondment, assignment, etc.) _____

Justification for security screening requirement

Position/Competition/Contract number	Title		Group/Level (Rank if applicable)
Employee ID number/PRI/Rank and Service number (if applicable)	If term or contract, indicate duration period ▶	From	To
Name and address of department / organization / agency	Name of official	Telephone number ( )	Facsimile number ( )

B BIOGRAPHICAL INFORMATION (To be completed by the applicant)

Surname (Last name)	Full given names (no initials) underline or circle usual name used	Family name at birth
SMITH	(John) (nomiddle name)	SMITH

All other names used (i.e. Nickname)	Sex	Date of birth (Y M D)	Country of birth	Date of entry into Canada if born outside Canada (Y M D)
Johnny	☒ Male ☐ Female	1960 01 27	CANADA	

RESIDENCE (provide addresses for the last five years, starting with the most current) Home address	Daytime telephone number	E-mail address
	(306) 201-1433	JSmith@telus.net

	Apartment number	Street number	Street name	Civic number (if applicable)	From (Y M)	To present
1		1257	Cooper Avenue		2001 01	

City	Province or state	Postal code	Country	Telephone number
PEACE RIVER	ALBERTA	T63 2X9	CANADA	(780) 261-1493

	Apartment number	Street number	Street name	Civic number (if applicable)	From (Y M)	To (Y M)
2			12-13-57-W2		2009 03	2001 01

City	Province or state	Postal code	Country	Telephone number
GRAND CACHE	ALBERTA	TOG 7X3	CANADA	(780) 234-2102

Have you previously completed a Government of Canada security screening form? ☒ Yes ☐ No

If yes, give name of employer, level and year of screening. CORRECTIONAL SERVICES CANADA 2001 (Y)

CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA (see instructions)

Have you ever been convicted of a criminal offence for which you have not been granted a pardon? ☒ Yes ☐ No

If yes, give details. (charge(s), name of police force, city, province/state, country and date of conviction) ▼

Charge(s)	Name of police force	City
DRIVING UNDER THE INFLUENCE OF ALCOHOL	EDMONTON POLICE SERVICE	EDMONTON

Province/State	Country	Date of conviction ▶ (Y M D)
ALBERTA	CANADA	2001 02 01

Surname: SMITH, John (no middle name) | Date of birth: 1960-01-27 | PROTECTED A (When completed)

RESIDENCE (Additional Information)

	Apartment number	Street Number	Street Name	Civic Numb er (if applicable)	From Y M	To Y M
3			1-87-18-W4		2007 01	2009 03
	City	Province or state	Postal code	Country	Telephone number	
	SASKATOON	SASKATCHEWAN	S0G3C0	CANADA	(306) 231-7192	
4		20	HILL AVENUE		2004 01	2007 01
	CALGARY	ALBERTA	T0G3C0	CANADA	(403) 239-7186	
5						
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Government of Canada / Gouvernement du Canada

PERSONNEL SCREENING, CONSENT AND AUTHORIZATION FORM

PROTECTED (when completed)

Surname and full given names	Date of birth (Y M D)
SMITH, John (no middle name)	1960 01 27

C CONSENT AND VERIFICATION (To be completed by the applicant and authorized Departmental/Agency/Organizational Official)

Checks Required (See Instructions)	Applicant's initials	Name of official (print)	Official's initials	Official's Telephone number
1. ☑ Date of birth, address, education, professional qualifications, employment history, personal character references	JS			( )
2. ☑ Criminal record check	JS			( )
3. ☑ Credit check (financial assessment, including credit records check)	JS			( )
4. ☑ Loyalty (security assessment only)	JS			
5. ☑ Other (Law Enforcement Records Checks)	JS			( )

The Privacy Act Statement
The information on this form is required for the purpose of providing a security screening assessment. It is collected under the authority of subsection 7(1) of the *Financial Administration Act* and the Government Security Policy (GSP) of the Government of Canada, and is protected by the provisions of the *Privacy Act* in institutions that are covered by the *Privacy Act*. Its collection is mandatory. A refusal to provide information will lead to a review of whether the person is eligible to hold the position or perform the contract that is associated with this Personnel Screening Request. Depending on the level of security screening required, the information collected by the government institution may be disclosed to the Royal Canadian Mounted Police (RCMP) and the Canadian Security Intelligence Service (CSIS), which conduct the requisite checks and/or investigation in accordance with the GSP and to entities outside the federal government (e.g. credit bureaus). It is used to support decisions on individuals working or applying to work through appointment, assignment or contract, transfers or promotions. It may also be used in the context of updating, or reviewing for cause, the reliability status, security clearance or site access, all of which may lead to a re-assessment of the applicable type of security screening. Information collected by the government institution, and information gathered from the requisite checks and/or investigation, may be used to support decisions, which may lead to discipline and/or termination of employment or contractual agreements. The personal information collected is described in Standard PIB PSU 917 (Personnel Security Screening) which is used by all government agencies, except the Department of National Defence PIB DND/PPE 834 (Personnel Security Investigation File), RCMP PIB CMP PPU 065 (Security/Reliability Screening Records), CSIS PIB SIS PPE 815 (Employee Security), and PWGSC PIB PWGSC PPU 015 (Personnel Clearance and Reliability Records) used for Canadian Industry Personnel. Personal information related to security assessments is also described in the CSIS PIB SIS PPU 005 (Security Assessments/Advice).

I, the undersigned, do consent to the disclosure of the preceding information including my photograph for its subsequent verification and/or use in an investigation for the purpose of providing a security screening assessment. By consenting to the above, I acknowledge that the verification and/or use in an investigation of the preceding information may also occur when the reliability status, security clearance or site access are updated or otherwise reviewed for cause under the Government Security Policy. My consent will remain valid until I no longer require a reliability status, a security clearance or a site access clearance, my employment or contract is terminated, or until I otherwise revoke my consent, in writing, to the authorized security official.

John Smith — Signature
2011-12-01 — Date (Y/M/D)

D REVIEW (To be completed by the authorized Departmental/Agency/Organizational Official responsible for ensuring the completion of sections A, B and C)

Name and title	Telephone number
Address	Facsimile number

E APPROVAL (To be completed by authorized Departmental/Agency/Organizational Security Official only)

I, the undersigned, as the authorized security official, do hereby approve the following level of screening.

Reliability Status

☐ Approved Reliability Status ☐ Not approved

Name and title

Signature — Date (Y/M/D)

Security Clearance (if applicable)

☐ Level I ☐ Level II ☐ Level III ☐ Not recommended

Name and title

Signature — Date (Y/M/D)

Comments

PHOTO
(for Level III T.S., and/or upon request - see instructions)

Government of Canada / Gouvernement du Canada

INSTRUCTIONS FOR PERSONNEL SCREENING CONSENT AND AUTHORIZATION FORM TBS/SCT 330-23E (Rev. 2002/02)
Once completed, this form shall be safeguarded and handled at the level of Protected A.

General:
If space allotted in any portion is insufficient please use separate sheet using same format.

1. Section A (Administrative Information) Authorized Departmental/Agency/Organizational Official
The Official, based on instructions issued by the Departmental Security Officer, may be responsible for determining, based on five year background history, what constitutes sufficient verification of personal data, educational and professional qualifications, and employment history. References are to be limited to those provided on the application for employment or equivalent forms.

SUPPLEMENTAL INFORMATION REQUIREMENTS
Persons who presently hold a SECURITY CLEARANCE and subsequently marry, remarry or commence a common-law partnership, in addition to having to update sections of the *Security Clearance Form (TBS/SCT 330-60)*, are required to submit an original *Personnel Screening, Consent and Authorization Form*, with the following parts completed:

Part A - As set forth in each question
Part B - As set forth in each question, excluding CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA.
Part C - Applicant's signature and date only are required

"Other". This should be used to identify if the security screening is for Site Access, NATO, SIGINT etc.

2. Section B (Biographical Information)
To be completed by the ***applicant***. If more space is required use a separate sheet of paper. → attached "Residence (Additional Information) Form.

Country of Birth - For "NEW" requests, if born abroad of Canadian parents, please provide a copy of your Certificate of Registration of Birth Abroad. If you arrived in Canada less than five years ago, provide a copy of the Immigration Visa, Record of Landing document or a copy of passport.

- List only criminal convictions for which a pardon has NOT been granted. Include on a separate attached sheet of paper, if more than one conviction. Applicant must include those convictions outside Canada. Thereafter sign the separate attached sheet of paper.
- Offences under the *National Defence Act* are to be included as well as convictions by courts-martial are to be recorded.

3. Section C (Consent and Verification)
A copy of Section "C" may be released to institutions to provide acknowledgement of consent.

Criminal record checks (fingerprints may be required) and credit checks are to be arranged through the Departmental Security Office or the delegated Officer.

Consent: may be given only by an applicant who has reached the age of majority, otherwise, the signature of a parent or guardian is mandatory.

The age of majority is:
19 years in NFLD., N.S., N.B., B.C., Yukon, Northwest Territories and Nunavut;
18 years in P.E.I., Que., Ont., Man., Sask. and Alta.

The applicant will provide initials in the " applicant's initials box". – Box 1-5

The official who carried out the verification of the information will print their name, insert their initials and telephone number in the required space (RCMP employee only)
- Reliability Screening (for all types of screening identified within Section A): complete numbers 1 and 2 and 3 if applicable.
- Security Clearance (for all types of screening identified within Section A): complete numbers 1 to 4 and 5 where applicable.
- Other: number 5 is used only where prior Treasury Board of Canada Secretariat approval has been obtained.

4. Section D (Review)
To be completed by authorized Departmental/Agency/Organizational Official who is responsible for ensuring the completion of sections A to C as requested.

5. Section E (Approval)
Authorized Departmental/Agency/Organizational Security Official refers to the individuals as determined by departments, agencies, and organizations that may verify reliability information and/or approve/not approve reliability status and/or security clearances. Approved Reliability Status and Level I, II and III, as well as the signature of the authorized security official or manager are added for Government of Canada use only. Applicants are to be briefed, acknowledge, and be provided with a copy of the "Security Screening Certificate and Briefing Form (TBS/SCT 330-47)".
Note: Private sector organizations do not have the authority to approve any level of security screening.

Photographs: Departments/Agencies/Organizations are responsible for ensuring that three colour photographs of passport size are attached to the form for the investigating agency. Maximum dimensions are 50mm x 70mm and minimum are 43mm x 54mm. The face length from chin to crown of head must be between 25mm x 35mm. The photographs must be signed by the applicant and an authorized security official. The photographs must have been taken within the last six months. It is required for new or upgrade Level III security clearances for identification of the applicant during the security screening investigation by the investigating agency. The investigating agency may in specific incidents request a photograph for a Level I or II clearances when an investigation is required.

* ENSURE ATTACHED "ADDITIONAL INSTRUCTIONS" ARE REVIEWED/FOLLOWED (more detailed information on how to complete TBS 330-23E)

Canada

Government of Canada / Gouvernement du Canada

PROTECTED (When complete

OFFICE USE ONLY		
Reference number	Department number	File number

SECURITY CLEARANCE FORM

The Privacy Act Statement

The information on this form is required for the purpose of providing a security assessment. It is collected under the authority of subsection 7(1) of the *Financial Administration Act* and the Government Security Policy (GSP) of the Government of Canada and is protected by the provisions of the *Privacy Act* in institutions that are covered by the *Privacy Act*. Its collection is mandatory. A refusal to provide information will lead to a review of whether the person is eligible to hold the position or perform the contract that is associated with this Personnel Screening Request. The information collected by the government institution may be disclosed to the Royal Canadian Mounted Police (RCMP) and the Canadian Security Intelligence Service (CSIS), which conduct the requisite checks and/or investigation in accordance with the GSP and to entities outside the federal government (e.g. credit bureaus). It is used to support decisions on individuals working or applying to work through appointment, assignment or contract, transfers or promotions. It may also be used in the context of updating, or reviewing for cause, the reliability status, security clearance or site access, all of which may lead to a re-assessment of the applicable type of security screening. Information collected by the government institution, and information gathered from the requisite checks and/or investigation, may be used to support decisions, which may lead to discipline and/or termination of employment or contractual agreements. The personal information collected is described in Standard PIB PSU 917 (Personnel Security Screening) which is used by all government agencies, except the Department of National Defence PIB DND/PPE 834 (Personnel Security Investigation File), RCMP PIB CMP PPU 065 (Security/Reliability Screening Records) CSIS PIB SIS PPE 815 (Employee Security), and PWGSC PIB PWGSC PPU 015 (Personnel Clearance and Reliability Records) used for Canadian Industry Personnel. Personal information related to security assessments is also described in the CSIS PIB SIS PPU 005 (Security Assessments/Advice).

Please typewrite or print in block letters.

NOTE: Level I and II must complete sections A to J inclusive and P.
Level III must complete all sections.

A ADMINISTRATIVE INFORMATION (To be completed by Department/Agency/Organization)

☐ New ☐ Upgrade ☐ Supplemental
☐ Update ☐ Transfer ☐ Re-activation

Level: ☐ I (CONFIDENTIAL) ☐ II (SECRET) ☐ III (TOP SECRET) ☐ other _____

Department/Agency/Organization	Employee ID number/PRI/Rank and Service number (if applicable)	Organization number

B BIOGRAPHICAL INFORMATION (To be completed by the applicant)

1. Surname (Last name)	2. Full given names (no initials) underline or circle usual name used	3. Family name at birth

4. All other names used (i.e. Nickname)	5. Sex ☐ Male ☐ Female	6. Date of birth Y M D

7. Place of birth (city)	Province/State	Country

8. Name change (other than marriage)	From	To

9. Place of change (city, province or state, and country)	10. Method (authority)

C SECURITY SCREENING

1. Have you previously completed a Government of Canada security screening form? ☐ Yes ☐ No	If yes, give name of department/agency/organization, and the year and level of clearance. Y

D MARITAL STATUS/COMMON-LAW PARTNERSHIP

Current status
☐ Married ☐ Common-Law Partnership ☐ Separated ☐ Widowed ☐ Divorced ☐ Single

1

A) CURRENT SPOUSE/COMMON-LAW PARTNER: Surname, given names	B) Maiden Name (if applicable)	C) Present citizenship of current spouse/common-law partner

D) Date of marriage/ common-law partnership Y M D	E) City, province or state, and country of marriage/common-law partnership

F) City, province or state, and country of birth	G) Date of birth Y M D

H) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	I) If separated, widowed or divorced, specify date Y M D

J) Name and address of employer (job title)

2

A) PREVIOUS SPOUSE/COMMON-LAW PARTNER: Surname, given names (cover only the past five years)	B) Present citizenship of former spouse/common-law partner

C) Date of marriage/ common-law partnership Y M D	D) City, province or state, and country of marriage/common-law partnership

E) Date of divorce/ separation/ deceased Y M D	F) City, province or state, and country of divorce

G) Country of Birth (if known)	H) Date of birth Y M D

E IMMEDIATE RELATIVES (including those living outside Canada) (see instructions)

NOTE: Do not use initials

1

A) Full name (surname and all given names, including maiden name)	B) Relationship

C) City, province or state, and country of birth	D) Date of birth Y M D

E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D

G) Name and address of employer	H) Job title

Surname and full given names	Date of birth Y M D

E IMMEDIATE RELATIVES (continued)

NOTE: **Do not use initials**

2	A) Full name (surname and all given names, including maiden name)	B) Relationship
	C) City, province or state, and country of birth	D) Date of birth Y M D
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D
	G) Name and address of employer	H) Job title
3	A) Full name (surname and all given names, including maiden name)	B) Relationship
	C) City, province or state, and country of birth	D) Date of birth Y M D
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D
	G) Name and address of employer	H) Job title
4	A) Full name (surname and all given names, including maiden name)	B) Relationship
	C) City, province or state, and country of birth	D) Date of birth Y M D
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D
	G) Name and address of employer	H) Job title
5	A) Full name (surname and all given names, including maiden name)	B) Relationship
	C) City, province or state, and country of birth	D) Date of birth Y M D
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D
	G) Name and address of employer	H) Job title
6	A) Full name (surname and all given names, including maiden name)	B) Relationship
	C) City, province or state, and country of birth	D) Date of birth Y M D
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D
	G) Name and address of employer	H) Job title
7	A) Full name (surname and all given names, including maiden name)	B) Relationship
	C) City, province or state, and country of birth	D) Date of birth Y M D
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) Y M D
	G) Name and address of employer	H) Job title

F CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA (see instructions)

Have you ever been convicted of a criminal offence for which you have not been granted a pardon? ☐ Yes ☐ No	If yes, give details (charge(s), name of police force, city, province/state, country and date of conviction) ▼	
Charge(s)	Name of police force	City
Province/State	Country	Date of conviction ▶ Y M D

G FOR COMPLETION BY PERSONS BORN OUTSIDE CANADA OR BORN IN CANADA HOLDING DUAL CITIZENSHIP (see instructions)

1. Date of entry into Canada Y M D	2. Present citizenship	
3. If you are a naturalized Canadian, give the certificate number and date of issue Y M D Certificate No. _____	4. If you are not naturalized, have you applied for Canadian citizenship? Please provide copy of Immigrant Visa or Record of Landing documentation ☐ Yes ☐ No	Date of application Y M D
5. Do you maintain citizenship of a country other than Canada? If yes, please provide the name of the country and explain why. ☐ Yes ☐ No (If yes) Name of Country: _____ Explain:	6. Have you used a passport other than a Canadian one? If yes, explain why. ☐ Yes ☐ No (If yes) Explain:	

Surname and full given names	Date of birth Y M D

H RESIDENCE (there should be no gaps)

List addresses where you have lived during the last 10 years, starting with the most current. (Rural address to include lot and civic number.)

1	Apartment number	Street number	Street name		Civic number (if applicable)	**From** Y M	**To** **present**
	City		Province or state	Postal code	Country	Telephone number ( )		
2	Apartment number	Street number	Street name		Civic number (if applicable)	**From** Y M	**To** Y M
	City		Province or state	Postal code	Country	Telephone number ( )		
3	Apartment number	Street number	Street name		Civic number (if applicable)	**From** Y M	**To** Y M
	City		Province or state	Postal code	Country	Telephone number ( )		
4	Apartment number	Street number	Street name		Civic number (if applicable)	**From** Y M	**To** Y M
	City		Province or state	Postal code	Country	Telephone number ( )		
5	Apartment number	Street number	Street name		Civic number (if applicable)	**From** Y M	**To** Y M
	City		Province or state	Postal code	Country	Telephone number ( )		

I EMPLOYMENT (last 10 years) (see instructions for self-employed and consultants) (there should be no gaps)

Would your employment be jeopardized if your current supervisor, below, is contacted? ☐ Yes ☐ No

If yes, provide the name of an alternate employment contact and telephone number.

Were you dismissed or asked to resign from any position(s) as listed below? ☐ Yes ☐ No

If yes, give name of employer, supervisor, and date.

Name of employer	Supervisor	Position title	Date Y M

1	A) Name of employer - do not use initials (department/organization/agency, if applicable)	B) **From** Y M	**To**	**present**	
	C) Job-site address (street number, street name, city, province or state and country)				
	D) Job title/Description	E) Rank and service number (if applicable)			
	F) Supervisor's name in full	G) Supervisor's telephone number ( )			
2	A) Name of employer - do not use initials (department/organization/agency, if applicable)	B) **From** Y M	**To** Y M		
	C) Job-site address (street number, street name, city, province or state and country)				
	D) Job title/Description	E) Rank and service number (if applicable)			
	F) Supervisor's name in full	G) Supervisor's telephone number ( )			
3	A) Name of employer - do not use initials (department/organization/agency, if applicable)	B) **From** Y M	**To** Y M		
	C) Job-site address (street number, street name, city, province or state and country)				
	D) Job title/Description	E) Rank and service number (if applicable)			
	F) Supervisor's name in full	G) Supervisor's telephone number ( )			
4	A) Name of employer - do not use initials (department/organization/agency, if applicable)	B) **From** Y M	**To** Y M		
	C) Job-site address (street number, street name, city, province or state and country)				
	D) Job title/Description	E) Rank and service number (if applicable)			
	F) Supervisor's name in full	G) Supervisor's telephone number ( )			

Surname and full given names	Date of birth Y M D

J FOREIGN EMPLOYMENT

1. Are you now or have you **ever** been employed by or acted as a consultant for a foreign government, firm, or agency? ☐ Yes ☐ No	If yes, give details (country, organization, nature of work and dates) Include military (cadets), law enforcement and security intelligence employment

SECTIONS "K" TO "O" MUST ALSO BE COMPLETED FOR LEVEL III ONLY

K TRAVEL

List countries visited within the last five years for personal travel and/or non-Government business, other than Canada, the USA and Mexico.

Country	Purpose	From Y M	To Y M

L FOREIGN ASSETS

Do you have any business, financial or personal assets outside Canada? ☐ Yes ☐ No	If yes, list the relevant countries (exclude stocks and mutual funds purchased in Canada)

M CHARACTER REFERENCES IN CANADA (see instructions)

List three character references (non-family members) and one neighbourhood reference

1	Name in full (no initials)	Relationship	Period known
	Complete home address		Telephone Number ( )
	Complete title and business address		Business Telephone Number ( )
2	Name in full (no initials)	Relationship	Period known
	Complete home address		Telephone Number ( )
	Complete title and business address		Business Telephone Number ( )
3	Name in full (no initials)	Relationship	Period known
	Complete home address		Telephone Number ( )
	Complete title and business address		Business Telephone Number ( )

Neighbourhood reference (see instructions)

Name in full (no initials)	Telephone Number ( )
Complete home address	Business Telephone Number ( )

N EDUCATION

1. Name of the last school or university you attended full time	2. Student ID number (if known)	3. Location of institution	4. Period of attendance From Y M To Y M

5. Field of study (Diploma or degree obtained)

O MILITARY SERVICE

Military service in the Canadian Armed Forces: Regular, Reserves and Sea, Army and Air Cadets (from the period since your 16th birthday).

1. Name and last location	2. Rank and Service no.	3. Period of service From Y M	To Y M

P CERTIFICATION

I hereby certify that the information set out by me in this document is true and correct to the best of my knowledge and belief.

1. Signature	2. Date Y M D	3. Telephone (Home) ( )	3. Telephone (Business) ( )

ALL INFORMATION SUPPLIED IS SUBJECT TO VERIFICATION BY INVESTIGATION

Government of Canada | Gouvernement du Canada

INSTRUCTIONS FOR COMPLETION OF SECURITY CLEARANCE FORM TBS/SCT 330-60E (Rev. 2006-02)

General:

- Once completed this form shall be safeguarded and handled at the level of PROTECTED A.
- If clarification of information is required, a Canadian Government Official may contact the applicant to obtain additional information in order to complete the security screening investigation and an interview of the applicant may be requested.
- This form is to be completed using an automated system or if not available using a typewriter or printing in block letter format in black ink.
- Please read and follow these instructions carefully.
- The original signed copy must be submitted.
- It is important that a copy of the completed questionnaire be retained by the applicant for future reference.
- Incomplete or illegible forms will NOT be considered.
- All names are to be in full (no initials) (Maternal and Paternal or other names used).
- Addresses are to include, where applicable civic or township name and the lot and concession numbers.
- If information is not known or is unavailable please indicate this on the form and on a separate sheet of paper explain the cause of circumstance.
- All dates are to be entered in order of YEAR, MONTH, and DAY as applicable.
- If space allotted in any portion is insufficient please use separate sheet using same format.

Detailed Instructions:

SECTION A
- To be completed by the department, agency or organization.
- "Other" This should be used to identify if the security screening is for Site Access, NATO, SIGINT etc.

SECTION B (Remainder of the form is to be completed by the applicant)
- Complete as requested.

SECTION C
- Complete as requested.

SECTION D
"common-law partner" - in relation to an applicant, means a person who is cohabiting with the individual in a conjugal relationship, having so cohabited for a period of at least one year. This includes persons of the same sex.

- 1. includes current spouse and common-law partner as applicable.
- If any person is deceased, date of death and last address while living are to be shown.
- 2. includes previous spouse and common-law partner as applicable during the last five years.
- If a person is deceased, date of death is to be shown in 2e.
- All other questions to be answered as set forth.

SECTION E
- Questions 1 to 8 - experience has shown that incomplete answers to these questions are the most common cause of delay. Please follow the instructions carefully.
- For all security clearance requests all Immediate Relative(s) information must be provided.
- Immediate family includes the following:
- All children 18 years and over that you or your spouse or common-law partner have a parental relationship.
- Your father, mother, brothers, sisters. Include "half" or "step" relatives in this category.
- Your current spouse's or common-law partner's father and mother. Include "half" or "step" relatives in this category.

If any person is deceased, date of death and last address while living are to be shown.

SECTION F
- List only criminal convictions for which a pardon has NOT been granted. Include on a separate attached sheet of paper, if more than one conviction. Applicant must include those convictions outside Canada.
- Offences under the *National Defence Act* are to be included as well as convictions by courts-martial are to be recorded.

SECTION G
- If a naturalized Canadian, it is important to show the certificate number, date of issue. Attach a photocopy of the certificate.
- If born abroad of Canadian parents, please provide a copy of your Certificate of Registration of Birth Abroad.
- If not a Canadian Citizen indicate if application has been made for Citizenship. In this case, passport or identity card number and particulars should be recorded in box "6". Please provide copy of Immigrant Visa or Record of Landing documentation.
- Questions 5 and 6 - Attach a separate sheet of paper if more space is required. Each sheet must be signed.

SECTION H
- As set forth, ensuring current address is recorded first.
- The Postal code is mandatory for the current address, and if known, for previous addresses.
- For rural area, include civic number or lot, concession and township number.

SECTION I
- Record your present employment first.
- Please note that it may be necessary to contact your present employer.
- Time at school and periods of unemployment are also to be shown; (as well as, secondments, educational leave, and courses of over six months' duration; include supervisor or colleague's name).
- Job-site address is the address where your work is performed and may be different from your employer's address.

NOTE: If you are self-employed or a consultant, or have been self-employed or a consultant, provide the following:
a) Name of employer - give your business name; if not applicable, give your name;
b) No change;
c) Job-site address - give your permanent business address; if not applicable, give your residence address;
d) No change;
e) No change;
f) Supervisor's name - give a name of a person who can verify your employment;
g) No change.

SECTION J
- Is related to determining past employment of security concern. A security official may ask for further details.

SECTION K
- Travel record is for less than six months, if more than this period it is to be recorded as residence in part "H".
- One day visits to countries, such as cruise stopover, do not have to be recorded.
- A security official may ask for details of travel.
- An employee or contractor on Canadian Government business is not required to record details of travel in this section.

SECTION L
- A security official may ask for details in terms of the type of assets and estimated value.

SECTION M
- Character references must be colleagues, peers, and friends who have known you well for over three years and should be able to cover your non-work environment and activities.
- Character references are NOT to include relatives and MUST be residing in Canada.
- Faster processing is facilitated if references listed are in your geographic area.
- Neighbourhood reference is an individual who has known you for over six months preferably at your current address. If not, the individual has been a neighbour during the past five years.

SECTION N
- Complete as requested.

SECTION O
- Question to be answered if not covered in employment section. List last or current unit and dates of total service in the Canadian Armed Forces.
- If more space is required use a separate sheet of paper. Each sheet must be signed.

SECTION P
- Complete as requested.

SUPPLEMENTAL INFORMATION REQUIREMENTS
Persons who have previously completed a SECURITY CLEARANCE and subsequently marry, remarry or commence a common-law partnership are required to submit an original Security Clearance Form with the following parts completed:

For all Security Clearances

Part A - As set forth in each question
Part B - As set forth in each question
Part C - As set forth in each question
Part D - As set forth in each question
Part E - Provide details on parents of new spouse/common-law partner and any children (over the age of 18 years) of the new spouse/common-law partner
Part P - To be signed by person submitting the form

Note: In addition to the above, in those cases where an individual marries or commences a common-law partnership with a Non-Canadian National or Landed Immigrant who has not yet arrived in Canada, the following information is required:

Parts A-D As set forth in each question
Part E - Parents of new spouse/common-law partner, brothers, sisters (include "half and "step" relatives) and any children (over the age of 18 years) of the new spouse/common-law partner
Part H - For new spouse/common-law partnership
Part I - For new spouse/common-law partnership
Part P - To be signed by person submitting the form

CYCLICAL UPDATE REQUIREMENTS
- Levels I+II (10 year update). Complete all portions of the form as per instructions above.
- Level III (5 year update cycle)

With the exceptions of Parts H and I, where the information required is that which covers the period of time since the last submission of a questionnaire, **ALL OTHER** parts of the questionnaire must be completed **IN FULL**.

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

Listed below are instructions for completion of the TBS 330-60E. In addition to reviewing the notes below, please review the attached "Government of Canada Instructions For Completion of Security Clearance Form".

NOTE:

1. **All information requested on Form TBS 330-60E MUST be provided (ie. do not leave any "blanks").**

2. **Failure to provide ALL requested information will result in forms being returned to the General Contractor or General Consultant (as per contract specifications).**

3. **PLEASE NOTE: NO ABBREVIATIONS ARE TO BE USED ON THIS FORM (ie. "CA" for Canada, "AB" for Alberta etc.)**

Page 1 of Form:

Section A. Administrative Info.: do not complete (to be completed by RCMP)

Section B. Biographical Info.: ***To be completed by applicant***:

1. Surname: Your Last Name that you currently use – ie. "Smith"

2. Full given names: (no initials):
   a. Your First Name and Middle Name (s) ie. "Cameron John"
   **If you do not have a middle name, state "no middle name" on the form.
   **Circle or underline your usual name used (whether you go by your first name or middle name).

3. Family Name at birth: Your Last Name when you were born - ie. "Smith" (do not include "Same")

4. All other names used: Abbreviation(s) of name(s) used (ie."Dave"/David, "Charlie"/Charles) or Nicknames.

5. Sex: Place "x" in box beside male or female

6. Date of Birth: provide the Year, Month and Day you were born ie. 2012-01-01 (must provide all in this format)

7. a,) Place of Birth: the city or town or village that you were born in.
   b.) Province/State: the province or state that you were born in (no abbreviations)
   c.) Country: the country that you were born in (no abbreviations)

8. Name Change (other than marriage): your former surname and/or first, middle name(s) and the "From" and "To" dates of your name change (2012-01 (Month) – 01 (Day) format).

9. Place of change: City, province or state and country where your name was changed.

10. Method: Authority that authorized your name change ie. Alberta Vital Statistics

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

Section C. Security Screening: ***To be completed by applicant***

1. Have you previously completed a Government of Canada security screening form?:
   a. "No" or
   b. "Yes" – if "Yes", please provide details. If you cannot recall some or all of the details (ie. year of screening, state "cannot recall").

Section D. Marital Status/Common-Law Partnership: ***To be completed by applicant:***

- Current Status: current marital status – check off applicable box.

1. Current Spouse or common-law partner:
   a. Surname, First and Middle Name (use format : ie. SMITH, Judy Carol)
      **Circle usual first name used;
      **If no middle name, state "no middle name" on the form.
   b. Maiden Name; if no maiden name, state "none".
   c. Present Citizenship of current spouse/common-law partner ie. "Canadian"
   d. Date of marriage/common-law partnership: Year-Month-Day format (ie. 2012-01-01)
   e. City, province or state, and country of marriage/common-law partnership (ie. Regina, Saskatchewan, Canada) – no abbreviations.
   f. City, province or state, and country of birth: of your spouse/common-law partner (ie. Regina, Saskatchewan, Canada) – no abbreviations.
   g. Date of Birth: of your spouse/common-law partner – Year-Month-Day format
   h. Present Address: Apartment number, street number, street name, city, province or state, and country (Do not abbreviate province and country)
      - If address is not a street address, you must provide a legal land description for rural addresses (ie. SW-12-13-33-W1), followed by Town (or RM) (ie. Lacombe or RM of Sherwood or County of Smith), followed by Province and Country (no abbreviations – Saskatchewan Canada).
      - **Do not provide any Post Office Box No's** – need physical address of residence / not where your mail is forwarded to (PO Box no.).
   i. If separated, widowed or divorced, specify date: Year-Month-Day format (ie. 2012-01-01)
   j. Name and address of employer (job title): Include the following:
      - Name of Company that your spouse is employed by – ie. "Smith's Plumbing
      - Complete Street Address or Legal Land Description of Company that your spouse is employed by – ie. 245 – 7 Street, Regina, Saskatchewan, Canada (do not abbreviate province and country)
      - **Do not provide any Post Office Box No's** – need physical address of residence / not where your mail is forwarded to (PO Box no.).
      - Job Title of your spouse (ie. Financial Officer).

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

2. Previous Spouse/Common-Law Partner (cover only the past 5 years only/during the past 5 years):
   - If no previous spouse/common-law partner, state "None"; if previous spouse/common-law partner:

   a. Surname, First and Middle Name (use format: ie. SMITH, Judy Carol)
      **Circle usual first name used;
      **If no middle name, state "no middle name" on the form.
   b. Present Citizenship of Former Spouse/Common-law partner: ie. "Canadian"
   c. Date of marriage/common-law partnership: Year-Month-Day format (ie. 2012-01-01)
   d. City, province or state, and country of marriage/common-law partnership: (ie. Regina, Saskatchewan, Canada) – no abbreviations.
   e. Date of divorce/separation/deceased: Year-Month-Day format
   f. City, province or state, and country of divorce: (ie. Regina, Saskatchewan, Canada) – no abbreviations.
   g. Country of Birth (if known): of your former spouse/common-law partner – Year-Month-Day format
   h. Date of Birth: of your former spouse/common-law partner – Year-Month-Day

Section E. Immediate Relatives: To be completed by applicant (Page 1 & continued on Page 2)

a. Full Name: (Surname, First and Middle Name, including Maiden Name in brackets):
   - Circle usual first name used;
   - If no middle name, state "no middle name" on the form.

b. Relationship: include son or daughter (*if they are over 18 years of age*), mother, father, brothers, sisters – include "half" or "step" relatives in this category; AND mother-in-law, father-in-law – include "half" or "step" relatives in this category.

c. City, Province or State, and Country of Birth: of your immediate relative – ie. Regina, Saskatchewan, Canada (do not abbreviate province and country).

d. Date of Birth: of your relative Year-Month-Day format

e. Present address: where your relative currently resides as follows:
   - Apartment number, street number, street name, city, province or state, and country (Do not abbreviate province and country)
   - If address is not a street address, you must provide a legal land description for rural addresses (ie. SW-12-13-33-W1).
   - **Do not provide any Post Office Box No's** – need physical address of residence / not where your mail is forwarded to (PO Box no.).
   - If person is deceased, the last address while living is to be shown (if unknown, state "unknown").

f. Date of death (if applicable): Year-Month-Day format

g. Name and address of employer: Include the following information:
   - Name of Company that your relative is employed by – ie. "Smith's Plumbing"
   - Complete Street Address or Legal Land Description of Company that your spouse is employed by – ie. 245 – 7 Street, Regina, Saskatchewan, Canada (do not abbreviate province and country)
   - **Do not provide any Post Office Box No's** – need physical address of residence / not where your

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

mail is forwarded to (PO Box no.)

- If not working, state "unemployed" or if deceased, state "deceased".

h. Job Title: of your immediate relative (ie. Financial Officer)

Page 2 of Form:

Top of Page: Surname, and full given names (First and Middle Names) – use this format.

Section F. Criminal Convictions In And Outside Canada: ***To be completed by applicant***

- "No" OR
- "Yes" - if "Yes", please provide details. If you cannot recall some or all of the details (ie. date of conviction, state "cannot recall").

Notes: List only criminal convictions for which a pardon has NOT been granted. If more than one conviction, list additional criminal convictions in and outside of Canada, on a separate sheet of paper and sign this attached sheet of paper.

Section G. For Completion By Persons Born Outside Canada etc.: ***To be completed by applicant***

- Only complete as requested if born outside of Canada OR born in Canada Holding Dual Citizenship.

Page 3 of Form:

Top of Page: Surname, and full given names (First and Middle Names) – use this format.

Section H. Residence (no gaps in date) ***: To be completed by applicant***

- Include last TEN years of residences, starting with your current home address. If you do not have enough spaces to list residences from the past ten years on the attached form, photocopy this page and list additional residences (include your Surname, Full Given Names and Date of Birth at the top of each additional page).

1. a. Apartment number, b. street number, c. street name, c. city, d. province or state, and e. country (Do not abbreviate province and country)
   - If address is not a street address, you must provide a legal land description for rural addresses (ie. SW-12-13-33-W1).
   - **Do not provide any Post Office Box No's** – need physical address of residence / not where your mail is forwarded to (PO Box no.)

2. From and To dates that you resided at each residence (Year and Month format); ***no gaps in dates*****
DATES MUST BE CONSECUTIVE–NO BREAKS IN TIME PERIODS as stated above.

Section I. Employment: ***To be completed by applicant (Page 3 & continued on Page 4)***

- Include last TEN years of employment, starting with your current employer. If you do not have enough spaces to list employment from the past ten years on the attached form, photocopy this page and list additional employers (include your Surname, Full Given Names and Date of Birth at the top of each additional page).

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

1. Would your employment be jeopardized if your current supervisor, below, is contacted?: Check off applicable box – "Yes" or "No".
   - If Yes, provide the name of an alternate employment contact and telephone number including:
     a. First Name and Surname of Contact Person
     b. Company Name that Contact Person is employed for
     c. Telephone number including area code.

2. Were you dismissed or asked to resign from any position(s) as listed below?: Check off applicable box – "Yes" or "No".
   - If Yes, give the name of employer, supervisor, and date:
     a. Name of Employer: The Company Name
     b. Supervisor: The person's first name and surname
     c. Position Title: Supervisor's Title
     d. Date: Year and Month Format – the date that you were dismissed/asked to resign.

3. Employment History (for the past 10 years):
   a. Name of Employer: The company name of your employer
   b. From: The Year and Month that you started working for the specified employer & To: "present" or the date that you stopped working for the specified employer.
   c. Job-Site Address: Street Number, Street Name, City, Province or state, and Country (no abbreviations for City, Province and/or Country) – **NO POST OFFICE BOX NO.'S, POSTAL CODES OR ABBREVIATIONS.**
   d. Job Title/Description: Your Job Title or Description ie. "Consultant"
   e. Rank and Service number (if applicable): if not applicable state "none"
   f. Supervisor's name in Full: First Name and Surname Name of Supervisor
   g. Supervisor's Telephone Number: Include area code in brackets.

   NOTE: there cannot be any gaps in dates; if you were unemployed for a short duration, include "unemployed" along with the "From and To" dates on the attached form – 10 years must be included on the form, even if you were "unemployed" or a "student".

Page 4 of Form:

Top of Page: Surname, and full given names (First and Middle Names) – use this format.

Section J. Foreign Employment: ***To be completed by applicant***

1. Are you now or have you ever been employed by or acted as a consultant for a foreign government, firm, or agency?: Check of a box: "Yes" or "No".

2. If yes, give details: Country, organization, nature of work and dates); include military (cadets), law enforcement and security intelligence employment.

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

Section K. Travel: ***To be completed by applicant (you must complete for an RRS clearance)***

1. If you have not visited within the last five years for personal travel and/or non-Government business, other than Canada, the USA and Mexico, state "None".

2. If you have, include: Country, Purpose of Travel and "From" and "To" dates (year and month format).

Section L. Foreign Assets: ***To be completed by applicant (you must complete for an RRS clearance)***

1. "No" OR
2. "Yes" - if "Yes", please list the relevant countries (exclude stocks and mutual funds purchased in Canada).

Section M. Character References In Canada: ***To be completed by applicant (you must complete for an RRS clearance)***

- List three character references (non-family members – colleagues, peers, and friends) who have known you well for over three years and should be able to cover your non-work environment and activities AND:
- NOTE: FASTER PROCESSING IS FACILITIES IF REFERENCES LISTED ARE IN YOUR GEOGRAPHIC AREA.
- List one neighborhood reference who has known you for over six months preferably at your current address. If not, the individual has been a neighbor during the past five years.

1. Name in full (no initials): First Name and Last Name of Individual

2. Relationship: ie. Friend, Coworker

3. Period Known: Since (Year) ie. "Since 1975"

4. Complete Home Address – a. Apartment Number, b. House Number, c. Street number or name d. City, Province or State, Country OR Legal Land Description if in a rural area (ie. SW-30-23-45-W4th) - **NO POST OFFICE BOX NO.'S OR POSTAL CODES OR ABBREVIATIONS.**

5. Telephone Number: Home Telephone Number (area code in brackets)

6. Complete Title and Business Address:
   a. Your Reference's Title at Work (ie. Consultant)
   b. Your Reference's Employer/Company Name (ie. Smith Architects)
   c. Your Reference's Business Address (Number, Street No. or Name, City, Province or State, and Country) or Legal Land Description if in a rural area **(NO POST OFFICE BOX NO.'S OR POSTAL CODES, NO ABBREVIATIONS).**

7. Telephone Number: Your Reference's Business Telephone number or Cell Number (include area code).
   - NOTE: Please place an asterisk (*) beside one of the above noted "daytime" telephone numbers of each reference listed, as reference checks will likely be completed during daytime hours.
   - **NOTE: Please ensure that all of your references are at the telephone numbers that you have provided; failure to provide up to date telephone numbers will result in processing delays.**

INSTRUCTIONS FOR COMPLETION OF GOVERNMENT OF CANADA SECURITY CLEARANCE FORM (Form No. TBS 330-60E)

Section N. Education: ***To be completed by applicant (you must complete for an RRS clearance)***

1. Name of the last school or university you attended "full time": ie. Smith Composite High School or York University.

2. Student ID Number: if unknown, state "unknown"

3. Location of institution: City, Province or State and Country (no abbreviations)

4. Period of Attendance: From and To Dates that you attended this institution (Year and Month format)

5. Field of Study: Diploma or degree obtained OR state "Did not obtain Diploma or degree".

Section O. Military Service: ***To be completed by applicant (you must complete for an RRS clearance)***

1. Name and Last Location:

2. Rank and Service No.:

3. Period of Service: From and To Dates that you served (Year and Month format)

OR

- If no Military Service - include "None".

Section P. Certification: ***To be completed by applicant***

1. Signature: Sign your name

2. Date: Today's Date (Year, Month and Day format)

3. Telephone No.: Home (include area code)

4. Telephone No.: Business (include area code)

****Please ensure that you also review "Government of Canada – Instructions For Completion of Security Clearance Form TBS 330-60E (Rev. 2006-02).**

Updated June 14, 2012

SAMPLE OF COMPLETED DOCUMENT

Government of Canada / Gouvernement du Canada

PROTECTED (When completed)

OFFICE USE ONLY		
Reference number	Department number	File number

SECURITY CLEARANCE FORM

The Privacy Act Statement

The information on this form is required for the purpose of providing a security assessment. It is collected under the authority of subsection 7(1) of the *Financial Administration Act* and the Government Security Policy (GSP) of the Government of Canada and is protected by the provisions of the *Privacy Act* in institutions that are covered by the *Privacy Act*. Its collection is mandatory. A refusal to provide information will lead to a review of whether the person is eligible to hold the position or perform the contract that is associated with this Personnel Screening Request. The information collected by the government institution may be disclosed to the Royal Canadian Mounted Police (RCMP) and the Canadian Security Intelligence Service (CSIS), which conduct the requisite checks and/or investigation in accordance with the GSP and to entities outside the federal government (e.g. credit bureaus). It is used to support decisions on individuals working or applying to work through appointment, assignment or contract, transfers or promotions. It may also be used in the context of updating, or reviewing for cause, the reliability status, security clearance or site access, all of which may lead to a re-assessment of the applicable type of security screening. Information collected by the government institution, and information gathered from the requisite checks and/or investigation, may be used to support decisions, which may lead to discipline and/or termination of employment or contractual agreements. The personal information collected is described in Standard PIB PSU 917 (Personnel Security Screening) which is used by all government agencies, except the Department of National Defence PIB DND/PPE 834 (Personnel Security Investigation File), RCMP PIB CMP PPU 065 (Security/Reliability Screening Records), CSIS PIB SIS PPE 815 (Employee Security), and PWGSC PIB PWGSC PPU 015 (Personnel Clearance and Reliability Records) used for Canadian Industry Personnel. Personal information related to security assessments is also described in the CSIS PIB SIS PPU 005 (Security Assessments/Advice).

Please typewrite or print in block letters.

NOTE: Level I and II must complete sections A to J inclusive and P.
Level III must complete all sections.

A ADMINISTRATIVE INFORMATION (To be completed by Department/Agency/Organization)

☐ New ☐ Upgrade ☐ Supplemental ☐ Update ☐ Transfer ☐ Re-activation

Level: ☐ I (CONFIDENTIAL) ☐ II (SECRET) ☐ III (TOP SECRET) ☐ other

Department/Agency/Organization	Employee ID number/PRI/Rank and Service number (if applicable)	Organization number

B BIOGRAPHICAL INFORMATION (To be completed by the applicant)

1. Surname (Last name)	2. Full given names (no initials) underline or circle usual name used	3. Family name at birth
SMITH	(JOHN) (no middle name)	SMITH

4. All other names used (i.e. Nickname)	5. Sex	6. Date of birth (Y M D)
Johnny	☒ Male ☐ Female	1960 01 27

7. Place of birth (city)	Province/State	Country
EDMONTON	ALBERTA	CANADA

8. Name change (other than marriage)	From	To
NONE	—	—

9. Place of change (city, province or state, and country)	10. Method (authority)
—	

C SECURITY SCREENING

1. Have you previously completed a Government of Canada security screening form? ☒ Yes ☐ No

If yes, give name of department/agency/organization, and the year and level of clearance.
CORRECTIONAL SERVICES CANADA
RELIABILITY STATUS CLEARANCE (RRS) Y 2001

D MARITAL STATUS/COMMON-LAW PARTNERSHIP

Current status: ☒ Married ☐ Common-Law Partnership ☐ Separated ☐ Widowed ☐ Divorced ☐ Single

1

A) CURRENT SPOUSE/COMMON-LAW PARTNER: Surname, given names	B) Maiden Name (if applicable)	C) Present citizenship of current spouse/common-law partner
SMITH, (JOANNE) JANE	JONES	CANADIAN

D) Date of marriage/common-law partnership (Y M D)	E) City, province or state, and country of marriage/common-law partnership
1981 08 01	EDMONTON, ALBERTA, CANADA

F) City, province or state, and country of birth	G) Date of birth (Y M D)
CALGARY, ALBERTA, CANADA	1960 02 01

H) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	I) If separated, widowed or divorced, specify date (Y M D)
1257 Cooper Avenue, Peace River, alberta, Canada	

J) Name and address of employer (job title)
PEACE RIVER Health Region, 123-2 Avenue, Peace River, Alberta, Canada (NURSE)

2

A) PREVIOUS SPOUSE/COMMON-LAW PARTNER: Surname, given names (cover only the past five years)	B) Present citizenship of former spouse/common-law partner
NONE	

C) Date of marriage/common-law partnership (Y M D)	D) City, province or state, and country of marriage/common-law partnership

E) Date of divorce/separation/deceased (Y M D)	F) City, province or state, and country of divorce

G) Country of Birth (if known)	H) Date of birth (Y M D)

E IMMEDIATE RELATIVES (including those living outside Canada) (see instructions)

NOTE: Do not use initials

1

A) Full name (surname and all given names, including maiden name)	B) Relationship
SMITH, (JERALD) GEORGE	FATHER

C) City, province or state, and country of birth	D) Date of birth (Y M D)
EDMONTON, ALBERTA, CANADA	1940 20 01

E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country)	F) Date of death (if applicable) (Y M D)
235-7 Street, Peace River, Alberta, Canada	2011 06 02

G) Name and address of employer	H) Job title
None - Deceased	None - DECEASED

Surname and full given names	Date of birth (Y M D)
SMITH, John (no middle name)	1960 01 27

E IMMEDIATE RELATIVES (continued)

NOTE: Do not use initials

2	A) Full name (surname and all given names, including maiden name): SMITH, GAIL (no middle name)	B) Relationship: MOTHER
	C) City, province or state, and country of birth: EDMONTON, ALBERTA, CANADA	D) Date of birth (Y M D): 1941 06 01
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country): 235-7 Street, Peace River, Alberta, Canada	F) Date of death (if applicable) (Y M D):
	G) Name and address of employer: Safeway Canada, 213-7 Street, Peace River, Alberta, Canada	H) Job title: Cashier
3	A) Full name (surname and all given names, including maiden name): JONES, JORDAN DALE	B) Relationship: STEP-BROTHER
	C) City, province or state, and country of birth: CALGARY, Alberta, Canada	D) Date of birth (Y M D): 1982 01 07
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country): 27 Allan Place, Leduc, Alberta, Canada	F) Date of death (if applicable) (Y M D):
	G) Name and address of employer: UNEMPLOYED	H) Job title:
4	A) Full name (surname and all given names, including maiden name): JONES, Shelley Lynn (Callin)	B) Relationship: MOTHER-IN-LAW
	C) City, province or state, and country of birth: CALGARY, Alberta, Canada	D) Date of birth (Y M D): 1936 07 03
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country): 12 Jasper Place, Lamont, Alberta, Canada	F) Date of death (if applicable) (Y M D):
	G) Name and address of employer: Hill Electric, 23-2 Avenue, Lamont, Alberta, Canada	H) Job title: CLEANER
5	A) Full name (surname and all given names, including maiden name): JONES, James Kelly	B) Relationship: FATHER-IN-Law
	C) City, province or state, and country of birth: CALGARY, Alberta, Canada	D) Date of birth (Y M D): 1937 06 01
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country): 12 Jasper Place, Lamont, Alberta, Canada	F) Date of death (if applicable) (Y M D): 1999 07 01
	G) Name and address of employer: NONE - DECEASED	H) Job title: None - Deceased
6	A) Full name (surname and all given names, including maiden name): SCHNEIDER, KAREN GAIL	B) Relationship: DAUGHTER
	C) City, province or state, and country of birth: CALGARY, ALBERTA, CANADA	D) Date of birth (Y M D): 1978 02 01
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country): SW-4-3-12-W4, Lacombe, Alberta, Canada	F) Date of death (if applicable) (Y M D):
	G) Name and address of employer: ESSO, NE-12-4-36-54, Delburne, Alberta, Canada	H) Job title: OPERATOR
7	A) Full name (surname and all given names, including maiden name):	B) Relationship:
	C) City, province or state, and country of birth:	D) Date of birth (Y M D):
	E) Present address (apartment number, street number, street name, civic number (if applicable), city, province or state and country):	F) Date of death (if applicable) (Y M D):
	G) Name and address of employer:	H) Job title:

F CRIMINAL CONVICTIONS IN AND OUTSIDE OF CANADA (see instructions)

Have you ever been convicted of a criminal offence for which you have not been granted a pardon?

☒ Yes ☐ No

If yes, give details. (charge(s), name of police force, city, province/state, country and date of conviction) ▼

Charge(s)	Name of police force	City
DRIVING UNDER THE INFLUENCE OF ALCOHOL	EDMONTON POLICE SERVICE	EDMONTON

Province/State	Country	Date of conviction ▶ (Y M D)
ALBERTA	CANADA	2001 02 01

G FOR COMPLETION BY PERSONS BORN OUTSIDE CANADA OR BORN IN CANADA HOLDING DUAL CITIZENSHIP (see instructions)

1. Date of entry into Canada (Y M D):

2. Present citizenship:

3. If you are a naturalized Canadian, give the certificate number and date of issue (Y M D)

Certificate No. _____

4. If you are not naturalized, have you applied for Canadian citizenship? Please provide copy of Immigrant Visa or Record of Landing documentation ☐ Yes ☐ No

Date of application (Y M D):

5. Do you maintain citizenship of a country other than Canada? If yes, please provide the name of the country and explain why. ☐ Yes ☐ No

(If yes) Name of Country: _____

Explain:

6. Have you used a passport other than a Canadian one? If yes, explain why. ☐ Yes ☐ No

(If yes) Explain:

PROTECTED (When completed)

Surname and full given names	Date of birth (Y M D)
SMITH, John (no middle name)	1960 01 27

H RESIDENCE (there should be no gaps)

List addresses where you have lived during the last 10 years, starting with the most current. (Rural address to include lot and civic number.)

	Apartment number	Street number	Street name	Civic number (if applicable)	From (Y M)	To
1		1257	COOPER AVENUE		2011 01	present
	City: PEACE RIVER	Province or state: ALBERTA	Postal code: T8S 2X9	Country: CANADA	Telephone number: (780) 261-1493	
2			12-13-57-W2		2009 03	2011 01
	City: GRAND CACHE	Province or state: Alberta	Postal code: T0E 0Y3	Country: CANADA	Telephone number: (780) 234-2102	
3			1-87-18-W4		2007 01	2009 03
	City: SASKATOON	Province or state: SASKATCHEWAN	Postal code: S0G 3C0	Country: CANADA	Telephone number: (306) 231-7192	
4		20	HILL AVENUE		2004 01	2007 01
	City: CALGARY	Province or state: Alberta	Postal code: T0G 3C0	Country: CANADA	Telephone number: (403) 239-7186	
5		can't recall	unknown - can't recall		1999 09	2004 01
	City: Calgary	Province or state: Alberta	Postal code: T0G 3C0	Country: Canada	Telephone number: ( ) "unknown - cannot recall"	

I EMPLOYMENT (last 10 years) (see instructions for self-employed and consultants) (there should be no gaps)

Would your employment be jeopardized if your current supervisor, below, is contacted? ☐ Yes ☒ No

If yes, provide the name of an alternate employment contact and telephone number.

Were you dismissed or asked to resign from any position(s) as listed below? ☐ Yes ☒ No

If yes, give name of employer, supervisor, and date.

Name of employer	Supervisor	Position title	Date (Y M)

1	A) Name of employer - do not use initials (department/organization/agency, if applicable): ABC WELDING INCORPORATED	B) From (Y M): 2011 01	To: present
	C) Job-site address (street number, street name, city, province or state and country): 243-7 STREET, PEACE RIVER, ALBERTA, CANADA		
	D) Job title/Description: WELDER	E) Rank and service number (if applicable): NONE	
	F) Supervisor's name in full: GERALD MILLION	G) Supervisor's telephone number (cell): (780) 299-1257	
2	A) Name of employer - do not use initials (department/organization/agency, if applicable): Jim's WELDING	B) From (Y M): 2009 30	To (Y M): 2011 01
	C) Job-site address (street number, street name, city, province or state and country): 637-8 AVENUE, PEACE RIVER, ALBERTA, CANADA		
	D) Job title/Description: WELDER	E) Rank and service number (if applicable): NONE	
	F) Supervisor's name in full: KEVIN HARRIS	G) Supervisor's telephone number (cell): (780) 891-7624	
3	A) Name of employer - do not use initials (department/organization/agency, if applicable): UNEMPLOYED	B) From (Y M): 2007 01	To (Y M): 2009 30
	C) Job-site address (street number, street name, city, province or state and country):		
	D) Job title/Description:	E) Rank and service number (if applicable):	
	F) Supervisor's name in full:	G) Supervisor's telephone number: ( )	
4	A) Name of employer - do not use initials (department/organization/agency, if applicable): KARI'S WELDING	B) From (Y M): 2004 01	To (Y M): 2007 01
	C) Job-site address (street number, street name, city, province or state and country): SW-19-12-24-W4, REDDEER, ALBERTA, CANADA		
	D) Job title/Description: WELDER	E) Rank and service number (if applicable): NONE	
	F) Supervisor's name in full: CORY KARI	G) Supervisor's telephone number: (780) 863-2149	

see pg 2. →

Surname and full given names	Date of birth (Y M D)
SMITH, John (no middle name)	1 1 9 6 0 9 1 2 7

H RESIDENCE (there should be no gaps)

List addresses where you have lived during the last 10 years, starting with the most current. (Rural address to include lot and civic number.)

	Apartment number	Street number	Street name	Civic number (if applicable)	From (Y M)	To (Y M) / present
1						present
	City	Province or state	Postal code	Country	Telephone number ( )	
2						
	City	Province or state	Postal code	Country	Telephone number ( )	
3						
	City	Province or state	Postal code	Country	Telephone number ( )	
4						
	City	Province or state	Postal code	Country	Telephone number ( )	
5						
	City	Province or state	Postal code	Country	Telephone number ( )	

I EMPLOYMENT (last 10 years) (see instructions for self-employed and consultants) (there should be no gaps)

Would your employment be jeopardized if your current supervisor, below, is contacted? ☐ Yes ☐ No

If yes, provide the name of an alternate employment contact and telephone number.

Were you dismissed or asked to resign from any position(s) as listed below? ☐ Yes ☐ No

If yes, give name of employer, supervisor, and date.

Name of employer	Supervisor	Position title	Date (Y M)

(5)

A) Name of employer - do not use initials (department/organization/agency, if applicable): STUDENT

B) From: 1 9 9 9 0 2 To: 2004 01

C) Job-site address (street number, street name, city, province or state and country)

D) Job title/Description

E) Rank and service number (if applicable)

F) Supervisor's name in full

G) Supervisor's telephone number ( )

2

A) Name of employer - do not use initials (department/organization/agency, if applicable)

B) From: Y M To: Y M

C) Job-site address (street number, street name, city, province or state and country)

D) Job title/Description

E) Rank and service number (if applicable)

F) Supervisor's name in full

G) Supervisor's telephone number ( )

3

A) Name of employer - do not use initials (department/organization/agency, if applicable)

B) From: Y M To: Y M

C) Job-site address (street number, street name, city, province or state and country)

D) Job title/Description

E) Rank and service number (if applicable)

F) Supervisor's name in full

G) Supervisor's telephone number ( )

4

A) Name of employer - do not use initials (department/organization/agency, if applicable)

B) From: Y M To: Y M

C) Job-site address (street number, street name, city, province or state and country)

D) Job title/Description

E) Rank and service number (if applicable)

F) Supervisor's name in full

G) Supervisor's telephone number ( )

Surname and full given names	Date of birth (Y M D)
SMITH, JOHN (no middle name)	1960 01 27

J FOREIGN EMPLOYMENT

1. Are you now or have you **ever** been employed by or acted as a consultant for a foreign government, firm, or agency?	If yes, give details (country, organization, nature of work and dates) Include military (cadets), law enforcement and security intelligence employment
☐ Yes ☒ No	

SECTIONS "K" TO "O" MUST ALSO BE COMPLETED FOR LEVEL III ONLY

K TRAVEL

List countries visited within the last five years for personal travel and/or non-Government business, other than Canada, the USA and Mexico.

Country	Purpose	From (Y M)	To (Y M)
"NONE"			

L FOREIGN ASSETS

Do you have any business, financial or personal assets outside Canada?	If yes, list the relevant countries (exclude stocks and mutual funds purchased in Canada)
☐ Yes ☒ No	

M CHARACTER REFERENCES IN CANADA (see instructions)

List three character references (non-family members) and one neighbourhood reference

1	Name in full (no initials): Allan NiKum	Relationship: FRIEND	Period known: 4 years
	Complete home address: SW-12-6-2-W4, MANNING, ALBERTA, CANADA		Telephone Number: (780) 236-1921
	Complete title and business address: WELDER, ABC WELDING, 243-7 Street, Peace River, Alberta, CANADA		Business Telephone Number: (780) 236-0012 *
2	Name in full (no initials): CORY Timothy	Relationship: COLLEAGUE	Period known: 6 years
	Complete home address: 17 ANGLE STREET, ORANGE, ALBERTA, CANADA		Telephone Number (cell): (780) 892-1343 *
	Complete title and business address: WELDER, ABC Welding, 19-3 Avenue, Manning, Alberta, Canada		Business Telephone Number: (780) 892-1691
3	Name in full (no initials): Dennis James	Relationship: FRIEND	Period known: 9 years
	Complete home address: 123-2 Avenue, MANNING, ALBERTA, CANADA		Telephone Number (cell): (780) 777-1992 *
	Complete title and business address: CONSULTANT, PEACE FINANCIAL, 2-3 Street, Manning, Alberta, Canada		Business Telephone Number: (780) 823-1111
Neighbourhood reference (see instructions)			
Name in full (no initials): BRIAN ANDERS			Telephone Number: (780) 236-1111 *
Complete home address: 1253 COOPER STREET, PEACE RIVER, ALBERTA, CANADA			Business Telephone Number: ( ) NONE

N EDUCATION

1. Name of the last school or university you attended full time	2. Student ID number (if known)	3. Location of institution	4. Period of attendance (Y M)
NAIT	UNKNOWN	EDMONTON, ALBERTA, CANADA	From 1978 09 To 1979 06

5. Field of study (Diploma or degree obtained): WELDING CERTIFICATE

O MILITARY SERVICE

Military service in the Canadian Armed Forces: Regular, Reserves and Sea, Army and Air Cadets (from the period since your 16th birthday).

1. Name and last location	2. Rank and Service no.	3. Period of service (Y M)
NONE		From To

P CERTIFICATION

I hereby certify that the information set out by me in this document is true and correct to the best of my knowledge and belief.

1. Signature	2. Date (Y M D)	3. Telephone (Home)	3. Telephone (Business)
John Smith	2011 11 20	(780) 261-1493	(780) 299-1111

ALL INFORMATION SUPPLIED IS SUBJECT TO VERIFICATION BY INVESTIGATION

Government of Canada / Gouvernement du Canada

INSTRUCTIONS FOR COMPLETION OF SECURITY CLEARANCE FORM TBS/SCT 330-60E (Rev. 2006-02)

General:

- Once completed this form shall be safeguarded and handled at the level of PROTECTED A.
- If clarification of information is required, a Canadian Government Official may contact the applicant to obtain additional information in order to complete the security screening investigation and an interview of the applicant may be requested.
- This form is to be completed using an automated system or if not available using a typewriter or printing in block letter format in black ink.
- Please read and follow these instructions carefully.
- The original signed copy must be submitted.
- It is important that a copy of the completed questionnaire be retained by the applicant for future reference.
- Incomplete or illegible forms will NOT be considered.
- All names are to be in full (no initials) (Maternal and Paternal or other names used).
- Addresses are to include, where applicable civic or township name and the lot and concession numbers.
- If information is not known or is unavailable please indicate this on the form and on a separate sheet of paper explain the cause of circumstance.
- All dates are to be entered in order of YEAR, MONTH, and DAY as applicable.
- If space allotted in any portion is insufficient please use separate sheet using same format. → photocopy applicable sheet + continue adding additional information (ensure name + date of birth are included on the top of each additional sheet.

Detailed Instructions:

SECTION A
- To be completed by the department, agency or organization.
- "Other" This should be used to identify if the security screening is for Site Access, NATO, SIGINT etc.

SECTION B (Remainder of the form is to be completed by the applicant)
- Complete as requested.

SECTION C
- Complete as requested.

SECTION D
"common-law partner" - in relation to an applicant, means a person who is cohabiting with the individual in a conjugal relationship, having so cohabited for a period of at least one year. This includes persons of the same sex.

- 1. includes current spouse and common-law partner as applicable.
- If any person is deceased, date of death and last address while living are to be shown.
- 2. includes previous spouse and common-law partner as applicable during the last five years.
- If a person is deceased, date of death is to be shown in 2e.
- All other questions to be answered as set forth.

SECTION E
- Questions 1 to 8 - experience has shown that incomplete answers to these questions are the most common cause of delay. Please follow the instructions carefully.
- For all security clearance requests all Immediate Relative(s) information must be provided.
- Immediate family includes the following:
- All children 18 years and over that you or your spouse or common-law partner have a parental relationship.
- Your father, mother, brothers, sisters. Include "half" or "step" relatives in this category.
- Your current spouse's or common-law partner's father and mother. Include "half" or "step" relatives in this category.

If any person is deceased, date of death and last address while living are to be shown.

SECTION F
- List only criminal convictions for which a pardon has NOT been granted. Include on a separate attached sheet of paper, if more than one conviction. Applicant must include those convictions outside Canada.
- Offences under the *National Defence Act* are to be included as well as convictions by courts-martial are to be recorded.

SECTION G
- If a naturalized Canadian, it is important to show the certificate number, date of issue. Attach a photocopy of the certificate.
- If born abroad of Canadian parents, please provide a copy of your Certificate of Registration of Birth Abroad.
- If not a Canadian Citizen indicate if application has been made for Citizenship. In this case, passport or identity card number and particulars should be recorded in box "6". Please provide copy of Immigrant Visa or Record of Landing documentation.
- Questions 5 and 6 - Attach a separate sheet of paper if more space is required. Each sheet must be signed.

SECTION H
- As set forth, ensuring current address is recorded first.
- The Postal code is mandatory for the current address, and if known, for previous addresses.
- For rural area, include civic number or lot, concession and township number. → SW-3-12-24-N4 ie.

SECTION I
- Record your present employment first.
- Please note that it may be necessary to contact your present employer.
- Time at school and periods of unemployment are also to be shown; (as well as, secondments, educational leave, and courses of over six months' duration; include supervisor or colleague's name).
- Job-site address is the address where your work is performed and may be different from your employer's address.

NOTE: If you are self-employed or a consultant, or have been self-employed or a consultant, provide the following:
a) Name of employer - give your business name; if not applicable, give your name;
b) No change;
c) Job-site address - give your permanent business address; if not applicable, give your residence address;
d) No change;
e) No change;
f) Supervisor's name - give a name of a person who can verify your employment;
g) No change.

SECTION J
- Is related to determining past employment of security concern. A security official may ask for further details.

SECTION K
- Travel record is for less than six months, if more than this period it is to be recorded as residence in part "H".
- One day visits to countries, such as cruise stopover, do not have to be recorded.
- A security official may ask for details of travel.
- An employee or contractor on Canadian Government business is not required to record details of travel in this section.

SECTION L
- A security official may ask for details in terms of the type of assets and estimated value.

SECTION M
- Character references must be colleagues, peers, and friends who have known you well for over three years and should be able to cover your non-work environment and activities.
- Character references are NOT to include relatives and MUST be residing in Canada.
- Faster processing is facilitated if references listed are in your geographic area.
- Neighbourhood reference is an individual who has known you for over six months preferably at your current address. If not, the individual has been a neighbour during the past five years.

SECTION N
- Complete as requested.

SECTION O
- Question to be answered if not covered in employment section. List last or current unit and dates of total service in the Canadian Armed Forces.
- If more space is required use a separate sheet of paper. Each sheet must be signed.

SECTION P
- Complete as requested.

SUPPLEMENTAL INFORMATION REQUIREMENTS
Persons who have previously completed a SECURITY CLEARANCE and subsequently marry, remarry or commence a common-law partnership are required to submit an original Security Clearance Form with the following parts completed:

For all Security Clearances

Part A - As set forth in each question
Part B - As set forth in each question
Part C - As set forth in each question
Part D - As set forth in each question
Part E - Provide details on parents of new spouse/common-law partner and any children (over the age of 18 years) of the new spouse/common-law partner
Part P - To be signed by person submitting the form

Note: In addition to the above, in those cases where an individual marries or commences a common-law partnership with a Non-Canadian National or Landed Immigrant who has not yet arrived in Canada, the following information is required:

Parts A-D As set forth in each question
Part E - Parents of new spouse/common-law partner, brothers, sisters (include "half and "step" relatives) and any children (over the age of 18 years) of the new spouse/common-law partner
Part H - For new spouse/common-law partnership
Part I - For new spouse/common-law partnership
Part P - To be signed by person submitting the form

CYCLICAL UPDATE REQUIREMENTS
- Levels I+II (10 year update). Complete all portions of the form as per instructions above.
- Level III (5 year update cycle)

With the exceptions of Parts H and I, where the information required is that which covers the period of time since the last submission of a questionnaire, **ALL OTHER** parts of the questionnaire must be completed **IN FULL**.

* Please ensure you review "Additional Instruction" sheet for Form TBS 330-23E

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SECURITY/RELIABILITY INTERVIEW PRE-INTERVIEW QUESTIONNAIRE

- The Pre-Interview Security/Reliability Questionnaire and the Security/Reliability Interview are both integral parts of the RCMP recruiting and security process. They, and the subsequent field investigation, are used to assist in determining suitability and reliability and contribute to the security screening assessment of individuals who seek employment as a member, employee or volunteer of the RCMP or under a contract awarded to, or administered by, the RCMP. Verifications to issue security clearances are carried out to assess an individual's loyalty and reliability as it relates to loyalty. Reliability checks are done to assess an individual's reliability. This is being done in accordance to the Policy on Government Security (PGS) which became effective July 1, 2009.
- You are required to fill the Pre-Interview Questionnaire and return it to the RCMP Human Resources Section when completed. You will soon be contacted to meet with an interviewer to complete the Security/ Reliability Interview.
- Please carefully read and follow the instructions below.

Instruction for the Applicant

- The Pre-Interview Questionnaire (Form 1020-1) is available in both official languages. You may complete the Pre-Interview Questionnaire in the language of your choice.
- Your decision to complete the Pre-Interview Questionnaire and the subsequent Security/Reliability Interview must be voluntary and be based on your desire to pursue employment with, or at, the RCMP.
- You should answer the questions contained in the Pre-Interview Questionnaire accurately, completely, thoroughly and honestly to the best of your knowledge and belief. You should answer the questions contained in the Pre-Interview Questionnaire on your own without the assistance of third parties (e.g. family or friends), considering the personal and sensitive nature of the information provided. You may withdraw from the process at any time or refuse to provide answers to any or all of the questions contained in the Pre-Interview Questionnaire. You should, however, be advised that an incomplete Pre-Interview Questionnaire may result in your disqualification from the employment process.
- You are not required to provide any information in the Pre-Interview Questionnaire that relates to a conviction for which a pardon has been received, or a matter that was processed pursuant to the *Young Offenders Act (R.S.C. 1985, c. Y-1, now repealed)* or the *Youth Criminal Justice Act (S.C. 2002, c. 1).*
- You are under no obligation to provide information about third parties, (e.g. individuals other than yourself), in the Pre-Interview Questionnaire.
- You are under no obligation to disclose any information regarding a crime where you were a victim or complainant.
- You should be aware that, in the event of significant discrepancy between the information you provide in this Pre-Interview Questionnaire and in the context of the Security/Reliability Interview, and the information that surfaces from the RCMP's background investigation, you may be asked to undergo a second interview to explain adverse information.

- Deceit, dishonesty or non-disclosure in answer to questions contained in the Pre-Interview Questionnaire are likely to result in your disqualification from the employment process.
- Should you apply for any other employment with, or at, the RCMP within the next five (5) years, the information provided in this Pre-Interview Questionnaire may be used to reassess your suitability and reliability and for security screening purposes. This may result in your disqualification from the employment process.
- If you are currently employed by, or working at, the RCMP, you should be advised that the information provided in this Pre-Interview Questionnaire may be used in reassessing your suitability and reliability, and in carrying out the security screening process. This may result in your disqualification from the employment process in question. This may also lead, where applicable, to a review for cause and possible revocation of an existing clearance or reliability status, and consequently the dismissal from your current employment with the RCMP.

Notices regarding prior serious criminal offences and serious risk to yourself or the safety of others.

- The information you provide on the Questionnaire and during the Security/Reliability Interview process is collected and used by the RCMP for the purposes of an employment application and security screening. However, if you admit to having committed a serious undetected criminal offence, or are deemed to pose a serious risk to yourself or to the safety of others, the RCMP may disclose information to entities with lawful authority to collect such information (e.g. police of jurisdiction or child protection agencies) for a law enforcement or public safety purpose. While cases of such disclosure are rare and exceptional, the RCMP strongly discourages you from completing the Pre-Interview Questionnaire or attending the Security/ Reliability Interview if you believe this Notice applies to you.

Examples of serious criminal offences include, but are not limited to:
- murder;
- sexual assault;
- child pornography: accessing, possession, distribution, or the making of;
- any crime involving children;
- arson resulting in loss of life or substantial damage;
- forcible confinement;
- robbery;
- crime committed with a facial covering and/or a weapon.

Should you be uncertain if this applies to you, you should consult a lawyer to obtain independent legal advice.

- If you nonetheless chose to pursue the process and admit, on the Pre-Interview Questionnaire or in the context of the Security/Reliability Interview, to having committed one or a number of serious criminal offence(s), be advised that the information may be disclosed to entities with lawful authority to collect such information (e.g. police of jurisdiction or child protection agencies).
- If, in light of the information provided on the Pre-Interview Questionnaire or in the context of the Security / Reliability Interview, you are deemed to pose a serious threat to yourself or to the safety of others, be advised that the information may be disclosed to the entities with lawful authority to collect such information (police of jurisdiction or child protection agencies).
- You are also advised that such disclosures could lead to incident reports being entered into police databases, which could impact future employment or volunteering opportunities, or other activities that require security screening (e.g. employment with schools, banks, etc.).
- You are further advised that such disclosures could also lead to an investigation, arrest, charge(s), criminal prosecution, conviction, and, ultimately, the imposition of a sentence.

Notice regarding the collection and use of personal information by the RCMP

- The RCMP is collecting, on a voluntary basis, the personal information you provide on the Pre-Interview Questionnaire and in the context of the Security/Reliability Interview to assist in determining your suitability and reliability and for security screening purposes. The information requested is essential for making these determinations and, should it not be provided, may result in your disqualification and/or our inability to proceed with the employment process.
- The information is collected under the authority of the *Royal Canadian Mounted Police Act, R.S.C.1985, c. R-10* and the *Financial Administration Act, R.S.C. 1985, c. F-11.* It is protected and managed in conformity with the provisions of the *Privacy Act, R.S.C. 1985, c. P-21* and the *Privacy Regulations, SOR/83-508.*
- The information collected will be stored by the RCMP in Personal Information Bank CMP PPU 065 and be disclosed in conformity with the *Privacy Act.* Under this Act, you have the right to the protection of, access to and correction of your personal information. More details regarding the collection and use of personal information can be found at www.infosource.gc.ca .

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SECURITY/RELIABILITY INTERVIEW PRE-INTERVIEW QUESTIONNAIRE

Office use only	
HRMIS number	File number

Declaration, Acknowledgement, and Consent

Name of applicant	Telephone number

Mailing address

	Applicant's initials
I, the undersigned, have read and understand the previous pages of instruction and notices.	
I am completing this Pre-Interview Questionnaire voluntarily, based on my desire to volunteer, pursue work as a member or employee of the RCMP or under a contract awarded to, or administered by, the RCMP.	
I declare that the information provided in this Pre-Interview Questionnaire is up-to-date, accurate, complete and honest to the best of my knowledge and belief.	
I understand that the consequences of my not being completely honest and forthright in this Pre-Interview Questionnaire could result in me no longer being considered for employment with, or at, the RCMP.	
I understand that I do not have to include any information in this Pre-Interview Questionnaire that relates to a conviction for which a pardon has been received, or a matter that was processed pursuant to the *Young Offenders Act* or the *Youth Criminal Justice Act*.	
I understand that the information provided in this Pre-Interview Questionnaire may affect my opportunities for any other employment with, or at, the RCMP within the next five (5) years, or, where applicable, may affect my current security clearance and employment with, or at, the RCMP.	
I understand that, if I admit to having committed one or more serious undetected criminal offence(s) in this Pre-Interview Questionnaire, actions could be taken, which could lead, ultimately to the imposition of a sentence.	
I understand that, if in light of the answers provided in the Pre-Interview Questionnaire, I am deemed to pose a serious risk to myself or to the safety of others, actions could be taken, which could lead, ultimately to the imposition of a sentence.	
I understand that, in the event of significant discrepancy between the information I provide in this Pre-Interview Questionnaire and in the context of the Security/Reliability Interview and information that surfaces from the RCMP's background investigation, I may be asked to undergo a second interview to explain adverse information for verification and confirmation purposes.	
I declare that I will not divulge the contents and format of this Pre-Interview Questionnaire and of the Security/Reliability Interview to anyone.	
I consent to my personal information being collected, used and disclosed for the purposes identified above.	
I consent to my personal information being used for security screening purposes pursuant to the Treasury Board's Policy on *Government Security*.	

Signature of applicant _____ Date _____

SECURITY/RELIABILITY INTERVIEW
PRE-INTERVIEW QUESTIONNAIRE

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Please complete the following information and return.This questionnaire will form part of your Security/Reliability Interview that will be completed.

Office use only	
HRMIS number	File number

Name of applicant	Telephone number

1. List the names of everyone of 18 years old or more you have lived with at each of your addresses over the past ten years? (except people who were just visiting for a few days)

2. Do you have any family* or friends** living outside Canada?

☐ Yes If yes, list their names below ☐ No

* Family refers to spouse/cohabitant, parents and/or guardians, spouse's/cohabitant's parents and/or guardians, children, brothers and sisters (including step and half relative).

** Friend refers to persons with whom the interviewee have associated (e.g., person seen frequently) over the last five years, excluding relatives, former employers, supervisors.

SECURITY/RELIABILITY INTERVIEW
PRE-INTERVIEW QUESTIONNAIRE

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HRMIS number	File number

Name of applicant	Telephone number

3. List the names of your closest friends and associates* and describe your relationship with them (include name, address, relationship and age).

4. List all clubs, organizations, or associations that you belong to or have belonged to or that you have contributed financially or otherwise supported.

* Associate refers to a person who joins with others in some activity and/or keep company with, hang out with.

SECURITY/RELIABILITY INTERVIEW
PRE-INTERVIEW QUESTIONNAIRE

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HRMIS number	File number

Name of applicant	Telephone number

5. Have you in the past five years traveled outside of Canada, including USA?

☐ No ☐ Yes, complete this section

Bring your passport(s) to the interview for verification and confirmation purposes.

Countries visited	Approx. date (yyyy-mm)	Duration	Reasons	Contact with government officials or police? Difficulties or unusual incidents? (If yes, please specify)

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HRMIS number	File number

Name of applicant	Telephone number

6. Financial assessment

Your relationship with money may have an impact in obtaining either, a reliability status, a security clearance and/or site/facilities access. Please answer the following questions and be prepared to explain them to the interviewer.

A - Does your financial situation cause you any stress? If so, what level of stress do you feel: low, medium or high and why?

B - What is your ratio of debt versus income?

C - How has this changed over the past five years, if at all?

D - How do you expect your financial situation to evolve over the next 5 years?

E - If you are not satisfied with your finances, what are you doing to improve your situation?

SECURITY/RELIABILITY INTERVIEW
PRE-INTERVIEW QUESTIONNAIRE

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Office use only	
HRMIS number	File number

Name of applicant	Telephone number

7. Have any members of your immediate family, close friends or associates been involved (to your knowledge) in criminal activity, meaning been suspected, charged or convicted of any criminal offences? This involvement should not be limited to the following offences (assault, domestic violence, theft, fraud, shoplifting, drug offenses, hack into a computer, drinking and driving, hunting without a permit.)

☐ No ☐ Yes, complete this section.

i)	Name of individual		Date of birth (yyyy-mm-dd)
	Home address	Involvement/Activity	
ii)	Name of individual		Date of birth (yyyy-mm-dd)
	Home address	Involvement/Activity	
iii)	Name of individual		Date of birth (yyyy-mm-dd)
	Home address	Involvement/Activity	
iv)	Name of individual		Date of birth (yyyy-mm-dd)
	Home address	Involvement/Activity	
v)	Name of individual		Date of birth (yyyy-mm-dd)
	Home address	Involvement/Activity	

Analyst/Interviewer/Risk manager comments/notes
(For office use only)

SECURITY/RELIABILITY INTERVIEW
PRE-INTERVIEW QUESTIONNAIRE

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HRMIS number	File number

Name of applicant	Telephone number

8. Have you ever used or experimented with any illegal drugs and/or have you abused any pharmaceutical (prescription) drugs in the past five years?

☐ No

☐ Yes, please provide the requested information for each drug and/or prescription drugs and explain circumstances of use below.

Drug	Method and frequency of use	Approximate dates of use (first time, last time)	Circumstances/ Motives for use	Means to obtain drugs	Financial outlay (How much do/did you spend on drugs on a monthly basis?)

Analyst/Interviewer/Risk manager comments/notes
(For office use only)

SECURITY/RELIABILITY INTERVIEW
PRE-INTERVIEW QUESTIONNAIRE

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Name of applicant

Telephone number

9. Please provide your current e-mail address(es) and briefly describe your on-line activities (e.g. social networking such as Facebook, Twitter, Myspace).

10. Declaration

I, undersigned, hereby declare that the information I have provided in this Security/Reliability Interview - Pre-Interview Questionnaire is up to date, accurate, complete and honest, to the best of my knowledge and belief.

Signature of applicant

Date

Part 1 General

1.1 ADMINISTRATIVE

.1 Project meetings will be scheduled throughout the progress of the work and at the call of Departmental Representative.

.2 Provide physical space and make arrangements for meetings.

.3 The Consultant shall chair meetings.

.4 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

.1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Agenda to include:

- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work: in accordance with Section 01 32 16 - Construction Progress Schedules - Bar (GANTT) Chart.
- .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Delivery schedule of specified equipment.
- .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .8 Owner provided products and work.
- .9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .12 Monthly progress claims, administrative procedures, photographs, hold backs.
- .13 Appointment of inspection and testing agencies or firms.
- .14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work, progress meetings will be held on a regular basis. Schedule to be determined.

.2 Contractor, major Subcontractors involved in Work, Departmental Representative, Consultant and Owner's representatives are to be in attendance.

.3 Minutes of meetings will be recorded by the Consultant. Minutes will be distributed within 72 hours.

.4 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for effect on construction schedule and on completion date.
.12 Other business.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Project Schedule and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

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

.2 Submit to Departmental Representative within 7 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

1.4 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.

.1 Project milestone will be identified through discussion with the Contractor and Departmental Representative at the outset of the project.

1.5 PROJECT SCHEDULE REPORTING

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

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.6 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

END OF SECTION

1.1 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

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

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

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

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Submit where required in the specifications, shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Saskatchewan, Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 7 days for Departmental Representative's review of each submission.

.5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.9 After Departmental Representative's review, distribute copies.

.10 Submit 6 copies of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit 6 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit 6 copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of contract award for project.

.13 Submit 6 copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit 6 copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit 6 copies of manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.16 Submit 6 copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.17 Delete information not applicable to project.

.18 Supplement standard information to provide details applicable to project.

.19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.20 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that Departmental Represenetaive approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains

solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

.21 Electronic submission of Shop Drawings

.1 Electronic Shop Drawings (PDF format) shall not exceed 11x17 actual size. Electronic transfer of shop drawings relies on Architect and Engineering Consultants to print a record copy for their files - this can be done providing shop drawings do not exceed 11x17. Larger shop drawings would require hard copies for review.

.2 General Contractor to review shop drawing and place their electronic stamp signifying review.

.3 General Contractor to email all shop drawings to Architect with copy to Engineering Consultant as applicable.

.4 Engineering Consultant to review and place their electronic stamp / marks up, then email to Architect only (Engineering Consultant will not copy anyone else).

.5 Architect to check for coordination and transmit reviewed shop drawings by email to General Contractor.

1.3 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's business address.

.3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

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

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control and as specified in each applicable Section.

END OF SECTION

Part 1 General

1.1 SITE PROTECTION

.1 Prevent damage to all existing items which are to remain (e.g. fencing, signs, trees, shrubs, turf, natural features, buildings, asphalt, surface or underground utility lines). Make good any damage.

.2 Preserve and protect existing benchmarks and survey monuments. Inform Consultant immediately if benchmarks or survey monuments are encountered during construction. Make good any damage.

1.2 FINES AND PENALTIES

.1 Abuse to any plant material or unauthorized pruning or removal, in whole or in part, of plant material is not permitted.

.2 Be responsible to monitor all sub-trades for plant material abuse. Restitution for all damages found will be solely upon the Contractor.

.3 A fine for not less than plant material repair or replacement costs plus for loss of aesthetic or intrinsic value per individual plant, will be levied. The decision of the Consultant in determination of damage will be final.

1.3 FIRES

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

1.4 DISPOSAL OF WASTES

.1 Burying of rubbish and waste materials on site is not permitted.

.2 Disposal of waste, or volatile materials such as mineral, spirits, oil or paint thinner, into water-ways, storm or sanitary sewers prohibited.

.3 Remove rubbish, waste products and debris in accordance with regulations of authorities having jurisdiction.

1.5 CARE OF EXISTING PLANT MATERIAL

.1 Use all means necessary to protect plant materials before start up and during construction.

.2 Do not disturb the existing grade or store heavy equipment within the drip line of existing trees. If access is required within the drip line of existing trees, then protect the access route with a moveable timber bridge to cushion/spread weight of vehicles over a greater surface area. Consultant to approve access route and timber bridge construction before work begins.

.3 Protection of branches that are interfering with construction: All branches that pose temporary interference to the process of construction, are to be tied up or back under the supervision of the Consultant. Bindings thus provided will be removed as soon as feasible by the completion of construction (or phase of construction) to reduce possible water sprouting or structural damage.

.4 Pruning trees that are interfering with construction: Remove interfering branches, without injury to trunks only when directed by the Consultant. The Consultant will determine all trees which require pruning, the extent of pruning allowed, and will identify the amount of compensatory pruning required for loss of roots or tops. The Contractor will adhere to limitations of on-site construction movement around identified trees.

.5 Monitor condition of trees, in particular, possible wind damage or snow load damage to branches that are tied up.

.6 Wash foliage should excessive construction dust build up on plant material.

1.6 TRAFFIC PROVISIONS AND STORAGE

.1 Determine interference of trees and their root zones before moving equipment or supplies on site to avoid any damage to trees.

.2 Traffic provisions:

.1 Use only approved access routes for vehicular and heavy pedestrian movement.

.3 Parking areas shall be pre-designated at each construction site.

.1 Contractor responsible to provide soil aeration of compacted tree root areas through holes bored into the soil at the direction of the Consultant.

.4 Storage:

.1 Store construction materials, fuels, chemicals, etc., in approved areas only.

.2 Store equipment, soil, building materials and debris beyond the drip-line of trees.

1.7 EXCAVATING ADJACENT TO EXISTING TREES

.1 Locate and stake locations of electric service utility lines, and other underground construction.

.2 Excavations within 2.0 metres of trees will be permitted only with prior approval of the Consultant. Prior to excavating, all tree roots along the side to be exposed must be severed with a trencher to a depth of 500mm along the line of excavation. Prune all exposed roots with a sharp pruning tool, in order to provide a clean severance of roots.

.3 Excavations beyond two (2) metres from trees do not require trenching. Immediately after excavation, prune all exposed roots with a sharp pruning tool, in order to provide a clean severance of roots. Place a tarp over excavation wall to prevent exposed roots from drying out. Backfill around tree roots as soon as possible.

1.8 HERBICIDES / PESTICIDES

.1 Use only with approval of Consultant and Owner and in strict accordance with applicable regulations and manufacturer’s instructions.

1.9 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

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

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.3 Province of Saskatchewan

.1 Occupational Health and Safety Act, 1993, S.S. 2005.

1.2 SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Submit 1 copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Requirements.

.7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

.8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

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

.10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.4 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

.1 Schedule and administer Health and Safety Meeting with Departmental Representative prior to commencement of Work.

1.6 REGULATORY REQUIREMENTS

.1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

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

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Regulations, 1996.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.10 UNFORSEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have site-related working experience specific to activities associated with overhead work.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work .

1.12 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

1.13 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.

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

.3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

.1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

.2 Do blasting operations in accordance with Section 31 23 16 Utility Trench Excavation and Backfill.

1.15 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 26 – Environmental Protection.

.2 Section 26 32 10 – Diesel Electric Generating Units (Liquid Cooled)

.3 Section 33 56 14 – Above Ground Fuel Storage Tanks.

1.2 REFERENCES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

.2 Reference Standards:

.1 Canadian Environmental Assessment Act, 2012

.2 Canadian Environmental Protection Act, 1999

.1 Federal Halocarbon Regulations, 2003 (SOR/2003-289)

.2 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, 2008 (SOR/2008-197)

.3 Canadian Council of Ministers of the Environment, Environmental Code for Above Ground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003.

.3 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008 Stipulated Price Contract.

.4 U.S. Environmental Protection Agency (EPA)/Office of Water

.1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

.2 EPA General Construction Permit (GCP) 2012.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for all above ground fuel storage tanks, including those that serve electrical generators, and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS MSDS in accordance with Section 01 33 00 – Submittal Requirements.

.3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.

.4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.6 Include in Environmental Protection Plan:

.1 Name of person responsible for ensuring adherence to Environmental Protection Plan.

.2 Name and qualifications of person responsible for manifesting hazardous waste to be removed from site.

.3 Name and qualifications of person responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

.1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

.1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.13 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from

construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.15 Pesticide treatment plan to be included and updated, as required.

.7 In accordance with federal regulations provide the following documentation to the Departmental Representative after construction and before the system can be commissioned and/or filled (tanks 2500L or less that serve generators are exempt from this requirement):

.1 Copy of stamped permit drawings;

.2 Copy of tank shop drawings, stamped as verified by manufacturer's representative

.3 As-constructed survey drawing of the storage tank system, stamped by a professional surveyor (professional engineer or geo-scientist) licensed to practice in the Province of Saskatchewan.

.4 Refer to detailed requirements of submission within Section 33 56 14 Above Ground Fuel Storage Tanks.

1.4 FIRES

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

1.5 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

.3 Provide temporary drainage and pumping required to keep excavations and site free from water.

.4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

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

1.6 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties as indicated in related Sections.

.2 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.3 Minimize stripping of topsoil and vegetation.

.4 Restrict tree removal to areas indicated.

1.7 WORK ADJACENT TO WATERWAYS

.1 Construction equipment to be operated on land only.

.2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative..

.3 Waterways to be kept free of excavated fill, waste material and debris.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

1.8 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where directed by Departmental Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 HISTORICAL/ARCHAEOLOGICAL CONTROL

.1 Provide historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.

.2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

1.10 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Burying rubbish and waste materials is not permitted.

.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.2 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

.2 Smoking on site is restricted to within personal vehicles or designated smoking locations.

END OF SECTION

Part 1 General

1.1 INSPECTION

.1 Allow Departmental Representative and Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative or Consultant, instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.3 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.4 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.5 REPORTS

.1 Submit two (2) copies of inspection and test reports to Departmental Representative.

.2 Provide copies to subcontractor of work being inspected or tested.

1.6 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.7 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations acceptable to Departmental Representative and as specified in specific Section.

.3 Prepare mock-ups for Departmental Representative and Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.

.6 Mock-ups may remain as part of Work.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 TEMPORARY HEATING AND VENTILATION

.1 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.2 Ventilating:

- .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
- .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
- .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.3 Permanent heating system of building may be used when available. Obtain written approval from Departmental Representative prior to using equipment. Be responsible for damage to heating system if use is permitted.

.4 Refer to Mechanical and Electrical sections for specific requirements regarding temporary use of utilities.

.5 On completion of Work for which permanent heating system is used, provide service maintenance to system at discretion of the Departmental Representative.

.6 Pay costs for maintaining temporary heat, when not using permanent heating system.

.7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

- .1 Conform with applicable codes and standards.
- .2 Enforce safe practices.
- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.
- .5 Vent direct-fired combustion units to outside.

.8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.4 TEMPORARY POWER AND LIGHT

.1 Provide and maintain temporary lighting throughout project. Existing lighting and power systems may be utilized.

1.5 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone, fax, data hook up, lines and equipment necessary for own use and use of Departmental Representative.

1.6 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by Authorities Having Jurisdiction and governing codes, regulations and bylaws.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.

1.2 SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute work expeditiously.

.5 Remove from site all such work after use.

1.4 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, and temporary stairs.

1.5 HOISTING

.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists and cranes to be operated by qualified operator.

.3 Provide protective coverings for finish surfaces of cars and entrances.

1.6 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 CONSTRUCTION PARKING

.1 Parking will be permitted on site.

.2 Provide and maintain adequate access to project site.

1.8 OFFICES

.1 Provide and maintain, during the entire progress of the Work, a suitable office on the site, for own use, with suitable tables or benches for the examination of drawings, specifications, etc., and where all notices and instructions from the Consultant may be received and acknowledged. Provide suitable meeting space for site meetings. Provide adequate heating, ventilating and lighting. Location of these offices to be coordinated with the Departmental Representative.

.2 Provide marked and fully stocked first-aid case in a readily available location.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 Contractor shall be responsible for cleaning and maintenance of designated facilities.

1.11 CONSTRUCTION SIGNAGE

.1 No signs or advertisements, other than warning signs, are permitted on site.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC AND PEDESTRIANS

.1 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.

.2 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.3 Protect travelling public from damage to person and property.

.4 Do not block roads without obtaining approval to do so from the Departmental Representative.

.5 Contractor's traffic on roads selected for hauling material shall not interfere with on-going training on site.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.8 Dust control: adequate to ensure safe operation at all times.

.9 Provide snow removal during period of Work.

1.13 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways on an on-going basis.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.2 GUARD RAILS, BARRICADES, AND SIGNAGE

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

.2 Provide Construction Zone warning and access control signage.

1.3 HOARDING

.1 Erect temporary site enclosure using 1.8 m high chainlink fence with steel posts spaced at maximum 2.4 m on centre. Maintain fence in good repair.

.2 Provide lockable truck entrance gates and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

.3 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.4 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.5 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers and finished areas of Work.

.2 Maintain and relocate protection until such work is complete.

.3 Maintain negative pressure in area of dust generating work. Exhaust directly to the exterior.

1.6 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.7 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.8 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.9 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.10 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Be responsible for damage incurred due to lack of or improper protection.

1.11 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General14045

1.1 WORK INCLUDED

.1 Protection and care of existing trees to be retained.

1.2 RELATED WORK

.1	Site Preparation	Section 02 41 13
.2	Topsoil Stripping and Stockpiling	Section 31 14 13

1.3 CARE OF EXISTING PLANT MATERIAL

.1 Use all means necessary to protect plant materials before start up and during construction. Review working conditions on-site, prior to start of construction, with Consultant.

.2 Do not disturb the existing grade or store heavy equipment within the drip line of existing trees. If access is required within the drip line of existing trees, then protect the access route with a moveable timber bridge to cushion/spread weight of vehicles over a greater surface area. Consultant to approve access route and timber bridge construction before work begins.

.3 Provide drainage where, as a result of construction, water is ponding over existing root zones.

.4 Protection of branches that are interfering with construction: Branches that pose temporary interference to the process of construction, are to be tied up or back under the supervision of the Consultant. Bindings thus provided will be removed as soon as feasible after the completion of construction (or phase of construction) to reduce possible water sprouting or structural damage.

.5 Pruning trees that are interfering with construction: Work to be undertaken by a Certified Arborist. Remove interfering branches, without injury to trunks. The Consultant, in consultation with the Arborist, will determine all trees which require pruning, the extent of pruning allowed, and will identify the amount of compensatory pruning required for loss of roots or tops. The Contractor will adhere to limitations of on-site construction movement around identified trees.

.6 Monitor condition of trees, in particular, possible wind damage or snow load damage to branches that are tied up.

.7 Wash foliage should excessive construction dust build up on plant material.

1.4 TRAFFIC PROVISIONS AND STORAGE

.1 Determine interference of trees and their root zones, before moving equipment or supplies on site, to avoid any damage to trees.

.2 Traffic provisions:

.1 Use only approved access routes for vehicular and heavy pedestrian movement. Parking areas shall be pre-designated at each construction site.

.2 Contractor responsible to provide soil aeration of compacted tree root areas through holes bored into the soil at the direction of the Consultant.

.3 Storage:

.1 Store construction materials, fuels, chemicals, etc., in approved areas only.

.2 Store equipment, soil, building materials and debris beyond the dripline of trees.

1.5 EXCAVATING ADJACENT TO EXISTING TREES

.1 Locate and stake locations of electrical service, utility lines, and other underground construction.

.2 Place all underground lines in utility "corridors" to reduce root zone disturbance on site.

.3 Underground service/utility line installations within two (2) metres of trees are to be tunnelled at a minimum depth of 600mm. Review the location of the utility line with the Consultant, for approval before tunnelling.

.4 Excavations within 1.5 - 2.0 metres of trees will be permitted only on one side of any tree. Prior to excavating, all tree roots along the side to be exposed must be severed with a trencher to a depth of 500mm along the line of excavation. Prune all exposed roots with a sharp pruning tool, in order to provide a clean severance of roots.

.5 Excavations beyond two (2) metres from trees do not require trenching. Immediately after excavation, prune all exposed roots with a sharp pruning tool, in order to provide a clean severance of roots. Place a tarp over excavation wall to prevent exposed roots from drying out. Backfill around tree roots as soon as possible.

1.6 HOARDING REQUIREMENTS TO PROTECT TREES

.1 Contractor to erect hoardings in compliance with the standards outlined below:

.1 Trees within 3 to 5 metres of construction: standard snow fence at farthest possible distance from trees.

.2 Trees within 1 to 3 metres of construction: plywood 12mm thick, 1220mm height, enclosing trees at farthest possible distance from trees.

.3 Trees within 1 metre of construction: 39 x 89 x 2400mm boards secured vertically at 300mm intervals around tree trunk with strapping or equivalent.

.2 Contractor is responsible for costs of erecting, maintaining and removing hoardings, and for regular watering and maintenance of trees while so enclosed.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.4 Cost for such testing will be born by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

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

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

1.3 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber, steel members, doors and frames on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

1.6 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.10 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Departmental Representative of conflicting installation. Install as directed.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

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

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.15 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location and depth of capped service.

END OF SECTION

Part 1 General

1.1 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practice in Place of Work, acceptable to Departmental Representative.

1.2 SURVEY REFERENCE POINTS

.1 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.2 Make no changes or relocations without prior written notice to Departmental Representative.

.3 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.4 Require surveyor to replace control points in accordance with original survey control.

1.3 SURVEY REQUIREMENTS

.1 Existing base horizontal and vertical control points are designated on drawings.

.2 Establish two permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.3 Establish lines and levels, locate and lay out, by instrumentation.

.4 Stake for grading, fill and top soil placement and landscaping features.

.5 Stake slopes and berms.

.6 Establish pipe invert elevations.

.7 Stake batter boards for foundations.

.8 Establish foundation column locations and floor elevations.

.9 Establish lines and levels for mechanical and electrical work.

1.4 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

.2 Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative

1.5 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Departmental Representative of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.6 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

.4 In accordance with federal regulations provide the following documentation to the Departmental Representative after construction and before the outdoor gas storage and dispensing tank and fuel oil storage tank can be commissioned and/or filled:

.1 As-constructed survey drawing of both storage tank systems, stamped by a professional surveyor licensed to practice in the Province of Saskatchewan.

.2 Coordinate requirements of submission with Section 33 54 16 Above Ground Fuel Storage Tanks.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit name and address of Surveyor to Departmental Representative.

.2 On request of Departmental Representative submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.2 FORMS

.1 Special forms may be required during the course of this Work. Forms will be supplied by the Departmental Representative.

1.3 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping or firestopping sealant material using UL or ULC rated assembly in accordance with manufacturer's instructions.

.12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise. Coordinate Work with mechanical and electrical divisions.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times. Do not burn waste materials on site.

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

.4 Provide on-site containers for collection of waste materials and debris.

.5 Dispose of waste materials and debris off site.

.6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

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

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy. Remove debris and surplus materials from accessible concealed spaces.

.3 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.4 Vacuum carpet in renovated areas and where construction traffic occurs. If heavily soiled, carpeting shall be commercially steam cleaned. This will be at the discretion of the Departmental Representative.

.5 Clean and wax areas of resilient sheet and tile flooring in renovated areas, where required by specification section.

.6 Dust all horizontal surfaces, clean all glass and wipe down walls in renovated areas.

END OF SECTION

Part 1 General

1.1 WASTE MATERIAL STORAGE, HANDLING AND PROTECTION

.1 Store materials to be salvaged in locations as directed by Departmental Representative.

.2 Unless specified otherwise, materials for removal do not become Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from required list of salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.5 Protect salvaged materials from movement or damage.

.6 Provide on-site facilities for collection, handling, and storage of anticipated quantities of waste materials.

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

1.2 DIVERSION OF MATERIALS

.1 Separate materials and equipment required to be salvaged from general waste stream and stockpile in appropriate storage area, as reviewed by Departmental Representative and consistent with applicable fire regulations.

.2 On-site sale of salvaged materials is not permitted.

1.3 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste, volatile materials, mineral spirits, oil, and paint thinner into waterways, storm, or sanitary sewers.

1.4 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Maintain security measures established by existing facility and where required provide temporary security measures approved by Departmental Representative.

.3 Burning of waste on site is not permitted.

1.5 SCHEDULING

.1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.Execution

1.6 APPLICATION

.1 Handle waste materials in accordance with appropriate regulations and codes.

1.7 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

1.8 SCHEDULE

.1 Salvage the following equipment/materials for owner re-use:

.1 Boulders larger than 600x600x600mm and smaller than 1000x1000x1500mm created by blasting existing rock for site servicing installation or discovered during grubbing and excavation are to be salvaged for use in the landscape. Stockpile on site until final placement can be coordinated with Departmental Representative.

END OF SECTION

Part 1 General

1.1 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Departmental Representative Inspection.

.2 Departmental Representative Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Certificates required by Fire Commissioner and Utility companies have been submitted.

.5 Operation of systems have been demonstrated to Owner's personnel.

.6 Commissioning of systems is complete and commissioning forms have been completed.

.7 Work is complete and ready for final inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, Consultants and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

.5 Where re-inspection is required due to uncompleted deficiencies, the time required by the Departmental Representative and Consultants will be recorded and reimbursement of this time may be charges back to the Contractor by deducting from amounts retained.

1.2 CLEANING

.1 In accordance with Section 01 74 11 - Cleaning.

.2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

.2 Refer to Mechanical and Electrical Divisions for information specific to the mechanical and electrical close-out submittals.

.3 In accordance with federal regulations provide the following documentation to the Departmental Representative after construction and before the outdoor gas storage and dispensing tank and fuel oil storage tank can be commissioned and/or filled:

- .1 Copy of stamped permit drawings;
- .2 Copy of tank shop drawings, stamped as verified by manufacturer's representative
- .3 As-constructed survey drawing of both storage tank systems, stamped by a professional surveyor licensed to practice in the Province of Saskatchewan.
- .4 Coordinate requirements of submission with Section 33 54 16 Above Ground Fuel Storage Tanks.

.4 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.5 Copy will be returned after final inspection, with Departmental Representative's comments.

.6 Revise content of documents as required prior to final submittal.

.7 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals in English.

.8 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.9 Furnish evidence, if requested, for type, source and quality of products provided.

.10 Defective products will be rejected, regardless of previous inspections. Replace products at Contractor's own expense.

.11 Pay costs of transportation.

1.2 FORMAT

.1 Organize data as instructional manual.

.2 Provide two (2) bound copies including 1 PDF copy on DVD or CD in each of the manuals.

.3 Provide two (2) additional PDF copies on DVD or CD.

.4 Binders: cloth, hard covered, expandable, loose leaf paper size 219 x 279 mm. Colour "black." Provide two (2) copies.

.5 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.6 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents. Lettering to be "gold" colour.

.7 Provide printed title on DVD/CD version to coincide with title on bound version.

.8 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.9 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.10 Text: manufacturer's printed data, or typewritten data.

.11 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.3 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Shop Drawings: illustrating details of a portion of work.

.4 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.5 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.6 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.4 AS-BUILTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

1.5 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of opaque drawings, provided by Departmental Representative.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

.7 Refer to Mechanical and Electrical Divisions for information specific to the mechanical and electrical close-out submittals.

1.6 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.

.15 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.8 SPARE PARTS

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.6 Additional Requirements: as specified in individual specifications sections.

1.9 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.10 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.11 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.12 WARRANTIES AND BONDS

.1 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.

.2 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.4 Respond in a timely manner to oral or written notification of required construction warranty repair work.

.5 Written verification will follow oral instructions. Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.13 PRE-WARRANTY CONFERENCE

.1 Meet with Departmental Representative, to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Departmental Representative.

.2 Departmental Representative will establish communication procedures for:

.1 Notification of construction warranty defects.

.2 Determine priorities for type of defect.

.3 Determine reasonable time for response.

.3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.

.2 Refer to all project Specification Sections for detailed description of commissioning requirements.

.3 Acronyms:

.1 Cx - Commissioning.
.2 Cx Authority – Commissioning Authority.
.3 EMCS - Energy Monitoring and Control Systems.
.4 O&M - Operation and Maintenance.
.5 PI - Product Information.
.6 PV - Performance Verification.
.7 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

.1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:

.1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
.2 Ensure appropriate documentation is compiled into the O&M manual.
.3 Effectively train O&M staff.

.2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.

.1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
.2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

.3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

.1 Commissioning (Cx) Plan. The Contractor will be responsible for developing the Commissioning (Cx) Plan.

.2 The parties responsible for Cx activities shall be identified in the Commissioning (Cx) Plan.

.3 Cx to be a line item of Contractor's cost breakdown.

.4 Cx activities supplement field quality and testing procedures described in relevant technical sections.

.5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the installed systems are proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities include transfer of critical knowledge to facility operational personnel.

.6 Departmental Representative will issue Interim Acceptance Certificate when:

.1 Completed Cx documentation has been received, reviewed for suitability and approved by Cx Authority.

.2 Equipment, components and systems have been commissioned.

.3 O&M training has been completed.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

.1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Consultant and Cx Authority, to ensure effective performance.

.2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

.1 Before Construction:

.1 Review contract documents, confirm by writing to Departmental Representative:

.1 Adequacy of provisions for Cx.

.2 Aspects of design and installation pertinent to success of Cx.

.2 During Construction:

.1 Co-ordinate provision, location and installation of provisions for Cx.

.3 Before start of Cx:

.1 Have Cx Plan up-to-date.

.2 Ensure installation of related components, equipment, sub-systems, systems is complete.

.3 Fully understand Cx requirements and procedures.

.4 Have Cx documentation shelf-ready.

.5 Understand completely design criteria and intent and special features.

.6 Submit complete start-up documentation to Departmental Representative.

.7 Have Cx schedules up-to-date.

.8 Ensure systems have been cleaned thoroughly.

.9 Complete TAB procedures on systems; submit TAB reports to Departmental Representative for review and approval.

.10 Ensure "As-Built" system schematics are available.

.4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

.1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.

.2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 SUBMITTALS

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

.1 Submit:

.1 Name of Contractor's Cx agent.

.2 Draft Cx documentation.

.3 Preliminary Cx schedule.

.2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.

.3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 8 weeks prior to start of Cx.

.4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

.1 Refer to individual equipment Specification Sections for (Cx) forms: Installation Check Lists, Product Information (PI) and Performance Verification (PV) forms for requirements.

.2 Consultant and Cx Authority to review and approve Cx documentation.

.3 Provide completed and approved Cx documentation to Departmental Representative.

1.9 COMMISSIONING SCHEDULE

.1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16 - Construction Progress Schedules.

.2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:

.1 Approval of Cx reports.

.2 Verification of reported results.

.3 Repairs, retesting, re-commissioning, re-verification.

.4 Training.

1.10 COMMISSIONING MEETINGS

.1 Cx meetings will be held following project meetings and as specifically requested.

.2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.

.3 Cx meetings will be held on a regular basis until commissioning deliverables have been addressed.

.4 At approximately 50% completion stage a separate Cx scope meeting will be held to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:

.1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.

.2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.

.5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.

.6 Meeting will be chaired by Contractor, who will record and distribute minutes.

.7 Ensure subcontractors and relevant manufacturer representatives are present at 50% and subsequent Cx meetings and as required.

1.11 STARTING AND TESTING

.1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.12 WITNESSING OF STARTING AND TESTING

.1 Provide 14 days notice prior to commencement.

.2 Departmental Representative may witness start-up.

.3 Consultant and Cx Authority will witness testing for PV.

.4 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.13 MANUFACTURER'S INVOLVEMENT

.1 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative.

.1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.

.2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.

.2 Integrity of warranties:

.1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.

.2 Verify with manufacturer that testing as specified will not void warranties.

.3 Qualifications of manufacturer's personnel:

.1 Experienced in design, installation, and operation of equipment and systems.

.2 Ability to interpret test results accurately.

.3 To report results in clear, concise, logical manner.

1.14 PROCEDURES

.1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.

.2 Conduct start-up and testing in following distinct phases:

.1 Included in delivery and installation:

.1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.

.2 Visual inspection of quality of installation.

.2 Start-up: follow accepted start-up procedures.

.3 Operational testing: document equipment performance.

.4 System PV: include repetition of tests after correcting deficiencies.

.5 Post-substantial performance verification: to include fine-tuning.

.3 Correct deficiencies and obtain approval from Consultant and Cx Authority after distinct phases have been completed and before commencing next phase.

.4 Documents require tests on approved PV forms.

.5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:

.1 Minor equipment/systems: implement corrective measures approved by Departmental Representative.

.2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.

.3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.

.1 Rejected equipment to be remove from site and replace with new.

.2 Subject new equipment/systems to specified start-up procedures.

1.15 START-UP DOCUMENTATION

.1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.

.2 Start-up documentation to include:

.1 Factory and on-site test certificates for specified equipment.

.2 Pre-start-up inspection reports.

.3 Signed installation/start-up check lists.

.4 Start-up reports,

.5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

.1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.

.2 With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation.

.3 Operate and maintain systems for length of time required for commissioning to be completed.

.4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.17 TEST RESULTS

.1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.

.2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

.1 Notify Departmental Representative at least 14 days prior to start of Cx.

.2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.19 INSTRUMENTS / EQUIPMENT

.1 Submit to Departmental Representative for review and approval:

.1 Complete list of instruments proposed to be used.

.2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date, and calibration accuracy.

.2 Provide the following equipment as required:

.1 2-way radios.

.2 Ladders.

.3 Equipment as required to complete work.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

.1 Carry out Cx:

.1 Under actual operating conditions, over entire operating range, in all modes.

.2 On independent systems and interacting systems.

.2 Cx procedures to be repeatable and reported results are to be verifiable.

.3 Follow equipment manufacturer's operating instructions.

.4 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

.1 Consultant and Cx Authority to witness activities and verify results.

1.22 AUTHORITIES HAVING JURISDICTION

.1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.

.2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.

.3 Provide copies to Departmental Representative within 10 days of test and with Cx report.

1.23 COMMISSIONING CONSTRAINTS

.1 Commissioning will be undertaken on new equipment and modified equipment provided under this contract. Where these are tied into existing building systems the Cx will need to be coordinated with the building operator.

1.24 EXTRAPOLATION OF RESULTS

.1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.25 EXTENT OF VERIFICATION

.1 Provide manpower and instrumentation to verify up to 100% of reported results.

.2 Number and location to be at discretion of Departmental Representative.

.3 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.

.4 Review and repeat commissioning of systems if inconsistencies found in more than 20% of reported results.

.5 Perform additional commissioning until results are acceptable to Consultant and Cx Authority.

1.26 REPEAT VERIFICATIONS

.1 Assume costs incurred by Departmental Representative for third and subsequent verifications where:

.1 Verification of reported results fail to receive Consultant's or Cx Authority approval.

.2 Repetition of second verification again fails to receive approval.

.3 Departmental Representative deems Contractor's request for second verification was premature.

1.27 SUNDRY CHECKS AND ADJUSTMENTS

.1 Make adjustments and changes which become apparent as Cx proceeds.

.2 Perform static and operational checks as applicable and as required.

1.28 DEFICIENCIES, FAULTS, DEFECTS

.1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.

.2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.29 COMPLETION OF COMMISSIONING

.1 Upon completion of Cx leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.

.3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Cx Authority.

1.30 ACTIVITIES UPON COMPLETION OF COMMISSIONING

.1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.31 TRAINING

.1 Provide training in accordance with Section 01 91 41 - Commissioning (Cx) - Training and requirements of Contract Specification Sections.

1.32 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

.1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.33 OCCUPANCY

.1 Cooperate fully with Departmental Representative during stages of acceptance; facility will remain fully occupied.

1.34 INSTALLED INSTRUMENTATION

.1 Use instruments installed under Contract for TAB and PV if:

.1 Accuracy complies with these specifications.

.2 Calibration certificates have been deposited with Departmental Representative.

.2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.35 PERFORMANCE VERIFICATION TOLERANCES

.1 Application tolerances:

.1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Unless noted otherwise in this contract Specifications, to be within +/- 10% of specified values.

.2 Instrument accuracy tolerances:

.1 To be of higher order of magnitude than equipment or system being tested.

.3 Measurement tolerances during verification:

.1 Unless noted otherwise in this contract Specifications actual values to be within +/- 2 % of recorded values.

1.36 OWNER'S PERFORMANCE TESTING

.1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

Part 2 Schedules

2.1 SCHEDULE OF ARCHITECTURAL SYSTEMS

.1 All door hardware and controls: door hardware and electronic controls function.

2.2 CX SCHEDULE FOR MECHANICAL SYSTEMS

.1 Produce schedule of Cx activities in bar chart format to a scale that will ensure legibility. Bar chart to indicate:

.2 Sequences of testing equipment and systems, interrelationship between tests, duration of tests and training periods.

.3 Cx resources which will be committed to this project to ensure completion by prescribed dates.

.1 Training Plan.

.2 Cx Documentation Plan.

.3 Water/fire mains and related site fire hydrants:

.4 Commission as soon as installation is complete, using procedures described in NFPA reference standards to provide protection for exterior envelope of new building during construction.

.5 Wet pipe sprinkler systems:

.1 Test completed systems in accordance with NFPA 13.

.6 Plumbing systems:

.1 To be filled, then proceed with flushing, cleaning and disinfection processes.

.2 Test plumbing and piping systems installed under this project.

.3 Test operation of all water heaters.

.4 Departmental Representative will verify operation of all plumbing fixtures on site.

.7 HVAC systems:

.1 Ductwork, piping and conduit systems that will be concealed to be tested and certified to specified standards before being concealed. This work is specified in relevant technical sections of Division 23.

.2 HVAC systems to be initially started up, "bumped" in a stand-alone mode and pre-start-up inspections completed.

.3 Start after dust-producing construction procedures have been completed and areas are dust-free.

.4 Start HVAC to replace temporary heating systems after Consultant's written approval.

.5 Operate HVAC to permit TAB and ensure full compliance with contract documents when weatherstripping, caulking and sealing of exterior envelope has been completed, and interior partitions and doors are installed and ceiling return plenums are in place.

.6 Federal Halocarbon forms are to be completed in accordance with Federal Regulations as indicated in respective Specification Sections. Sample Forms are provided under Commissioning Forms.

.8 Fuel systems:

.1 Refer to Above Ground Fuel Storage Tank Section 33 56 14 for commissioning requirements. Sample federal forms are provided under Commissioning Forms.

.9 HVAC and related hydronic systems:

.1 Test in conjunction with controls, and fire and smoke detection systems.

.10 Items which have a detrimental effect on operation and maintenance. To receive preliminary attention at this point. To be fully commissioned at same time as relevant equipment and systems.

.11 Vibration isolation and seismic control measures:

.1 Test these measures at same time as connected system.

.12 Equipment and systems subject to specified codes and standards or subject to approval of an authority having jurisdiction:

.1 Commission equipment and systems in accordance with those requirements.

.2 Where testing is required as part of a regulatory process, and where Cx procedures are fully developed, are appropriate to project, ensure tests as required by such codes are performed. Departmental Representative to witness tests as part of Quality Assurance role.

.13 Controls:

.1 Testing and Cx to be specified in relevant sections under Division 23, which defines conditions for acceptance.

.2 Point-by-point and end-to-end testing to be carried out by installation Contractor, monitored by Departmental Representative and verified as part of system verification.

.3 Demonstration of operation of systems under operating conditions and over full operating range to take place prior to 30-day test period and to be witnessed by Departmental Representative. Includes simulated opposite-season tests. Controls and operation to be verified after HVAC systems have been through TAB.

.14 To reduce VOC concentrations to acceptable levels:

.1 Flow rates of outside air into HVAC systems to be adjusted as required during Cx, after occupancy and as necessary after occupancy.

.15 Commission mechanical systems and associated equipment as follows:

.1 Plumbing systems:

.1 Installation and Operation of all plumbing fixtures installed under this project.

.2 Installation and Operation of hot water generating equipment (all point of use heaters and common heaters).

.3 Installation and Operation of Domestic Recic pump

.4 All piping installed to serve fixtures.

.2 HVAC and exhaust systems:

.1 HVAC systems (RTU-1 to RTU-5)

.2 Exhaust systems (All exhaust fan systems and controls)

.3 Terminal Heating Units (All unit heaters, cabinet unit heaters, duct electric heating coils and perimeter radiation with associated controls for each device)

.4 Dedicated DX Systems (AC-1 x 2 with CU-1)

.3 Fire and life safety systems:

.1 Wet pipe sprinkler systems.

.2 Fire Hydrant.

.3 Fire extinguishers.

.4 Fuel systems:

.1 All fuel storage systems, piping and operation.

.16 Product Information forms shall be completed and submitted with Shop Drawings. An index of the required forms and sample forms are provided with the specifications. If forms are not submitted with shop drawings the value of the equipment will be held back as a deficiency until the forms are completed and submitted even if the equipment is on site.

.17 Performance Verification forms (samples provided as noted) shall be finalized with contractor and completed by the contractor prior to performance review with Departmental Representative for the following mechanical systems:

.1 Roof Top Units (RTU-1 – RTU-5, PV sample provided for RTU-1)

.2 Exhaust fans EF-1 to EF-14 (PV sample provided) – 100% to be reviewed with Cx Agent after commissioning is complete.

.3 Air Conditioning Units AC-1 and associated condensing units. – 100% to be reviewed with Cx Agent after commissioning is complete.

.4 All Perimeter Heating Terminal Units: 30% to be reviewed with Cx Agent after commissioning is complete.

.5 All Unit Heater and Cabinet Unit Heaters: 100% to be reviewed with Cx Agent after commissioning is complete.

.6 All Duct Heating Coils: 100% to be reviewed with Cx Agent after commissioning is complete.

.7 Testing and Air Balancing Report: 30% to be reviewed with Cx Agent after commissioning is complete.

.8 Domestic water Heaters: 100% to be reviewed with Cx Agent after commissioning is complete.

2.3 SCHEDULE OF ELECTRICAL SYSTEMS

.1 The following is a listing of the building electrical systems to be commissioned:

.1 Low Voltage Lighting Control Devices (includes potential relocation for optimizing effectiveness of sensing zones)

.2 Low Voltage Switchboards (includes adjustments and confirmation of all trip settings from project's Over-Current Coordination study).

.3 Panelboards Breaker Type (includes proper operation of emergency transfer panel, verification of panel directories)

.4 Motor Starters including Variable Frequency Drives

.5 Grounding (includes ground resistance test results)

.6 Lighting Operation

.7 Emergency Lighting (includes aiming of lamps to optimize illumination onto egress paths).

.8 Fire Alarm System (includes integrated life safety testing and monitoring of alarm call outs)

.9 Communication Cable Inside Building (includes review of all testing printouts)

.10 Standby Power Generator (includes vibration testing, full alarm testing, automatic shutdown testing, trouble alarm testing, block heater / enclosure heater operation, harmonic test result review)

.11 Standby Power Transfer switch (includes all switch modes including bypass, alarm testing, trouble testing)

.12 Security System and Door Access (by Owner's own forces)

2.4 INTEGRATED LIFE SAFETY SYSTEMS

.1 Upon completion of individual system tests, test for integration of life safety systems upon

.1 Loss of Utility power / Return of Utility power

.2 Occurrence of standby power online

.3 Fire alarm signal upon loss / return of power feed

.4 Failure of standby power during utility outage

.2 Electronic Hardware and Detention Hardware Systems: Test integration with fire alarm event.

.3 Fire Protection Systems: test integrated systems to verify that components work together as designed.

.4 Performance of HVAC, fire protection, EMCS and systems forming part of integrated systems to be verified after systems has been TAB'd to ensure compliance with prescribed requirements.

.5 Fire alarm call out, horn strobes.

.6 Emergency lighting, exit signage during standby power operation.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Commissioning forms to be completed for equipment, system and integrated system.

.2 Product Information (PI) forms are appended to this Section.

.3 Example Performance Verification (PV) forms are appended to this Section.

1.2 INSTALLATION/START-UP CHECK LISTS

.1 Include the following data:

.1 Product manufacturer's installation instructions and recommended checks.

.2 Special procedures as specified in relevant technical sections.

.3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.

.2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists may be required for specific project conditions.

.3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.

.4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in O&M Manual at completion of project.

.5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

.1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the Cx Manual at completion of work.

.2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Consultant and Cx Authority approvals.

1.4 PERFORMANCE VERIFICATION (PV) FORMS

.1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.

.2 PV report forms include those developed by Contractor, and records the measured data and readings taken during functional testing and Performance Verification procedures.

.3 Prior to PV of integrated system, complete the PV forms of related systems and obtain Consultant's and Cx Authority approval.

1.5 COMMISSIONING FORMS

.1 The Consultant will develop and provide the Contractor with final project-specific Commissioning forms in hard-copy format complete with specification data.

.2 Revise items on Commissioning forms to suit project requirements.

1.6 COMMISSIONING VERIFICATION PROCESS

.1 Use Commissioning forms to verify installation and record performance of equipment and systems.

.2 Strategy for Use:

.1 Consultant provides Contractor project-specific Commissioning forms with Specification data included.

.2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.

.3 Confirm operation as per design criteria and intent.

.4 Identify variances between design and operation and reasons for variances.

.5 Verify operation in specified normal and emergency modes and under specified load conditions.

.6 Record analytical and substantiating data.

.7 Reported results will be verified by the Consultant and Cx Authority.

.8 Form to bear signatures of recording technician and reviewed and signed off by Consultant and Cx Authority.

.9 Submit immediately after tests are performed.

.10 Reported results in true measured SI unit values.

.11 Originals of completed forms are to be retained on site during start-up, testing and commissioning period. Maintain in Commissioning Manual binder.

.12 Forms to be hard copy with type written results in Commissioning Manual Binder.

END OF SECTION

Mechanical Component Form Index		
Section 1: Air Moving Equipment		
Form	Equipment	Reference
CFM1.1	Roof Top Unit RTU-1	Provided in Specifications
CFM1.2	Roof Top Unit RTU-2	Provided in Specifications
CFM1.3	Roof Top Unit RTU-3	Similar to CFM1.2
CFM1.4	Roof Top Unit RTU-4	Similar to CFM1.2
CFM1.5	Roof Top Unit RTU-5	Similar to CFM1.1
CFM1.6	Exhaust Fan EF-1 to EF-4	Provided in Specifications
CFM1.7	Exhaust Fan EF-5 to EF-6	Similar to CFM1.6
CFM1.8	Exhaust Fan EF-8	Provided in Specifications
CFM1.9	Exhaust Fan EF-9	Similar to CFM1.8
CFM1.10	Exhaust Fan EF-10	Similar to CFM1.8
CFM1.11	Exhaust Fan EF-11	Similar to CFM1.8
CFM1.12	Exhaust Fan EF-12	Similar to CFM1.8
CFM1.13	Exhaust Fan EF-13	Similar to CFM1.8
CFM1.14	Exhaust Fan EF-14	Similar to CFM1.8
Section 2: Terminal Heating Units		
Form	Equipment	Reference
CFM2.1	Cabinet Console Heater CC-1 to CC-4	Provided in Specifications
CFM2.2	Fan Forced Heater FF-1 to FF-2	Provided in Specifications
CFM2.3	Electric Fan Coil FC-1	Provided in Specifications
CFM2.4	Electric Heating Coil HC-1	Provided in Specifications
CFM2.5	Unit Heater UH-1 to UH-5	Similar to CFM2.2
CFM2.6	Electric Baseboard BB-1	Provided in Specifications
CFM2.7	Electric Baseboard BB-2	Similar to CFM2.6
CFM2.8	Electric Baseboard BB-3	Similar to CFM2.6
Section 3: Air Conditioning Equipment		
Form	Equipment	Reference
CFM3.1	Air Conditioning Unit AC-1/CU-1	Provided in Specifications

Mechanical Component Form Index		
Section 4: Miscellaneous		
Form	Equipment	Reference
CFM4.1	Silencers	Provided in Specifications
CFM4.2	System Fill	Not Provided
CFM4.3	Expansion Tank ET-1	Not Provided
CFM4.4	Expansion Tank ET-2	Not Provided
Section 5: Plumbing		
Form	Equipment	Reference
CFM5.1	Dom. Water Heater WH-1	Provided in Specifications
CFM5.2	Dom. Water Heater WH-2	Provided in Specifications
CFM5.3	Dom. Water Heater WH-3	Provided in Specifications
CFM5.4	Dom. Water Heater WH-4	Similar to CFM5.3
CFM5.5	Pump P-1	Provided in Specifications
Section 6: Housing Equipment		
Form	Equipment	Reference
CFM6.1	Furnace	Provided in Specifications
CFM6.2	Heat Recovery Ventilator	Provided in Specifications

Project Name:	Project #:	S-03-2014
New Modular Police Building and Employee Housing - Black Lake	Component Form #:	CFM1.1

Component Verification Form		Section:
System: HVAC	Equipment: Roof Top Unit	Tag: RTU-1

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Roof Top Unit
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Roof
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed
Supply Fan:				
Air Flow	1,038 L/s (2,201 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
T.S.P.	685 Pa (2.75 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
E.S.P.	249 Pa (1.00 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
Fan RPM	1760		-	Eng: ☐ Con: ☐
Fan Static Efficiency	47%		-	Eng: ☐ Con: ☐
Motor Size	2.24 kW (3.00 hp)	(0.00 hp)	-	Eng: ☐ Con: ☐
Motor RPM	1760 RPM		-	Eng: ☐ Con: ☐
Motor Efficiency	Premium		-	Eng: ☐ Con: ☐
Return Fan:				
Air Flow	1,038 L/s (2,201 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
T.S.P.	414 Pa (1.66 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
E.S.P.	125 Pa (0.50 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
Fan RPM	1358		-	Eng: ☐ Con: ☐
Fan Static Efficiency	51%		-	Eng: ☐ Con: ☐
Motor Size	1.49 kW (2.00 hp)	(0.00 hp)	-	Eng: ☐ Con: ☐
Motor RPM	1760 RPM		-	Eng: ☐ Con: ☐
Motor Efficiency	Premium		-	Eng: ☐ Con: ☐
Heat Wheel:				
Air Flow	1,038 L/s (2,201 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
Sensible Effectiveness	76.3%		-	Eng: ☐ Con: ☐
Latent Effectiveness	72.0%		-	Eng: ☐ Con: ☐
Motor Size	0.06 kW (0.08 hp)	(0.00 hp)	-	Eng: ☐ Con: ☐
Motor RPM	1750 RPM		-	Eng: ☐ Con: ☐
Defrost Control	VFD Motor		-	Eng: ☐ Con: ☐
Pre-Heating Coil:				
Air Flow	1,038 L/s (2,201 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
E.A.T.	-41.70 C -(43.06 F)	(32.00 F)	-	Eng: ☐ Con: ☐
L.A.T	7.20 C (44.96 F)	(32.00 F)	-	Eng: ☐ Con: ☐
A.P.D.	15 Pa (0.06 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
Energy Source	Electric		-	Eng: ☐ Con: ☐
Control	Modulating		-	Eng: ☐ Con: ☐
Size	60.00 kW (205 MBH)	(0 MBH)	-	Eng: ☐ Con: ☐
Heating Coil:				
Air Flow	1,038 L/s (2,201 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
E.A.T.	5.00 C (41.00 F)	(32.00 F)	-	Eng: ☐ Con: ☐
L.A.T	38.00 C (100.40 F)	(32.00 F)	-	Eng: ☐ Con: ☐
A.P.D.	5 Pa (0.02 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
Energy Source	Electric		-	Eng: ☐ Con: ☐
Control	Modulating/SCR		-	Eng: ☐ Con: ☐
Size	40.00 kW (136 MBH)	(0 MBH)	-	Eng: ☐ Con: ☐

Project Name:	Project #:	S-03-2014
New Modular Police Building and Employee Housing - Black Lake	Component Form #:	CFM1.1

Component Verification Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit**	*Tag:* **RTU-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Roof Top Unit
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Roof
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Cooling Coil:					
Air Flow	1,038 L/s (2,201 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
E.A.T. DB	27.80 C (82.04 F)	(32.00 F)	-	Eng: ☐	Con: ☐
E.A.T. WB	16.90 C (62.42 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Coil L.A.T. DB	8.40 C (47.12 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Unit L.A.T. DB	9.60 C (49.28 F)	(32.00 F)	-	Eng: ☐	Con: ☐
A.P.D.	10 Pa (0.04 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Suction Temperature	6.70 C (44.06 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Total Energy Exch.	25.78 kW (88 MBH)	(0.0 MBH)	-	Eng: ☐	Con: ☐
Sensible Energy Exch.	23.08 kW (79 MBH)	(0.0 MBH)	-	Eng: ☐	Con: ☐
Refrigerant	R-410A (HFC)		-	Eng: ☐	Con: ☐
Compressors	2		-	Eng: ☐	Con: ☐
Lead Capacity Control	Variable Speed		-	Eng: ☐	Con: ☐
Lag Capacity Control	on/off		-	Eng: ☐	Con: ☐
Cooling Efficiency	9.4		-		
IEER	14.9		-		
Electrical:					
Wiring	Single Point		-	Eng: ☐	Con: ☐
Voltage	575 / 3 phase		-	Eng: ☐	Con: ☐
Unit FLA	105 amps		-	Eng: ☐	Con: ☐
Min. Circuit Ampacity	107 amps		-	Eng: ☐	Con: ☐
Max Overcurrent	110 amps		-	Eng: ☐	Con: ☐

Sound:	Discharge		Return		Comments		
	Spec	Shop	Spec	Shop			
63	85 dB		84 dB		-	Eng: ☐	Con: ☐
125	84 dB		82 dB		-	Eng: ☐	Con: ☐
250	86 dB		79 dB		-	Eng: ☐	Con: ☐
500	82 dB		72 dB		-	Eng: ☐	Con: ☐
1000	74 dB		72 dB		-	Eng: ☐	Con: ☐
2000	72 dB		70 dB		-	Eng: ☐	Con: ☐
4000	69 dB		67 dB		-	Eng: ☐	Con: ☐
8000	63 dB		61 dB		-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Prepared By: HDA Engineering Ltd. Regina, Sk, (306) 525-9815

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM1.2**

Component Verification Form

Section:

System:	*Equipment:*	*Tag:*
HVAC	**Roof Top Unit**	**RTU-2**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Roof Top Unit
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Roof
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Fan:					
Air Flow	906 L/s (1,921 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
T.S.P.	685 Pa (2.75 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
E.S.P.	249 Pa (1.00 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
S.P.	349 Pa (1.40 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Fan RPM	1268		-	Eng: ☐	Con: ☐
Motor Size	1.49 kW (2.00 hp)	(0.00 hp)	-	Eng: ☐	Con: ☐
Motor RPM	1760 RPM		-	Eng: ☐	Con: ☐
Motor Efficiency	Premium		-	Eng: ☐	Con: ☐
Sound	75 dBa		-		
Heating Coil:					
Air Flow	906 L/s (1,921 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
E.A.T.	9.40 C (48.92 F)	(32.00 F)	-	Eng: ☐	Con: ☐
L.A.T	23.30 C (73.94 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Energy Source	Electric		-	Eng: ☐	Con: ☐
Control	Modulating/SCR		-	Eng: ☐	Con: ☐
Size	15.00 kW (51 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	**Project #:** S-03-2014
	Component Form #: CFM1.2

Component Verification Form

System:	*Equipment:*	*Tag:*
HVAC	**Roof Top Unit**	**RTU-2**

Section:

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Roof Top Unit
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Roof
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Cooling Coil:					
Air Flow	755 L/s (1,601 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
E.A.T. DB	24.70 C (76.46 F)	(32.00 F)	-	Eng: ☐	Con: ☐
E.A.T. WB	17.00 C (62.60 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Unit L.A.T. DB	12.80 C (55.04 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Nominal Energy	14.70 kW (50 MBH)	(0.0 MBH)	-	Eng: ☐	Con: ☐
Net Energy	14.40 kW (49 MBH)	(0.0 MBH)	-	Eng: ☐	Con: ☐
Refrigerant	R-410A (HFC)		-	Eng: ☐	Con: ☐
Compressors	1		-	Eng: ☐	Con: ☐
Lag Capacity Control	two stage		-	Eng: ☐	Con: ☐
Cooling Efficiency	12.8		-		
SEER	17.6		-		
Electrical:					
Wiring	Single Point		-	Eng: ☐	Con: ☐
Voltage	600 / 3 phase		-	Eng: ☐	Con: ☐
Min. Circuit Ampacity	22 amps		-	Eng: ☐	Con: ☐
Max Overcurrent	25 amps		-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM1.6**

Component Verification Form

System:	*Equipment:*	*Section:* / *Tag:*
HVAC	**EXHAUST FAN**	**EF-1 to EF-4**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	EF-1: Room 141/142, EF-2: Room 138/139
	EF-3: Room 136/137, EF-4: Room 159/160
Equip Location	Crawlspace

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed
Fan:				
Fan Type	Inline Cabinet		-	Eng: ☐ Con: ☐
Air Flow	47 L/s (100 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
E.S.P.	125 Pa (0.50 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
Sound	3 Sones		-	Eng: ☐ Con: ☐
Motor Size	0.10 kW (0.13 hp)	(0.00 hp)	-	Eng: ☐ Con: ☐
Voltage / Phase	120/1		-	Eng: ☐ Con: ☐
Motor Type	Direct Drive		-	Eng: ☐ Con: ☐
Control	Local Switch with timer			
Options:				
Insulation Lining	13mm		-	Eng: ☐ Con: ☐
Backdraft Damper	Yes		-	Eng: ☐ Con: ☐
Isolators	Spring		-	Eng: ☐ Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM1.6**

Component Verification Form

System:	*Equipment:*	*Section:* / *Tag:*
HVAC	**EXHAUST FAN**	**EF-8**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	Room 147
Equip Location	Roof

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed
Fan:				
Fan Type	Roof Exhaust		-	Eng: ☐ Con: ☐
Air Flow	71 L/s (151 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
E.S.P.	31 Pa (0.12 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐ Con: ☐
Sound	1.5 Sones		-	Eng: ☐ Con: ☐
Motor Size	0.01 kW (0.01 hp)	(0.00 hp)	-	Eng: ☐ Con: ☐
Voltage / Phase	120/1		-	Eng: ☐ Con: ☐
Motor Type	Direct Drive		-	Eng: ☐ Con: ☐
Control	Line Voltage Switch			
Options:				
Insulation Lining	13mm		-	Eng: ☐ Con: ☐
Backdraft Damper	Yes		-	Eng: ☐ Con: ☐
Isolators	Yes		-	Eng: ☐ Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name: New Modular Police Building and Employee Housing - Black Lake	**Project #:** S-03-2014
	Component Form #: CFM2.1

Component Verification Form

System:	*Equipment:*	*Tag:*
HVAC	**Electric Cabinet Console Heater**	**CC-1 to CC-4**

Section:

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Cabinet	16 gauge steel		-	Eng: ☐	Con: ☐
Air Flow	118 L/s (250 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Voltage / Phase	600/3 phase	115/1	-	Eng: ☐	Con: ☐
Control	Remote Thermostat				
Control Transformer`	Yes		-	Eng: ☐	Con: ☐
Transf. Factory Wired and Mounted	Yes		-	Eng: ☐	Con: ☐
Energy Exchanged	6.00 kW (20 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name: New Modular Police Building and Employee Housing - Black Lake	**Project #:** S-03-2014
	Component Form #: CFM2.2

Component Verification Form

System:	*Equipment:*	*Tag:*	*Section:*
HVAC	**Fan Forced Heater**	**FF-1 & FF-2**	

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Cabinet	20 gauge steel		-	Eng: ☐	Con: ☐
Air Flow	75 L/s (159 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Voltage / Phase	240/1 phase	115/1	-	Eng: ☐	Con: ☐
Control	Remote Thermostat			Eng: ☐	Con: ☐
Control Transformer`	Yes		-	Eng: ☐	Con: ☐
Transf. Factory Wired and Mounted	Yes		-	Eng: ☐	Con: ☐
Energy Exchanged	4.00 kW (14 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM2.3**

Component Verification Form		*Section:*
System: **HVAC**	*Equipment:* **Electric Fan Coil**	*Tag:* **FC-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Air Flow	353 L/s (748 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Voltage / Phase	208/1 phase		-	Eng: ☐	Con: ☐
Fan	3-speed			Eng: ☐	Con: ☐
E.S.P.	62 Pa (0.25 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Filter	Merv 8 - 25mm		-	Eng: ☐	Con: ☐
Cabinet	20 gauge steel		-	Eng: ☐	Con: ☐
Lining	foil faced insulation			Eng: ☐	Con: ☐
Drain Pan	Galvaninzed			Eng: ☐	Con: ☐
Door Switch	Non-fused interlock			Eng: ☐	Con: ☐
Energy Exchanged	6.00 kW (20 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐
Electrical:					
Min. Circuit Ampacity	38 amps		-	Eng: ☐	Con: ☐
FLA	31 amps		-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM2.4**

Component Verification Form

Section:

System:	*Equipment:*	*Tag:*
HVAC	**Electric Heating Coil**	**HC-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Type	Duct mounted		-	Eng: ☐	Con: ☐
Air Flow	424 L/s (899 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Voltage / Phase	600 / 3 phase		-	Eng: ☐	Con: ☐
Contactor	Magnetic		-	Eng: ☐	Con: ☐
Auto-cut-out	Yes			Eng: ☐	Con: ☐
Manual Cut-out	Yes			Eng: ☐	Con: ☐
Disconnect Switch	Yes			Eng: ☐	Con: ☐
Controls	SCR Modulating			Eng: ☐	Con: ☐
Control Mounting	Factory Mounted			Eng: ☐	Con: ☐
Sensor	Field Installed Duct Sensor			Eng: ☐	Con: ☐
Discharge Air Stat	Field Installed Thermostat			Eng: ☐	Con: ☐
Energy Exchanged	25.00 kW (85 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐
Electrical:					
Min. Circuit Ampacity	24 amps		-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name: New Modular Police Building and Employee Housing - Black Lake	**Project #:** S-03-2014
	Component Form #: CFM2.6

Component Verification Form

System:	*Equipment:*	*Section:* / *Tag:*
HVAC	**Electric Baseboard**	**BB-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	TWA
Type	Hot Water Radiant Panels
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	Building
Floor Located	Main Floor
Room	Various

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed
Type B Panel				
Length	617 mm (24.3 in.)	(0.0 in.)	-	Eng: ☐ Con: ☐
Voltage / Phase	600/3 phase		-	Eng: ☐ Con: ☐
Control	Remote Thermostat			Eng: ☐ Con: ☐
Control Transformer`	Yes		-	Eng: ☐ Con: ☐
Transf. Factory Wired and Mounted	Yes		-	Eng: ☐ Con: ☐
Energy Exchanged	1.50 kW (5 MBH)	(0 MBH)	-	Eng: ☐ Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	Project #:	S-03-2014
New Modular Police Building and Employee Housing - Black Lake	Component Form #:	CFM3.1

Component Verification Form — Section:

System:	Equipment:	Tag:
HVAC	Packaged Cooling Equipment	AC-1

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	Room 143/149
Floor Located	Main Floor / Roof
Room	Room 143/149

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Indoor Unit					
Air Flow Low Speed	151 L/s (320 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Air Flow High Speed	200 L/s (424 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
# of speeds	3.00	-	-	Eng: ☐	Con: ☐
# of AC units	2.00	-	-	Eng: ☐	Con: ☐
Total Cooling	3.52 kW (12 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐
Voltage / Phase	208/1	-	-	Eng: ☐	Con: ☐
SEER	15.2	-	-	Eng: ☐	Con: ☐
EER	10.1	-	-	Eng: ☐	Con: ☐
Breaker	15A	-	-	Eng: ☐	Con: ☐
Condensate Pump	Yes	-	-	Eng: ☐	Con: ☐
Pump factory wired	Yes	-	-	Eng: ☐	Con: ☐
Refrigerant	HFC (R410A)	-	-	Eng: ☐	Con: ☐
Outdoor Unit CU-1					
Voltage / Phase	208/1	-	-	Eng: ☐	Con: ☐
Min. Circuit Ampacity	18 amps	-	-	Eng: ☐	Con: ☐
Max Overcurrent	30 amps	-	-	Eng: ☐	Con: ☐
Refrigerant	HFC (R410A)	-	-	Eng: ☐	Con: ☐
Warranty	6 years	-	-	Eng: ☐	Con: ☐
Wind gaurds	Yes	-			
Load Modulation	Variable Compressor	-	-	Eng: ☐	Con: ☐
Ambient Operation to	-40.00 C -(40.00 F)	(32.00 F)	-	Eng: ☐	Con: ☐
Accessories					
Filter Width	100mm	-	-	Eng: ☐	Con: ☐
Filter Efficiency	Merv 8	-	-	Eng: ☐	Con: ☐
				☐	☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	Project #:	S-03-2014
New Modular Police Building and Employee Housing - Black Lake	Component Form #:	CFM6.1

Component Verification Form

System:	Equipment:	Tag:
HVAC	Furnace	F-1

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Furnace
Model Number	
Serial Number	

LOCATION DATA:

Building	Housing Unit
Area Served	Whole House
Floor Located	Main
Room	Mechanical

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Style	Upflow		-	Eng: ☐	Con: ☐
HeatingAir Flow	479 L/s (1,015 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Heating S.P.	124 Pa (0.50 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Cooling Air Flow	538 L/s (1,141 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Heating S.P.	124 Pa (0.50 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Motor	ECM		-	Eng: ☐	Con: ☐
Motor Size	0.25 kW (0.33 hp)	(0.00 hp)	-	Eng: ☐	Con: ☐
Motor RPM	1760 RPM		-	Eng: ☐	Con: ☐
Heating Coil:					
Air Flow	479 L/s (1,015 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Temperature Rise	26.00 C (47.00 F)		-	Eng: ☐	Con: ☐
Energy Source	Electric		-	Eng: ☐	Con: ☐
Control	Modulating/SCR		-	Eng: ☐	Con: ☐
Size	18.00 kW (61 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐
Electrical:					
Wiring	Single Point		-	Eng: ☐	Con: ☐
Voltage	240/1 phase		-	Eng: ☐	Con: ☐
Unit FLA	76 amps		-	Eng: ☐	Con: ☐
Accessories					
Thermostat	7day programmable		-	Eng: ☐	Con: ☐
Filter Rack	External Filter Rack		-	Eng: ☐	Con: ☐
Filter	25mm (1")		-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Prepared By: HDA Engineering Ltd. Regina, Sk, (306) 525-9815

Project Name: New Modular Police Building and Employee Housing - Black Lake	**Project #:** S-03-2014
	Component Form #: CFM6.2

Component Verification Form — Section:

System:	Equipment:	Tag:
HVAC	**Residential Energy Recovery Unit**	**ERV-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Energy Recovery Unit
Model Number	
Serial Number	

LOCATION DATA:

Building	Housing Unit
Area Served	Whole House
Floor Located	Main
Room	Mechanical

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Style	Cross Flow		-	Eng: ☐	Con: ☐
Air Flow	59 L/s (125 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
S.P.	100 Pa (0.40 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Return Fan:					
Style	Cross Flow		-	Eng: ☐	Con: ☐
Air Flow	59 L/s (125 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
S.P.	100 Pa (0.40 in.w.c.)	(0.00 in.w.c.)	-	Eng: ☐	Con: ☐
Energy Recovery					
Air Flow	59 L/s (125 CFM)	(0 CFM)	-	Eng: ☐	Con: ☐
Sensible Effectiveness (at 0 Deg.C)	65.0%	-	-	Eng: ☐	Con: ☐
Defrost Control	Recirculating Damper		-	Eng: ☐	Con: ☐
Electrical & Controls:					
Wiring	Single Point		-	Eng: ☐	Con: ☐
Voltage	120/1 phase		-	Eng: ☐	Con: ☐
Watts at high Speed	110 W		-	Eng: ☐	Con: ☐
Watts at low Speed	48 W		-	Eng: ☐	Con: ☐
Amp Rating	1.25 amps		-	Eng: ☐	Con: ☐
Controls	Factory digital		-	Eng: ☐	Con: ☐
Remote Timers	2		-	Eng: ☐	Con: ☐
Accessories					
Balancing Ports	Yes		-	Eng: ☐	Con: ☐
Duct Connections	4 collars		-	Eng: ☐	Con: ☐
Balancing Dampers	On collars		-	Eng: ☐	Con: ☐
S/A Filters	Washable		-	Eng: ☐	Con: ☐
E/A Filters	Washable		-	Eng: ☐	Con: ☐
Cabinet	Insulated		-	Eng: ☐	Con: ☐

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM6.2**

Component Verification Form		*Section:*
System: **HVAC**	*Equipment:* **Residential Energy Recovery Unit**	*Tag:* **ERV-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	Energy Recovery Unit
Model Number	
Serial Number	

LOCATION DATA:

Building	Housing Unit
Area Served	Whole House
Floor Located	Main
Room	Mechanical

PERFORMANCE DATA:

	Specified	**Shop Drawings**	**Required Modification**	**Installed**

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Prepared By: **HDA Engineering Ltd.** Regina, Sk, (306) 525-9815

Project Name: New Modular Police Building and Employee Housing - Black Lake	**Project #:** S-03-2014
	Component Form #: CFM4.1

Component Verification Form

System:	*Equipment:*	*Section:* / *Tag:*
HVAC	**Silencer**	**SIL-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	Room 107.1
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed
Supply Fan:				
Length	2000 mm 80 in.	0 in.	-	Eng: ☐ Con: ☐
Inlet Size	300x150 (12"x10")		-	Eng: ☐ Con: ☐
Airflow	64 L/s (136 CFM)	(0 CFM)	-	Eng: ☐ Con: ☐
Configuration	Z - configuration		-	Eng: ☐ Con: ☐
Attenuation - 63 Hz	12		-	Eng: ☐ Con: ☐
Attenuation - 125 Hz	24		-	Eng: ☐ Con: ☐
Attenuation - 250 Hz	43		-	Eng: ☐ Con: ☐
Attenuation - 500 Hz	52		-	Eng: ☐ Con: ☐
Attenuation - 1 kHz	54		-	Eng: ☐ Con: ☐
Attenuation - 2kHz	55		-	Eng: ☐ Con: ☐
Attenuation - 4kHz	48		-	Eng: ☐ Con: ☐
Attenuation - 8kHz	32		-	Eng: ☐ Con: ☐
Outer Casing	22 ga. Galvanized		-	Eng: ☐ Con: ☐
Inner Casing	22 ga. Perforated Galv.		-	Eng: ☐ Con: ☐
Media	fiberglass		-	Eng: ☐ Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM5.1**

Component Verification Form

System:	*Equipment:*	*Section:* / *Tag:*
HVAC	**Water Heater**	**WH-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Style	Electric Tankless		-	Eng: ☐	Con: ☐
T&P Relief Valve	Yes		-	Eng: ☐	Con: ☐
Voltage / Phase	120/1phase		-	Eng: ☐	Con: ☐
Temp Rise at 0.5 GPM	22.80 C (41.00 F)		-	Eng: ☐	Con: ☐
Height	273 mm (10.7 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
Width	133 mm (5.2 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
Depth	73 mm (2.9 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
# of Elements	1		-	Eng: ☐	Con: ☐
Element Size	3.00 kW (10 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐
Electrical:					
Min. Circuit Ampacity	25 amps		-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:** S-03-2014
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:** CFM5.2

Component Verification Form		*Section:*
System: **HVAC**	*Equipment:* **Water Heater**	*Tag:* **WH-2**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Supply Fan:					
Style	Electric Wall Hung		-	Eng: ☐	Con: ☐
T&P Relief Valve	Yes		-	Eng: ☐	Con: ☐
Tank Size	22.70 L (6.0 US gpm)		-	Eng: ☐	Con: ☐
Voltage / Phase	120/1phase		-	Eng: ☐	Con: ☐
Basis of Recovery	55.50 C (100.00 F)		-	Eng: ☐	Con: ☐
Recovery Vol. (1st hr)	22.70 L (6.0 US gpm)		-	Eng: ☐	Con: ☐
Diameter	356 mm (14.0 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
Height	400 mm (15.7 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
# of Elements	1		-	Eng: ☐	Con: ☐
Element Size	1.50 kW (5 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM5.3**

Component Verification Form		*Section:*
System: **HVAC**	*Equipment:* **Water Heater**	*Tag:* **WH-3**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	
Floor Located	Main Floor
Room	

PERFORMANCE DATA:

	Specified	**Shop Drawings**	**Required Modification**	**Installed**	
Supply Fan:					
Style	Commercial Electric		-	Eng: ☐	Con: ☐
T&P Relief Valve	Yes		-	Eng: ☐	Con: ☐
Tank Size	151.00 L (40 US gpm)	(0 US gpm)	-	Eng: ☐	Con: ☐
Voltage / Phase	208/1phase		-	Eng: ☐	Con: ☐
Basis of Recovery	55.50 C (100.00 F)		-	Eng: ☐	Con: ☐
Recovery Vol. (1st hr)	68.00 L (18.0 US gpm)		-	Eng: ☐	Con: ☐
Diameter	356 mm (14.0 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
Height	400 mm (15.7 in.)	(0.0 in.)	-	Eng: ☐	Con: ☐
# of Elements	2		-	Eng: ☐	Con: ☐
Element Size	4.50 kW (15 MBH)	(0 MBH)	-	Eng: ☐	Con: ☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name:	**Project #:**	**S-03-2014**
New Modular Police Building and Employee Housing - Black Lake	**Component Form #:**	**CFM5.5**

Component Verification Form		*Section:*
System: **HVAC**	*Equipment:* **PUMP**	*Tag:* **P-1**

INSTALLED EQUIPMENT DATA:

Manufacturer	
Type	
Model Number	
Serial Number	

LOCATION DATA:

Building	Modular Police Building
Area Served	Domestic Recirc
Floor Located	Main Floor
Room	Room 139

PERFORMANCE DATA:

	Specified	Shop Drawings	Required Modification	Installed	
Pump:					
Pump Style	Cartridge Circulator		-	Eng: ☐	Con: ☐
Flow	0.09 L/s (1.5 US gpm)	(0 US gpm)	-	Eng: ☐	Con: ☐
Fluid	Potable Water		-	Eng: ☐	Con: ☐
Head	14.90 kPa (4.99 ft.w.c.)	(0.00 ft.w.c.)	-	Eng: ☐	Con: ☐
Motor Size	0.21 kW (0.28 hp)	(0.00 hp)	-	Eng: ☐	Con: ☐
Motor Efficiency	Premium		-	Eng: ☐	Con: ☐
Voltage / Phase	120/60		-	Eng: ☐	Con: ☐
Construction	Stainless Steel				
Options:					
				☐	☐
				☐	☐

Comments

SIGN-OFFS:

Contractor: _____ Date: _____

Engineer: _____ Date: _____

CxA: _____ Date: _____

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.1

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-01**	*Room #:* **141/142**

1. TEST PURPOSE

.1 To test installation of the exhaust fan to ensure that the system and all associated sub-systems operate as intended during normal and abnormal operating conditions.

.2 To document that the system operation performs as intended.

.3 To highlight required modifications and corrections to the system operation and allow those corrections to take place prior to substantial completion and turn over to owner.

2. Test Prerequisites

		C	E
.1	Mechanical:		
.1	As-built drawings are complete and have been submitted	☐	☐
.2	All component verifications are complete and reviewed	☐	☐
.3	Testing, adjusting and balancing (TAB) is complete for all associated systems.	☐	☐
.4	TAB report is complete and reviewed.	☐	☐
.2	Controls:		
.1	All associated controls have been verified point to point including: inputs, outputs, valves, actuators, interlocks, time delays, failure modes, restart modes, schedules, reset schedules, graphics and trending.	☐	☐
.2	All sensors/devices have been calibrated.	☐	☐
.3	All manual overrides and jumpers have been removed to allow for automatic operation.	☐	☐
.3	Equipment		
.1	Turn fan off manually at disconnect	☐	☐
.2	Verify system is complete and clean	☐	☐
.3	Verify fan rotation	☐	☐
.4	Verify back draft damper installation	☐	☐
.5	Verify installation of access doors	☐	☐
.6	Reset disconnect	☐	☐
.4	Timer Setpoint		
.1	Record timer setpoint Minutes	☐	☐

3. Functional Testing

.1	Enable		
.1	Verify RTU-1 is operational and exhausts is functioning	☐	☐
.2	Verify EF-01 is off	☐	☐
.3	Enable exhaust fan at wall button	☐	☐
.4	Verify EF-01 enables	☐	☐
.5	Confirm that airflow increases from exhaust	☐	☐
.6	Monitor operation for length of time on timer	☐	☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.1

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-01**	*Room #:* **141/142**

.1 Record time enabled---------- ---------- ☐ ☐
.2 Record time fan shuts down ---------- ---------- ☐ ☐

4. Operational Testing (when fan is running)

.1 Operation of EF-1	C	E
.1 Ensure fan is on----------	☐	☐
.2 Verify vibration isolators appear to be functioning----------	☐	☐
.3 Noise generated is within reason in space----------	☐	☐

Comments

SIGN-OFFS

Contractor: _____ Date:_____

Engineer:_____ Date:_____

CxA:_____ Date:_____

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.5

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-05, EF-06 and Coil HC-01**	*Room #:* **151**

1. TEST PURPOSE

.1 To test installation of the exhaust fan to ensure that the system and all associated sub-systems operate as intended during normal and abnormal operating conditions.

.2 To document that the system operation performs as intended.

.3 To highlight required modifications and corrections to the system operation and allow those corrections to take place prior to substantial completion and turn over to owner.

2. Test Prerequisites

		C	E
.1	Mechanical:		
.1	As-built drawings are complete and have been submitted	☐	☐
.2	All component verifications are complete and reviewed	☐	☐
.3	Testing, adjusting and balancing (TAB) is complete for all associated systems.	☐	☐
.4	TAB report is complete and reviewed.	☐	☐
.2	Controls:		
.1	All associated controls have been verified point to point including: inputs, outputs, valves, actuators, interlocks, time delays, failure modes, restart modes, schedules, reset schedules, graphics and trending.	☐	☐
.2	All sensors/devices have been calibrated.	☐	☐
.3	All manual overrides and jumpers have been removed to allow for automatic operation.	☐	☐
.3	Equipment		
.1	Turn fan off manually at disconnect	☐	☐
.2	Verify system is complete and clean	☐	☐
.3	Verify fan rotation	☐	☐
.4	Verify back draft damper installation	☐	☐
.5	Verify installation of access doors	☐	☐
.6	Reset disconnect	☐	☐
.4	System Setpoints		
.1	System is set to activate until condition is cleared, miniomum run timer is expired and alarm is acknowledged	☐	☐
.2	Record minimum run timer minutes	☐	☐
.3	Alarm activates on fault detection	☐	☐
.4	Audio alarm is disabled for warning	☐	☐
.5	Alarm activates on fault detection	☐	☐
.6	No activation delay on warning	☐	☐
.7	Record activation delay on alarm minutes	☐	☐
.8	Audio alarm is enabled	☐	☐
.9	Record CO warning setpoint PPM	☐	☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.5

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-05, EF-06 and Coil HC-01**	*Room #:* **151**

.10 Record CO alarm setpoint PPM ☐ ☐
.11 Record NOx warning setpoint PPM ☐ ☐
.12 Record NOx alarm setpoint PPM ☐ ☐

3. Operational Testing (test when fans are running during functional test)

		C	E
.1	Operation of EF-5		
.1	Ensure fan is on	☐	☐
.2	Verify vibration isolators appear to be functioning	☐	☐
.3	Noise generated is within reason in space	☐	☐
.2	Operation of EF-6	C	E
.1	Ensure fan is on	☐	☐
.2	Verify vibration isolators appear to be functioning	☐	☐
.3	Noise generated is within reason in space	☐	☐

4. Functional Testing

.1 Normal Operation (ensure no gas detected in space)
.1 EF-5 is on ☐ ☐
.2 Verify outside air damper is open ☐ ☐
.3 EF-6 is off ☐ ☐
.4 Measure Discharge Air Temperature:
.1 Actual measured temperature -------^{O}C ☐ ☐
.5 Increase discharge air setpoint for heating coil to above ambient ☐ ☐
.6 Heating coil enables and modulates to suit setpoint ☐ ☐
.7 Measure Discharge Air Temperature:
.1 Actual measured temperature -------^{O}C ☐ ☐
.8 Disable EF-05 ☐ ☐
.9 Verify outside air damper closes ☐ ☐
.10 Verify heating coil deenergizes ☐ ☐
.11 Reset Fan ☐ ☐
.12 Verify fan EF-5 re-energizes ☐ ☐
.13 Verify outside air damper opens to minimum ☐ ☐
.14 Heating coil enables and modulates to suit setpoint ☐ ☐
.15 Reset heating coil discharge air setpoint ☐ ☐

.2 Primary Gas Detection
.1 EF-5 is on ☐ ☐
.2 Start vehicle in space (or apply test gas to sensors) ☐ ☐
.3 Sensor detects gas ☐ ☐
.4 EF-6 energizes ☐ ☐
.5 Record time fan enables ☐ ☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.5

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-05, EF-06 and Coil HC-01**	*Room #:* **151**

.6	Verify outside air damper remains open	☐	☐
.7	When gas rises above warning limit, record gas level/type PPM	☐	☐
.8	Warning enables but not in alarm	☐	☐
.9	When gas rises above alarm limit, record gas level/type PPM	☐	☐
.10	Record time alarm limit is breached	☐	☐
.11	Record time alarm occurs	☐	☐
.12	Remove source	☐	☐
.13	Record time gas level drops below alarm limit	☐	☐
.14	Acknowledge alarm	☐	☐
.15	Verify EF-06 shuts down after minimum run time	☐	☐
.16	EF-5 remains on	☐	☐
.17	Verify outside air damper remains open	☐	☐

5. Failure Modes

.1 Motor Failure EF-6

.1	Cut power to motor (EF-6)	☐	☐
.2	Apply gas to trip high limit	☐	☐
.3	Verify alarm registers (audible and visual)	☐	☐
.4	Restore power to EF-6	☐	☐
.5	EF-6 resumes control	☐	☐
.6	Acknowledge Alarm	☐	☐

Comments

SIGN-OFFS

Contractor: _____ Date:_____

Engineer:_____ Date:_____

CxA:_____ Date:_____

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.6

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-07**	*Room #:* **157**

1. TEST PURPOSE

.1 To test installation of the exhaust fan to ensure that the system and all associated sub-systems operate as intended during normal and abnormal operating conditions.

.2 To document that the system operation performs as intended.

.3 To highlight required modifications and corrections to the system operation and allow those corrections to take place prior to substantial completion and turn over to owner.

2. Test Prerequisites

		C	E
.1	Mechanical:		
.1	As-built drawings are complete and have been submitted	☐	☐
.2	All component verifications are complete and reviewed	☐	☐
.3	Testing, adjusting and balancing (TAB) is complete for all associated systems.	☐	☐
.4	TAB report is complete and reviewed.	☐	☐
.2	Controls:		
.1	All associated controls have been verified point to point including: inputs, outputs, valves, actuators, interlocks, time delays, failure modes, restart modes, schedules, reset schedules, graphics and trending.	☐	☐
.2	All sensors/devices have been calibrated.	☐	☐
.3	All manual overrides and jumpers have been removed to allow for automatic operation.	☐	☐
.3	Equipment		
.1	Turn fan off manually at disconnect	☐	☐
.2	Verify system is complete and clean	☐	☐
.3	Verify fan rotation	☐	☐
.4	Verify back draft damper installation	☐	☐
.5	Verify installation of access doors	☐	☐
.6	Reset disconnect	☐	☐
.4	System Setpoints		
.1	System is set to activate until condition is cleared, minimum run timer is expired and alarm is acknowledged	☐	☐
.2	Record minimum run timer minutes	☐	☐
.3	Alarm activates on fault detection	☐	☐
.4	Audio alarm is disabled for warning	☐	☐
.5	Alarm activates on fault detection	☐	☐
.6	No activation delay on warning	☐	☐
.7	Record activation delay on alarm minutes	☐	☐
.8	Audio alarm is enabled	☐	☐
.9	Record CO warning setpoint PPM	☐	☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.6

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-07**	*Room #:* **157**

.10 Record CO alarm setpoint PPM ☐ ☐
.11 Record NOx warning setpoint PPM ☐ ☐
.12 Record NOx alarm setpoint PPM ☐ ☐

3. Functional Testing

.1 Schedule (ensure no gas detected in space)
- .1 EF-7 is off ☐ ☐
- .2 Verify outside air damper is closed ☐ ☐

.2 Primary Gas Detection
- .1 Start vehicle in space (or apply test gas to sensors) ☐ ☐
- .2 Sensor detects gas ☐ ☐
- .3 EF-7 energizes ☐ ☐
- .4 Record time fan enables ☐ ☐
- .5 When gas rises above warning limit, record gas level/type PPM ☐ ☐
- .6 Warning enables but not in alarm ☐ ☐
- .7 When gas rises above alarm limit, record gas level/type PPM ☐ ☐
- .8 Record time alarm limit is breached ☐ ☐
- .9 Record time alarm occurs ☐ ☐
- .10 Remove source ☐ ☐
- .11 Record time gas level drops below alarm limit ☐ ☐
- .12 Acknowledge alarm ☐ ☐
- .13 Verify fan shuts down after minimum run time ☐ ☐
- .14 Verify outside air damper closes to minimum position ☐ ☐

.3 Secondary Gas Detection
- .1 Apply test gas to sensors for second gas source ☐ ☐
- .2 Sensor detects gas ☐ ☐
- .3 EF-7 energizes ☐ ☐
- .4 Record time fan enables ☐ ☐
- .5 When gas rises above warning limit, record gas level/type PPM ☐ ☐
- .6 Warning enables but not in alarm ☐ ☐
- .7 When gas rises above alarm limit, record gas level/type PPM ☐ ☐
- .8 Record time alarm limit is breached ☐ ☐
- .9 Record time alarm occurs ☐ ☐
- .10 Remove source ☐ ☐
- .11 Record time gas level drops below alarm limit ☐ ☐
- .12 Acknowledge alarm ☐ ☐
- .13 Verify fan shuts down after minimum run time ☐ ☐
- .14 Verify outside air damper closes to minimum position ☐ ☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM2.6

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Exhaust Fan EF-07**	*Room #:* **157**

4. Operational Testing

		C	E
.1	Operation of EF-7		
.1	Ensure fan is on	☐	☐
.2	Verify vibration isolators appear to be functioning	☐	☐
.3	Noise generated is within reason in space	☐	☐

5. Failure Modes

.1	Motor Failure EF-7		
.1	Cut power to motor (EF-7)	☐	☐
.2	Apply gas to trip high limit	☐	☐
.3	Verify alarm registers (audible and visual)	☐	☐
.4	Restore power to EF-7	☐	☐
.5	EF-7 resumes control	☐	☐
.6	Acknowledge Alarm	☐	☐

Comments

SIGN-OFFS

Contractor: _____ Date:_____

Engineer:_____ Date:_____

CxA:_____ Date:_____

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.1

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-1**	*Room #:* **N/A**

1. TEST PURPOSE

.1 To test all components of the air handling unit to ensure that the system and all associated sub-systems operate as intended during normal and abnormal operating conditions.

.2 To document that the system operation performs as intended.

.3 To highlight required modifications and corrections to the system operation and allow those corrections to take place prior to substantial completion and turn over to owner.

.4 To ensure that the system and all sub-systems operates as required and intended and document that operation before turning over to the owner.

2. Test PrerequisitesMechanical:

	C	E
.1 System:		
.1 All component verifications are complete and reviewed ----------	☐	☐
.2 Testing, adjusting and balancing (TAB) is complete for all associated systems. ----------	☐	☐
.3 TAB report is complete and reviewed. ----------	☐	☐
.4 Heating is operational. ----------	☐	☐
.5 Cooling is operational. ----------	☐	☐
.6 Energy recovery unit is operational. ----------	☐	☐
.7 Verify supply fan operation:		
.1 Rotation ---------- ----------	☐	☐
.2 Lubrication ---------- ----------	☐	☐
.3 Belt Alignment ---------- ----------	☐	☐
.8 Verify exhaust fan operation:		
.1 Rotation ---------- ----------	☐	☐
.2 Lubrication ---------- ----------	☐	☐
.3 Belt Alignment ---------- ----------	☐	☐

.2 Controls:

.1 All associated controls have been verified point to point including: inputs, outputs, valves, actuators, interlocks, time delays, failure modes, restart modes, schedules, reset schedules, graphics and trending. ----------

.2 All sensors have been calibrated. ----------

.3 All sequences of operation at both extremes and at midpoints have been verified.

.4 All manual overrides and jumpers have been removed to allow for automatic operation. ----------

.5 All hardware interlocks and safeties (if any) are operational. ----------

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.1

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-1**	*Room #:* **N/A**

3. Operational Testing Procedures

				C	E
.1	Occupied/Unoccupied Schedule				
.1	Weekday Schedule	ON _____	OFF _____	☐	☐
.2	Weekend Schedule	ON	OFF	☐	☐
.3	Holiday Schedule	ON	OFF	☐	☐
.2	Coil and drain pan				
.1	Fill drain pan with water (during fan operation, with door closed)				
.1	Water drains freely			☐	☐
.2	No leaks evident			☐	☐
.3	All water flows to drain			☐	☐
.3	System shut down (or unoccupied mode):				
.1	Set system to unoccupied mode			☐	☐
.2	Supply Fan ramps down and "OFF"			☐	☐
.3	Exhaust Fan ramps down and "OFF"			☐	☐
.4	ERV shuts down			☐	☐
.5	Once fans are off RTU Relief Damper moves to "CLOSED"			☐	☐
.6	Once fans are off RTU Intake Damper moves to "CLOSED"			☐	☐
.7	Heating is "Off"			☐	☐
.8	Cooling is "OFF"			☐	☐
.4	System Start Up				
.1	Start-up system (Set to occupied)			☐	☐
.1	Verify RTU O/A damper opens		☐	☐	
.2	Verify RTU Exhaust damper opens			☐	☐
.3	Verify RTU Supply fan starts and ramps to setpoint			☐	☐
.4	Verify RTU Return fan start and ramps to setpoint			☐	☐
.5	RTU controls heat/cool to meet space temperature or discharge air temperature			☐	☐
.5	Discharge Air Control (OAT below free cooling – assumed to be 0 deg.C):				
.1	Turn off heat recovery wheel (RTU to stay operating)			☐	☐
.2	Cooling is off			☐	☐
.3	Measure Discharge Air Temperature:				
.1	Actual measured temperature		--- ^{O}C	☐	☐
.4	Increase space temperature setpoint			☐	☐
.5	Confirm heat output increases			☐	☐
.6	Measure Discharge Air Temperature:				
.1	Actual measured temperature		--- ^{O}C	☐	☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.1

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-1**	*Room #:* **N/A**

.7 Turn on heat recovery wheel (RTU to stay operating)---------- ☐ ☐
.8 Wheel operates to transfer energy ---------- ☐ ☐
.9 Heating output decreases ---------- ☐ ☐
.10 Measure Discharge Air Temperature:
.1 Actual measured temperature---------- --- ^{O}C ☐ ☐
.11 Reset temperature setpoint ---------- ☐ ☐

.6 Discharge Air Control (OAT above 21 deg.C.):

.1 Turn off heat recovery wheel (RTU to stay operating) ---------- ☐ ☐
.2 Heating is off---------- ☐ ☐
.3 Measure Discharge Air Temperature:
.1 Actual measured temperature---------- --- ^{O}C ☐ ☐
.4 Decrease space temperature setpoint ---------- ☐ ☐
.5 Cooling coil modulates to suit new space temperature setpoint -------- ☐ ☐
.6 Measure Discharge Air Temperature:
.1 Actual measured temperature---------- --- ^{O}C ☐ ☐
.7 Turn on heat recovery wheel (RTU to stay operating)---------- ☐ ☐
.8 Wheel operates to transfer energy ---------- ☐ ☐
.9 Cooling output decreases ---------- ☐ ☐
.10 Measure Discharge Air Temperature:
.1 Actual measured temperature---------- --- ^{O}C ☐ ☐
.11 Reset temperature setpoint ---------- ☐ ☐

.7 Pre-heat coil:

.1 Record Preheat coil setpoints:
.1 Outside air temperature setpoint ---------- --- ^{O}C ☐ ☐
.2 Preheat Leaving air temperature ---------- --- ^{O}C ☐ ☐
.2 Adjust setpoints to enable coil operation ---------- ☐ ☐
.3 Confirm coil enables---------- ☐ ☐
.4 Measure Preheat Air Temperature:
.1 Actual measured temperature---------- --- ^{O}C ☐ ☐
.5 Increase preheat temperature setpoint---------- ☐ ☐
.6 Coil modulates to suit new setpoint ---------- ☐ ☐
.7 Measure Discharge Air Temperature:
.1 Actual measured temperature---------- --- ^{O}C ☐ ☐
.8 Reset preheat coil setpoints ---------- ☐ ☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.1

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-1**	*Room #:* **N/A**

4. Failure Mode Testing Procedures

.1 Supply Fan Failure:

.1 Switch Power Off at Disconnect

.1	Critical Alarm---------- ----------	☐	☐
.2	Alarms at thermostat ---------- ----------	☐	☐
.3	Heating off ---------- ----------	☐	☐
.4	Outdoor Air Damper at 0% ---------- ----------	☐	☐
.5	Exhaust Damper at 0%---------- ----------	☐	☐
.6	Cooling off ---------- ----------	☐	☐
.7	Return fan stops ---------- ----------	☐	☐
.8	ERV stops ---------- ----------	☐	☐

.2 Turn Power On

.1	Fan system starts ---------- ----------	☐	☐

.2 Exhaust Fan Failure:

.1 Switch Power Off at Disconnect

.1	Critical Alarm---------- ----------	☐	☐
.2	Alarms at thermostat ---------- ----------	☐	☐
.3	Heating off ---------- ----------	☐	☐
.4	Outdoor Air Damper at 0% ---------- ----------	☐	☐
.5	Exhaust Damper at 0%---------- ----------	☐	☐
.6	Cooling off ---------- ----------	☐	☐
.7	Supply fan stops---------- ----------	☐	☐
.8	ERV stops ---------- ----------	☐	☐

.2 Turn Power On

.1	Fan system starts ---------- ----------	☐	☐

Comments

SIGN-OFFS

Contractor: _____ Date:_____

Engineer:_____ Date:_____

CxA:_____ Date:_____

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.2

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-2**	*Room #:* **N/A**

1. TEST PURPOSE

.1 To test all components of the air handling unit to ensure that the system and all associated sub-systems operate as intended during normal and abnormal operating conditions.

.2 To document that the system operation performs as intended.

.3 To highlight required modifications and corrections to the system operation and allow those corrections to take place prior to substantial completion and turn over to owner.

.4 To ensure that the system and all sub-systems operates as required and intended and document that operation before turning over to the owner.

2. Test PrerequisitesMechanical:

	C	E
.1 System:		
.1 All component verifications are complete and reviewed ----------	☐	☐
.2 Testing, adjusting and balancing (TAB) is complete for all associated systems. ----------	☐	☐
.3 TAB report is complete and reviewed. ----------	☐	☐
.4 Heating is operational. ----------	☐	☐
.5 Cooling is operational. ----------	☐	☐
.6 Economizer is operational. ----------	☐	☐
.7 Verify supply fan operation:		
.1 Rotation ---------- ----------	☐	☐
.2 Lubrication ---------- ----------	☐	☐
.3 Belt Alignment ---------- ----------	☐	☐
.8 Verify exhaust fan operation:		
.1 Rotation ---------- ----------	☐	☐
.2 Lubrication ---------- ----------	☐	☐
.3 Belt Alignment ---------- ----------	☐	☐

.2 Controls:

.1 All associated controls have been verified point to point including: inputs, outputs, valves, actuators, interlocks, time delays, failure modes, restart modes, schedules, reset schedules, graphics and trending. ----------

.2 All sensors have been calibrated. ----------

.3 All sequences of operation at both extremes and at midpoints have been verified.

.4 All manual overrides and jumpers have been removed to allow for automatic operation. ----------

.5 All hardware interlocks and safeties (if any) are operational. ----------

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.2

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-2**	*Room #:* **N/A**

3. Operational Testing Procedures

				C	E
.1	Occupied/Unoccupied Schedule				
.1	Weekday Schedule	ON _____	OFF _____	☐	☐
.2	Weekend Schedule	ON	OFF	☐	☐
.3	Holiday Schedule	ON	OFF	☐	☐
.2	Verification of field temperature devices.				
.1	Return Air Temperature (prior to air handling unit):				
.1	Actual measured temperature----------		--- ^{O}C	☐	☐
.3	Coil and drain pan				
.1	Fill drain pan with water (during fan operation, with door closed)				
.1	Water drains freely----------		----------	☐	☐
.2	No leaks evident----------		----------	☐	☐
.3	All water flows to drain----------		----------	☐	☐
.4	System shut down (or unoccupied mode):				
.1	Set system to unoccupied mode ----------			☐	☐
.2	Supply Fan ramps down and "OFF"----------			☐	☐
.3	Once fans are off RTU Relief Damper moves to "CLOSED" ----------			☐	☐
.4	Once fans are off RTU Intake Damper moves to "CLOSED" ----------			☐	☐
.5	Heating is "Off" ----------			☐	☐
.6	Cooling is "OFF" ----------			☐	☐
.5	System Start Up				
.1	Start-up system (Set to occupied)----------			☐	☐
.1	Verify RTU O/A damper opens---------- ----------☐			☐	
.2	Verify RTU Supply fan starts and ramps to setpoint----------			☐	☐
.3	Verify RTU Relief damper opens---------- ----------			☐	☐
.4	RTU controls heat/cool to meet space temperature or discharge air temperature---------- ----------			☐	☐
.6	Discharge Air Control (OAT below free cooling – assumed to be 0 deg.C):				
.1	Cooling is off----------			☐	☐
.2	Measure Discharge Air Temperature:				
.1	Actual measured temperature----------		--- ^{O}C	☐	☐
.3	Increase space temperature setpoint ----------			☐	☐
.4	Confirm heat output increases ----------			☐	☐
.5	Measure Discharge Air Temperature:				
.1	Actual measured temperature----------		--- ^{O}C	☐	☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.2

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-2**	*Room #:* **N/A**

.7 Discharge Air Control (OAT above 21 deg.C.):

.1	Heating is off----------	☐	☐
.2	Measure Discharge Air Temperature:		
.1	Actual measured temperature---------- --- ^{O}C	☐	☐
.3	Decrease space temperature to 1.5 Deg.C below current temp.---------	☐	☐
.4	Cooling coil modulates to suit new space temperature setpoint --------	☐	☐
.5	Confirm stage 1 operates and modulates ----------	☐	☐
.6	Measure Discharge Air Temperature:		
.1	Actual measured temperature---------- --- ^{O}C	☐	☐
.7	Decrease space temperature setpoint down to maximum cooling ------	☐	☐
.8	Cooling coil modulates to suit new space temperature setpoint --------	☐	☐
.9	Confirm stage 1 and 2 enable and modulate ----------	☐	☐
.10	Measure Discharge Air Temperature:		
.1	Actual measured temperature---------- --- ^{O}C	☐	☐
.11	Reset temperature setpoint ----------	☐	☐

.8 Economizer:

.1	Verify economizer functions in accordance with manufacturers tests-	☐	☐

4. Failure Mode Testing Procedures

.1 Supply Fan Failure:

.1	Switch Power Off at Disconnect		
.1	Critical Alarm---------- ----------	☐	☐
.2	Alarms at thermostat ---------- ----------	☐	☐
.3	Heating off ---------- ----------	☐	☐
.4	Outdoor Air Damper at 0% ---------- ----------	☐	☐
.5	Relief Damper at 0% ---------- ----------	☐	☐
.6	Cooling off ---------- ----------	☐	☐
.2	Turn Power On		
.1	Fan system starts ---------- ----------	☐	☐

Project Name: New Modular Police Building and Employee Housing - Black Lake	Project #: S-03-2014
	Performance Verification #: PVM1.2

Performance Verification Test Form		*Section:*
System: **HVAC**	*Equipment:* **Roof Top Unit RTU-2**	*Room #:* **N/A**

Comments

SIGN-OFFS

Contractor: _____ Date:_____

Engineer:_____ Date:_____

CxA:_____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No:
Owner File No:

Section: 019133.02

Item: **BREAKER PANELBOARD**

LOCATION DATA:

Floor _____ Room _____ Panel ID _____

EQUIPMENT DATA:

Manufacturer	_____	Bus Amperage/Bracing	_____
Model Number	_____	c/w TVSS Unit	___ Yes ___ No
Volt/Phase/Wire	_____		
No. of Circuits	_____	Match Installed	___ Yes ___ No

STATIC CHECKS: **DATE / CHECKED BY:** _____

Enclosure Details

Mounting	_____		
EEMAC Enclosure Type	_____		
Door Type	_____		
Drip Hood	___ Yes ___ No	Door Lock	___ Yes ___ No

Feeder Details

Wire Size	_____	Wire Insulation	_____
Ground Wire Type & Size	_____	Conduit Size	_____

Branch Breaker

Mounting	___ Bolt In ___ Plug In	Branch Lugs Torqued	___ Yes ___ No
Branch Wires Labelled	___ Yes ___ No	Neutral Wires Labelled	___ Yes ___ No
GFCI Breakers Labelled	___ Yes ___ No	GFCI Breakers Tested	___ Yes ___ No

Auxiliary Components

Main Breaker	_____ A	Interrupting Capacity	_____ KA
Main Lugs Torqued	___ Yes ___ No	Isolated Ground Bar	___ Yes ___ No
Bus Type	___ Copper ___ Aluminum		

Miscellaneous

Conduit Skirting	___ Yes ___ No	Lamecoid Accurate	___ Yes ___ No
Spare Conduits	___ Yes ___ No	Breaker Filler Pieces Installed	___ Yes ___ No
Exterior Clean	___ Yes ___ No	Circuit Directory Installed	___ Yes ___ No
Interior Clean	___ Yes ___ No	Top Connectors Sealed	___ Yes ___ No

OPERATION CHECKS: **DATE / MEASURED BY:** _____

Measured Values	**Amperage**	**Voltage**
	Line A _____ Amps	AB _____ Volts
	Line B _____ Amps	BC _____ Volts
	Line C _____ Amps	CA _____ Volts

SIGN-OFFS:

Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No:
Owner File No:

Section: 019133.02

Item: **CDP PANELBOARD**

LOCATION DATA:

Floor _____ Room _____ Panel ID _____

EQUIPMENT DATA:

Manufacturer	_____	Bus Amperage/Bracing	
Model Number	_____	c/w TVSS Unit	___ Yes ___ No
Volt/Phase/Wire	_____		
No. of Breakers	_____	Match Installed	___ Yes ___ No

STATIC CHECKS: **DATE / CHECKED BY:** _____

Enclosure Details

Mounting	___ Flush ___ Surface ___ Padmount		
3mm Sheet Steel	___ Yes ___ No	Phosphated	___ Yes ___ No
Door Type	_____	Painted & Touched-up	___ Yes ___ No
Drip Hood	___ Yes ___ No	Door Lock	___ Yes ___ No

Feeder Details

Wire Size	_____	Wire Insulation	_____
Ground Wire Type & Size	_____	Conduit Size	_____

Branch Breaker

Mounting	___ Bolt In ___ Plug In	Branch Lugs Torqued	___ Yes ___ No
Branch Wires Labelled	___ Yes ___ No	Neutral Wires Labelled	___ Yes ___ No

Auxiliary Components

Bus Type ___ Copper ___ Aluminum

Miscellaneous

Conduit Skirting	___ Yes ___ No	Lamecoid Accurate	___ Yes ___ No
Spare Conduits	___ Yes ___ No	Breaker Filler Pieces Installed	___ Yes ___ No
Exterior Clean	___ Yes ___ No	Top Connectors Sealed	___ Yes ___ No
Interior Clean	___ Yes ___ No		

OPERATION CHECKS: **DATE / MEASURED BY:** _____

Measured Values

Amperage		**Voltage**	
Line A	_____ Amps	AB	_____ Volts
Line B	_____ Amps	BC	_____ Volts
Line C	_____ Amps	CA	_____ Volts

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No:
Owner File No:

019133.02

Item: **EQUIPMENT RACK**

LOCATION DATA:

Floor _____ Room _____ Panel ID _____

EQUIPMENT RACK:

Manufacturer _____ Match Installed ___ Yes ___ No
Series _____
Model Number _____

STATIC CHECKS: **DATE / CHECKED BY:** _____

Components Installed

19-inch mounting rails	___ Yes	___ No	Fibre Patch Panel - Qty:	_____	
42U Rack Units	___ Yes	___ No	Data Patch Panel - Qty:	_____	
152mm Side Channels	___ Yes	___ No			
2-Ring horizontal managers	___ Yes	___ No			
2 - Shelves	___ Yes	___ No	Min Clearance - Front: 914mm	___ Yes	___ No
6-Outlet Power Bar	___ Yes	___ No	Min Clearance - Back: 1067mm	___ Yes	___ No
12-foot Shielded Cord Set	___ Yes	___ No	Min Clearance - Side: 762mm	___ Yes	___ No
Integral on/off Switch	___ Yes	___ No			
15A Breaker Reset	___ Yes	___ No			
EMI/RFI Filtering	___ Yes	___ No			
Ground Lug Terminated	___ Yes	___ No			

Cabling

Fibre Cable:	Type:	_____	Size: _____	Colour:	_____
Data Cables:	Category:	_____	Size: _____	Colour:	_____

Connectors:

Fibre Connectors	Type:	_____	Size: _____	Colour:	_____
Data Connectors	Category:	_____	Size: _____	Colour:	_____

OPERATION CHECKS:

Cable installation and testing:

Installed and Certified by:
Company: _____ Name: _____ Date: _____

Labeling info provided by Owner	___ Yes	___ No	Rack layout info provided	___ Yes	___ No
Patch Cords Supplied	___ Yes	___ No	by Owner:		
Cable Test Report Submitted	___ Yes	___ No	All Cables Passed Tests:	___ Yes	___ No

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No: 019133.02
Owner File No:

Item: **DISCONNECT SWITCHES**

LOCATION DATA:

Floor _____ Room _____ Equipment: _____

EQUIPMENT DATA:

Manufacturer _____
Model Number _____
Volt/Phase/Amperage _____
Horsepower _____ Match Installed ___ Yes ___ No

STATIC CHECKS: **DATE / CHECKED BY:** _____

Elevator Main Disconnect Switch

Fusible Switch	___ Yes	___ No
Volt/Phase	_____	
Pole/Wire	_____	
Switch Amperage - 60A	___ Yes	___ No
Fuse Amperage - 35A	___ Yes	___ No

Enclosure Details

Mounting	___ Flush	___ Surface
EEMAC Enclosure Type	_____	
Padlockable	___ Yes	___ No
Label	___ Yes	___ No

Elevator Cab Light Main Disconnect Switch

Breaker Switch	___ Yes	___ No
Volt/Phase	_____	
Pole/Wire	_____	
Switch Amperage - 15A	___ Yes	___ No

Enclosure Details

Mounting	___ Flush	___ Surface
EEMAC Enclosure Type	_____	
Padlockable	___ Yes	___ No
Label	___ Yes	___ No

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No: 019133.02
Owner File No:

Item: **EXIT LIGHT**

FIXTURE TYPE: _____ Number Installed: _____

EQUIPMENT DATA: **DATE / CHECKED BY:** _____

Manufacturer _____

Catalogue Number _____

Fixture Type _____

Housing _____

Voltage _____

Lamp Wattage _____

Lamp Type _____

Lettering Type _____

Number of Faces _____

Circuit _____

Mounting

Nexus Compatible _____

Options _____

_____

Match Installed ___ Yes ___ No

_____

_____

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No:
Owner File No:

Section: 019133.02

Item: **F/A COMPONENTS**

EQUIPMENT DATA:

Manufacturer _____ Match Installed ___ Yes ___ No
System _____

STATIC CHECKS: **DATE / CHECKED BY:** _____

System Devices	**Model Number**	**Match installed**
Manual Pull Stations		___ Yes ___ No
Smoke Detectors		___ Yes ___ No
Monitor Modules		___ Yes ___ No
Control Modules		___ Yes ___ No
Relay Modules		___ Yes ___ No
Fault Isolator Modules		___ Yes ___ No
Power Supply		___ Yes ___ No
Annunciator Panel		___ Yes ___ No
Signal Devices		___ Yes ___ No

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No:
Owner File No:

Section: 019133.02

Item: **GROUNDING**

STATIC CHECKS: **DATE / CHECKED BY:** _____

Grounded Systems

Communications	___ Yes	___ No
Switchboard	___ Yes	___ No
Transformers	___ Yes	___ No
Lay-in Trays	___ Yes	___ No
Feeder Conduits	___ Yes	___ No
Green Insul. on Branch Conduits	___ Yes	___ No
Continuity checked	___ Yes	___ No

Miscellaneous

Riser _____

Ground Bus _____

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No: 019133.02
Owner File No:
Item: **LIGHTING**

FIXTURE TYPE: _____ Number Installed: _____

EQUIPMENT DATA: **DATE / CHECKED BY:** _____

Manufacturer _____

Catalogue Number _____

Voltage _____

Lamp Type _____

Lamp Wattage _____

Number of Lamps _____

Ballast/Driver Type _____

Size _____

Mounting _____

Diffuser _____

Options _____

_____

Match Installed ___ Yes ___ No

SIGN-OFFS:

Contractor: _____ Signature: _____ Date:_____

Cx Rep: _____ Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
Location:
RAL File No:
Owner File No:

Section: 019133.02

Item: **LV PANELS**

LOCATION DATA:

Floor: _____ Room: _____ ID: _____

EQUIPMENT DATA:

Manufacturer _____ Match Installed ___ Yes ___ No
System _____
Model Number _____ Relay Capacity: _____ Relays: _____

STATIC CHECKS: **DATE / CHECKED BY:** _____

Components Installed

Intelligent Card	___ Yes	___ No	Data-Line	___ Yes	___ No
Photo Control Package	___ Yes	___ No	BMS Interface Module	___ Yes	___ No
Networking Modules	___ Yes	___ No	Photo-control Module	___ Yes	___ No
Power Supply Units	___ Yes	___ No	OCC Sensors	___ Yes	___ No
Digital Switches w/ Pilot Light	___ Yes	___ No	Photo Sensors (Indoor)	___ Yes	___ No
Relays w/ Pilot Light Switch	___ Yes	___ No	Photo Sensors (Outdoor)	___ Yes	___ No
Channel Bushbuttons	___ Yes	___ No			

Panel Installation

Power supply terminated	___ Yes	___ No	Operating manuals provided	___ Yes	___ No
Panel relays terminated	___ Yes	___ No			
Remote relays terminated	___ Yes	___ No			
Class 2 wiring terminated	___ Yes	___ No			
Lamecoid Identification	___ Yes	___ No			

OPERATION CHECKS:

Programming and Start-up

Start-up and programming verified by:
Company: _____ Name: _____ Date: _____

Control Devices:

LV Switching conforms to drawings	___ Yes	___ No
Indoor Photo Sensors Operational	___ Yes	___ No
Outdoor Photo Sensors Operational	___ Yes	___ No
Occupancy Sensors Operational	___ Yes	___ No

SIGN-OFFS:

Contractor: Signature: _____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
RAL File No: 019133.02
Owner File No:
Item: **MOTOR STARTER**

LOCATION DATA:

Floor _____ Room _____ ID _____

EQUIPMENT DATA:

Manufacturer	_____	Thermal Protection	___ Yes ___ No
Model Number	_____	Panel/Cct Fed From	_____
Starter Volt/Phase/Wire	_____	Starter Size	_____
Starter Type	_____	Match Installed	___ Yes ___ No

STATIC CHECKS: **DATE / CHECKED BY:** _____

Motor Protection Switch

Type	___ Fuse ___ Breaker	Pilot Lights Checked	___ Yes ___ No
Size	_____		

Overload Elements

Overload Correctly Sized	___ Yes ___ No	Amperage Range	_____ Amps

Motor Data

Service Factor	_____	Full Load Current	_____ Amps
Motor Volt/Phase/Wire	_____	Motor Horsepower	_____ HP
Motor Design Type	_____	Motor Code	_____
Motor Insulation	_____	Motor Locked Rotor Current	_____ Amps
Cable Distance to Drive	_____	Motor RPM	_____ RPM

Enclosure Details

Mounting	___ Flush ___ Surface		
EEMAC Enclosure Type	_____		
Door Type	_____		
Drip Hood	___ Yes ___ No	Door Lock	___ Yes ___ No

Miscellaneous

Exterior Clean	___ Yes ___ No	Top Connectors Water Tight	___ Yes ___ No
Interior Clean	___ Yes ___ No	Conduit Connectors Sealed	___ Yes ___ No
Indicating Lights Operate	___ Yes ___ No	Ground Wire Type & Size	___ Type ___ AWG
Hand/Off/Auto Switch	___ Yes ___ No	Phase Rotation Confirmed	___ Yes ___ No
Air Filters Present	___ Yes ___ No	Operation Manual Included	___ Yes ___ No
Air Filters Changed Pre-Startup	___ Yes ___ No	Record of VFD Settings	___ Yes ___ No

OPERATION CHECKS: **DATE / MEASURED BY:** _____

Starter Operation

Manual Operation Checked	___ Yes ___ No	Auto Operation Checked	___ Yes ___ No
Disconnect Function Checked	___ Yes ___ No	Fire Alarm Shutdown Checked	___ Yes ___ No
VFD Display Calibrated	___ Yes ___ No	Auto Restart Checked	___ Yes ___ No
Motor RPM Verified	___ Yes ___ No	Owner Training Completed	___ Yes ___ No

Measured Values	**Amperage**		**Voltage**		**Voltage**	
	Line A	_____ Amps	AB	_____ Volts	AN	_____ Volts
	Line B	_____ Amps	BC	_____ Volts	BN	_____ Volts
	Line C	_____ Amps	CA	_____ Volts	CN	_____ Volts

Motor Terminal Waveforms Taken	___ Yes ___ No	Skip Frequencies	_____
Acceleration Time	_____	Carries Frequency	_____
Deceleration Time	_____	Maximum Speed	_____
Output Pulse Risetime	_____	Minimum Speed	_____
Speed Control	☐-10VDC ☐4-20mA ☐ +/-10VDC	Speed Display	☐ % ☐ Hz

SIGN-OFFS:

Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Owner:
Project Name:
Location:
Owner File No:

019133.02

Item: **Wiring Devices**

STATIC CHECKS: **DATE / CHECKED BY:** _____

Receptacles location and operation confirmation

Duplex Receptacles (5-15R)	_____ Yes	_____ No
Single Receptacles (5-15R)	_____ Yes	_____ No
T-Slot Receptacles (5-20R)	_____ Yes	_____ No
Tamper resistant safety Receptacles (5-15R)	_____ Yes	_____ No
GFCI (Safe-Lock - 5mA Ground Fault)	_____ Yes	_____ No

Switches location and operation confirmation

120V Switches (SPST, 15A)	_____ Yes	_____ No
120V Pilot Light Switches (SPST - 15A)	_____ Yes	_____ No
Fractional HP/KW Manual Starters	_____ Yes	_____ No
120V Illuminated Switches	_____ Yes	_____ No
Dimmer Switches	_____ Yes	_____ No

Comments:

SIGN-OFFS:

Contractor: Signature:_____ Date:_____

Consultant: Ritenburg & Associates Ltd. Signature:_____ Date:_____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
CDP PANELBOARDS

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, manufacturer's recommendations and Specifications.
- ☐ Confirm that the panelboard has been securely fastened and mounted on unistrut and / or plywood backboards (where required by the specifications).
- ☐ Confirm that all feeder and branch circuit conductors are properly sized, terminated with the proper torque, identified as required by the Specifications. Ensure that the panelboard, panelboard feeders & branch wiring have been Megger tested. Panel phase and branch wiring colour & circuit number must correspond.
- ☐ Ensure that trip rating of each breaker is present and visible.
- ☐ Mark all lugs and terminals that have been torqued with red lacquer or marker.
- ☐ Ensure that the branch circuits and their breakers are correctly matched.
- ☐ Ensure that the panelboards lamecoid tag conforms to the drawings & Specification.
- ☐ Ensure that all sections of the Contractor Start-up and Testing Sheet(s) are signed or initialed and dated.
- ☐ Complete record drawings.
- ☐ Conduct Owner training on the operation and maintenance of the panelboards.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
Data/Voice System

Form. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the specifications and comply with the shop drawings.
- ☐ Perform the installation in accordance with the manufacturer's recommendations and in accordance with the specifications and drawings.
- ☐ Conduct testing of the cabling system in accordance the standards outlined in the specifications.
- ☐ Confirm termination of all vertical and horizontal copper cable.
- ☐ Confirm termination of all fibre cable.
- ☐ All fibre and copper cables are provided with service loops at the equipment racks and BIX blocks.
- ☐ In all wall or pac pole drops, a 300mm cable slack is provided before entering wall or pac pole suspended in the ceiling.
- ☐ Confirm identification of equipment and all tagging is completed in accordance with the specifications and Owner's requirements.
- ☐ Confirm management of all vertical and horizontal cables, including installation of waterfalls at equipment racks.
- ☐ Confirm velcor straps are used. Cable ties are unacceptable.
- ☐ Confirm grounding within the Data/Com Rooms in accordance with the requirements of the Canadian Electrical Code, specifications and drawings, including bonding of the equipment racks, conduit stubs and cable trays.
- ☐ Confirm clearances at the equipment racks.
- ☐ Each equipment racks is supplied with a floor mounting base, fibre and copper patch panels, cable managers, power bar, and shelves.
- ☐ Confirm equipment racks are secured to floor.
- ☐ Confirm power to server equipment is energized and polarity of all wiring devices is checked.
- ☐ Supply and turn-over to Owner the fibre and copper patch cords in the quantities, types and lengths noted in the specifications.
- ☐ Submit cable test reports, include copies or CD disk in the Operating and Maintenance Manual.
- ☐ Conduct Owner training on the layout and installation of this system.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

_____

Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
DISCONNECT SWITCHES F/NF

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, manufacturer's recommendations and Specifications.
- ☐ Confirm that the disconnect switches has been securely fastened.
- ☐ Confirm that all feeder and branch circuit conductors are properly sized, terminated with the proper torque, identified as required by the Specifications.
- ☐ Mark all lugs and terminals that have been torqued with red lacquer or marker.
- ☐ Ensure that the branch circuits and their fuses are correctly matched.
- ☐ Ensure that the disconnect switches lamecoid tags conforms to the drawings & Specification.
- ☐ Ensure that all sections of the Contractor Start-up and Testing Sheet(s) are signed or initialed and dated.
- ☐ Complete record drawings.
- ☐ Conduct Owner training on the operation and maintenance of the panelboards.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
EXIT AND EMERGENCY LIGHTING

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings (if provided).
- ☐ The installation is completed in accordance with the Canadian Electrical Code, specifications and manufacturer's recommendations.
- ☐ Confirm that all conductors for supply and control are properly sized, terminated with proper torque.
- ☐ Confirm exit lighting clearly indicate the means of egress and are visible in all public areas.
- ☐ Confirm exit light fixtures are connected to a dedicated emergency circuit as indicated on the floor plans.
- ☐ Ensure that exit light circuit breaker is locked in on position.
- ☐ Confirm complete illumination of the EXIT signs.
- ☐ Perform functional & other tests (as applicable) required by the Specifications, the Manufacturer or the Design Consultant.
- ☐ Conduct Owner training in regards to the operation and maintenance of the emergency exit lighting.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
FIRE ALARM

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings.
- ☐ Complete installation and wiring of all components of the fire alarm system in accordance with the manufacturer's recommendations, specifications, and in accordance with the National Standard of Canada/Underwriters' Laboratory of Canada Standards CAN/ULC-S524-M06 "Standard for the Installation of Fire Alarm Systems".
- ☐ Complete the inspection and testing of the fire alarm system in accordance with the National Standard of Canada/Underwriters' Laboratory of Canada Standards CAN/ULC-S536-04 "Standard for the Inspection and Testing of Fire Alarm Systems".
- ☐ Complete the verification of the fire alarm system in accordance with the National Standard of Canada/Underwriters' Laboratory of Canada Standards CAN/ULC-S537-04 "Standard for the Verification of Fire Alarm System Installations".
- ☐ Confirm fire alarm system connected to a dedicated circuit with breaker lock-on device on branch breaker.
- ☐ Fire alarm control panel is fed with mineral insulated cable, or is provided with 1-hour rating on feeder to the fire alarm panel.
- ☐ Initiate alarm from each breakglass station.
- ☐ Initiate an alarm from each smoke detector and heat detector by initiating an alarm using a magnet, artificial smoke, or by jumping out device in case of fixed temperature heat detectors. The method to activate a detector shall be confirmed by the manufacturer's verification agent.
- ☐ Initiate an alarm from the sprinkler system by testing flow within a floor control zone valve.
- ☐ Conduct an open circuit tests at various points on the Class B tolerant loops. Initiate an alarm from various points on the open circuit.
- ☐ Initiate an alarm to check supervisory and control functions at the fire alarm control and annunciator panel.
- ☐ Check correctness of identification of annunciator zones and device mapping at the annunciator.
- ☐ Initiate one test alarm to central supervisory station after notice of test is given.
- ☐ Check operation of all auxiliary contacts and devices, and verify that auxiliary control door holders, fan shut-down, elevator homing, etc, is fully operational.
- ☐ Perform functional and other tests (as applicable) as required by the Specifications, the Manufacturer or the Consultant.
- ☐ Check operation of fire alarm audible and visual signal appliances in public areas.
- ☐ Record sound levels for fire alarm signal devices within public areas.
- ☐ Confirm signal to the municipal fire department in accordance with the requirements of the 2010 National Building Code.
- ☐ Submit manufacturer's fire alarm certificate of verification and fire alarm test report.
- ☐ Confirm spared devices are provided to the owner as required by the Specifications.
- ☐ Complete record drawings.

- ☐ Conduct Owner training on the operation and maintenance of the fire alarm system.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into notes areas of any unfinished areas or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
GROUNDING

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings (if provided).
- ☐ Perform tests that are required by the Canadian Electrical Code, ANSI/NETA standard's, manufacturer's recommendations and Specifications.
- ☐ All electrical equipment and wiring grounded in accordance with the Canadian Electrical Code, and local inspection authority's rules and regulations.
- ☐ The ground bus in each switchboard, transformer, motor control centre, etc., connected to the grounding network by two AWG #3/0 bare copper conductors.
- ☐ All motors with flexible connections have separate insulated ground wire run bridging the flexible connections with the ground wire run back to the nearest junction box or motor control centre.
- ☐ Exposed copper cleaned to a bright surface, and finished with two coats of clean, insulating varnish.
- ☐ Where bonds are covered with soil, the conductors are to be coated with anti-corrosion compound "Kopr-Shield" (Thomas & Betts Co.) before compression connector is applied. All bonding done with 'C' tap and lug compression connectors.
- ☐ All grounding connectors, conductor and terminations checked and approved by the Consultant prior to concealment by fill or architectural finishes.
- ☐ The main grounding electrode or system shall have a fall-of-potential test. Refer to IEEE Standard 81. Five ohms is the maximum allowable resistance between the main grounding electrode and ground.
- ☐ Determine resistance between main grounding system and all major electrical equipment frames, system neutral and any floating neutrals. Any resistance values greater than 0.5 ohm shall be examined.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
LIGHTING

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, specifications, and manufacturer's recommendations.
- ☐ Confirm that all circuit conductors for supply and control are properly sized, terminated with proper torque, identified as required by the Specifications.
- ☐ Confirm proper ballast and voltage ratings are installed within the fixtures.
- ☐ Confirm correct lamps are provided for the fixture in accordance with the specifications and manufacturer's requirements. Ensure lamp colour temperatures and colour rendering index (CRI) are in accordance with the requirements of the specifications.
- ☐ Confirm fixtures are clean, proper fit of lenses and fixture trims.
- ☐ Confirm installation of switches, occupancy sensors and photocells.
- ☐ Adjust coverage and time delay-off to all wall and ceiling occupancy sensors.
- ☐ Complete record drawings for layout of lighting, circuit identification and control.
- ☐ Conduct Owner training in regards to the operating and maintenance of lighting fixtures, including the type of lamps installed, lamp and ballast or LED/driver replacement, driver or ballast warranties, and general maintenance of the fixtures.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
LOW VOLTAGE LIGHTING

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical Specification and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, ANSI/NETA standards, manufacturer's recommendations and Specification.
- ☐ Confirm that all line voltage and class II wiring for supply and control are properly sized, terminated, identified as required by the specifications.
- ☐ Day-light sensors installed for interior perimeter lighting.
- ☐ Exterior photo-sensors installed for exterior lighting.
- ☐ Low voltage power packs are installed and locations marked on as-built drawings.
- ☐ Verify and adjust photo control sensitivity for interior and exterior lighting.
- ☐ Occupancy sensors interconnected to switches as shown on drawings.
- ☐ Provide record of occupancy sensor and photocell programming.
- ☐ Aim and adjust photo controls to optimize function.
- ☐ Conduct Owner training in regards to the operation, programming and maintenance of the lighting control system.
- ☐ Complete record drawings.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
OVERCURRENT PROTECTIVE DEVICES

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical Specification and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, ANSI/NETA standards, manufacturer's recommendations and Specification.
- ☐ Confirm that the overcurrent protection device is correctly sized and has been securely fastened.
- ☐ Confirm that all supply and load feeders are properly sized, terminated with the proper torque, identified as required by the Specification. Ensure that the supply and load feeders have been Megger tested.
- ☐ Mark all lugs and terminals that have been torqued with red lacquer or marker.
- ☐ Ensure that all sections of the Contractor Start-up and Testing Sheet(s) are signed or initialed and dated.
- ☐ Complete record drawings
- ☐ Conduct Owner training on the operation and maintenance of the overcurrent protective equipment.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
BREAKER PANELBOARDS

Sect. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, manufacturer's recommendations and Specifications.
- ☐ Confirm that the panelboard has been securely fastened and mounted on unistrut and / or plywood backboards (where required by the specifications).
- ☐ Ensure panel interior is at the correct depth from the tub or wall face. Confirm that the nuts securing the interior to the tub bolts / tub are properly tightened.
- ☐ Confirm that all feeder and branch circuit conductors are properly sized, terminated with the proper torque, identified as required by the Specifications. Ensure that the panelboard, panelboard feeders & branch wiring have been Megger tested. Panel phase and branch wiring colour & circuit number must correspond.
- ☐ Mark all lugs and terminals that have been torqued with red lacquer or marker.
- ☐ Ensure that the branch circuits and their breakers are correctly matched.
- ☐ Ensure that the panelboards lamecoid tag conforms to the drawings & Specification.
- ☐ Insert final typewritten panel directory and provide breaker lock-on devices as per Specification.
- ☐ Operate the PTT test feature if GFCI breakers are in the panelboard.
- ☐ Ensure that all sections of the Contractor Start-up and Testing Sheet(s) are signed or initialed and dated.
- ☐ Complete record drawings.
- ☐ Conduct Owner training on the operation and maintenance of the panelboards.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes: _____

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Ritenburg & Associates Ltd.
Consulting Electrical Engineers

Performance Checks
WIRING DEVICES

Spec. 019133.02

Owner:
Project Name:
RAL File No:
Owner File No:

Activities, Checks and Tests by the Electrical Contractor

- ☐ Verify the products used meet the requirements of the electrical specifications and complies with the shop drawings.
- ☐ Perform the installation and performance tests according to the Canadian Electrical Code, manufacturer's recommendations and Specifications.
- ☐ Test receptacles for polarity.
- ☐ Test GFCI Receptacles with an appropriate ground fault tester.
- ☐ Verify panel directories and circuit identification indicated on the record drawings are consistent and correct.
- ☐ Record drawings are completed, indicating actual location of devices and circuit identification.
- ☐ Ensure that all parts of this commissioning form and performance checks have been completed. Enter into the notes areas of any unfinished work or problems encountered during installation or commissioning.

Notes:

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Contractor: Signature: _____ Date: _____

Consultant: Ritenburg & Associates Ltd. Signature: _____ Date: _____

Identification of Storage Tank Systems for the Purpose of the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*

Environment Canada (EC) Storage Tank System Identification Form

One form per storage tank system. Mailing instructions on last page.

ENVIRONMENT CANADA USE ONLY

ID Number	
Date Received	
Date Entered	
Entered By	
Comments	

PART I: PURPOSE OF NOTIFICATION

✓ Check all that apply:

☐ Identification of new (not previously registered) system	☐ Temporary withdrawal (Part V)	☐ Change in tank contents (Part IV)
☐ Change in system (e.g. upgrade) (Part IV)	☐ Permanent withdrawal and removal (Part V)	☐ New owner / operator (Part II & III)
☐ Other (specify):		☐ Change in owner / operator address (Part II & III)

PART II: OWNERSHIP OF TANK SYSTEM

A. Owner Name

B. Owner Address
(include: City, Province/Territory, Postal Code)

C. Name of Contact Person

D. Title of Contact Person

E. Phone Number ( )

Fax Number ( )

F. E-mail Address

G. Name of Previous Owner (if applicable)

PART III: LOCATION OF TANK SYSTEM

H. Facility Name

I. Street Address or location of system
(if no street address provide latitude & longitude)

J. Street Address or location of tank system records
(if no street address provide latitude & longitude)

K. Name of Operator (if different from owner)

L. Title of Operator (if different from owner)

M. Operator Address (if different from owner)

N. Phone Number
(if different from owner) ( )

Fax Number
(if different from owner) ( )

O. E-mail Address (if different from owner)

PART IV: STORAGE TANK SYSTEM DESCRIPTION

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
Owner's Tank Identification Number					
EC Tank System Identification Number (one ID number per system)					
Year of Installation of Tank (If unknown, write "unknown")					
Date of Changes to the system (MM/DD/YYYY)					
Is System in Service All Year?	☐ Yes ☐ No (Please identify the month(s) during which the system is in service)				
Type of Tank	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND
Type of Piping (Check all that apply)	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND	☐ ABOVEGROUND ☐ UNDERGROUND
Diameter of Piping (Specify units: millimeters or inches)					
Nominal Tank Capacity (litres)					
Product stored					
Describe how the product transfer area is designed to contain spills					

ULC or API Standard Number	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
API Specification 12B	☐	☐	☐	☐	☐
API Specification 12D	☐	☐	☐	☐	☐
API Specification 12F	☐	☐	☐	☐	☐
API Std 650	☐	☐	☐	☐	☐
ULC-C142.14	☐	☐	☐	☐	☐
ULC-C142.15	☐	☐	☐	☐	☐
ULC-C142.17	☐	☐	☐	☐	☐
ORD-C142.18	☐	☐	☐	☐	☐
ULC-C142.20	☐	☐	☐	☐	☐
ORD-C142.21	☐	☐	☐	☐	☐
ORD-C142.22	☐	☐	☐	☐	☐
ORD-C142.23	☐	☐	☐	☐	☐
ORD-C142.5	☐	☐	☐	☐	☐
ORD-C58.10	☐	☐	☐	☐	☐
ULC-C80-1	☐	☐	☐	☐	☐
ULC-S601	☐	☐	☐	☐	☐
ULC-S602	☐	☐	☐	☐	☐
ULC-S603	☐	☐	☐	☐	☐

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
ULC-S615	☐	☐	☐	☐	☐
ULC-S630	☐	☐	☐	☐	☐
ULC-S643	☐	☐	☐	☐	☐
ULC-S652	☐	☐	☐	☐	☐
ULC-S653	☐	☐	☐	☐	☐
ULC-S655	☐	☐	☐	☐	☐
Unknown – underground tank	☐	☐	☐	☐	☐
Unknown – field erected vertical aboveground tank	☐	☐	☐	☐	☐
Unknown – horizontal aboveground tank	☐	☐	☐	☐	☐
Other (specify)					

Material of Construction (Check all that apply)	Tank 1	Piping 1	Tank 2	Piping 2	Tank 3	Piping 3	Tank 4	Piping 4	Tank 5	Piping 5
Concrete encased steel	☐		☐		☐		☐		☐	
Fiberglass Reinforced Plastic (FRP)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Jacketed steel	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Steel	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Black Iron		☐		☐		☐		☐		☐
Copper		☐		☐		☐		☐		☐
Ducted Flexible		☐		☐		☐		☐		☐
Enviroflex/Bufflex		☐		☐		☐		☐		☐
Flexible Metallic		☐		☐		☐		☐		☐
Galvanized Steel		☐		☐		☐		☐		☐
Geoflex		☐		☐		☐		☐		☐
Nonmetallic Thermoplastic (flexible)		☐		☐		☐		☐		☐
Polyethylene		☐		☐		☐		☐		☐
PVC		☐		☐		☐		☐		☐
Theroset (rigid)		☐		☐		☐		☐		☐
Other (specify)										
Unknown	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Has tank/piping been repaired?	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

Secondary Containment (Check all that apply)	Tank 1	Piping 1	Tank 2	Piping 2	Tank 3	Piping 3	Tank 4	Piping 4	Tank 5	Piping 5
Double Walled	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Self Contained Tank Assembly	☐		☐		☐		☐		☐	
Concrete Encased Steel Assembly	☐		☐		☐		☐		☐	
Synthetic Membrane Liner	☐		☐		☐		☐		☐	
Excavation Liner	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dike with Impermeable Liner	☐		☐		☐		☐		☐	
Impermeable Liner with Double Bottom	☐		☐		☐		☐		☐	
Other (specify)										
None	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Corrosion Protection (Check all that apply)	Tank 1	Piping 1	Tank 2	Piping 2	Tank 3	Piping 3	Tank 4	Piping 4	Tank 5	Piping 5
Factory Attached Sacrificial Anode	☐		☐		☐		☐		☐	
Field Attached Sacrificial Anode	☐		☐		☐		☐		☐	
Impressed Current System	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Non-corroding Material	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Painted	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Bonded Plastic or Resin Coated		☐		☐		☐		☐		☐
Epoxy or Polyurethane Coated		☐		☐		☐		☐		☐
Other (specify)										
Unknown	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Type of Pump to Oil-Water Separator (If present)	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
Centrifugal	☐	☐	☐	☐	☐
Not centrifugal	☐	☐	☐	☐	☐

Leak Detection	Tank 1	Piping 1	Tank 2	Piping 2	Tank 3	Piping 3	Tank 4	Piping 4	Tank 5	Piping 5
Tank precision leak detection test	☐		☐		☐		☐		☐	
Automatic tank gauging (ULC/ORD-C58.12 or ULC/ORD-C58.14)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Continuous in-tank leak detection	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Visual inspection of walls	☐		☐		☐		☐		☐	
Visual inspection		☐		☐		☐		☐		☐
Inventory reconciliation	☐		☐		☐		☐		☐	
Continuous external horizontal aboveground tank leak monitoring (sensor cable system)	☐		☐		☐		☐		☐	
Tank (API Standard 653) or tank floor inspection	☐		☐		☐		☐		☐	
Continuous external vertical aboveground tank leak monitoring (sensor cable system)	☐		☐		☐		☐		☐	
Interstitial monitoring – double walled tank	☐		☐		☐		☐		☐	
Piping precision leak detection test		☐		☐		☐		☐		☐
Continuous external underground pipe leak monitoring (sensor cable system)		☐		☐		☐		☐		☐
Continuous external aboveground pipe leak monitoring (sensor cable system)		☐		☐		☐		☐		☐
Corrosion analysis program		☐		☐		☐		☐		☐
Other (specify)										
None	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Sump 1		Sump 2		Sump 3		Sump 4		Sump 5	
Visual inspection	☐		☐		☐		☐		☐	
Continuous sump leak monitoring (petroleum product probe)	☐		☐		☐		☐		☐	
Static liquid media leak detection test	☐		☐		☐		☐		☐	
Other (specify)										
None	☐		☐		☐		☐		☐	

Spill Containment	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
Aboveground tanks ORD-C-142.19	☐	☐	☐	☐	☐
Underground tanks ORD-C-58.19	☐	☐	☐	☐	☐
Other (specify)					
None	☐	☐	☐	☐	☐
Overfill Prevention	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
Overfill Protection for Storage Tanks In Petroleum Facilities (API RP 2350)	☐	☐	☐	☐	☐
Overfill Protection Devices For Flammable Liquid Storage Tanks (ORD-C58.15)	☐	☐	☐	☐	☐
Overfill Ball Float Valve	☐	☐	☐	☐	☐
Overfill Alarm	☐	☐	☐	☐	☐
Overfill Automatic Shutoff	☐	☐	☐	☐	☐
Method – trained personnel in attendance at all times	☐	☐	☐	☐	☐
Other (specify)					
None	☐	☐	☐	☐	☐

PART V: TANK WITHDRAWAL FROM SERVICE AND REMOVAL (Please refer to Sections 42-45 of Regulations)

Owner's Tank Identification Number										
EC Tank System Identification Number (One ID number per system)										
Tank and Piping Status	Tank 1	Piping 1	Tank 2	Piping 2	Tank 3	Piping 3	Tank 4	Piping 4	Tank 5	Piping 5
Withdrawn From Service	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Date Withdrawn From Service (MM/DD/YYYY)										
Withdrawal Completed in Accordance with Sections 42-44 of Regulations	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐
Removed (must notify EC)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Date Removed (MM/DD/YYYY)										
Removal Completed in Accordance with Sections 45 of Regulations	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

PART VI: OWNER OR OWNER'S REPRESENTATIVE CERTIFICATION

I hereby certify that the information provided with respect to the identification of tank system(s) under section 28 of the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* is accurate and complete.

Name and Title (Type or Print)	**Signature**	_____/_____/_____ **Date**

***	
Enter your form electronically at www.ec.gc.ca/st-rs (FIRSTS database)	
OR	
Mail form to Environment Canada	
National Capital Region Office (Serves all of Canada)	Environment Canada – Storage Tanks Program Public and Resources Sectors Directorate Aboriginal and Public Sector Division 351 St. Joseph Boulevard, 18th Floor Place Vincent Massey Gatineau, Quebec K1A 0H3

HALOCARBON SERVICE RECORD – ROYAL CANADIAN MOUNTED POLICE, NORTH WEST REGION

Technician to Complete Items in the Following Sections

Activity Description	Section A	Section B	Section C
☐ Commissioning	All Items	Items 1-3, 6	Items 1 - 5, 11, 13, 14
☐ Leak Test / Release Report	All Items	All Items	Items 1 - 6, 11 - 14
☐ Other Service	All Items	All Items	Items 1 – 8, 11, 13, 14
☐ Dismantling, Decommissioning or Destruction	All Items	Item 4	Items 1, 4, 6 - 14

*When Decommissioning one completed form must remain in the service log and one shall be affixed to the unit throughout disposal.

Section A

Equipment Owner/Operator	RCMP "F" Division, 6101 Dewdney Avenue, Regina, SK, S4P 3K7
Site Address	
Equipment Location	
Equipment Make and Model	
Equipment Serial #	
Work Order #	
Service Date	
Technician Name	
Technician Certificate #	
Company/Employer of Technician	

Section B

Activity	Yes	No	Comments
1. Leak test performed			*Ensure Leak Test Tag is affixed to the unit.
2. Leak(s) detected/quantity released			
3. Leak(s) repaired			
4.Halocarbon recovered from system			
5.Halocarbon isolated in system			
6. System charged with halocarbon			

Section C

1. Type of halocarbon				
2. Amount of halocarbon charged	(kg)		(lb)	(oz)
3. Charged by	☐ Contractor		☐ Factory	
4. Refrigeration capacity of system	(tonnes)		(BTU/hr)	(kW)
5. Halocarbon charged per circuit (kg, lb, oz)	1.	2.	3.	4.
6. Type of halocarbon recovered				
7. Amount of halocarbon recovered	(kg)		(lb)	(oz)
8. Recovered into cylinder owned by	☐ Contractor		☐ Owner/Operator	
9. Final destination of equipment				
10. Final destination of halocarbon				
11. If system is leaking, owner/operator notified of leaks	☐ Yes		☐ No	
12. Circumstances leading to the release, corrective action, and actions taken to prevent subsequent releases				
13. Technician's signature				
14. Owner/Operator signature		Title		
Additional Comments				

Leak Test
Equipment Tag

Unit # _____

Name/Address of Owner of System

RCMP “F” Division
6101 Dewdney Avenue
Regina, SK S4P 3K7

Operator of System

Same as Above

_____
Specific Location of System

_____
Description of System

_____
Type of Halocarbon Contained in System

_____
Charging Capacity of System

DO NOT REMOVE

Employer of Certified Person									
Certificate #									
Name of Certified Person									
Date									

Employer of Certified Person									
Certificate #									
Name of Certified Person									
Date									

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 This Section specifies roles and responsibilities of Training.

1.2 TRAINEES

.1 Trainees: personnel selected for operating and maintaining this facility. Includes Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.

.2 Trainees will be available for training for purposes of familiarization with systems.

1.3 INSTRUCTORS

.1 Consultant will provide:

.1 Descriptions of systems.

.2 Instruction on design philosophy, design criteria, and design intent.

.2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:

.1 Start-Up, operation, shut-down of equipment, components and systems.

.2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.

.3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.

.3 Contractor and equipment manufacturer to provide instruction on:

.1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.4 TRAINING OBJECTIVES

.1 Training to be detailed and duration to ensure:

.1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.

.2 Effective on-going inspection, measurements of system performance.

.3 Proper preventive maintenance, diagnosis and trouble-shooting.

.4 Ability to update documentation.

.5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.5 TRAINING MATERIALS

.1 Instructors to be responsible for content and quality.

.2 Training materials to include:

.1 "As-Built" Contract Documents.
.2 Operating & Maintenance Manual.
.3 TAB and PV Reports.

.3 Departmental Representative will review training manuals.

.4 Training materials to be in a format that permits future training procedures to same degree of detail.

.5 Supplement training materials:

.1 Transparencies for overhead projectors.
.2 Multimedia presentations.
.3 Manufacturer's training videos.
.4 Equipment models.

1.6 SCHEDULING

.1 Include in Commissioning Schedule time for training.

.2 Deliver training during regular working hours, training sessions to be for duration specified in relevant Specification Sections.

.3 Training to be completed prior to acceptance of facility.

1.7 RESPONSIBILITIES

.1 Be responsible for:

.1 Implementation of training activities,
.2 Coordination among instructors,
.3 Quality of training, training materials,

.2 Departmental Representative will evaluate training and materials.

.3 Upon completion of training, provide written report, signed by Instructors, with complete list of attendees, and witnessed by Consultant and Cx Authority.

.4 Coordination with Departmental Representative.

1.8 TRAINING CONTENT

.1 Training to include demonstrations by Instructors using the installed equipment and systems.

.2 Content includes:

.1 Review of facility and occupancy profile.
.2 Functional requirements.
.3 System philosophy, limitations of systems and emergency procedures.
.4 Review of system layout, equipment, components and controls.

.5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.

.6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.

.7 Maintenance and servicing.

.8 Trouble-shooting diagnosis.

.9 Interaction among systems during integrated operation.

.10 Review of O&M documentation.

.3 Provide specialized training as specified in relevant Sections of the Specifications.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

.1 Removal of existing sitework in preparation for new construction.

1.2 RELATED WORK

.1	Tree Protection	Section 01 56 39
.2	Topsoil Stripping and Stockpiling	Section 31 14 13
.3	Grading	Section 31 22 00

1.3 MATERIAL OWNERSHIP

.1 All useable lumber, bricks, and miscellaneous materials shall become the property of the Owner.

.2 Note the requirement to salvage existing boulders for re-use in landscape development.

1.4 SAFETY

.1 Take all precautions for the safety and the protection of the employees, public vehicle and pedestrian traffic by adequate fencing, hoarding, flagmen and barricades as may be required in the interest of safety and in accordance with provincial and municipal requirements.

1.5 DAMAGE TO MUNICIPAL STRUCTURES

.1 Care shall be taken to avoid damage to sidewalks, pavement and any and all municipal works. Be responsible for repair or replacement of any damaged public property or utility to the satisfaction of the property owner.

1.6 DAMAGE TO ADJACENT PROPERTIES

.1 Take all precautions necessary for the protection of fences, trees, structures, pavement and excavations on adjoining properties. Be responsible for any damages resulting from whatever causes; make good any such damages to the satisfaction of adjacent property owners, and settle any claims which may arise.

1.7 DISCONNECTION OF SERVICES

.1 Arrange, and pay the cost of, disconnection of any services by the appropriate utility company. No claims shall be made for delays which may result in such disconnections. Should municipal authority elect to shut off the water supply by closing the service valve only, mark and protect the valve during the course of construction. If a water leak develops, immediately bring the matter to the municipal authority's attention and pay for the cost of repair if due to Contractor negligence.

1.8 TREES

.1 Trees, designated to be retained, shall be protected in accordance with Section 01 56 39 - Tree Protection.

.2 **Do not remove trees in contravention of current *Migratory Birds Convention Act*.** Trees designated for removal shall be cleared, without damage to adjacent trees or structures. Thoroughly grub out roots and stumps to minimum 500 mm below grade. Take particular care to avoid damage to root systems of trees to be retained. **Remove elm trees in accordance with provincial and municipal regulations.**

.3 Dispose of cleared vegetation, stumps and roots off-site at approved municipal location.

1.9 BACKFILL

.1 Where necessary to provide backfill, provide in accordance with Section 31 22 00 - Site Grading.

1.10 DEMOLITION

.1 Be responsible for the demolition of existing structures, as shown on drawings. Pay costs required by the Town of Black Lake, SaskPower, SaskTel, SaskEnergy, and any other party or agency involved. Remove all abandoned and terminated water, gas, sewer, telephone and electrical lines. Co-ordinate the termination and removal of all services involved. Be responsible for the removal or relocation of any services adjacent to the property necessary for the completion of the work.

END OF SECTION

Part 1 General

1.1 GENERAL CONDITIONS

.1 The General Conditions of the Contract, Supplementary General Conditions and General Requirements are hereby made part of this section.

1.2 WORK INCLUDED

.1 Form for all cast-in-place concrete indicated on drawings and subsequently remove all such forms.

1.3 DESIGN AND CODE REQUIREMENTS

.1 Formwork and supporting falsework shall be designed and constructed in accordance with the requirements of CAN/CSA S269.3-M92 (R2008) and CAN/CSA -A23.1-09 as applicable to the work.

.2 Assume full responsibility for the design and for the adequacy and safety of all formwork and falsework.

.3 Retain a professional engineer to design falsework which consists of shoring more than one tier in height or which is a framed structure.

.4 The design and erection of formwork and related supporting works shall comply with construction safety legislation and regulations.

1.4 HANDLING AND STORAGE

.1 Deliver, handle and store formwork materials to prevent weathering, warping or damage detrimental to the strength of the materials or to the surface to be formed.

.2 Ensure that formwork surfaces which will be in contact with concrete are not contaminated by foreign matter. Handle and erect the fabricated formwork so as to prevent damage.

Part 2 Products

2.1 QUALITY AND STRENGTH

.1 The quality and strength of formwork material shall comply with the requirements set forth in this Specification and CAN/CSA A23.1-09.

2.2 FINISHES

.1 Form materials for concrete surfaces which will be exposed to view, or which require smooth and uniform surfaces for applied finishes or other purposes, shall consist of square

edges, smooth panels of plywood, metal or plastic to approval of the Consultant. The panels shall be square and made in a true plane, clean, free of holes, surface markings and defects.

.2 Square edged, tongue and groove or shiplap lumber may be used to form concrete which will not be exposed to view or which does not require smooth uniform surface for other purposes.

2.3 MATERIALS

.1 Form plywood: exterior grade, Douglas Fir conforming to CSA Standard O121-08. Plywood shall be resin coated one side (in contact with concrete). Use sound undamaged plywood with clean true edges. Make up or patching strips between panels shall be kept to a minimum.

.2 Lumber for forms, falsework, shoring and bracing: conform to CAN/CSA O141-05 (R2009) for Softwood Lumber, and the applicable authorized grading authority. All lumber shall be a grade to which allowable unit stresses may be assigned in accordance with the National Building Code. All lumber shall be grade marked by the authorized grading authority.

.3 Form Ties: Fabricated units having a minimum working strength when assembled of 21 MPa and shall be adjustable in lengths to permit tightening and alignment of forms. Ties shall be made with breakback ends or other means of removing the tie end to a depth of at least 25 mm from the concrete surface, after the forms are removed. Flat tie for Architectural exposed concrete to include plastic cones leaving no metal within 20 mm of surface.

.4 Form release agent: Proprietary material which will not stain the concrete or impair the natural bonding or colour characteristics of coating intended for use on the concrete.

.5 Waterstops: Purpose made polyvinyl chloride; 12 MPa minimum tensile strength, -46^0 C. to $+70^0$ C working temperature range, conforming to CGSB 41 GP 35M, Type 2.

.6 Tubular column forms: round spirally wound laminated fibre forms, internally treated with release material.

.7 Dovetail anchor slots: minimum 0.6 mm galvanized steel with insulation filled slots.

.8 Pre-moulded joint fillers:

.1 Bituminous impregnated fibreboard: ASTM D1751-73.

.2 Vinyl Foam: to ASTM D1752-67 (1973) Type I, flexible grade.

.3 Standard Cork: to ASTM D1752-67 (1973) Type II.