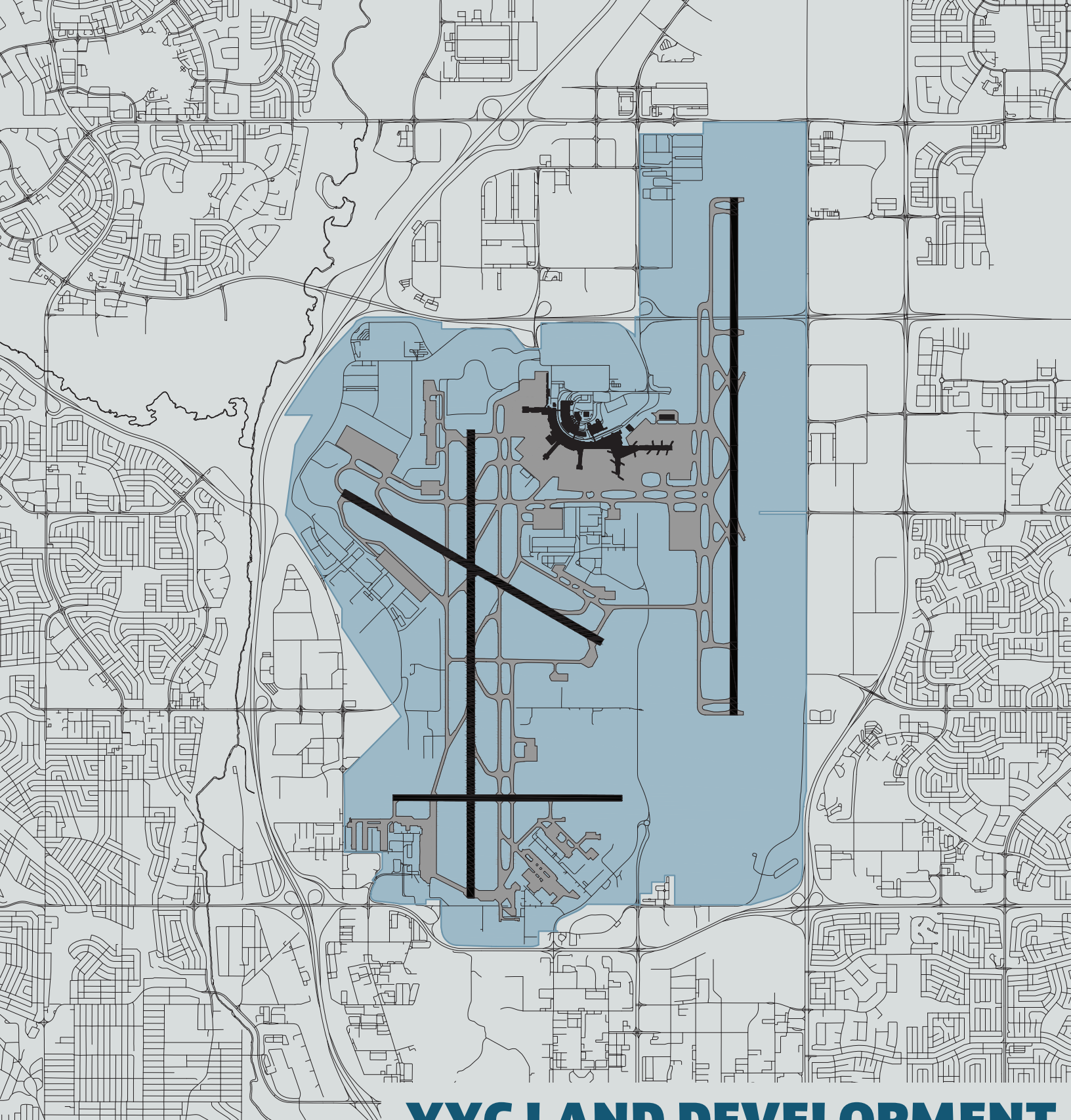

YYC LAND DEVELOPMENT

TECHNICAL DESIGN AND CONSTRUCTION STANADARDS

MARCH 2023

YYC™ CALGARY AIRPORT AUTHORITY

Revision Control Record

Date	Revision / Reason	Section	Revision Stakeholder	Completed by
March 31, 2023	Final Submission to the Calgary Airport Authority	All sections 1 - 7	Infrastructure – Civil Infrastructure – Development Services Environment Legal	Garnette Arsenault Daniel Qian

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Appendices

Acronyms

ANSI	American National Standards Institute
APEGA	Association of Professional Engineers and Geoscientists of Alberta
AVPA	Aviation Vicinity Protection Area Regulation
AWWA	American Water Works Association
AZR	Airport Zoning Regulations
BP	Building Permit
CARs	Canadian Aviation Regulations
CASA	Civil Aviation Safety Alert
CASR	Canadian Aviation Security Regulations
CADD	Computer Aided Drafting Design
CEAA	Canadian Environmental Assessment Act
CIP	Construction and Installation Permit
CSA	Canadian Standards Association
DP	Development Permit
ECO	Environmental and Construction Operations
EEE	Environmental Effect Evaluation
FOD	Foreign Object Damage
HTH	Calcium Hypochlorite
IDDST	Infrastructure Department and Development Services Team
IOC	Integrated Operations Centre
ISED	Science and Economic Development Canada
ISO	International Organization Standardization
LUP	Land Use Plan
NMS	National Master Specification
MH	Manhole
OGS	Oil Grit Separator
PPE	Personal Protective Equipment
PSN	Physical Security Notice
QA	Quality Assurance
RAIC	Restricted Area Identity Card
TAS	Traffic Accommodation Strategy
TDGA	Transportation of Dangerous Goods Act
TIA/EIA	Telecommunications Industry Association, Electronic Industries Alliance
TIA	Traffic Impact Assessment
WHMIS	Workplace Hazardous Materials Information System
YYC	Calgary International Airport

Definitions

1. “Apron” means the part of an aerodrome, other than the maneuvering area, intended to accommodate the loading and unloading of passengers and cargo, the refueling, servicing, maintenance and parking of aircraft, and any movement of aircraft, vehicles and pedestrians necessary for such purpose.

2. “APEGA” is the Association of Professional Engineers and Geoscientists of Alberta that regulates the practices of engineering and geoscience in Alberta on behalf of the Government of Alberta through the Engineering and Geoscience Professions Act.

3. “Authenticated” means that an APEGA licensed professional has completed the work and is assuming technical responsibility for the professional work product.

4. “Building” includes anything constructed or placed on, in, over or under land but does not include a highway or public roadway, or a bridge forming part of a highway or public roadway.

5. “Building Height” means that height determined by creating a line parallel to grade along each building elevation and separated vertically from grade by the maximum allowable height for the district. Such line may be exceeded only by part of the building, on no more than one building elevation, and ancillary structures.

6. “Building Permit” means a permit issued pursuant to the City of Calgary Building Permit By-Law authorizing construction.

7. “Calgary Airport Authority” or “Airport Authority” means the Airport Authority established pursuant to the “Regional Airports Authorities Act” SA 1989, c, R-9, 0S.

8. “City of Calgary” or “City” means the Corporation of the City of Calgary or the land lying within the corporate limits of the City, as the context requires.

9. “Development” means

    a. an excavation or stockpile and the creation of either of them,

    b. a building or an addition to, or replacement or repair of a building and the construction or placing in, on, over or under land of any of them,

    c. a change or use of land or a building or an act done in relation to land or a building that results in or likely to result in a change in the use of the land or building, or

    d. a change in the intensity of use of land or a building or an act done in relation to land or a building that results in or is likely to result in a change in the intensity of use of the land or building.

10. “Development Coordinator” is the individual who represents the Calgary Airport Authority and is the liaison between the Proponent and the Calgary Airport Authority for all review and approval phases from preliminary design to completion of construction.

11. “Fence” means a vertical physical barrier constructed to provide visual screening or to prevent unauthorized access.

12. “Grading” means an engineering process of changing slope of an area to establish a finished ground elevation surface, excluding an artificial embankment, at any point immediately adjacent to the building.

13. “Head Lease” has the meaning set out in Section 1.0 of these Technical Design and Construction Standards.

14. “Landscaping” means the modification and enhancement of a site using any or all of the following elements: soft landscaping consisting of vegetation such as trees, shrubs, hedges, grass; and ground cover hard landscaping consisting of non-vegetation materials such as brick, stone, concrete, tile and wood, excluding monolithic concrete and asphalt architectural elements consisting of wing walls, sculpture and the like.

15. “Lease Boundary” means the line that defines the boundary of a site that is being leased by the Calgary Airport Authority or it’s predecessors in interest to another party, or a property line, or the boundaries of the site as defined by the Calgary Airport Authority;

16. “Lot Centre” means the point located at equal distance within the boundaries of a lot as shown on a plan of subdivision or described in a certificate of title or the boundaries shown on a lease agreement.

17. “Permit” means an official document issued to give authorization or consent to someone to do something.

18. “Pre-graded” means before the start of any grading activities or earth disturbance or construction.

19. “Project” has the meaning set out in Section 1.0 of these Technical Design and Construction Standards.

20. “Property Line” means a legal boundary of an area of land.

21. "Proponent” means the individual, partnership, corporation, trust, trustee or other entity, or any combination of the foregoing, who wishes to undertake a Project at the Calgary International Airport (YYC) pursuant to a right to occupy, use, lease, license and/or develop property, whether land or building, and whether as a tenant, licensee, developer, contractor, consultant or other user, and includes the Proponent’s representatives, agents, contractors, employees and consultants.

22. “Record drawings” are prepared by a licensed professional to record design changes for which they accept professional liability.

23. “Runway” is a defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

24. “Screened” means the total or partial concealment of a building, structure or activity by a fence, wall, berm or soft landscaping.

25. “Sea Can” means marine CARGO Container, Sea Can, C Can, Seacan, C-can, ISO Container, cargo or freight container that are often used interchangeably to describe a shipping container.

26. “Signs” means any visual medium, including its structure and other component parts,

which is used on a permanent or temporary basis to convey information, or to advertise or attract attention to a product, service, place, activity, person, institution, or business, excluding third party advertising.

27. “Site” means an area of land on which a building or use exists or for which a request or application for confirmation and authorization of development is made.

28. “Site Access” means access to the site from adjacent parcels or internal access from one part of the site to another part of the site for pedestrian or vehicular traffic.

29. “Storage areas parking” means the area of a building or site set aside for the parking of motor vehicles.

30. “Structure” means anything constructed or erected with a fixed location on the ground or attached to something having a fixed location on the ground and includes walls, light standards, fences and signs.

31. “Subgrade” means in-situ or native soil graded and compacted to sustain the weight of structures placed above it.

32. “Trade Park” means a section of the airport land that has been designated, planned, and zoned for development, based on the airport land use plan.

33. “Taxiway” is a defined path on a land aerodrome designed for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another.

34. “Utilities” means any one or more of the following:

    a. Systems for the distribution of gas, whether artificial or natural, electricity, telephone and cable television,

    b. Facilities for the storage, transmission, treatment, distribution, or supply of water,

    c. Facilities for the collection, treatment, movement, or disposal of sanitary sewage,

    d. Storm sewer drainage facilities,

35. “Use” means the Permitted and Discretionary Uses and their categories, that are both permanent and Interim Uses listed in the Land Use Districts.

1.0 - INTRODUCTION

1.0 INTRODUCTION

The Calgary International Airport (YYC) is located on Federal lands. This means that all development is subject to Federal regulations and guidelines, as well as the ground lease from Transport Canada (the "**Head Lease**").

The YYC Land Development Technical Design and Construction Standards is a document prepared by the Calgary Airport Authority (the Airport Authority) that outlines the requirements for development of property at YYC that may differ from other land development within the City of Calgary. These are the minimum acceptable standards, and apply to all developments, alterations, improvements, and additions to properties located within the YYC Property Lines, including to any Buildings and to any property within any Buildings (each, a "**Project**").

In addition to outlining the technical standards and guidelines, this document outlines the submission and approval process that all Proponents and their representatives (including their consultants and/or contractors) must follow. All Projects must comply with these standards, unless otherwise authorized in writing by the Airport Authority, in its sole and unfettered discretion.

The Airport Authority reserves the right to amend these standards at any time. The Airport Authority also reserves the right to waive or increase these standards as may be required due to the specific characteristics and location of any given Project. Should the Airport Authority refuse an application for a Project, the applicant will be provided with written reasons for refusal.

For additional clarity, these Technical Design and Construction Standards will apply to existing tenants.

1.1 REGULATORY AGENCIES

Construction of any facility on land in the proximity of an airport is highly constrained and regulated. All developments must fall into the acceptable category within the following regulatory documents from the governing authorities.

1.1.1 Land Use, Development Guidelines and Acreage Assessment Levies

An agreement exists between the Airport Authority and the City of Calgary titled "Agreement on Land Use, Development Guidelines and Acreage Assessment Levies". Proponents must follow the requirements detailed in the document. The document outlines permissible uses within the various Trade Parks and details the requirements for the various stages of the development. The document is available on-line at www.yyc.com.

1.1.2 YYC Airport Vicinity Protection Area Regulation (AVPA)

This is a Provincial regulation that identifies the type of allowable facilities on or adjacent to YYC based on the forecast exposure to noise conditions. The document is available online at www.calgary.ca.

1.1.3 Calgary International Airport Zoning Regulations (Aeronautics Act C.R.C.,c77)

This regulation identifies the approach, transitional and outer surfaces that are associated with the runways. These are the invisible areas that protect the Runways. The information contained in this Act provide restrictions on the location and height of any structure within these surfaces.

1.1.4 Transport Canada – TP312, 5th Edition, Aerodrome Standards and Recommended Practices, Land Aerodromes

This manual serves as the authoritative document for airport specifications, including physical characteristics, obstacle limitation surfaces, lighting, markers, marking and signs. The current TP312 contains “standards” so that it is consistent with the Canadian Aviation Regulations (CARs).

1.1.5 NAV Canada – Land Use Proposal

NAV Canada oversees air traffic through a sophisticated network of area control centres, air traffic control towers, flight service stations, maintenance centres, flight information centres and navigation aids across Canada. NAV Canada assesses all land use proposals near YYC before construction begins to ensure that safety and efficiency are not compromised. Some development uses may not be permitted even if other permits have been obtained. More information including processing time can be found on their website at www.navcanada.ca.

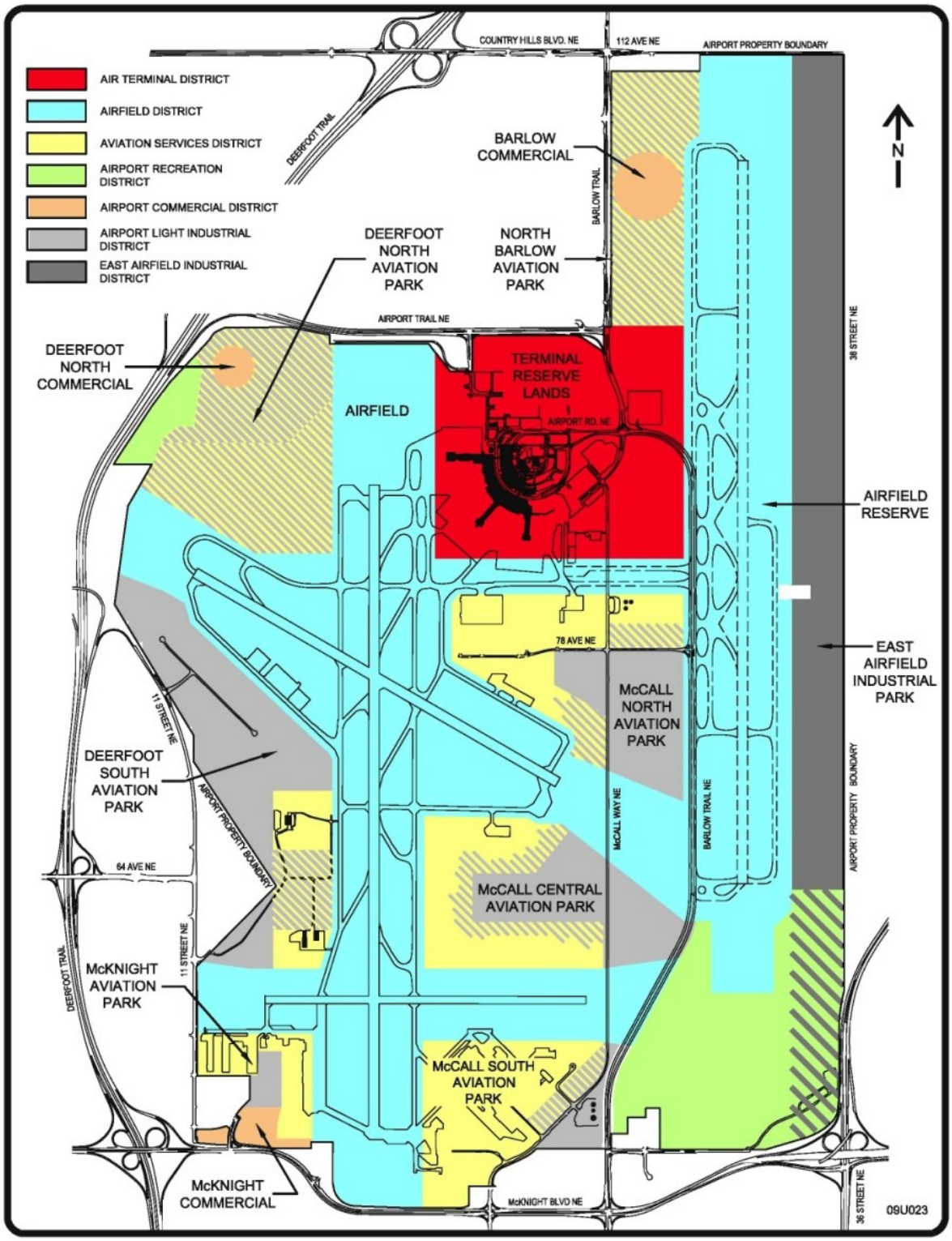


Figure 1 - YYC Land Use Plan

1.2 DEVELOPMENT PROCESS

The Airport Authority, as landlord both in the terminal building complex and surrounding lands within the YYC Property Lines, has a responsibility, as set out in the Head Lease, to provide Transport Canada with information regarding any Project.

As a result of the Airport Authority's responsibilities under the Head Lease, all Proponents must comply with these standards. As such, the Airport Authority developed the Construction & Installation Permit (CIP) process to be used as a tracking tool and instrument to monitor Proponent development and ensure that it meets the Airport Authority's standards, much like a municipality's development and building permitting system.

A CIP application form must be submitted to the Airport Authority with detailed drawings outlining the work that is to be performed. The online CIP application is available on YYC's webpage (www.yyc.com). The form must be completed in its entirety. Base drawings can be requested from a Development Coordinator of the Airport Authority. There is currently no fee to the Proponent for the CIP; however, there may be a requirement for a development security deposit.

The information below is available at the following link: Tenant Development Services (yyc.com).

- Construction Crane Assessments;
- Development Standards & Guidelines Documents;
- Downloadable Information Pamphlets;
- Online CIP Application Form; and
- Tenant Development FAQs.

Once the application has been submitted and checked for completeness, a review will begin. The Project will be circulated to those parties within the Airport Authority that may be affected. A review of all disciplines affected by the work will be detailed, and comments will be forwarded to the Proponent, or their authorized representative. A submission may require further clarification, additional information, or subsequent revisions if it is incomplete or does not meet the standards as laid out in these standards.

After revisions have been made to the satisfaction of the Airport Authority and all supporting documentation and permits are received, a CIP may be issued to allow the Proponent to begin work. It is important to note that other permits may be required from other authorities having jurisdiction (for example, the City of Calgary). A letter of authorization from the Airport Authority is required before a Proponent may apply for any such permits.

Additional permits (such as locates, excavation, etc.) may be required separately from the Airport Authority prior to beginning of construction work.

1.3 PERMITS FROM OTHER JURISDICTIONS

Once the Airport Authority has given its approval to the Proponent in the form of a letter of authorization, the Proponent may apply for a Building Permit from the City of Calgary. The City of Calgary will not accept or process a Building Permit application without a letter of authorization from the Airport Authority.

Once the Proponent has obtained a Building Permit from the City of Calgary, the Airport Authority will issue the CIP to the Proponent. The terms and conditions as identified in the CIP for the development must be signed and returned to the Development Coordinator prior to proceeding with construction.

Every Proponent must obtain a CIP from the Airport Authority prior to proceeding with any work.

As part of the development process, an application to Transport Canada and NAV CANADA will be undertaken by the Airport Authority on behalf of the Proponent. Approval by these regulatory agencies is required prior to the start of any work.

1.4 COMPLIANCE WITH GOVERNING AUTHORITIES

The following codes, regulations & acts shall apply as they relate to the specific Project. Although this list attempts to be complete, it is the Proponent's responsibility to ensure that all applicable codes and their most current regulations are adhered to, and that the appropriate permit(s) are displayed at the work site.

- The Calgary Airport Authority Master Plans for Stormwater, Water System, and Sewer.
- The Calgary Airport Authority Site Specific Development Guidelines for Trade Parks, if applicable.
- The Calgary Airport Authority CADD Manual
- The City of Calgary Standards and Specifications, including but not limited to:
    - Design Guidelines for Development Site Servicing Plans
    - Access Design Standards
    - Stormwater Management and Design Manual
    - The City of Calgary Construction Specifications for Road, Water, Sewer, Landscape, Street Lights, etc.
- Applicable Development Guidelines from Utility Companies, e.g., ATCO, ENMAX, etc. Note that some of the telecommunication utilities could impact the air navigational instruments, therefore, the use of the latest technologies (e.g., 5G) will need to be reviewed and approved by the Airport Authority. Refer to Section 3.8 for further details.

- Canadian Electrical Code and Alberta Appendices
- Canadian Environmental Protection Act
- Canadian Heating, Ventilating and Air Conditioning Code
- Canadian Labour Code - Part II
- Canadian Plumbing Code
- Canadian Occupational Safety and Health Regulations
- Alberta Building Code
- National Building Code
- National Fire Code
- Alberta Fire Code
- Alberta Environmental Protection and Enhancement Act
- Alberta Transportation and Economic Corridors Guidelines
- Transportation of Dangerous Good Act (TDGA)
- CAN/CSA B651-M90, Barrier Free Design
- CAN/CSA C22.2 214, Communication Cables
- ANSI-J-STD-607-A-2002 (607-A) Commercial Building Grounding and Bonding Requirements for Tele-communications
- TIA/EIA 568-B Commercial Building Telecommunications Cabling Standards
- TIA/EIA 569-B Commercial Building Standard for Telecommunications Pathways and Spaces
- Alberta Occupational Health and Safety and its regulations
- Alberta Pressure Equipment Safety Regulation
- American Society of Mechanical Engineers Code, Boiler and Pressure Vessels
- Workplace Hazardous Materials Information System (WHMIS)

In cases where more than one regulation applies to a specific situation, the most stringent requirement shall apply.

NOTE: Neither the review of plans, specifications, and construction details, nor the issuance of a CIP by the Airport Authority, in any way relieves the Proponent from complying with all applicable by laws, codes, regulations, and the most stringent requirements of all authorities having jurisdiction.

1.5 DEVELOPMENT SERVICES

The Development Coordinator represents the Airport Authority and is the liaison between the Proponent and the Airport Authority for all construction review and approval phases from preliminary design to completion of work.

All correspondence, questions and submissions related to Proponent construction should be forwarded to:

The Calgary Airport Authority
Calgary International Airport
2000 Airport Road N.E.
Calgary, Alberta T2E 6W5
ATTENTION: General Manager, Development Services

Email: CIP@yyc.com

1.6 THE CALGARY AIRPORT AUTHORITY RESPONSIBILITIES

1.6.1 Base Drawings

The Airport Authority will provide the Proponent with base drawings for the area being constructed. The Proponent must check and verify the accuracy of these drawings on site. The conditions at a Lease Boundary are of particular importance. A topographic survey is recommended.

1.6.2 Submission Review

The Airport Authority will review the submission within a reasonable time frame. The Airport Authority comments may be provided if changes are required to the design submission. If the Airport Authority rejects a Project submission, a written reason will be provided.

1.6.3 Coordination

The Development Coordinator will assist the Proponent with applications (including Transport Canada and NAV Canada), permits, security escort coordination, and other requests to help ensure the Project runs smoothly. Refer to www.yyc.com for forms and applications with regards to locates, permits, etc. The Proponent will be responsible for the cost of escorts for construction during construction.

1.6.4 Quality Assurance Inspection and Testing

The Airport Authority or its representative will carry out regular Quality Assurance (QA) inspections and testing, for works on and beyond a Lease

Boundary. This is to confirm the service connections to the YYC system, as well as any alterations to the YYC system, are constructed in accordance with the underlying contract and the CIP requirements.

1.7 PROPONENT RESPONSIBILITIES

1.7.1 Permit to Practice

It is the responsibility of the Proponent to hire qualified consultants and contractors, licensed to practice in the Province of Alberta. All documents submitted shall be authenticated by the licensed professionals, in compliance with the latest APEGA guidelines and YYC CADD Manual.

1.7.2 Verification of Information

It is the Proponent's responsibility to confirm on-site conditions and verify the information provided by the Airport Authority. This includes but is not limited to utility locations and depths, ground elevations, hydrants, streetlights, sidewalks, etc. The Proponent will be required to provide coordinates of the proposed building corners and verify the as-built coordinates with a site survey at the Project completion.

1.7.3 Submission Requirements

A complete submission will include a completed Construction & Installation Permit application (http://cips.yyc.com) and detailed drawings of the proposed Project. The Issued for CIP Review drawings shall be authenticated for design review submissions.

Refer to the "Land Use Agreement between the Calgary Airport Authority and the City of Calgary", available online at www.yyc.com, and the following sections for submission requirements.

1.7.4 Construction Specifications

One digital copy of the authenticated Construction Specifications shall be submitted for all Proponent development Projects. National Master Specification (NMS) format is preferred, unless otherwise approved or requested by the Airport Authority.

1.7.5 Construction Drawings

Authenticated Construction Drawings shall be submitted in the form of one (1) set of electronic files in PDF format and AutoCAD files in .dwg format, unless otherwise approved or requested by the Airport Authority.

All drawings, including review submissions, should be prepared following the Airport Authority CADD standards.

In general, all drawings are to be scale drawings with dimensions, and include the following:

- Key plan, showing location of Project (this key plan should be at a scale large enough to show required exits/access to exits, proximity to washrooms, etc.)
- Detailed floor plans
- Exterior and interior elevations
- Sections and details, as required
- Reflected ceiling plans, as required
- All signage, including type, materials, size, and location
- Structural, mechanical, electrical, and telecommunication/data drawings as required, including details and performance characteristics of all equipment.
- Site grading drawings to indicate the high points, low points, escape route elevations, slopes, etc.
- Site Servicing Drawings shall show utility connection locations as well as the size of services. Where necessary, special systems or equipment drawings shall be submitted.
- Stormwater drainage plans meeting the requirements from the Airport Authority
- Pavement structure and tie-in details, as required
- Fire hydrant plan, as required

1.7.6 Utility Crossing

All utility crossings shall follow the minimum separation requirements from the City of Calgary. Exceptions should be reviewed with the Airport Authority for acceptance.

It is the Proponent's responsibility to acquire utility crossing agreement / permit where applicable, e.g., ATCO, ENMAX, etc.

When crossing over an existing utility, which is located within 300 mm below the bottom of the trench, the Proponent shall hand excavate and expose the crown of the existing utility. The existing utility shall be examined in the presence of the consultant and the Airport Authority. Any damage to the existing utility shall be repaired to the satisfaction of the consultant and the Airport Authority.

When crossing under an existing utility, the existing utility shall be supported to meet or exceed the City of Calgary standards.

1.7.7 Plan of Construction Operations for airside work

At the request of the Airport Authority, the Proponent may need to prepare and submit a Plan of Construction Operations (PCO) for any work on airside. The Airport Authority can provide a template if required.

1.7.8 Security

If the Project takes place in a secure area, the Proponent is responsible for following Canadian Aviation Security Regulations (CASR 2012).

The Proponent is also responsible for providing or arranging for security escorts for the duration of the Project. Security Escort forms are available on the Calgary International Airport's webpage (www.yyc.com) and must be submitted a minimum of 5 business days in advance.

1.7.9 Start-up Meeting

All construction Projects, especially the medium to large sized ones, require a pre-construction coordination / start-up meeting prior to commencement of any work.

1.7.10 Protection of Existing Infrastructure

It is the Proponent's responsibility to protect all existing infrastructure during the construction of the new development. All damages will need to be repaired or replaced to meet or exceed the previous conditions, at the sole cost of the Proponent, following the Airport Authority's schedule requirements where reasonable.

1.7.11 Shutdowns

If service shutdowns within the Project area are required during the construction period for any reason, the Proponent must make those arrangements. Shutdown forms are available on the Calgary International Airport's webpage (www.yyc.com) and must be submitted a minimum of 5 business days prior to requested time of shutdown.

1.7.12 Notification Before Covering Works

It is the Proponent's responsibility to notify the Airport Authority for inspection, prior to the backfill of any service connections to the YYC system.

1.7.13 Final Inspection

The Proponent must ensure that all consultants - architectural, electrical, mechanical and structural, (if applicable) who are responsible for the

Proponent's construction documents, perform a final inspection and ensure that the Project has been constructed as per the construction documents and that all equipment and systems are operating as specified and designed. A copy of the occupancy permit (if applicable), final inspection report, list of equipment and acceptance of the work by the consultants must be forwarded to the Development Coordinator before the Airport Authority will accept the Project as being complete.

1.7.14 Record Drawings

It is a condition of the CIP and the Proponent's lease with the Airport Authority, if applicable, that record drawings be submitted within 30 days of completion of the Project. This should be completed in compliance with the latest practice guidelines from APEGA.

The submission should include the as-built survey of following information as minimum requirements:

- Building corners,
- Floor elevations,
- Maximum building height including all roof top units, and
- Utility at tie-in locations.

Refer to Section 7 Project Completion for further detail.

1.8 DRAWING STANDARDS

All drawings shall follow the latest version of the YYC CADD Manual. A copy of this manual is attached in Appendix A. In general, all drawings are to be presented on a standard B1 size format. Information is to be metric and drawing text shall be a minimum of 2.5 millimeters in height and suitable for 1/2 size printing and scanning.

Facility base information is available in AutoCAD .dwg format and it is desirable to have Proponent submissions in the same format.

2.0 – CIVIL STANDARDS

2.0 GENERAL

Requirements for design drawings and technical reports vary depending on the site. Requirements will be discussed with the Proponent during lease inquiry, if applicable. All required technical reports must be authenticated by qualified consultants who are registered to practice in the Province of Alberta.

2.1 GEOTECHNICAL REPORT

A geotechnical evaluation is required for any Project within the airport lands. The Proponent is responsible for hiring a geotechnical consultant to complete a site-specific geotechnical evaluation for any such Project. The site-specific geotechnical evaluation can be completed by conducting a geotechnical drilling program and/or using the geotechnical information available for the site.

The geotechnical evaluation must be conducted to industry standards and applicable national and local codes and guidelines. A geotechnical engineer of record (EOR) must be assigned to ensure the design and construction of the Project complies with the Alberta building code. The site-specific geotechnical evaluation should include the following, if required:

- A slope stability assessment for any proposed development in land with slopes steeper than 15%. The slope stability analysis must provide a minimum factor of safety of 1.5 with applicable setback if required.
- A deep fill assessment for any engineered fill placed on site in excess of 2 metres thick.

The Airport Authority will provide available geotechnical information to the Proponent.

A copy of the geotechnical investigation report(s) will be required as part of the submission for design review by the Airport Authority.

Prior to the geotechnical investigation, the Proponent will need to apply for a partial CIP for the geotechnical work only. This work will be carried out at the Proponent's risk, should any unexpected discovery be made as a result of the investigation.

2.2 TRAFFIC IMPACT ASSESSMENT

A traffic impact assessment (TIA) has been completed as part of the initial Trade Park outline plan.

The Airport Authority will notify the Proponent if a Project is identified with potential traffic impacts to the surrounding area. The Proponent will be required to complete a TIA study to ensure that the transportation infrastructure can safely accommodate the Project. The goal is to ensure that the transportation system will operate safely and efficiently within the design horizon of the study.

The TIA is to be prepared in accordance with the City of Calgary's latest Traffic Impact Assessment Guidelines. References to the City of Calgary for scope definition and TIA approvals are to be replaced by the Airport Authority.

The Proponent will be responsible for implementing the required improvements to the surrounding transportation infrastructure to accommodate their Project traffic in accordance with the recommendation of the TIA.

2.3 LOT STRIPPING AND GRADING

2.3.1 The majority of the parcels in the Trade Parks have been pre-graded in accordance with the master plan for the subdivision.

In order to control erosion and disturbance to adjacent properties, the Airport Authority implements the practice of leaving the parcel graded downward toward the lot centre. In addition, the Airport Authority may have placed topsoil on the Subgrade to facilitate organic growth and to minimize soil erosion.

2.3.2 Depending on the Project, the Proponent may be required to import additional fill to raise the Subgrade. The Airport Authority will endeavor to provide (supply only) a source of fill from an alternate location on airport property, however the cost of hauling and installation to suit the Project is the responsibility of the Proponent. The Airport Authority makes no representations, warranties, or guarantees of the suitability or quality of the material, and it is the Proponent's sole responsibility to inspect and/or test to confirm the provided material is suitable for its Project.

The Proponent may be required to provide a stripping and Grading plan as part of their application. All lot Grading must follow the requirements from the Airport Authority and the City of Calgary, whichever is more stringent.

2.3.3 No stripping or grading will be permitted until all conditions of the CIP have been met.

Offsite source of fill to be used as engineered fill must be provided to geotechnical EOR and/or Airport Authority for review prior to importing it to the site.

2.4 STORMWATER MANAGEMENT

2.4.1 The Proponent is responsible to manage the stormwater in the lease area or site area, as applicable, in accordance with the City of Calgary standards and the Airport Authority stormwater master plan. A controlled discharge rate may apply and in such case the Proponent is required to manage the remaining stormwater on site. Proof of compliance is required as part of the design submission for review and acceptance by the Airport Authority.

All stormwater calculations shall be prepared and submitted in accordance with the guidelines from the Airport Authority and the City of Calgary.

2.4.2 The Proponent is responsible to follow the latest climate resilience design guidelines and recommendations.

2.5 CONSTRUCTION START

Once the Airport Authority has given its approval to the Proponent in the form of a CIP the Proponent may proceed with work, provided that the following measures are in place at all times:

2.5.1 The Airport Authority will designate the Proponent and/or their contractor as Prime Contractor. Prime Contractor regulations will apply. The Proponent must provide appropriate fencing and signage to protect the site and the public. The site must be identified as a construction zone.

2.5.2 The Proponent must provide a Traffic Accommodation Strategy (TAS) to address traffic accommodation issues relevant to the specific activity being performed, provide protection for workers and equipment within the work area, and allow all modes of traffic to pass safely and with a minimum of inconvenience through or around the work zone. The TAS is to follow the City of Calgary's latest Temporary Traffic Control Manual. The TAS is to be approved by the Calgary Airport Authority prior to commencement of construction. The Proponent or its Prime Contractor is responsible for the cost to prepare the TAS and the implementation of the TAS to accommodate construction activities.

2.5.3 The Proponent must ensure appropriate drainage control on site for the duration of the project.

2.5.4 The Proponent must perform daily sweeping to ensure all public roadways remain clean.

2.5.5 The Proponent must construct the access ramp utilizing recycled asphalt or washed aggregate. When construction is complete the Proponent must remove the access ramp.

2.5.6 The Proponent must maintain all erosion and sediment control measure in accordance with the approved Erosion and Sediment Control Plan.

2.5.7 The Proponent must employ appropriate measures to control dust.

2.5.8 Any contamination encountered must be immediately reported to the Airport Authority's Environmental Team.

2.6 ROADWAYS AND DRIVEWAYS

All roadways and driveways shall follow the applicable guidelines as set by the City of Calgary and the Land Use Agreement between the Calgary Airport Authority and the City of Calgary, whichever is more stringent.

All roadways and driveways shall satisfy the functionality of the Project.

All roadways and driveways shall satisfy the City of Calgary Fire Department Access Standards.

2.7 SIDEWALKS AND CURBS

As part of the development of the Trade Park the Airport Authority has constructed the roadway with curbs and pedestrian walkways. The Development Coordinator will complete a site inspection of this infrastructure prior to construction start, followed by a second inspection at Project completion. The Proponent is responsible to repair any damage to the roadway, sidewalks and curb at the completion of the Project.

All sidewalks and curbs shall follow the guidelines as set by the City of Calgary, including but not limited to the Road Construction Standard Specifications and Access Design Standards.

2.8 TAXIWAY ACCESS AND AIRCRAFT PARKING APRON

Design, construction, and maintenance of the airside taxiway access up to the Proponent's Lease Boundary will be the Airport Authority's responsibility.

The Proponent will need to provide written requests to clarify the planned use, largest and longest operating aircraft, largest and heaviest vehicle and equipment, as well as any other relevant information that may affect the taxiway access.

After design of the taxiway(s) is completed and mutually agreed upon, the Proponent may not be able to change or alter the design.

A taxiway typically connects with an aircraft parking apron. It is the Proponent's responsibility to design, construct and maintain the apron, in compliance with the regulations and guidelines from Transport Canada, Environment and Climate Change Canada, and other applicable regulatory bodies. It is recommended to engage a qualified consulting firm who is familiar with this type of work.

2.9 STREET LIGHTS AND HYDRANTS

The street light and hydrant infrastructure installed on airport property is owned and managed by the Airport Authority or the City of Calgary. If relocation of these installations is required, the Proponent will need to provide a plan to support the move and all costs associated with the relocation are the responsibility of the Proponent.

When relocating a streetlight, the use of a splice box is not permitted. New length of wire must be installed in conduit between light poles. Match existing wire as verified by drawings and site inspection. Electrical isolation is required for this work to be performed.

Any contemplated changes to the streetlights will require a site inspection by the Airport Authority for confirmation of asset ownership.

The Proponent must review the hydrant locations in preparation of the fire protection plan, as part of the building permit process.

Refer to Section 3.7 of these Technical Design and Construction Standards for temporary hydrant use during construction.

2.10 APPROVED PRODUCT LIST

All site servicing products shall be the approved products by the Airport Authority and the City of Calgary, unless otherwise authorized by the Airport Authority in writing.

3.0 – UTILITY SERVICING STANDARDS

3.0 UTILITY SERVICING

3.1 GENERAL INFORMATION

The major utility lines within the Trade Parks at the airport are owned and maintained by the Airport Authority and not the City of Calgary.

The Airport Authority will provide base plans or as-builts of the applicable Trade Park to provide utility information within the subdivision to the Proponent.

3.2 DEEP SERVICE

The Airport Authority will bring connections to the Proponent's Lease Boundary, based on the Proponent's design that is mutually agreed upon between the Airport Authority and the Proponent.

The Proponent will be responsible for all on site final services connections to the storm, sanitary and water stubs in accordance with City of Calgary standards. These will be reviewed by the Airport Authority at both the design and construction stages.

3.3 OIL GRIT SEPARATOR

The Proponent will be required to install an oil grit separator, using an approved product by the City of Calgary, at the outlet end of the Project's stormwater system prior to connection to the Airport Authority's system. Oil grit separators are underground concrete vaults, or manholes, connected to the storm system infrastructure, which are configured internally to provide a measure of contaminant separation, in case of an on-site hydrocarbon or similar spills. These are installed within the Proponent's leased property and it is the Proponent's responsibility to service, maintain and repair. The oil grit separator must be designed to meet the requirements from the Airport Authority, the City of Calgary, and the Government of Alberta.

It is the Proponent's responsibility to maintain the oil grit separator to ensure its functionality. A copy of the maintenance record may be required as part of the audit process under the Proponent's lease, if applicable.

3.4 SANITARY TEST MANHOLE

The Proponent will be required to install a sanitary test manhole (Test MH) as part of their design. Unlike the City of Calgary where the Test MHs are located outside the property line on public property, development on airport property requires that the Test MH is located within the Proponent's leased property.

It is the Proponent's responsibility to maintain the Test MH to ensure its functionality. A copy of the maintenance record may be required as part of the audit process under the Proponent's lease, if applicable.

3.5 SHALLOW SERVICE

Natural gas, power and telecommunications will be extended from the right-of-way by the respective service provider once requested by the Proponent. Proponents are encouraged to contact service providers early during the development process. The costs of providing these services are the responsibility of the Proponent.

As part of the development process each service provider is responsible to submit a CIP application form with detailed drawings outlining the work that is to be performed. The online CIP application is available on the Calgary International Airport's webpage (www.yyc.com). The form must be completed in its entirety. Base drawings can be requested from a Development Coordinator of the Airport Authority.

3.6 COMMISSIONING OF WATER MAINS AND LINES

Upon completion of work on water distribution mains and services, domestic water lines shall be thoroughly flushed to remove all entrapped air and foreign matter (i.e., preliminary flushing), and tested for hydrostatic pressure and leakage. Work shall be completed following the latest City of Calgary Water Specifications.

The test section shall be subjected to 150% of the normal working pressure or 1 MPa (150 psi) whichever is the greater at the lowest elevation and not less than 125 % of the normal working pressure or 860 kPa (125 psi) whichever is the greater at the highest elevation. The test pressure shall not exceed the Manufacturer's recommended maximum test pressure.

The test pressure shall be maintained (by additional pumping if necessary) for two (2) hours. While the line is under pressure, all exposed fittings, valves, and hydrants shall be examined for leakage.

Defective elements shall be repaired or replaced and the test repeated until all visible leakage has been stopped and the allowable leakage requirements have been met.

Defective pipe shall be replaced with new pipe; repair clamps shall not be used for this purpose. Failed material shall be made available to the engineer for investigation. After completion of all repairs and prior to re-testing, the preliminary flushing of mains and services shall be repeated to the satisfaction of the engineer.

3.7 FLUSHING AND DISINFECTION OF WATER MAINS AND LINES

Upon completion of hydrostatic pressure testing on water distribution mains and services, domestic water lines must be flushed and tested to ensure safety of domestic water across airport property.

The following is a list of rules and procedures to be followed by all Proponents performing work on airport property.

3.7.1 Rules

(a) All PPE for handling hazardous materials shall be worn. (i.e., safety glasses, rubber/latex gloves, masks)

(b) All workers on site must be notified of the presence of the disinfecting agent located on site. Typically, a solution of calcium hypochlorite (HTH) is used.

(c) Calcium hypochlorite shall conform to the AWWA B300-99 Standard.

(d) The water main undergoing disinfection must be completely isolated from the rest of the distribution system. Any operation of valves must only be performed by YYC utility team through permit.

(e) All services connected to the water main(s) shall be closed for entire duration of disinfection.

(f) Before the water main line is to be put into service, a water sample will be taken from the section line being tested and sent to a qualified laboratory for testing. Only after the analysis is satisfactory, will the water main be put into service.

(g) Always flush and disinfect water mains into sanitary manholes via discharge hose. Safely discharge the water so that no impairment occurs to any water sources.

(h) The water main may not be put into service prior to receiving the results of the laboratory's water test.

(i) If the analysis does not meet health approval the contractor shall follow proper procedures according to the results found followed by another water sample.

3.7.2 Procedure

(a) To begin disinfection, ensure the entire section of pipe has been flushed of any debris or turbidity to avoid wasting disinfecting chemical.

(b) Once initial flushing is completed, use a 45-gallon drum; premix a solution of HTH and pump the solution into the main to bring the chlorine content to a concentration of 25 mg/L.

(c) At the beginning of the disinfection; all valves (including hydrant valves) and hydrants shall be operated to ensure that all parts along the section have been in contact with the chlorine solution.

(d) Once the chlorine has reached the extremities of the section, the intake and discharge valves shall be closed and the system shall be left to stand for 24 hours, unless otherwise directed.

(e) At the end of the 24 hour period; the system shall then be flushed a second time to expel all water with high chlorine content into sanitary sewer mains. Periodically check the sanitary sewer manhole to ensure the flow into the sewer main is not exceeding the pipe capacity.

(f) After the high chlorine solution has been flushed; a water sample must be taken to a certified water testing lab to test for any impurities that may still be found in the watermain line.

(g) Only after a 24 hour water test performed by a certified lab indicating the absence of any impurities, will the watermain be put into service.

(h) The Proponent shall contact the Airport Authority and consultant to provide results, at which point the Airport Authority will return main to service if all results are satisfactory.

3.8 TEMPORARY HYDRANT USE

3.8.1 To prevent damage, the following procedures are required for non-emergency use of fire hydrants:

(a) Obtain written authorization for use of hydrant from the Airport Authority, Manager Mechanical Facilities, at 403.735.1470.

https://www.yyc.com/en-us/calgaryairportauthority/formsapplications.aspx

(b) Use approved adaptor and valve on outlet of hydrant – do not use hydrant valve for routine opening and closing. Open hydrant fully after installing approved adaptor and valve.

(c) Notify the Airport Authority upon completion of use of hydrant.

(d) User of hydrant may be charged with costs involved in back-to-service operational check, repairs required, hydrant drainage and winterization if required.

(e) City of Calgary BMA (backflow meter assembly) is required. Initial and final consumption readings need to be reported to Manager Mechanical Facilities.

(f) Obtain City of Calgary approved water meter.

3.9 DIRECTIONAL DRILLING

Prior to directional drilling, the Proponent is required to apply for a directional drilling permit including a section along the proposed drilling profile showing the

confirmed depth of the existing utilities. Refer to the Forms and Applications at www.yyc.com for further information.

3.10 5G SERVICE AND SIMILAR MOBILE NETWORKS

The Airport Authority complies with the Transport Canada Civil Aviation Safety Alert (CASA), document CASA 2021-08, to raise awareness of the potential risk of 5G interference and to recommend precautionary operational measures before confirming of impact of 5G radio waves on radio altimeters.

In compliance with the recommendation in the CASA and Innovation, Science and Economic Development Canada (ISED), Proponents can continue to upgrade their infrastructure as long as 5G service is NOT enabled within the Airport Exclusion Zone, as indicated by red hatching in the figure below. The frequency band of 5G and similar mobile network is 3450 – 3650 MHZ, based on ISED interim technical rules, dated November 18, 2021.

The use of 5G service requires review and approval from the Airport Authority.

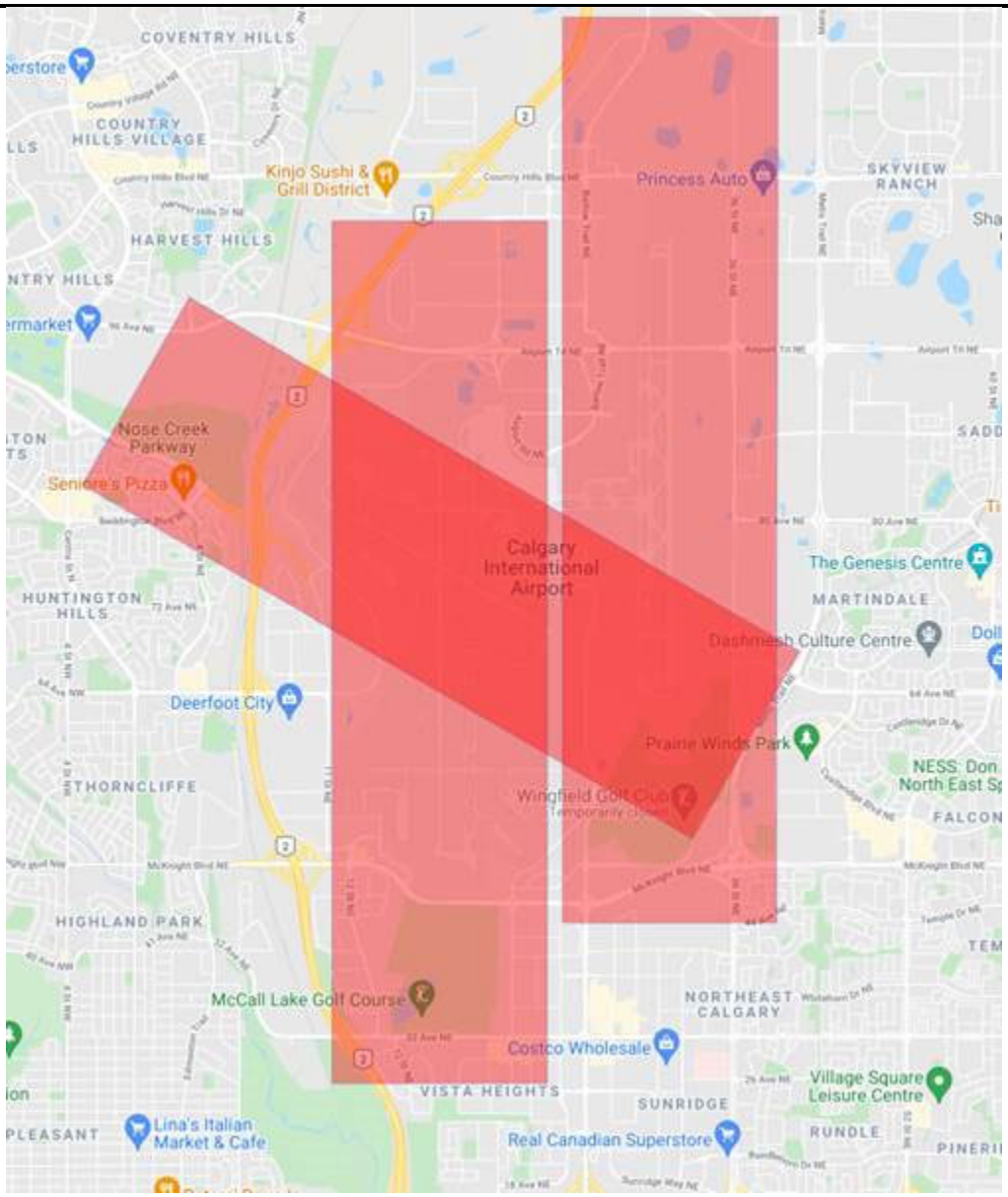


Figure 1 - 5G Airport Exclusion Zone

4.0 - ENVIRONMENTAL STANDARDS

4.0 ENVIRONMENTAL REQUIREMENTS AND CONSIDERATIONS

YYC is located on Federal lands. This means that all Projects are subject to Federal regulations and guidelines, and must receive an environmental assessment as required by the Impact Assessment Act (IAA).

Not only is the Project subject to Federal environmental regulations, Provincial and Municipal regulations and bylaws can also play a role in development of the site.

As part of the review by the Airport Authority, the Environment Department will conduct an environmental assessment.

4.1 ECO PLAN

Prior to the commencement of construction, the Proponent will be required to complete a detailed Environmental and Construction Operations (ECO) Plan.

The intent of the ECO Plan is to provide guidance and minimize the impact on the environment as a result of construction activities.

The ECO Plan must consist of written procedures on the protection measures that the Proponent will follow and address how they will comply with applicable legislation, regulations and approvals.

The Airport Authority follows the ECO Plan Framework document in use by Alberta Transportation, The City of Calgary, and the City of Edmonton. A copy of the ECO Plan Framework is attached in Appendix B.

4.2 EROSION AND SEDIMENT CONTROL PLAN

The Proponent must submit an Erosion and Sediment Control Plan to be reviewed by the Airport Authority's Environmental Team prior to construction start, following the latest City of Calgary process and guidelines. Should there be any discrepancy, the Proponent will be responsible for all remediation measures, including but not limited to pipe cleanup and pond dredging.

4.3 LANDSCAPING

The Proponent is required to follow the landscaping guidelines in the "Agreement on Land Use, Development Guidelines, and Acreage Assessment Levies" document.

The Airport Authority will provide a list of approved plants and seeds for the Project. Generally, any tree or shrub that produces berries, acorns or plant species known to attract wildlife are prohibited from being planted on airport lands.

If seeding occurs late in the year, the Proponent must return in the spring to ensure the seed has germinated; if not, the area will need to be re-seeded by the Proponent.

4.4 WILDLIFE POLICY

Conflicts between aircraft and wildlife are a major concern to the aviation industry. Each year, hundreds of millions of dollars are spent to repair and replace damaged aircraft parts as a result of wildlife strikes. The Airport Authority has a Wildlife Policy that the Proponent must comply with. This policy is available upon request.

It is the Proponent's responsibility to consider and comply with the latest guidelines with regards to wildlife habitat.

4.5 FUEL STORAGE TANKS

As noted previously, the airport is on Federal land. All fuel storage tanks are required to follow the regulations and guidelines from the Government of Canada as well as the Petroleum Tank Management Association of Alberta, the delegated agent in Alberta. Some of the applicable regulations and guidelines are outlined below:

- Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197). Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (justice.gc.ca)
- User's guide for online federal identification registry for storage tank systems. User's guide for online federal identification registry for storage tank systems – Canada.ca
- Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (canada.ca)
- Calgary Fire Department Requirements

4.6 HAZARDOUS MATERIALS MANAGEMENT STANDARD

The Hazardous Materials Management Standard is currently under review, and will be available upon request.

4.7 ENVIRONMENTAL IMPACT ASSESSMENT

All tenant development projects may be subject to the latest IAA. Refer to the official website for the latest information. A copy of the Transport Canada Environmental Effect Evaluation (EEE) Form is attached in Appendix C. The Airport Authority will review and determine the assessment requirements on a case-by-case basis.

5.0 – MISCELLANEOUS DEVELOPMENTS

5.0 MISCELLANEOUS

5.1 FENCING STANDARD

All Fences must be a minimum of 10' chain link fence with a "Y" overhang facing inward and outward at a 45 degree angle and six strands of barbed wire (three per overhang), in the vicinity of the ATB (Security Gate #37 to Security Gate #320) and a 8' chain link fence with a "Y" overhang facing inward and outward at a 45 degree angle with six strands of barbed wire for all other areas.

Temporary construction Fences must be a minimum of 8' high with three outward facing strands of barbed wire on top and a minimum of six wire twist-ties to secure the sections together and the gap in the fabric cannot be wide enough to aid in scaling the Fence (no more than 2"), with curbs on the Fence supports so that wind, prop-wash, or jet blast cannot blow the Fence over.

The security barrier shall be kept clear of objects that may constitute a threat to the security of the aerodrome in all areas for a distance of 1m inside the security barrier and 3m outside the security barrier, except where the security barrier is located less than 3m from the aerodrome Property Line, in which case the clear zone shall extend from the security barrier to the aerodrome Property Line.

When abutting to an existing airside Fence the first section must meet the same requirements as the airside Fence.

Any change or alteration to the airside Fence is strictly prohibited without review and direction of the Airport Authority’s Security Team.

Gate forming part of the security barrier shall be of the same height and provide the same level of security as the security barrier.

5.2 GATES

The materials used in gate construction shall match those used in the Fence. Gates shall be equipped with three strand barbed wire straight up.

There shall be no more than a 4” clearance at the bottom of the gate. Frangible gate equipment shall be provided on fire routes.

Maximum 5 second cycle response time for gate opening and closing.

Fail safe automated equipment shall:

(a) Only be activated by vehicles;

(b) Not remain open in absence of vehicles;

(c) Not permit access to unauthorized vehicles (i.e., once activated does not permit access to more than one vehicle);

(d) Be provided with an automated and a manual override (to open, close, and hold open, which can only be activated by authorized personnel);

(e) Not close on vehicles in gate path;

(f) Withstand and operate under Canadian winter conditions.

Ensure that the bending movements and shear forces on gate posts and hinges are accommodated.

Ensure that gate width will accommodate vehicle use (normal gate width is 6.1m).

Vehicle gates required as access for crash routes shall be locked at the time of an emergency. Vehicle gates shall be fitted with a frangible chain, welded to one gate, which is then padlocked to the other gate; the crash vehicle can push against the gates, causing the chain to snap and allowing access. (This type of connection shall be used only for chain-link gates).

Gate posts subject to damage by heavy equipment shall be protected by installing protective posts and ensure adequate approaches.

Padlocks are issued by the Airport Authority (cost to Proponent).

Proponent to provide Restricted Area signage, identical to those currently in use. The Airport Authority shall number and install gate numbering signage (both vehicular and man gate).

Frequency of use (recommendation only):

(a) A manual swing gate with padlock should be considered when frequency of use is 1 to 20 openings per day.

(b) A manual slide gate with padlock should be considered when frequency of use is 20 to 50 openings per day.

(c) An automated slide gate should be considered when frequency of use is 50 to 100 openings per day.

(d) A manned operation should be considered when frequency of use is 100 or more openings per day.

(e) No slide or automated gates should be located on fire routes unless staffed 24 hours a day, or unless an accessible frangible fence section is provided. Manual swing gates on fire routes should be provided with frangible gate equipment.

5.3 SEA CAN INSTALLATION/USE

Marine CARGO Container, Sea Can, C Can, Seacan, C-can, ISO Container, cargo or freight container are often used interchangeably to describe a shipping container ("**Sea Cans**").

The Airport Authority views Sea Cans as temporary storage structures. Approval for the installation of Sea Cans will be granted on a temporary basis provided they meet approval criteria. Sea Cans being used for any purpose other than storage will not be permitted on airport lands. This applies to all YYC Proponents.

5.3.1 Approval Criteria

The policy for Sea Can use is reviewed by the Airport Authority's Infrastructure Department and Development Services Team (IDDST) on an annual basis. Considerations for review and approvals will be as follows:

(a) Case by case review of the need for the Sea Cans - valid reasons must be given.

(b) Approvals granted temporarily (maximum 3 years) and Proponent must reapply at the expiration of the approval.

(c) Sea Cans are not permitted in the Terminal Reserve Trade Park.

(d) Sea Cans must be placed away from visible areas and screened when possible.

(e) Sea Cans must be installed on a suitable hard surface base and not directly on grass.

(f) Multiple Sea Cans must be same color.

(g) Sea Cans must be in "good condition". A picture of the actual Sea Can must be provided to The Airport Authority prior to the installation.

(h) Only one (1) Sea Can per acre of land area will be allowed.

(i) Storage of hazardous materials in Sea Cans is NOT permitted.

(j) Sea Cans being used for any purpose other than storage, will not be permitted.

5.3.2 Compliance

All Sea Can installations at YYC must be vetted through the CIP program. Failure to do so will result in the requirement for immediate removal until a proper application is made. All Proponents are required to abide by the terms, conditions, and policies of their lease with the Airport Authority.

5.4 ENGINEERED TENSION MEMBRANE STRUCTURES

An engineered tension membrane structure is a prefabricated, modular building design. Many requests are received for tent or fabric styled structures provided by a number of suppliers. They are typically a structure with metal supports and high-

quality fabrics capable of withstanding snow loads and meeting fire code requirements.

The goal of the Airport Authority's Development Services is to support and assist land development in a fashion keeping with the Airport Authority and the City of Calgary standards. Improvement in design and manufacturing of membrane structures has evolved making them a viable option for tenant construction.

5.4.1 Approval Criteria

Applications for engineered tensioned membrane structures will be reviewed on a case-by-case basis. Minimum requirements would include:

(a) Aluminum substructure 50 year pro-rata guarantee

(b) Engineered for extreme weather and environmental conditions in accordance with local conditions

(c) Architectural membrane must be durable and have proof of performance in cold weather applications

(d) Structure must utilize performance insulation to ensure climate control with optimal heating and cooling efficiency.

(e) Must be installed on a suitable hard surface base and not directly on grass.

5.4.2 Permitted when:

(a) All conditions of DP and BP submissions to City of Calgary have been met to their satisfaction.

(b) Extenuating circumstances support the use of temporary facilities. These include but are not limited to construction time frames; lease factors, etc.

(c) The use is to facilitate an out-building or secondary building type of accommodation

(d) Used for purposes of storage.

(e) Used as a temporary facility with a specific "take down" date included in the lease agreement/CIP approval conditions.

5.4.3 Not permitted:

(a) When proposed for erection in a high profile area where the aesthetics are not complementary to other development in the area.

(b) Temporary tents and engineered membrane structures are not permitted in the Terminal Reserve Trade Park.

5.4.4 Compliance

All Engineered Membrane Structures and Temporary Tent installations at YYC must be vetted through the Construction Installation Permitting (CIP) program. Failure to do so will result in the requirement for immediate removal until a proper application is made. All Proponents are required to abide by the terms, conditions, and policies of their lease with the Airport Authority.

5.5 MODULAR BUILDING INSTALLATION

Modular buildings are manufactured in a factory and transported to site for installation saving the Proponent time and cost. They are easy to relocate and are expandable.

Modular buildings can support expansion and growth when timing, budget and relocation options are not available. The approval for installation of a modular building will be reviewed and granted on a case-by-case basis provided the application meets the approval criteria.

5.5.1 Approval Criteria

(a) Must be installed on a suitable hard surface base and not directly on grass.

(b) Exterior finish must be complementary to existing site building(s).

(c) Multiple buildings must be the same color.

(d) Building structure must be in “good condition”.

(e) Skirting, ramp, and stairs must be included in architectural design.

5.5.2 Permitted when:

(a) All conditions of DP and BP submissions to City of Calgary have been met to their satisfaction.

(b) Extenuating circumstances support the use of temporary facilities. These include but are not limited to construction timeframes, lease factors, etc.

(c) The use is to facilitate an outbuilding or secondary building type of accommodation

(d) Used for purposes of storage.

(e) Used as a temporary facility with a specific “take down” date included in the lease agreement/CIP approval conditions.

5.5.3 Not permitted:

(a) When proposed for erection in a high profile area where the aesthetics are not complementary to other development in the area.

(b) Modular building installations are not permitted in the Terminal Reserve Trade Park.

5.5.4 Compliance

All modular building installations at YYC must be vetted through the CIP program. Failure to do so will result in the requirement for immediate removal until a proper application is made. All Proponents are required to abide by the terms, conditions, and policies of their lease with the Airport Authority.

6.0 - CONSTRUCTION RULES

6.0 PROPONENT CONSTRUCTION RULES

Based on the Airport Authority's experience and in order to incur the least amount of inconvenience to all concerned, the following rules and requirements are applicable to all Projects upon commencement of construction work. These requirements will be enforced to ensure that there is no interruption to other businesses or public movement by the Proponent.

6.1 COMMENCEMENT OF PROPONENT WORK

Unless otherwise expressly permitted or required by the Airport Authority, no Proponent's work may commence and the Proponent may not have possession of its leased premises until the following conditions have been satisfied:

- The Airport Authority has issued the CIP and all other applicable permits.
- The Airport Authority has approved the Proponent's design, and the Proponent has submitted a construction schedule to the Airport Authority complete with 24-hour emergency contact list.
- All necessary approvals and permits of municipal and other governing authorities having jurisdiction over the Proponent's work have been obtained.
- The Airport Authority has approved the Proponent's contractors.
- The Airport Authority has notified the Proponent in writing of the date its leased premises are ready for the commencement of the Proponent's work and upon which the Proponent is to take possession.
- The Proponent's lease with the Airport Authority has been fully executed.
- The Airport Authority has received a development security deposit from the Proponent.

6.2 COORDINATION / START–UP MEETING

The Airport Authority recognizes safety as one of its core values and legislated mandates and will continuously strive to eliminate hazards and prevent incidents in the workplace.

The Airport Authority requires all Proponents to perform in a manner that conforms to these Technical Design and Construction Standards.

Prior to commencing work, a site meeting shall be arranged by the Development Coordinator. A representative of the Proponent and each of their representatives and contractors and consultants, and anyone else deemed essential to the Project, are required to attend.

Scheduling and coordination of all work shall be discussed including:

- Verification of construction schedule.

- Verification of requirements for construction safety to be maintained.
- Verification of site access, storage areas, parking and traffic management relative to the Proponent's contractors, employees, consultants and representatives.
- Proponent's responsibilities including garbage and debris, deliveries.
- Site inspection pre-construction (damage verification)
- Scheduling of critical shut-downs and utility tie-ins.
- Roles and responsibilities related to the ongoing management of the Project (including establishing emergency procedures, general lines of communication, etc.).

6.3 PUBLIC SAFETY

It is the responsibility of the Proponent to ensure that its contractors, consultants, employees and representatives exercise all caution in matters relating to construction and public safety and to comply with the Occupational, Health and Safety standards established by authorities having jurisdiction.

Where applicable, the Proponent shall designate a Prime Contractor responsible for work site safety for the Project.

From time to time, the Airport Authority may issue to a Proponent safety instructions, which must be strictly adhered to. All work is governed by the latest Construction Safety Act and the Proponent must abide by instructions of the Airport Authority's representative in these areas as applicable.

6.4 SECURITY

Security of the leased premises or construction site, as applicable, during the construction and fixturing period is the sole responsibility of the Proponent. The Airport Authority assumes no liability for any loss or damage including the theft of building materials, equipment, or supplies.

It will be necessary for all Proponents to comply with all applicable security legislation and regulations in effect at the Airport, including but not limited to:

- Conditions of Issue for RAIC & Temp Passes
- Conditions for Holding Visitor Passes
- Conditions for Holding Construction Visitor Passes
- Duties and Responsibilities of Visitor Sponsor and Escorts
- Application for Keys and Access

- Locksmith Service Request Form

Documents and information related to the above regulations as well as other security related requirements are available from http://www.yyc.com/en-us/businessatyyc/passoffice.aspx

6.5 SECURITY FENCE

The Airside Security Fence CAN NOT be compromised at any time. The security fence shall be kept clear AT ALL TIMES of objects that may constitute a threat to the security of the aerodrome in all areas for a distance of 3m outside the security fence. If the airside fence is compromised the IOC (Integrated Operations Centre) must be notified immediately.

A Physical Security Notice (PSN) document must be completed for any proposed change to the airside security fence or prime security line within a Building. The Development Coordinator will assist the Proponent with the submission of the PSN document. The document must be reviewed and approved by the Airport Authority's Security Team prior to any construction.

6.6 CONSTRUCTION FENCING

The Proponent should anticipate the requirement to install temporary construction fencing around their Project site.

6.7 CRANE USE ASSESSMENT

Crane use for any Projects requires assessment and approval from the Airport Authority, Transport Canada, and Nav Canada. Refer to www.yyc.com for construction crane assessment procedures.

6.8 WORKING HOURS

The Proponent may be subject to restrictions, which may be imposed by the Airport Authority in its sole discretion, in regard to deliveries, hours of work, scheduling and co-ordination of work, including but not limited to night shifts and weekends.

It is the responsibility of the Proponent to coordinate with the Development Coordinator the approved hours of work for their construction forces.

6.9 MATERIAL DELIVERY

The Proponent must coordinate the time, location, routing and method for all oversize/irregular deliveries relating to the construction with the Development Coordinator.

6.10 GARBAGE REMOVAL

The Proponent will be required to remove all construction debris on a daily basis. In areas where the work is "airside", measures must be taken to ensure that all garbage is enclosed and does not present a danger to airside operations,

especially causing any hazard of Foreign Object Damage (FOD). Temporary storage of garbage or debris outside of the leased premises or Project site, as applicable, will not be permitted.

All removed material shall be disposed of off-site, unless otherwise approved in writing by the Airport Authority prior to the disposal.

6.11 BUILDING CODES

It is the Proponent's responsibility to fully comply with all applicable governing codes and ordinances for their occupancy type.

6.12 PERMITS

The Proponent is responsible for obtaining at its own expense all approvals and/or permits pertaining to the Project from all authorities having jurisdiction prior to commencement of construction. All approvals and permits must be posted in a visible location.

6.13 DEFICIENCIES

The Proponent shall make good any deficiencies discovered by the Airport Authority or its representative, or by City of Calgary building inspectors whether in its own premises or in adjacent premises affected by the Proponent's Project. Failure to comply with a written request within 30 days will give the Airport Authority the right to correct the Proponent's deficiencies at the Proponent's sole expense.

6.14 CLEAN-UP

The Proponent should ensure proper clean-up of all areas related to its work to the satisfaction of the Airport Authority prior to opening for business.

7.0 - PROJECT COMPLETION

7.0 PROJECT COMPLETION

7.1 Final Inspection and Acceptance of the Work

The Proponent shall notify the Proponent's consultant(s) and the Airport Authority in writing when all deficiencies are complete and final clean-up has been done. The Proponent and its consultant(s) along with the Airport Authority will make a final inspection to ascertain if the Work has been fully completed in accordance with the approved detail drawings.

7.2 Occupancy Permit

The Proponent is responsible for obtaining an Occupancy Permit from the City of Calgary prior to commencing operations. Proof of the Occupancy Permit must be submitted to the Airport Authority prior to commencing operations.

7.3 Statutory Declaration

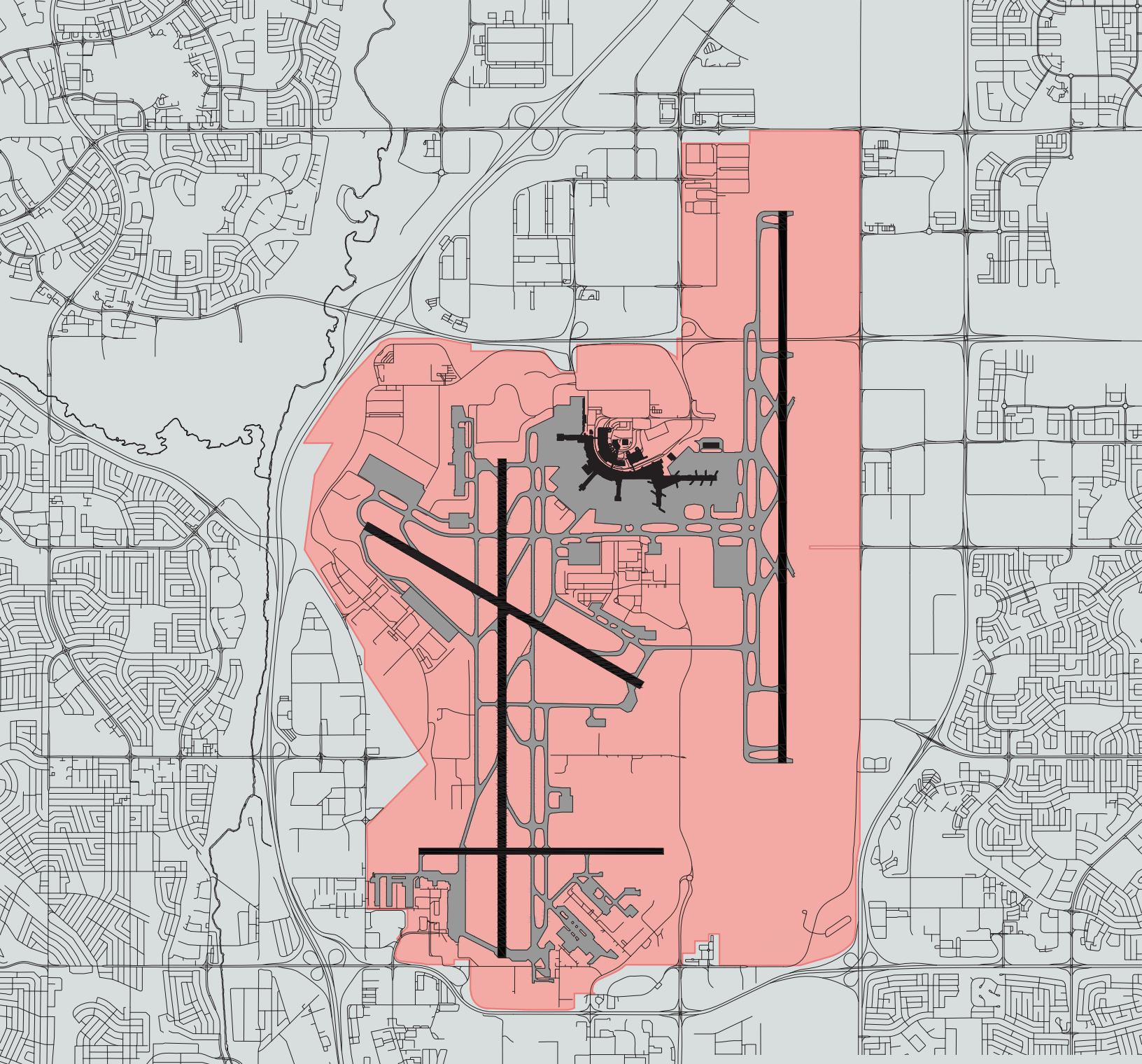
A Statutory Declaration is a legal form completed by the Proponent's contractor(s) and witnessed by a Commissioner of Oaths, Notary Public, or Justice of the Peace at the end of the construction period stating to the Owner, in this case the Proponent, that it has discharged all its lawful obligations with respect to the performance of the Contract, including without limitation, payment of all accounts for labour, subcontractors, suppliers, debts arising out of statutory requirements, and other indebtedness which may have been incurred, up to the date specified.

At the Airport Authority's request, the Proponent should submit to the Airport Authority, its Contractor's Statutory Declaration as required under the Construction Schedule. The Proponent will also furnish evidence of compliance with the requirements of the Workers' Compensation Act as required under the Construction Schedule.

7.4 Record Drawings

The provision of project record drawings is a term of the Lease, and must be submitted to the Development Coordinator within 30 days of the project construction completion. This time period may be extended to 60 days with approval from the Development Coordinator. The Proponent must provide the Airport Authority with one (1) set of good quality electronic files as specified in the YYC CADD Manual (Appendix A), documenting all as-built conditions. If the required documentation is not received by the Airport Authority within the specified time period, the Airport Authority will undertake the work at the Proponent's expense.

APPENDIX A – YYC CADD Manual



CAD

SITE/CIVIL & TERMINAL CAD STANDARD

VERSION 6.1 - MARCH 14, 2023

YYC™ CALGARY AIRPORT AUTHORITY

Index

1.0 INTRODUCTION

1.1 Background

This Computer Aided Design and Drafting Standards package is to be used on all Calgary Airport Authority (Airport Authority) projects. These standards have been developed as a guide and overview for all disciplines of CADD on internal and contractually submitted electronic drawing file formats. Highlights within this manual include file format, naming conventions, layering, drawing assembly and general drafting procedures.

Consultants shall contact Spatial Data Services (SDS) for updates and revisions to the standards and must ensure the most current issue of the Airport Authority CADD Manual is being used.

The file structure, drawing numbering, primary layer names and standard detail symbology shall be adhered to. Changes to the standards symbology or layering groups may be considered upon formal request to SDS. The Airport Authority must approve these modifications, in advance, and the modifications shall be documented in writing with the drawing submission.

Work created for the Airport Authority is protected by copyright. The Airport Authority in its master contract is to receive ownership of the information. This is so the information may be reused and provided to other consultants who require this information to carry out their work on Airport Authority projects. In addition, the head lease the Airport Authority has with the Federal Government ensures the Airport Authority receives transfer of copyright on all its consultant designed projects.

Facility record drawings are maintained by the Airport Authority SDS. These drawings have been created by pulling together information from past project as-builts, record drawings, and site surveys. As new projects are completed and record drawings delivered, these new areas are added to the facility record drawings. While every attempt is made to ensure the data in the record drawings is correct, any areas critical to the project should be verified by field checking. Access to past record drawings and associated data is permitted and can be arranged through Airport Authority Project Managers / Project Coordinators.

The Airport Authority is currently using Autodesk Map 2022, AutoCAD Architecture 2022, AutoCAD Civil 3D 2022 and AutoCAD Raster Design 2022. The airport has adopted the use of the AIA Layer Guidelines - Long Layer Name Format for its CADD layering convention.

2.0 GENERAL REQUIREMENTS

2.1 Delivery Media and Format

All information described in section 2.0 of this document is to be included in the electronic data deliverables. Any additional files developed as part of the project such as construction specifications, XML Databases shall also be provided with the drawing sets. Deliverables are to be provided via CD / DVD / USB STICK / FTP SITE.

Drawing files will be saved in AutoCAD 2018 .dwg format. The submitter is responsible for archiving the electronic data until final written acceptance from the Airport Authority has been issued. Electronic data deliverables are required with all major submittals unless otherwise directed by Contract Agreements.

Filenames:
- drawing/filename provided by the Airport Authority
- long filenames will be accepted by the Airport Authority
- refer to Section 3.2 for file naming conventions

2.2 Disk Labelling

If submitting data by disk, they must be labelled as follows:

Date:	Delivery date to the Airport Authority for final acceptance
Project Name:	Title of Project
Project Number:	Airport Authority Project Number
AutoCAD Release:	AutoCAD version drawing was created in
Company Name:	Name of consultant to the Airport Authority
Phone:	Phone number of consultant

2.3 File Description

The electronic data delivery package shall include a File Description note. The note shall be an 8 ½" x 11" PDF and describe the master files and associated x-reference files on the CD / DVD / USB Stick. A basic file list may be started using a dos shell command "dir /b /on > text.txt". This creates directory listing in brief format (name only) sorted by name output to a text file. This file may them be edited adding the full description of the file and the corresponding layout tab(s).

Sample Hard Copy of File Description:

2023/01/13
CALGARY AIRPORT AUTHORITY ELECTRONIC DATA - FILE DESCRIPTION

Prepared for:
Calgary Airport Authority

Prepared by:
Master Architects, Inc.
1000 Centre Street
Calgary, AB, T2G 1N4
Joe Smith, Project Manager
Phone: 403-555-1234
Email: joes@masterarchitects.com

Project: Concourse A Holdroom
Project Number: 4567
Contract Number: 1234

Remarks:
Paper and model space used in this file format
Font, Linetype, and CTB files used in plotting are enclosed

File Description:
23c04a01.dwg - Demolition and Room Layout
23c04a02.dwg - Wall Sections
23c04a03.dwg - Details
23c04m01.dwg - Mechanical Layout
23c04e01.dwg - Electrical Layout

2.4 Standard Coordinate Systems

Drawings generated for the Calgary Airport Authority may be one of two Coordinate Systems. One is for Site Mapping, the other for the Building Facility Drawings. To confirm the Coordinate System the particular drawing uses, view the drawing coordinates from within model space using the user Coordinate System (UCS) set to world. The following examples are for the Air Terminal Complex Grid Center. This is located on the northwest wall of the Services Building. This location is also an Alberta Survey Monument **#156646** (Airport Authority Tablet **#702113**). The monument is used by both systems but will display different values depending on the Coordinate System used.

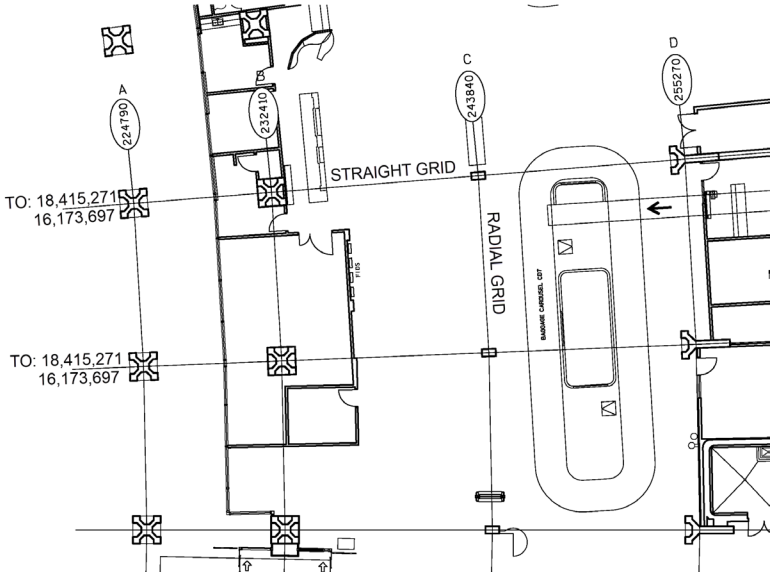
Site Mapping
Airport Authority Site mapping uses the Alberta **NAD83 datum; 3TM coordinate system centered at 114 degrees West**. The coordinate for the above sample monument is:
North **5,666,270.420** and East **–559.815m**.
The world UCS coordinate system in AutoCAD model space will reflect these values.
Units used in these drawing are METERS.

Building Facility
Building drawings (ATB, Parkade, Services Building, etc.) are set to a **Local Airport Coordinate System**. Using the monument example above, the AutoCAD world UCS coordinates in model space will display the coordinates of: North **18,415,271**, East **16,173,697**. ***Units used in these drawing are MILLIMETERS***.

When drawing in the ATB, elements are typically drawn parallel and perpendicular to the segmented radial grids, NOT the straight grids. This necessitates rotating the view

of the drawing. **DO NOT ROTATE OR MOVE THE ELEMENTS THEMSELVES**. One method of rotating the view without disturbing the drawing is to select a plan view of the UCS equal or perpendicular to the radial grid in the area the new elements are to be drawn.

Example: (In model space, we are going to rotate the view around an object)
Command: **UCS**
Specify origin of UCS or [Face/NAmed/OBject/Previous/View/World/X/Y/Z/ZAxis] <World>: **OB**
Select object to align UCS: **(Select an end of a line closest to the new left side of the view)**
Command: **PLAN**
<Current UCS>/Ucs/World: C



3.0 FILE MANAGEMENT

3.1 Project Directory Structure

Directory structures shall be created for all Capital projects. Projects not requiring all disciplines do not need to have all discipline levels created. All drawings will be located within the directory structure as indicated below.

Project Number Level – this number will be provided by the Airport Authority Project Manager. It consists of two parts: a location identifier code and project number in a format similar to the following example 5020-4008 (5020 being the location identifier and 4008 being the project number). Projects that require multiple tender packages should consider using TP01, TP02, TP03, etc to help define different packages within the project. If this method is used seek further clarification from the Project Manager / Project Coordinator. No drawings shall be located at this level.

Discipline Level - only title block/fence drawings (.dwg) are located at this level. Details, plans etc, from component level will be X-referenced onto title block/fence drawings from the BLK directory.

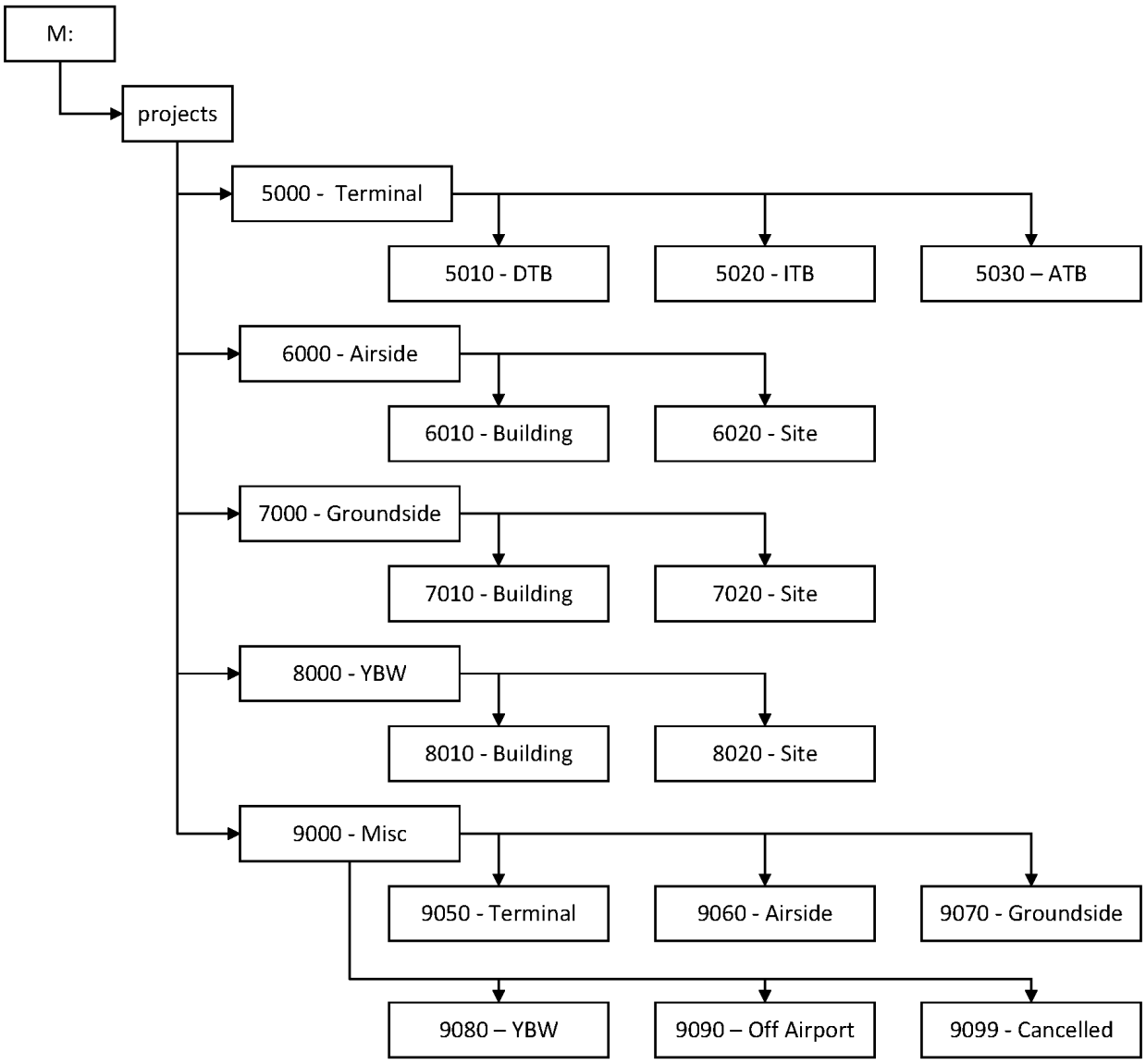
A	*Architectural Drawings*
C	*Civil Drawings*
E	*Electrical Drawings*
I	*Interiors Drawings*
M	*Mechanical/Plumbing/Fire Protection Drawings*
S	*Structural Drawings*
T	*Telecom Drawings*
Spec	*All Discipline specifications, schedules, addendums*
Admin	*All administrative files such as correspondence, technical data, production drawing lists and schedules etc.*

Component Level
BLK - Final drawing component elements are located in this directory. Components are X-referenced onto title blocks/fences.

Project Directory Structure - Consultants are not required to follow Airport Authority directory structure but are required to provide files that will fit into the Airport Authority file system as noted. Options are available to deal with AutoCAD xref file pathing as follows;

1) Placement of all drawings, plot sheets and xref files in one directory
2) When sub-directories are required, use Reference Type / Path Type set to Relative Path example: .\BLK\xxxxx.dwg Use a "." to indicate parent, then followed by the sub-directories as required.
3) AutoCAD command "eTransmit" with the selection to remove xref paths.

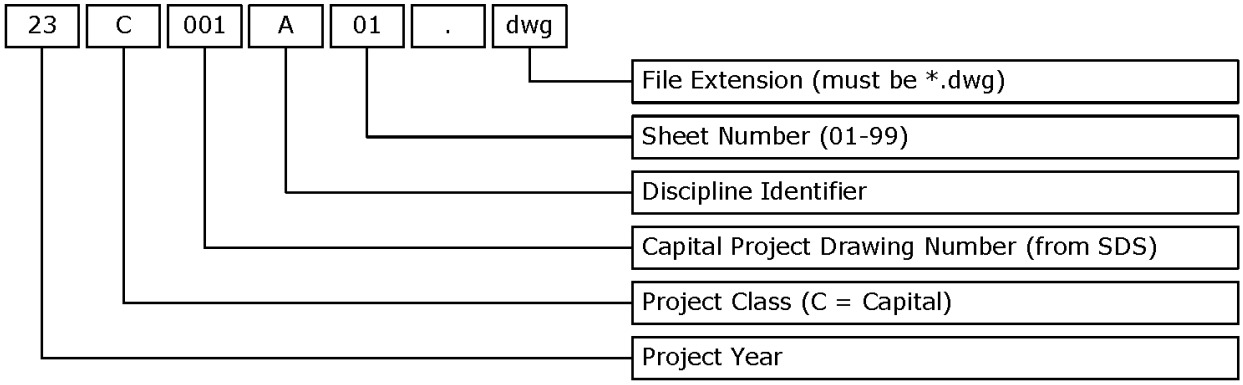
These above methods will allow the project drawings to move into the Airport Authority file System and allow AutoCAD to resolve the xref paths (see Section 5.3 External Reference Files).



3.2 File Naming Convention

File numbers are assigned for each separate Project tender package and are available from The Airport Authority Project Manager / Project Coordinator at the start of the project. The file number assigned is used to form part of the digital file number in combination with the sheet number. This is to ensure the digital drawing file numbering is unique from sheet to sheet also project to project.

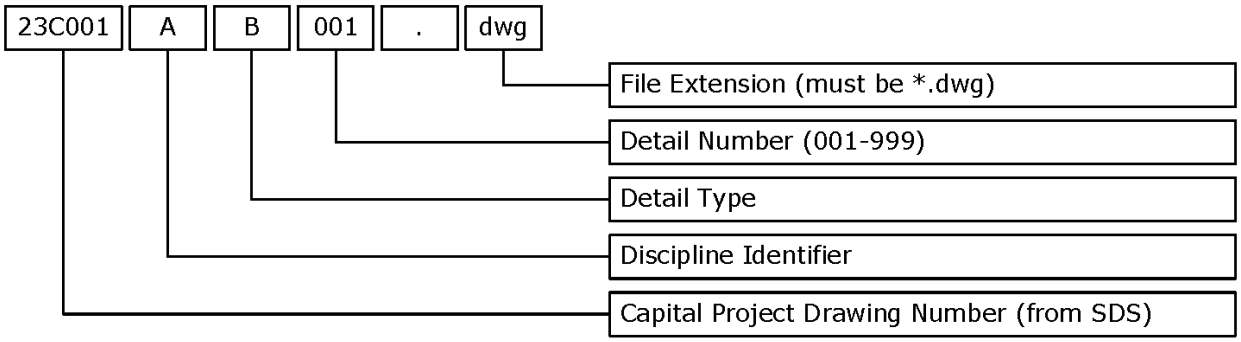
Plot Sheet Numbering



If multiple sheets are used within a single plot sheet, describe this in the digital file number. For example: 23C20a03-05.dwg would represent layout tabs a03, a04 and a05.

Additional characters may be added to the prefix to help relate to detail information types such as xref files (floor plans, ceiling plans elevations, or sections). The important item is using the prefix assigned to the project making the drawings unique for this project. These file to be located in .\BLK level.

Detail Numbering



Detail Type		Discipline Identifier	
B	*Floor plans*	A	*Architectural*
C	*Reflected Ceiling Plans*	C	*Civil*
D	*Details*	E	*Electrical*
E	*Elevations*	I	*Interiors*
F	*Finish Plans*	M	*Mechanical*
S	*Site Plans*	S	*Structural*
		T	*Telecom*

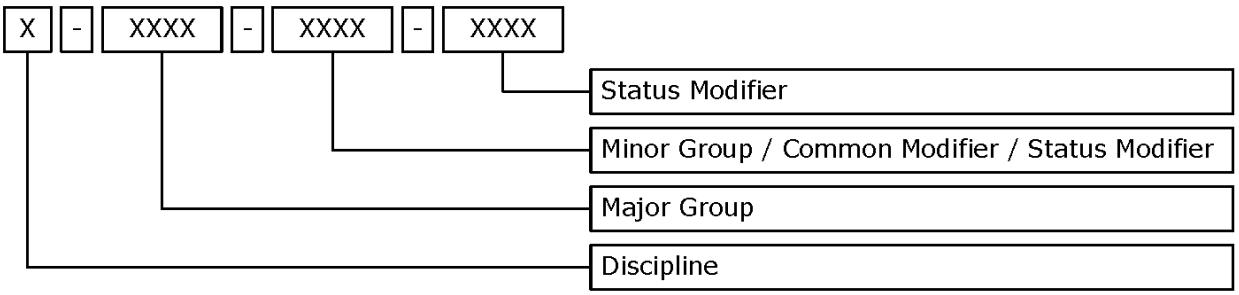
4.0 LAYERING

4.1 Layer Name Format

The layer convention used by the Airport Authority is based on the **AIA (American Institute of Architecture) Long Format Standard**. Variations to the AIA format are primarily Airport Specific layers. Layers are pre-built and are available for use by using Airport Authority template files. Only applicable layers are to be used. Blank layers are not to be included in final electronic data deliveries. Graphical representation of the same type of items shall be located on a single layer even when indicated on different drawings eg. a full height wall could be shown as **A-WALL** or **A-WALL-FULL** but not both. Layer names will be limited to 13 characters sub-divided into 4 sections, Disciplines, Major, Minor, Modifier and Status. Layer names are typically created using consonants which help in abbreviation creation. Maximum number of characters per group is 4. If new layers are required, they must first be approved by the Spatial Data Services prior to becoming part of official Airport Authority layering system. Complete layer lists with descriptions are required for each project is new layers have been used.

The Layer Guidelines are organized as a hierarchy. This accommodates expansion and user defined extensions to the layer list. Layer names are alphanumeric and use easy to remember abbreviations.

4.1.1 **Schematic**



4.1.2 **Discipline**

This field is used to indicate the origin of the graphic information. It may be a two-character field with the second characters either a hyphen or a user-defined modifier. This field uses that same format as the file names.

A	Architectural	**C**	Civil	**E**	Electrical
F	Fire Protection	**G**	General	**I**	Interior Design
L	Landscape	**M**	Mechanical	**P**	Plumbing
S	Structural	**T**	Telecom	**V**	Survey

4.1.3 Major Group

Major groups identify the specific discipline and building System.
Examples: A-DOOR for door, E-LITE for lights and P-FIXT plumbing fixture.

4.1.4 Minor Group

This is an optional, four-character field for further differentiation of the major group.
Example: A-WALL-PRHT indicates architecture, wall, and partial height.

4.1.5 Common Modifiers

The following are some common modifiers defined for use in the minor group field:

*-****-ABDN	Abandoned Features
*-****-ELEV	Elevation (vertical surfaces in 3D)
*-****-EQPM	Equipment
*-****-IDEN	Special Identification Tags (Inventory tags, Stair Numbers, etc)
*-****-PATT	Cross Hatching, Patterns
*-****-RMVD	Removed Features
*-****-SYMB	Symbols
*-****-TEXT	Text (Notes, Sizes, Labels, etc)

4.1.6 Status Modifiers

The status modifier may occur as a fourth field following the minor group or replace the minor group entirely. Typically used within construction drawings to denote the status of features and to help identify between new work, relocated items or items to be demolished. Status modifiers are not typically used within facility record drawings because those items are typically existing and do not require any status change but at times are used to identify features in question or feature needing record drawing status.

*-****-DEMO	Demolition
*-****-EXST	Existing to Remain
*-****-FUTR	Future Work
*-****-MOVE	Items to be Moved
*-****-NEWW	New Work
*-****-NICN	Not in Contract
*-****-NPLT	No Plot (No Plot option used with this layer)
*-****-PRPS	Proposed Work
*-****-RELO	Items to be Relocated
*-****-TEMP	Temporary Work

4.1.7 Annotation Layers

Annotation Layers are used for text, sheet borders, dimensions or cutting plane section symbols or other elements on a CADD drawing that do not represent physical

aspects of a building. The major group ANNO designates annotation.

Layer	Color	Linetype	Description
*-ANNO-CONS	8	Continuous	Construction Lines, Non-Plotting Info
*-ANNO-CTNN	13	Continuous	Continuation Notes (Model Space Only)
*-ANNO-DIMS	33	Continuous	Dimensions (Leaders, Angular, Linear, etc)
*-ANNO-KEYN	54	Continuous	Key Notes
*-ANNO-LEGN	43	Continuous	Legends
*-ANNO-NOTE	73	Continuous	Notes (Paragraph Format)
*-ANNO-REVS	113	Continuous	Revisions
*-ANNO-SCHD	23	Continuous	Schedule
*-ANNO-SYMB	52	Continuous	Symbols, Section Lines, Labels, Elevations
*-ANNO-TEXT	13	Continuous	Text (Single Line, Misc)
*-ANNO-TTLB	62	Continuous	Titleblocks

4.2 General Layer Comments

Viewports shall be placed on a VIEWPORT1, VIEWPORT2, VIEWPORT3, etc.. and set to "do not plot" in the layer menu. All other objects that are non-plot to be placed on a non-plot layer or layers.

It is recommended that each project make use of the AutoCAD Layer States Manager to help in save the layer states required to carry out the project work. To ensure your files are in a proper color layer on/off state ensure that you always save your file with a finished layer on / off color state so when the next user opens the file the drawing is in proper display condition.

If the following layering definitions do not suit the object being drawn, refer to Sub-Section 4.1 for proper layer creation and designation. Changes to the standards, symbology or layering groups may be considered upon formal request to SDS. The Airport Authority must approve these modifications in advance and the modifications shall be documented in writing with the drawing submission.

Layer lists are always under review and may change. It is advisable to check with The Airport Authority with each new project startup for an update to this document. The colors shown are used for plotting facility record drawings and may be used in different combinations for different projects as required.

4.3 Building Layers

4.3.1 **Architectural Layers**

LAYER	COLOR	LINETYPE	DESCRIPTION
A-AREA	123	Continuous	Area - Calculations & Boundary Lines
A-AREA-OCCP	203	Continuous	Area - Occupant Names
A-AREA-PATT	42	Continuous	Area - Hatch Patterns

LAYER	COLOR	LINETYPE	DESCRIPTION
A-AREA-TEXT	153	Continuous	Area - Descriptions and Identifiers
A-CLNG	21	Continuous	Ceiling Information
A-CLNG-ACCS	31	Continuous	Ceiling - Access
A-CLNG-BLKH	41	Continuous	Ceiling - Bulkheads
A-CLNG-GRID	41	Continuous	Ceiling - Grid
A-CLNG-OPEN	51	Continuous	Ceiling - Roof Penetrations
A-CLNG-PATT	41	Continuous	Ceiling - Hatch Patterns
A-CLNG-SUSP	61	Continuous	Ceiling - Suspended Elements
A-CLNG-TEES	71	Continuous	Ceiling - Main Tees
A-CNVR-CRSL	152	Continuous	Carousels
A-CNVR-CRSL-IDEN	163	Continuous	Carousel - Identifier Tags
A-CNVR-EDSU	52	Continuous	Conveyor - Explosion Detection System
A-CNVR-INBD	92	Continuous	Conveyor - Inbound
A-CNVR-OTBD	172	Continuous	Conveyor - Outbound
A-CNVR-SECT	12	Continuous	Conveyor - Security
A-CNVR-TRAN	32	Continuous	Conveyor - Transfer
A-DOOR	243	Continuous	Doors
A-DOOR-FULL	193	Continuous	Door - Full Height (to Ceiling): Swing and Leaf
A-DOOR-IDEN	153	Continuous	Door - Number, Hardware Group, Etc
A-DOOR-PRHT	202	Continuous	Door - Partial Height: Swing and Leaf
A-DOOR-SILL	241	Continuous	Door - Sills
A-DOOR-TEXT	153	Continuous	Door - Descriptions & Sizes
A-ELEV	132	Continuous	Elevation - Interior & Exterior
A-ELEV-IDEN	153	Continuous	Elevation - Component Identification Numbers
A-ELEV-OTLN	130	Dashed	Elevation - Interior & Exterior Outlines
A-ELEV-PATT	41	Continuous	Elevation - Textures and Hatch Patterns
A-ELEV-TEXT	153	Continuous	Elevation - Notes
A-EQPM	132	Continuous	Equipment
A-EQPM-ACCS	132	Continuous	Equipment - Access
A-EQPM-FIXD	142	Continuous	Equipment - Fixed
A-EQPM-GATE	122	Continuous	Equipment - Gate
A-EQPM-IDEN	153	Continuous	Equipment - Identifier Numbers & Labels
A-EQPM-MOVE	152	Continuous	Equipment - Moveable
A-EQPM-OVHD	31	Continuous	Equipment - Overhead
A-EQPM-PATT	41	Continuous	Equipment - Patterns & Hatching
A-EQPM-TEXT	153	Continuous	Equipment - Notes
A-ESKR	142	Continuous	Escalator
A-ESKR-IDEN	143	Continuous	Escalator - Identifier Tags
A-EVTR	202	Continuous	Elevator - Cars and Equipment

LAYER	COLOR	LINETYPE	DESCRIPTION
A-EVTR-IDEN	203	Continuous	Elevator - Identifier Tags
A-FLOR	152	Continuous	Floor Information
A-FLOR-HRAL	202	Continuous	Stair and Balcony Handrails, Guard Rails
A-FLOR-LEVL	52	Continuous	Level Changes, Ramps, Pits, Depressions
A-FLOR-MATS	121	Continuous	Floor Mats
A-FLOR-MILL	132	Continuous	Millwork (Manufactured & Field built Cabinets)
A-FLOR-OPEN	151	Continuous	Floor Openings
A-FLOR-OTLN	120	Phantom	Floor or Building Outline
A-FLOR-OVHD	31	Dashed	Overhead Items (Skylights, Overhangs-Dashed)
A-FLOR-PATT	41	Continuous	Paving, Tile, Carpet Patterns & Hatching
A-FLOR-RMNM	153	Continuous	Room Numbers (within database)
A-FLOR-SHFT	81	Continuous	Shaft Opening – Mechanical, Pipe Chase, etc.
A-FLOR-TEXT	153	Continuous	Details, Labels, Etc.
A-FURN	242	Continuous	Furniture (General)
A-FURN-GARB	42	Continuous	Furniture - Garbage Cans
A-FURN-IDEN	153	Continuous	Furniture - Identifier Tags
A-FURN-NEWS	122	Continuous	Furniture - News Stands
A-FURN-SEAT	142	Continuous	Furniture - Seats
A-FURN-SIGN	212	Continuous	Furniture - Signs
A-FURN-TOYS	242	Continuous	Furniture - Large Toys
A-FURN-TREE	82	Continuous	Furniture - Trees
A-FURN-VEND	52	Continuous	Furniture - Vending Machines
A-GLAZ	113	Continuous	Glazed Openings, Glazed Walls & Partitions
A-GLAZ-FULL	63	Continuous	Full Height Glazed Walls and Partitions
A-GLAZ-IDEN	153	Continuous	Window Numbers, Descriptions, and Identifiers
A-GLAZ-PATT	42	Continuous	Window Patterns & Hatching
A-GLAZ-PRHT	53	Continuous	Window and Partial Height Glazed Partitions
A-GLAZ-SILL	71	Continuous	Windowsills
A-ROOF	134	Continuous	Roof
A-ROOF-ELEV	143	Continuous	Roof - Surfaces 3D Views
A-ROOF-LEVL	171	Continuous	Roof - Level Changes; Ramps, Pits, Depressions
A-ROOF-OTLN	193	Continuous	Roof - Outline/Edge
A-ROOF-PATT	41	Continuous	Roof - Surface Patterns & Hatching
A-STRS	122	Continuous	Stair - Treads, Ladders
A-STRS-IDEN	123	Continuous	Stair - Identifier Tags
A-WALL	95	Continuous	Wall
A-WALL-FIRE	242	Continuous	Wall - Fire Wall Patterning
A-WALL-FULL	95	Continuous	Wall - Full Height, Stair & Shaft Walls, Walls to
A-WALL-HEAD	62	Continuous	Wall - Door & Window Headers (On Ceiling Plans)

LAYER	COLOR	LINETYPE	DESCRIPTION
A-WALL-JAMB	62	Continuous	Wall - Door& Window Jambs (Not On Ceiling Plans)
A-WALL-MOVE	113	Continuous	Wall - Moveable Partitions
A-WALL-PATT	42	Continuous	Wall - Insulation, Hatching and Fill
A-WALL-PRHT	112	Continuous	Wall - Part Height (Not On Ceiling Plans)
A-WALL-TPTN	102	Continuous	Wall - Toilet Partitions

4.3.2 **Structural Layers**

LAYER	COLOR	LINETYPE	DESCRIPTION
S-ABLT	202	Continuous	Anchor Bolts
S-ABLT-TEXT	153	Continuous	Anchor Bolt Tags, Identifiers & Notes
S-COLS	46	Continuous	Column
S-COLS-PATT	41	Continuous	Column - Patterns & Hatching
S-COLS-SILL	71	Continuous	Column - Sill (Structural Appearance)
S-COLS-TEXT	43	Continuous	Column - Notes & Sizes
S-FNDN	185	Continuous	Foundation
S-FNDN-PATT	41	Continuous	Foundation - Patterns & Hatching
S-FNDN-PILE	154	Continuous	Foundation - Piles, Drilled Piers
S-FNDN-RBAR	183	Continuous	Foundation - Reinforcing
S-FNDN-TEXT	153	Continuous	Foundation - Tags & Descriptions
S-FRAM-BEAM	21	Continuous	Framing - Beams
S-FRAM-DECK	52	Continuous	Framing - Structural Floor Deck
S-FRAM-JOIS	113	Continuous	Framing - Joists
S-FRAM-PATT	41	Continuous	Framing - Patterns & Hatching
S-FRAM-TEXT	153	Continuous	Framing - Notes & Sizes
S-GRID	250	B_Gridline	Column Grid
S-GRID-DIMS	33	Continuous	Column Grid - Dimensions & Text
S-GRID-IDEN	13	Continuous	Column Grid - Bubbles & Tags
S-METL	12	Continuous	Miscellaneous Metal
S-SLAB	53	Continuous	Slab
S-SLAB-EDGE	62	Continuous	Slab - Edge
S-SLAB-JOIN	12	Continuous	Slab - Control Joints
S-SLAB-PATT	41	Continuous	Slab - Patterns & Hatching
S-SLAB-RBAR	22	Continuous	Slab - Reinforcing
S-SLAB-TEXT	53	Continuous	Slab - Notes & Sizes
S-WALL	16	Continuous	Structural - Bearing or Shear Walls
S-WALL-BELW	71	Continuous	Structural - Wall Build out Below Grade Elevation
S-WALL-PATT	41	Continuous	Structural - Patterns & Hatching
S-WALL-PRHT	94	Continuous	Structural - Bearing Walls/ Partial Height
S-WALL-TEXT	13	Continuous	Structural - Wall Notes

4.3.3 **Mechanical Layers**

LAYER	COLOR	LINETYPE	DESCRIPTION
M-CHLD-EQPM	210	Continuous	Chilled Water - Equipment
M-CHLD-IDEN	133	Continuous	Chilled Water - Identifier Tags
M-CHLD-RETN-HIDD	140	Hidden	Chilled Water Return Pipe - Hidden
M-CHLD-RETN-PIPE	140	Dashed	Chilled Water Return Pipe
M-CHLD-RETN-SYMB	143	Continuous	Chilled Water Return Pipe - Symbols (Valves, Etc.)
M-CHLD-RETN-TEXT	133	Continuous	Chilled Water Return Pipe - Text (Pipe Sizes)
M-CHLD-SUPP-HIDD	140	Hidden	Chilled Water Supply Pipe - Hidden
M-CHLD-SUPP-PIPE	140	Continuous	Chilled Water Supply Pipe
M-CHLD-SUPP-SYMB	143	Continuous	Chilled Water Supply Pipe - Symbols (Valves, Etc.)
M-CHLD-SUPP-TEXT	133	Continuous	Chilled Water Supply Pipe - Text (Pipe Sizes)
M-CHLD-TEXT	133	Continuous	Chilled Water - Text (General Notes)
M-CONT-SYMB	73	Continuous	Control System - Symbols (Thermostats, Etc.)
M-CONT-TEXT	113	Continuous	Control System - Text
M-CONT-WIRE	102	Dashdot	Control System - Wire
M-GLYC-EQPM	210	Continuous	Glycol Cooling - Equipment
M-GLYC-IDEN	213	Continuous	Glycol Cooling - Identifier Tags
M-GLYC-RETN-HIDD	144	Hidden	Glycol Cooling Return Pipe - Hidden
M-GLYC-RETN-PIPE	144	Dashed	Glycol Cooling Return Pipe
M-GLYC-RETN-SYMB	163	Continuous	Glycol Cooling Return Pipe - Symbol (Valves, Etc.)
M-GLYC-RETN-TEXT	173	Continuous	Glycol Cooling Return Pipe - Text (Pipe Sizes)
M-GLYC-SUPP-HIDD	144	Hidden	Glycol Cooling Supply Pipe - Hidden
M-GLYC-SUPP-PIPE	144	Continuous	Glycol Cooling Supply Pipe
M-GLYC-SUPP-SYMB	163	Continuous	Glycol Cooling Supply Pipe - Symbol (Valves, Etc.)
M-GLYC-SUPP-TEXT	173	Continuous	Glycol Cooling Supply Pipe - Text (Pipe Sizes)
M-GLYC-TEXT	173	Continuous	Glycol Cooling - Text (Notes)
M-GLYH-EQPM	210	Continuous	Glycol Heating - Equipment
M-GLYH-IDEN	213	Continuous	Glycol Heating - Identifier Tags
M-GLYH-RETN-HIDD	220	Hidden	Glycol Heating Return Pipe - Hidden
M-GLYH-RETN-PIPE	220	Dashed	Glycol Heating Return Pipe
M-GLYH-RETN-SYMB	233	Continuous	Glycol Heating Return Pipe - Symbol (Valves, Etc.)
M-GLYH-RETN-TEXT	233	Continuous	Glycol Heating Return Pipe - Text (Pipe Sizes)
M-GLYH-SUPP-HIDD	220	Hidden	Glycol Heating Supply Pipe - Hidden
M-GLYH-SUPP-PIPE	220	Continuous	Glycol Heating Supply Pipe
M-GLYH-SUPP-SYMB	233	Continuous	Glycol Heating Supply Pipe - Symbol (Valves, Etc.)
M-GLYH-SUPP-TEXT	223	Continuous	Glycol Heating Supply Pipe - Text (Pipe Sizes)
M-GLYH-TEXT	223	Continuous	Glycol Heating - Text (Notes)
M-H200-EQPM	35	Continuous	200F Water Heating - Equipment

LAYER	COLOR	LINETYPE	DESCRIPTION
M-H200-IDEN	13	Continuous	200F Water Heating - Identifier Tags
M-H200-RETN-HIDD	10	Hidden	200F Water Heating Return Pipe - Hidden
M-H200-RETN-PIPE	10	Dashed	200F Water Heating Return Pipe
M-H200-RETN-SYMB	23	Continuous	200F Water Heating Return Pipe - Symbol (Valves)
M-H200-RETN-TEXT	13	Continuous	200F Water Heating Return Pipe - Text (Pipe Sizes)
M-H200-SUPP-HIDD	10	Hidden	200F Water Heating Supply Pipe - Hidden
M-H200-SUPP-PIPE	10	Continuous	200F Water Heating Supply Pipe
M-H200-SUPP-SYMB	23	Continuous	200F Water Heating Supply Pipe - Symbol (Valves)
M-H200-SUPP-TEXT	13	Continuous	200F Water Heating Supply Pipe - Text (Pipe Sizes)
M-H200-TEXT	13	Continuous	200F Water Heating - Text (General Notes)
M-H400-EQPM	210	Continuous	400F Water Heating - Equipment
M-H400-IDEN	223	Continuous	400F Water Heating - Identifier Tags
M-H400-RETN-HIDD	14	Hidden	400F Water Heating Return Pipe - Hidden
M-H400-RETN-PIPE	14	Dashed	400F Water Heating Return Pipe
M-H400-RETN-SYMB	243	Continuous	400F Water Heating Return Pipe - Symbol (Valves)
M-H400-RETN-TEXT	223	Continuous	400F Water Heating Return Pipe - Text (Pipe Sizes)
M-H400-SUPP-HIDD	14	Hidden	400F Water Heating Supply Pipe - Hidden
M-H400-SUPP-PIPE	14	Continuous	400F Water Heating Supply Pipe
M-H400-SUPP-SYMB	243	Continuous	400F Water Heating Supply Pipe - Symbol (Valves)
M-H400-SUPP-TEXT	223	Continuous	400F Water Heating Supply Pipe - Text (Pipe Sizes)
M-H400-TEXT	223	Continuous	400F Water Heating - Text (General Notes)
M-HEXH-DUCT	150	Continuous	Exhaust System - Ductwork
M-HEXH-EQPM	210	Continuous	Exhaust System - Equipment
M-HEXH-HIDD	140	Hidden	Exhaust System - Hidden
M-HEXH-IDEN	153	Continuous	Exhaust System - Identifier Tags (Diffuser Tags)
M-HEXH-PATT	131	Continuous	Exhaust System - Patterns and Hatching
M-HEXH-SYMB	143	Continuous	Exhaust System - Symbols (Exhaust Diffusers)
M-HEXH-TEXT	153	Continuous	Exhaust System - Text (Duct Sizes & Notes)
M-HRET-DUCT	104	Continuous	HVAC Return Ductwork
M-HRET-EQPM	210	Continuous	HVAC Return Ductwork - Equipment
M-HRET-HIDD	64	Hidden	HVAC Return Ductwork - Hidden
M-HRET-IDEN	103	Continuous	HVAC Return Ductwork - Identifier Tags (Diff. Tags)
M-HRET-PATT	41	Continuous	HVAC Return Ductwork - Patterns & Hatching
M-HRET-SYMB	73	Continuous	HVAC Return Ductwork - Symbols (Return Diffusers)
M-HRET-TEXT	103	Continuous	HVAC Return Ductwork - Text (Duct Sizes & Notes)
M-HSUP-DUCT	40	Continuous	HVAC Supply Ductwork
M-HSUP-EQPM	210	Continuous	HVAC Supply Ductwork - Equipment
M-HSUP-HIDD	40	Hidden	HVAC Supply Ductwork - Hidden
M-HSUP-IDEN	33	Continuous	HVAC Supply Ductwork – Identifier Tags (Diff. Tags)

LAYER	COLOR	LINETYPE	DESCRIPTION
M-HSUP-PATT	41	Continuous	HVAC Supply Ductwork - Patterns & Hatching
M-HSUP-SYMB	43	Continuous	HVAC Supply Ductwork - Symbols (Supply Diffusers)
M-HSUP-TEXT	33	Continuous	HVAC Supply Ductwork - Text (Duct Sizes & Notes)
M-RADW-EQPM	210	Continuous	Radiation Heating - Equipment
M-RADW-IDEN	233	Continuous	Radiation Heating - Identifier Tags
M-RADW-RETN-HIDD	30	Hidden	Radiation Heating - Return Hidden
M-RADW-RETN-PIPE	30	Dashed	Radiation Heating - Return Piping
M-RADW-RETN-SYMB	23	Continuous	Radiation Heating - Return Piping Symbols (Valves)
M-RADW-RETN-TEXT	33	Continuous	Radiation Heating - Return Piping Text (Pipe Sizes)
M-RADW-SUPP-HIDD	30	Hidden	Radiation Heating - Supply Hidden
M-RADW-SUPP-PIPE	30	Continuous	Radiation Heating - Supply Piping
M-RADW-SUPP-SYMB	23	Continuous	Radiation Heating - Supply Piping Symbols (Valves)
M-RADW-SUPP-TEXT	33	Continuous	Radiation Heating - Supply Piping Text (Pipe Sizes)
M-RADW-SYMB	23	Continuous	Radiation Heating - Symbols
M-REFG-EQPM	210	Continuous	Refrigeration - Equipment
M-REFG-HIDD	204	Hidden	Refrigeration - Hidden
M-REFG-IDEN	193	Continuous	Refrigeration - Identifier Tags
M-REFG-PIPE	204	Continuous	Refrigeration - Piping
M-REFG-SYMB	213	Continuous	Refrigeration - Symbols (Valves, Etc.)
M-REFG-TEXT	193	Continuous	Refrigeration - Text (Pipe Sizes & Notes)
M-STEM-CONP	54	Continuous	Steam System - Condensate Piping
M-STEM-EQPM	210	Continuous	Steam System - Equipment
M-STEM-HIDD	110	Hidden	Steam System - Hidden
M-STEM-PIPE	110	Continuous	Steam System – Piping
M-STEM-SYMB	123	Continuous	Steam System – Symbols
M-STEM-TEXT	113	Continuous	Steam System – Text

4.3.4 Plumbing Layers

LAYER	COLOR	LINETYPE	DESCRIPTION
P-CMPA-EQPM	210	Continuous	Compressed Air - Equipment
P-CMPA-PIPE	220	Continuous	Compressed Air - Pipe
P-CMPA-SYMB	203	Continuous	Compressed Air - Symbols (Valves, etc.)
P-CMPA-TEXT	213	Continuous	Compressed Air - Text
P-DOMW-CPIP	134	B_cwl	Domestic Cold Water - Piping
P-DOMW-CPIP-SYMB	123	Continuous	Domestic Cold Water Piping - Symbols (Valves)
P-DOMW-CPIP-TEXT	133	Continuous	Domestic Cold Water Piping - Text (Pipe Sizes/Notes)
P-DOMW-EQPM	210	Continuous	Domestic Water - Equipment (Pumps)
P-DOMW-HPIP	14	B_hwl	Domestic Hot Water - Piping
P-DOMW-HPIP-SYMB	23	Continuous	Domestic Hot Water Piping - Symbols (Valves)

P-DOMW-HPIP-TEXT	13	Continuous	Domestic Hot Water Piping - Text (Pipe Sizes/Notes)
P-DOMW-HREC	30	B_hwr	Domestic Hot Water Recirculation - Piping
P-DOMW-HREC-SYMB	13	Continuous	Domestic Hot Water Recirculation - Symbols (Valves)
P-DOMW-HREC-TEXT	33	Continuous	Domestic Hot Water Recirculation - Text (Pipe Sizes
P-FUEL-EQPM	210	Continuous	Fuel/Oil - Equipment
P-FUEL-IDEN	183	Continuous	Fuel/Oil - Identifiers
P-FUEL-PIPE	194	Dashed	Fuel/Oil - Piping
P-FUEL-SYMB	193	Continuous	Fuel/Oil - Symbols (Valves, etc.)
P-FUEL-TEXT	173	Continuous	Fuel/Oil - Text (General Notes)
P-NGAS-EQPM	210	Continuous	Natural Gas - Equipment
P-NGAS-HIHP	114	B_ngas	Natural Gas High Pressure Piping
P-NGAS-HIHP-SYMB	103	Continuous	Natural Gas High Pressure Piping - Symbols (Valves)
P-NGAS-HIHP-TEXT	93	Continuous	Natural Gas High Pressure Piping - Text (pipe sizes)
P-NGAS-LOWP	110	Continuous	Natural Gas Low Pressure Piping
P-NGAS-LOWP-SYMB	123	Continuous	Natural Gas Low Pressure Piping - Symbols (Valves)
P-NGAS-LOWP-TEXT	113	Continuous	Natural Gas Low Pressure Piping - Text (Pipe Sizes)
P-NGAS-MEDP	70	B_ngas	Natural Gas Medium Pressure Piping
P-NGAS-MEDP-SYMB	73	Continuous	Natural Gas Medium Pressure Piping - Symbols
P-NGAS-MEDP-TEXT	83	Continuous	Natural Gas Medium Pressure Piping - Text (Pipe
P-SANR-EQPM	210	Continuous	Sanitary - Equipment
P-SANR-FIXT	61	Continuous	Sanitary - Fixtures
P-SANR-PIPE	40	Dashed	Sanitary - Piping
P-SANR-SYMB	43	Continuous	Sanitary - Symbols
P-SANR-TEXT	53	Continuous	Sanitary - Text
P-STRM-EQPM	210	Continuous	Storm - Equipment
P-STRM-PIPE	154	Dashed	Storm - Piping
P-STRM-SYMB	143	Continuous	Storm - Symbols
P-STRM-TEXT	153	Continuous	Storm - Text
P-VENT-PIPE	214	Continuous	Ventilation - Piping
P-VENT-SYMB	213	Continuous	Ventilation - Symbols
P-VENT-TEXT	193	Continuous	Ventilation – Text

4.3.5 **Electrical Layers**

LAYER	COLOR	LINETYPE	DESCRIPTION
E-CTRL-DEVC	52	Continuous	Control System - Devices
E-CTRL-ECT	54	Continuous	Control System - Electronics
E-CTRL-WIRE	61	Continuous	Control System - Wiring
E-EQPM	62	Continuous	Electrical Equipment
E-EQPM-FIXD	142	Continuous	Electrical Equipment - Fixed
E-FIRE-CNDT	232	Continuous	Fire Systems - Conduit

LAYER	COLOR	LINETYPE	DESCRIPTION
E-FIRE-IDEN	233	Continuous	Fire Systems - Identifier Tags
E-FIRE-SYMB	233	Continuous	Fire Systems - Symbols (Alarms, Extinguishers)
E-FIRE-TEXT	233	Continuous	Fire Systems - General Notes
E-GRND-CIRC	123	Continuous	Electrical Ground System - Circuits
E-GRND-CNDT	112	Continuous	Electrical Ground System - Conduit
E-GRND-DIAG	114	Continuous	Electrical Ground System - Diagram
E-GRND-EQPM	131	Continuous	Electrical Ground System - Equipment
E-GRND-IDEN	153	Continuous	Electrical Ground System - Identifier Tags
E-GRND-REFR	141	Continuous	Electrical Ground System - Reference
E-GRND-TEXT	153	Continuous	Electrical Ground System - Text
E-LITE-CIRC	193	Continuous	Lighting - Circuits
E-LITE-CNDT	192	Dashed	Lighting - Conduit
E-LITE-EMER	134	Continuous	Lighting - Emergency Lighting Symbols
E-LITE-EXIT	234	Continuous	Lighting - Exit Lighting Symbols
E-LITE-IDEN	193	Continuous	Lighting - Luminaries Descriptions & Identifier Tags
E-LITE-JBOX	192	Continuous	Lighting - Junction Box
E-LITE-PANL	193	Continuous	Lighting - Panels
E-LITE-SWCH	192	Continuous	Lighting - Circuit Switches
E-LITE-SYMB	194	Continuous	Lighting - Symbols
E-LITE-TEXT	193	Continuous	Lighting - General Notes
E-LITE-WCNT	153	Continuous	Lighting - Circuit Wire Counts
E-POWR-BUSW	22	Continuous	Power - Busways
E-POWR-CIRC	23	Continuous	Power - Circuit Identifiers
E-POWR-CNDT	23	Dashed	Power - Conduit
E-POWR-DBNK	33	Dashed	Power - Ductbanks
E-POWR-EQPM	13	Continuous	Power - Equipment
E-POWR-FEED	12	Continuous	Power - Circuit Feeders
E-POWR-HTRC	190	Continuous	Power - Heat Tracing Circuits
E-POWR-JBOX	43	Continuous	Power - Junction Box
E-POWR-LTNG	181	Continuous	Power - Lightning Protection System
E-POWR-PANL	34	Continuous	Power - Panels
E-POWR-PATT	41	Continuous	Power - Patterns & Hatching
E-POWR-SYMB	42	Continuous	Power - Symbols
E-POWR-TEXT	133	Continuous	Power - Text
E-POWR-UCPT	11	Dashed	Power - Under Carpet Circuits
E-POWR-URAC	152	Dashed	Power - Under Floor Raceways
E-POWR-WCNT	133	Continuous	Power - Circuit Wire Counts
E-SIGN	134	Continuous	Signage
E-SIGN-IDEN	153	Continuous	Signage - Identifier Tags

LAYER	COLOR	LINETYPE	DESCRIPTION
E-SIGN-PATT	151	Continuous	Signage - Patterns & Hatching
E-SIGN-TEXT	153	Continuous	Signage – Text

4.3.6 Telecom Layers

LAYER	COLOR	LINETYPE	DESCRIPTION
T-ALRM-CNDT	134	Continuous	Alarm System - Conduit
T-ALRM-EQPM	133	Continuous	Alarm System - Equipment
T-ALRM-SYMB	133	Continuous	Alarm System - Symbols
T-ALRM-TEXT	133	Continuous	Alarm System - Text
T-CATV-CNDT	144	Continuous	Shaw Cablevision - Conduit
T-CATV-EQPM	143	Continuous	Shaw Cablevision - Equipment
T-CATV-SYMB	143	Continuous	Shaw Cablevision - Symbols
T-CATV-TEXT	143	Continuous	Shaw Cablevision - Text
T-CLOK-CNDT	74	Continuous	Clock - Conduit
T-CLOK-EQPM	73	Continuous	Clock - Equipment
T-CLOK-SYMB	73	Continuous	Clock - Symbols
T-CLOK-TEXT	73	Continuous	Clock - Text
T-CSEC-CNDT	144	Continuous	Close Circuit Television - Conduit
T-CSEC-EQPM	143	Continuous	Close Circuit Television - Equipment
T-CSEC-IDEN	143	Continuous	Close Circuit Television - Identifier Tags
T-CSEC-SYMB	143	Continuous	Close Circuit Television - Symbols
T-CSEC-TEXT	143	Continuous	Close Circuit Television - Text
T-FIDS-CNDT	204	Continuous	Flight Information Display System - Conduit
T-FIDS-EQPM	203	Continuous	Flight Information Display System - Equipment
T-FIDS-SYMB	203	Continuous	Flight Information Display System - Symbols
T-FIDS-TEXT	203	Continuous	Flight Information Display System - Text
T-SOUN-CNDT	104	Dashed	Paging and Sound System - Conduit
T-SOUN-EQPM	103	Continuous	Paging and Sound System - Equipment
T-SOUN-IDEN	103	Continuous	Paging and Sound System – Identifier Tags
T-SOUN-SYMB	103	Continuous	Paging and Sound System - Symbols
T-SOUN-TEXT	103	Continuous	Paging and Sound System - Text
T-TELE-CNDT	204	Continuous	Telecommunication and Data System - Conduit
T-TELE-EQPM	203	Continuous	Telecommunication and Data System - Equipment
T-TELE-SYMB	203	Continuous	Telecommunication and Data System - Symbols
T-TELE-TEXT	203	Continuous	Telecommunication and Data System - Text
T-TRAY	154	Continuous	Cable Tray
T-TRAY-EQPM	153	Continuous	Cable Tray - Equipment
T-TRAY-PATT	151	Continuous	Cable Tray - Patterns & Hatching
T-TRAY-SYMB	153	Continuous	Cable Tray - Symbols

LAYER	COLOR	LINETYPE	DESCRIPTION
T-TRAY-TEXT	153	Continuous	Cable Tray – Text

4.3.7 Fire Protection

LAYER	COLOR	LINETYPE	DESCRIPTION
F-PROT-EQPM	210	Continuous	Fire Protection - Equipment (Fire Hose Cabinets,
F-PROT-IDEN	163	Continuous	Fire Protection - Identifiers
F-PROT-PATT	191	Continuous	Fire Protection - Patterns & Hatching
F-PROT-PIPE	150	Continuous	Fire Protection - Piping
F-PROT-SYMB	153	Continuous	Fire Protection - Symbols
F-PROT-TEXT	143	Continuous	Fire Protection - Text (Pipe Sizes & General
F-SPRN-HEAD	52	Continuous	Sprinkler - Heads (Sprinkler Head Symbols)
F-SPRN-PIPE	190	Continuous	Sprinkler - Piping
F-SPRN-SYMB	193	Continuous	Sprinkler – Symbols (Valves)
F-SPRN-TEXT	143	Continuous	Sprinkler - Text (Pipe Sizes & General Notes)

4.4 Civil Layers

4.4.1 Base Layers

LAYER	COLOR	LINETYPE	DESCRIPTION
C-APRN	74	Continuous	Apron - Aircraft Maneuvering Surfaces
C-APRN-FENC	133	Continuous	Apron – Blast Fence
C-APRN-SHLD	192	Continuous	Apron - Shoulder
C-APRN-STRP	72	S_Centre	Apron - Paint Lines (Striping)
C-APRN-STRP-EQPM	72	Continuous	Apron - Equipment Restriction Paint Lines
C-APRN-STRP-GTTX	163	Continuous	Apron - Gate Number Painted
C-APRN-STRP-IDEN	72	Continuous	Apron - Identifiers
C-APRN-STRP-INLN	163	Continuous	Apron - Lead-in Gate Paint Lines
C-APRN-STRP-SBAR	163	Continuous	Apron – Stop Bar
C-APRN-STRP-SBAR-IDEN	163	Continuous	Apron – Stop Bar Identifiers
C-APRN-STRP-SBAR-IDEN	72	Continuous	Apron - Nose Wheel Markers & Paint Labels
C-APRN-STRP-VSRP	72	Continuous	Apron - Aircraft Service Road Paint Lines
C-APRN-STRP-VSRP-CNTR	72	Continuous	Apron - Aircraft Service Road Paint Centre Lines
C-APRN-STRP-WALK	71	Continuous	Apron - Walkways
C-APRN-TEXT	72	Continuous	Apron - Text
C-BERM	19	Continuous	Berms & Berm Patterns
C-BIKE-PATH	171	Continuous	Bike Pathways
C-BIKE-PATH-TEXT	172	Continuous	Bike Pathways - Text

LAYER	COLOR	LINETYPE	DESCRIPTION
C-BLDG	204	Continuous	Building - Footprint & Structures on Airport Property
C-BLDG-BRDG	202	Continuous	Building – Aircraft Loading Bridge
C-BLDG-NUMB	18	Continuous	Building - Numbers
C-BLDG-PATT	8	Continuous	Building - Footprint Hatch
C-BLDG-TEXT	202	Continuous	Building - Text
C-BLDG-TOPO-TEXT	18	Continuous	Building Roof Elevation
C-BLDG-UNGD	8	Hidden2	Building - Underground
C-FENC	32	S_Fence	Fence - Barbed Wire Fencing
C-FENC-SERT	32	S_Sfence	Fence - Security
C-FENC-SERT-TEXT	42	Continuous	Fence – Security Labels & Text
C-FENC-TEXT	42	Continuous	Fence - Labels & Text
C-GEOD-FOTO	7	Continuous	Orthophoto (Raster Images)
C-GEOD-IDEN	192	Continuous	Survey Control Monument Identifier Tags
C-GEOD-SYMB	193	Continuous	Survey Control Benchmark, Square/Round Iron Bar
C-GEOD-SYMB-APRN	193	Continuous	Survey Control Benchmark, Square/Round Iron Bar – Lean in Lines
C-GRID-IDEN	162	Continuous	Site Grid Lines - Identifier Tags
C-GRID-MAJR	133	Continuous	Site Grid Lines
C-GRID-MINR	202	Dashed	Site Grid Lines - Minor Intervals
C-PKNG	200	Continuous	Parking Lots on Airport Property
C-PKNG-CURB	203	Continuous	Parking Lot - Curbs & Islands
C-PKNG-STRP	202	Continuous	Parking Lot - Paint Lines, Handicap Symbols
C-PKNG-TEXT	202	Continuous	Parking Lot - Text
C-RAIL	32	PhantomX2	Railroads
C-RAIL-TEXT	42	Continuous	Railroads - Text
C-RNWY	234	Continuous	Runway - Aircraft Maneuvering Surfaces
C-RNWY-ABDN	62	S-ABDN	Runway – Abandoned
C-RNWY-IDEN	232	Continuous	Runway – Identifier Tags
C-RNWY-NUMB	233	Continuous	Runway - Numbers
C-RNWY-SHLD	192	Continuous	Runway - Shoulder
C-RNWY-STRP	232	S_Centre	Runway - Paint Lines (Striping)
C-RNWY-TEXT	232	Continuous	Runway - Notes & Labels
C-ROAD-ARVL	232	Continuous	Roads – Arrivals
C-ROAD-ARVL-STRP	231	S_Cenre	Roads – Arrivals Paint Lines
C-ROAD-ARVL-WALK	142	Continuous	Roads – Arrivals Walkways
C-ROAD-DPTR	232	Continuous	Roads – Departures
C-ROAD-DPTR-STRP	231	S_Cenre	Roads – Departures Paint Lines
C-ROAD-DPTR-WALK	142	Continuous	Roads – Departures Walkways
C-ROAD-MAJR	174	Continuous	Roads - Highways, Major Roads, Collector Roads
C-ROAD-MAJR-TEXT	172	Continuous	Roads – Major Text

LAYER	COLOR	LINETYPE	DESCRIPTION
C-ROAD-MINR	170	Continuous	Roads - Minor Roads
C-ROAD-MINR-TEXT	172	Continuous	Roads – Minor Text
C-ROAD-STRP	172	Continuous	Roads - Paint Lines (Striping)
C-ROAD-TUNL	171	Dashed	Roads - Tunnel
C-SIGN	203	Continuous	Sign
C-SIGN-TEXT	202	Continuous	Signs – Text
C-SURF-EDGE	192	Continuous	Surface – Surface Edges (Apron, Taxi, Rnwy)
C-SURF-RECT	192	Continuous	Recreational - Surfaces
C-SURF-RECT-TEXT	192	Continuous	Recreational - Text
C-SURF-TEXT	192	Continuous	Surface Text Labels (Concrete, Grass, Asphalt, Gravel)
C-TAXI	124	Continuous	Taxiway - Aircraft Maneuvering Surfaces
C-TAXI-SHLD	192	Continuous	Taxiway – Shoulder
C-TAXI-STRP	122	S_Centre	Taxiway - Paint Lines (Striping)
C-TAXI-TEXT	122	Continuous	Taxiway – Text
C-WALK	142	Continuous	Walks and Steps
C-WALK-STRP	132	Continuous	Walks and Steps - Pedestrian Paint Lines
C-WALK-TEXT	132	Continuous	Walks and Steps - Text
C-WATR-NTRL	144	Continuous	Water – Natural
C-WATR-NTRL-TEXT	142	Continuous	Water – Natural Text

4.4.2 **Utilities**

LAYER	COLOR	LINETYPE	DESCRIPTION
C-FUEL	60	S_Fuel	Fuel - Storage, Pump Stations, Manholes, Facilities
C-FUEL-EQPM	60	Continuous	Fuel - Equipment
C-FUEL-IDEN	62	Continuous	Fuel – Identifier Tags
C-FUEL-SYMB	63	Continuous	Fuel - Symbols
C-FUEL-TEXT	62	Continuous	Fuel - Labels, Pipe Size & Type
C-GLYC	210	Continuous	Glycol - Facilities
C-GLYC-EQPM	213	Continuous	Glycol - Equipment
C-GLYC-SYMB	213	Continuous	Glycol - Symbols
C-GLYC-TEXT	212	Continuous	Glycol - Labels, Pipe Size & Type
C-NGAS	40	S_Ngas	Natural - Gas Facilities
C-NGAS-EQPM	43	Continuous	Natural Gas – Equipment
C-NGAS-IDEN	42	Continuous	Natural Gas - Identifier Tags
C-NGAS-SYMB	43	Continuous	Natural Gas - Symbols
C-NGAS-TEXT	42	Continuous	Natural Gas - Labels, Pipe Size
C-SSWR	100	S_San	Sanitary Sewer - Features
C-SSWR-IDEN	102	Continuous	Sanitary Sewer - Identifier Tags
C-SSWR-NVRT	102	Continuous	Sanitary Sewer - Invert Information

LAYER	COLOR	LINETYPE	DESCRIPTION
C-SSWR-SYMB	103	Continuous	Sanitary Sewer - Symbols, Manholes, Valves, Meters
C-SSWR-TEXT	102	Continuous	Sanitary Sewer - Labels, Sizes, Types, Flow Direction
C-WATR	140	S_Water	Water - Domestic Water Facilities
C-WATR-IDEN	142	Continuous	Water - Identifier Tags (Valves, Hydrants)
C-WATR-SYMB	143	Continuous	Water - Symbols, Valves, Pumps, Tanks, Meters
C-WATR-TEXT	142	Continuous	Water - Labels, Pipe Size & Type

4.4.3 Storm Drainage

LAYER	COLOR	LINETYPE	DESCRIPTION
C-STRM	120	S_Storm	Storm Drainage - Features
C-STRM-DTCH	122	S_Ditch	Storm Drainage - Ditches & Drainage
C-STRM-IDEN	122	Continuous	Storm Drainage - Identifier Tags
C-STRM-NVRT	122	Continuous	Storm Drainage - Piping Invert Elevations
C-STRM-POND	124	Continuous	Storm Pond Edge
C-STRM-POND-AERN	120	S_AAS	Storm Pond Aeration
C-STRM-SUBD	120	S_Storm	Storm Drainage - Subdrains
C-STRM-SYMB	123	Continuous	Storm Drainage - Symbols, Manhole & Catch Basins
C-STRM-TEXT	122	Continuous	Storm Drainage - Labels, Sizes, Types, Flow Direction

4.4.4 Surface Topography

LAYER	COLOR	LINETYPE	DESCRIPTION
C-TOPO-BORE	63	Continuous	Topo - Test bore holes
C-TOPO-MAJR	190	Continuous	Topo - Ground Contours - Major Interval
C-TOPO-MINR	222	Continuous	Topo - Ground Contours - Minor Interval
C-TOPO-MJTX	221	Continuous	Topo - Ground Contours - Major Interval – Elev.
C-TOPO-MNTX	221	Continuous	Topo - Ground Contours - Minor Interval – Elev.
C-TOPO-PATT	255	Continuous	Topo – Building Outline Hatch
C-TOPO-SPOT	200	Continuous	Topo - Spot Height Labels

4.4.5 Power

LAYER	COLOR	LINETYPE	DESCRIPTION
C-DUCT	80	Continuous	Duct Bank
C-DUCT-SYMB	83	Continuous	Duct Bank– Symbols
C-DUCT-TEXT	82	Continuous	Duct Bank – Text
C-LITE	32	Continuous	Lighting - Site / Street Lighting
C-LITE-IDEN	32	Continuous	Lighting - Identifier Tags (Runway, Street, Etc.)
C-LITE-SYMB	33	Continuous	Lighting - Runway Lights, Flood Lights, Etc.

LAYER	COLOR	LINETYPE	DESCRIPTION
C-LITE-TEXT	32	Continuous	Lighting – Text
C-POWR	10	S_Power	Power - Electrical Power Feeds & Distribution Lines
C-POWR-1000	12	S_Power	Power - Terminal Area (Scaled Up)
C-POWR-DUCT	12	S_Duct	Power - Ducts Underground (With Text)
C-POWR-IDEN	12	Continuous	Power - Identifier Tags (Transformers, Etc.)
C-POWR-IDEN-1000	12	Continuous	Power - Terminal Area (Scaled up)
C-POWR-OVHD	11	Continuous	Power - Overhead Power Lines
C-POWR-POLE	13	Continuous	Power – Poles
C-POWR-SYMB	13	Continuous	Power - Symbols, Transformers, Pull Boxes, Etc.
C-POWR-SYMB-1000	12	Continuous	Power - Terminal Area (Scaled Up)
C-POWR-TEXT	12	Continuous	Power - Line Sizes, Notes, Labels, Etc.
C-POWR-TEXT-1000	12	Continuous	Power - Terminal Area (Scaled Up)

4.4.6 **Telecom**

LAYER	COLOR	LINETYPE	DESCRIPTION
C-COM1	200	S_Comm1	Comm - Airport Auth. System
C-COM1-SYMB	203	Continuous	Comm - Airport Auth. System Symbols
C-COM1-TEXT	202	Continuous	Comm – Airport Auth System Text
C-COM2	210	S_Comm2	Comm - Nav Aid Specific
C-COM2-SYMB	213	Continuous	Comm - Nav Aid Specific Symbols
C-COM2-TEXT	212	Continuous	Comm - Nav Aid Specific Text
C-COM3	220	S_Comm3	Comm – Outside/Private Lines (Telus, Shaw, Other)
C-COM3-SYMB	223	Continuous	Comm – Outside/Private Symbols
C-COM3-TEXT	222	Continuous	Comm – Outside/Private Text
C-COM4	230	S_Comm4	Comm - Other Lines Not Specified Above
C-COM4-SYMB	233	Continuous	Comm - Other Lines Not Specified Symbols
C-COM4-TEXT	232	Continuous	Comm - Other Lines Not Specified Text
C-COMM-DUCT	83	S_Duct	Comm - Ducts & Text
C-COMM-FIBRE	80	S_Comm1	Comm – Authority Fibre
C-COMM-IDEN	82	Continuous	Comm - Identifier Tags
C-DUCT	80	Continuous	Duct Bank
C-DUCT-SYMB	83	Continuous	Duct Bank– Symbols
C-DUCT-TEXT	82	Continuous	Duct Bank – Text

4.4.7 **Landscaping**

LAYER	COLOR	LINETYPE	DESCRIPTION
L-IRRG	140	Continuous	Irrigation System
L-IRRG-COVR	140	Continuous	Irrigation - Coverage Area

LAYER	COLOR	LINETYPE	DESCRIPTION
L-IRRG-EQPM	140	Continuous	Irrigation - Equipment
L-IRRG-PIPE	140	Continuous	Irrigation - Piping
L-IRRG-TEXT	152	Continuous	Irrigation - Notes & Information
L-PLNT	60	Continuous	Plant and Landscape Materials
L-PLNT-BEDS	161	Continuous	Plants - Rock, Bark, and Other Landscaping Beds
L-PLNT-GRND	102	Continuous	Plants - Grounds Covers and Vines
L-PLNT-PLAN	53	Continuous	Plants - Bedding Plants (Flowers)
L-PLNT-TREE	33	Continuous	Plants - Trees and Shrubs
L-PLNT-TURF	80	Continuous	Plants - Lawn Areas

4.4.8 **Lease**

LAYER	COLOR	LINETYPE	DESCRIPTION
C-FUEL-ESMT1	144	Continuous	Fuel Facility Easement
C-FUEL-ESMT1-IDEN	142	Continuous	Fuel Facility Easement Identifier Tags & Text
C-FUEL-ESMT2	164	Continuous	Fuel Facility Easement
C-FUEL-ESMT2-IDEN	162	Continuous	Fuel Facility Easement Identifier Tags & Text
C-PROP	16	Continuous	Property Boundary - Lines, Survey Benchmarks
C-PROP-BRNG	56	Continuous	Property Boundary - Bearings Labels
C-PROP-ESMT	173	Dashed2	Easements, Right of Ways
C-PROP-ESMT-IDEN	172	Continuous	Easements Identifier Tags & Text
C-PROP-ESMT-PINS	172	Dashed2	Easement Pins
C-PROP-EXST-BRNG	12	Continuous	Leased Parcel Bearing
C-PROP-EXST-IDEN	12	Continuous	Leased Parcel Identifier Tags
C-PROP-EXST-LINE	14	Continuous	Leased Parcel Line
C-PROP-EXST-PINS	12	Continuous	Leased Parcel Pins
C-PROP-EXST-TEXT	12	Continuous	Leased Parcel Text
C-PROP-PNTS	72	Continuous	Property Boundary Points
C-PROP-PRPS-BRNG	92	Continuous	Proposed Parcel Bearing
C-PROP-PRPS-ESMT	83	Dashed2	Proposed Easements, Right of Ways
C-PROP-PRPS-ESMT-IDEN	82	Continuous	Proposed Easements - Identifier Tags & Text
C-PROP-PRPS-IDEN	92	Continuous	Proposed Parcel Identifier Tags
C-PROP-PRPS-LINE	94	Continuous	Proposed Parcel Line
C-PROP-PRPS-PINS	92	Continuous	Proposed Parcel Pins
C-PROP-TEXT	12	Continuous	Property Boundary – Notes
C-PROP-THCK	253	Continuous	Property Boundary – Thick

4.4.9 **Off Property**

LAYER	COLOR	LINETYPE	DESCRIPTION
C-OFPR-BIKE-PATH	18	Continuous	Off Property - Bike Path
C-OFPR-BLDG	18	Continuous	Off Property - Buildings
C-OFPR-BLDG-PATT	18	Continuous	Off Property - Buildings Hatch
C-OFPR-BLDG-TOPO-TEXT	18	Continuous	Off Property – Building Roof Elevation
C-OFPR-COMM	18	Continuous	Off Property - Communication Data
C-OFPR-FENC	18	S_Fence	Off Property - Fences
C-OFPR-FUEL	18	S_Fuel	Off Property – Fuel Lines & Data
C-OFPR-LITE	18	Continuous	Off Property - Light Symbols & Data
C-OFPR-NGAS	18	S_Ngas	Off Property - Natural Gas Lines & Data
C-OFPR-NGAS-TEXT	18	Continuous	Off Property – Natural Gas Identifiers & Labels
C-OFPR-PKNG	18	Continuous	Off Property - Parking
C-OFPR-POWR	18	Continuous	Off Property - Power Lines & Symbols
C-OFPR-POWR-TEXT	18	Continuous	Off Property – Power Identifiers & Labels
C-OFPR-ROAD-MINR	18	Continuous	Off Property – Minor Roads & Curbs
C-OFPR-ROAD-TEXT	18	Continuous	Off Property – Road Identifiers & Labels
C-OFPR-SSWR	18	S_San	Off Property - Sanitary Sewer Lines & Data
C-OFPR-SSWR-TEXT	18	Continuous	Off Property – Sanitary Identifiers & Labels
C-OFPR-STRM	18	S_Storm	Off Property – Storm Drainage
C-OFPR-STRM-TEXT	18	Continuous	Off Property – Storm Identifiers & Labels
C-OFPR-TOPO-PATT	255	Continuous	Off Property - Topo Building Outline Hatch
C-OFPR-WATR	18	S_Water	Off Property - Water Lines & Data
C-OFPR-WATR-NTRL	18	Continuous	Off Property - Natural
C-OFPR-WATR-TEXT	18	Continuous	Off Property – Water Identifiers & Labels

4.5 YYC Only Layers

LAYER	COLOR	LINETYPE	DESCRIPTION
TT-APRN-STRP-GTTX-OLD	163	Continuous	Apron – Old Numbering System
TT-PROJ-BNDY	7	Dashed	Project Boundaries Reference
TT-PROJ-PRNM	113	Continuous	Project Number Reference
TT-SITE-10K-TEXT	40	Continuous	Site Text – 1-10K Plot
TT-SITE-35K-TEXT	40	Continuous	Site Text – 1-35K Plot
TT-FLOR-RMNM-OLDN	192	Continuous	Room Numbers - Old (original building or past space)

5.0 DRAWING REQUIREMENTS

5.1 Model and Paper Space

A model describes a portion of a building's geometry, its physical components: walls, doors, windows, columns, beams, outlets, ducts, etc. A model has no scale; it is drawn life-size. All buildings are described by a series of two-dimensional models - plans, elevations, sections, and details - although the organizational concept also supports three-dimensional. Models can be constructed using a hierarchically, in other words, models can contain other models.

Paper Space Layout Tab contains one or more scaled viewports of one or more models arranged within a border or title block. These tabs represent one - and only one - plotted drawing. Tabs are always plotted at full scale (1=1), and the origin shall be at the lower left-hand 0,0,0 corner of the sheet border and plot area by layout. The use of multiple layout tabs is acceptable with the digital filename representing the series of layouts into the filename.

Using a conventional database terminology, the models are the data, and the sheets are the reports of the data.

5.2 Base Drawings

Base drawing information shall be created at a scale of 1:1. Drawing components shall be created on appropriate layers and shall be 'COLOR BY LAYER' to enable referencing disciplines to manipulate their final plot appearance.

All graphic entities shall be comprised of representational and geometrically accurate entities, e.g. a circle shall be represented by circle entity and NOT a visually equivalent collection of line segments. Items shown in a dashed line-type shall be created with the LINETYPE feature and NOT by individual line elements.

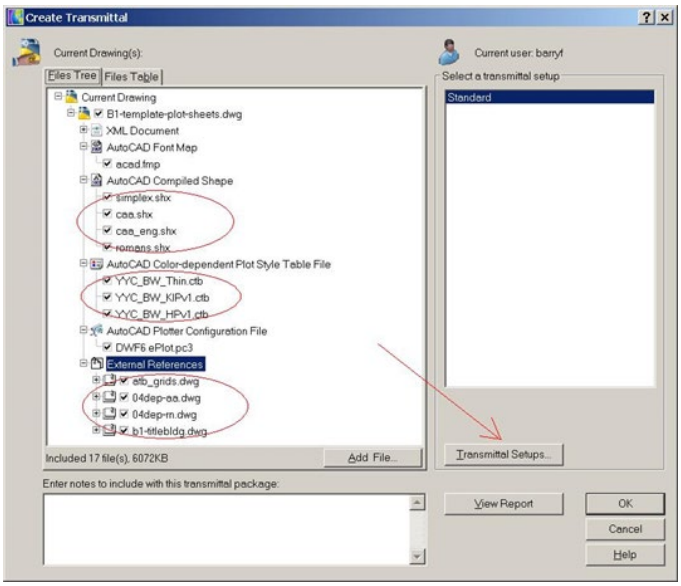
Base drawings are X-referenced directly into Model space and placed in Title Block using viewports.

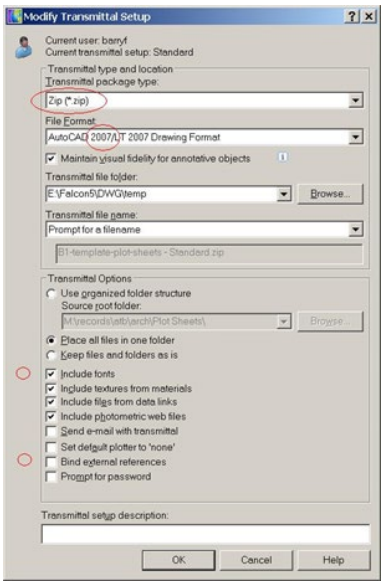
5.3 External Reference Files

When X-referencing files, ensure the UCS is set to the World Coordinate System and the files have an insertion point of 0,0. When exchanging files with other users (to or from consultants) ensure to provide all required xref files.

The use of the AutoCAD “eTransmit” command is the best method to ensure all required files associated with the file are included. This includes at a minimum, AutoCAD Complied Shape files (font and linetype), AutoCAD Color-dependence Plot Style tables and the External References.

Using eTransmit, in the Create Transmittal Setup.., set package type to .zip, select AutoCAD 2007 File format, Include Fonts and Deselect Bind external references (see below external reference binding).





When working with AutoCAD External Reference Files, the use of XREF Bind/Bind command is not acceptable with final drawing deliveries. This command creates files that contain long layer, font, block, linetype names and are unacceptable for future use. Files received using this method will be need to be re-delivered using eTransmit option. The use of hardpathing is also to be avoided. This is so files delivered to the client may be opened without problems of the files searching for paths that do not exist on the client system.

When delivering final files ensure all external reference files that are required are loaded and files that are not required have been detached. Do not leave orphaned xref files attached.

Reference file type of "OVERLAY" should only be used, do not use the Attachment mode unless the specific project configuration warrants Attachments (see section 3.1 Directory Structure - xref pathing options).

The use of External Reference Bind/Bind command may have its place when dealing with project steps and securing a snapshot in time as the project evolves (see section 5.17 Project Workflow). Typically the Bind/Bind command is not used due to the long layer, block, text and linetype names it creates.

5.4 Image Files (Raster Files)

The Airport Authority uses AutoCAD Raster Design to help with the insertion and manipulation of Orthophotos. If raster images are used within project drawings, all related files supporting the image such as information on coordinates, rotations angles, scales etc. (tfw, jgw, sdw) are to be provided. These files are essential for proper geo-referencing of the images.

5.5 Details

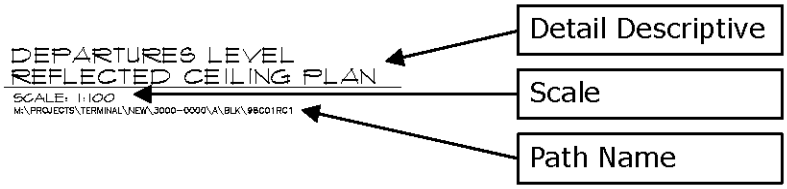
Display cutting plane shall be between 1200 - 1800 AFF. Objects below this cutting plane are displayed only on the floor plan. Objects above cutting plane are displayed

only on reflected ceiling plans. Objects intersecting the cutting plane are displayed on both plans.

All details shall use associative dimensioning. Details may be X-referenced directly onto Title Block sheets. Details shall be located with a common origin of 0,0,0 located in vicinity of the lower left hand corner of the detail.

Drawings shall contain the detail reference number of the Details being X-referenced. Detail Titles shall include detail name and where applicable the path of the detail. When standard details are used from standard library, the required files shall be copied to BLK directory, renamed to Detail Drawing Numbering sequence, modified only if required then X'ref onto the title block sheet. Standard details shall not be X-referenced directly from library directories as they may be periodically updated or deleted without notice.

Detail Referencing:



5.6 Standard Drawing Sheets

Sheet borders, title block, consultant's stamp logos and all other components of the master drawing sheet shall be in paper space. All graphic representations of the project or facility and all related notes, dimensions, symbols, etc., shall be constructed in model space.

Sheet Sizes are to be limited to three standard formats. Required sheet size is specific to each project and is under the discretion of The Airport Authority. The sheet sizes are as follows:

1. ANSI A - 216mm x 279mm (Letter – 8.5 x 11, Portrait or Landscape)
2. ANSI B - 279mm x 432mm (Tabloid – 11 x 17, Portrait or Landscape)
3. ISO B1 - 707mm x 1000mm (Airport Authority Large Format Standard)

5.7 Templates

Template drawing files and symbols provided by the Airport Authority are to be used, these include:

- Project Cover Sheets
- Project Title Blocks
- Drawing Symbology and Other Blocks
- Dimension and Text Styles
- Airport Authority Layers

The templates drawing also have AutoCAD units (-dwgunits, -aecdwgunits, -aecdwgsetup) set as follows:

- Building drawings to millimeters
- Site drawing to meters

5.8 Cover Sheet

There should only be one cover sheet per project. The cover sheet is to be kept current as project evolves with new sheets added or removed as required.

5.9 Title Blocks

The Airport Authority provides Drawing, Project and Contract numbers for use in the title block (see Section 3.2 for digital file/drawing naming). These numbers are assigned for file and retrieval purposes and are to be included in the tender, construction, and final record drawings. Consultants may modify title blocks to include prime and sub-consultant names and logos in the designated locations. There is also a space in the title block for consultants to show their project or file number for their purpose.

5.10 Dimensioning

All dimensions shown in the project submittals shall be fully associative and placed on appropriate layers. Dimension definition points should be located with an appropriate Object Snap (End Point, Mid Point, etc.) or otherwise located precisely on the project geometry. Manual input of dimension text or non-associative dimensions are NOT acceptable in submittals to the Airport Authority.

Note: Due to the different units used in Building (millimetres) and Site drawings (metres) different dimension styles are used.

Dimension Styles are included in template files.
They include CAA_MS1 (model space dimensioning), and CAA_PS1 (paper space dimensioning).
All settings are inclusive in the style.

If unable to use one of the provided styles, start a new style and set the dimension variables as shown below.

The following is an example of a Site - Metre (building/millimetres settings will be different):

Dimension Variables:
Dimension Lines: spacing = 10; color >by layer
Extension Lines: extension = 2; origin offset = 2; color >by layer.
Architectural Arrowheads: users arrow = Dimtick; size 1.5
Engineering Arrowheads: Closed filled = size 1.5
Scale: Set to Drawing Scale
Horizontal Justification = centred.

Vertical Justification = above.
Primary Units = decimal; precision 0.000

If dimensions are placed in paper space ensure to change "dimlfac" to the scale of the viewport.

5.11 Text Styles

Airport specific fonts caa_eng.shx and caa_arch.shx are required to be placed in a AutoCAD search path for proper display of these fonts. Copies of these fonts are available from the Airport Authority for external consultant use and are supplied in the Airport Authorities Standards package.

Text used on Calgary Airport Authority projects shall follow the styles listed below. Standard notation text size on file plotted drawings shall be 2.5mm, however a size of 2.0mm is allowed in areas of congestion. Keep the use of multiple text sizes on a single drawing to a minimum so the drawing is uniform and easy to read as determined by lead technologist.

Note: Due to the different units used in Building (millimetres) and Site drawings (metres) different Text Styles are used. The following is an example of a Building (site/metres settings will be different).

General Notation - plans and details

Style XFine, Font CAA_Eng, Size 200mm	or	Style XFine, Font CAA_Arch, Size 200mm
Style Fine, Font CAA_Eng, Size 250mm		Style Fine, Font CAA_Arch, Size 250mm
Style Medium, Font CAA_Eng, Size 300mm		Style Medium, Font CAA_Arch, Size 300mm
Style Large, Font CAA_Eng, Size 400mm		Style Large, Font CAA_Arch, Size 400mm

Detail Titles - as predefined attributes
Miscellaneous Symbols - as predefined attributes
Title Blocks - as predefined attributes

Airport Specific Fonts

FONT = STANDARD

key alone	`1234567890-=qwertyuiop[]\asdfghjkl;'zxcvbnm,./
CAPS LOCK	`1234567890-=QWERTYUIOP[]\ASDFGHJKL;'ZXCVBNM,./
SHIFT	~!@#$%^&×()_+QWERTYUIOP{}|ASDFGHJKL:"ZXCVBNM<>?

FONT = CAA_ENG

key alone	²1234567890-=qwertyuiop[]³asdfghjkl;'zxcvbnm,./
CAPS LOCK	²1234567890-=QWERTYUIOP[]³ASDFGHJKL;'ZXCVBNM,./
SHIFT	Ω£@#$%°&*()_+QWERTYUIOPø°±ASDFGHJKL:"ZXCVBNM<>ø

FONT = CAA_ARCH

key alone	²1234567890-=qwertyuiop[]³asdfghjkl;'zxcvbnm,./
CAPS LOCK	²1234567890-=QWERTYUIOP[]³ASDFGHJKL;'ZXCVBNM,./
SHIFT	Ω¢@#$%°&*()_+QWERTYUIOPø°±ASDFGHJKL:"ZXCVBNM<>ø

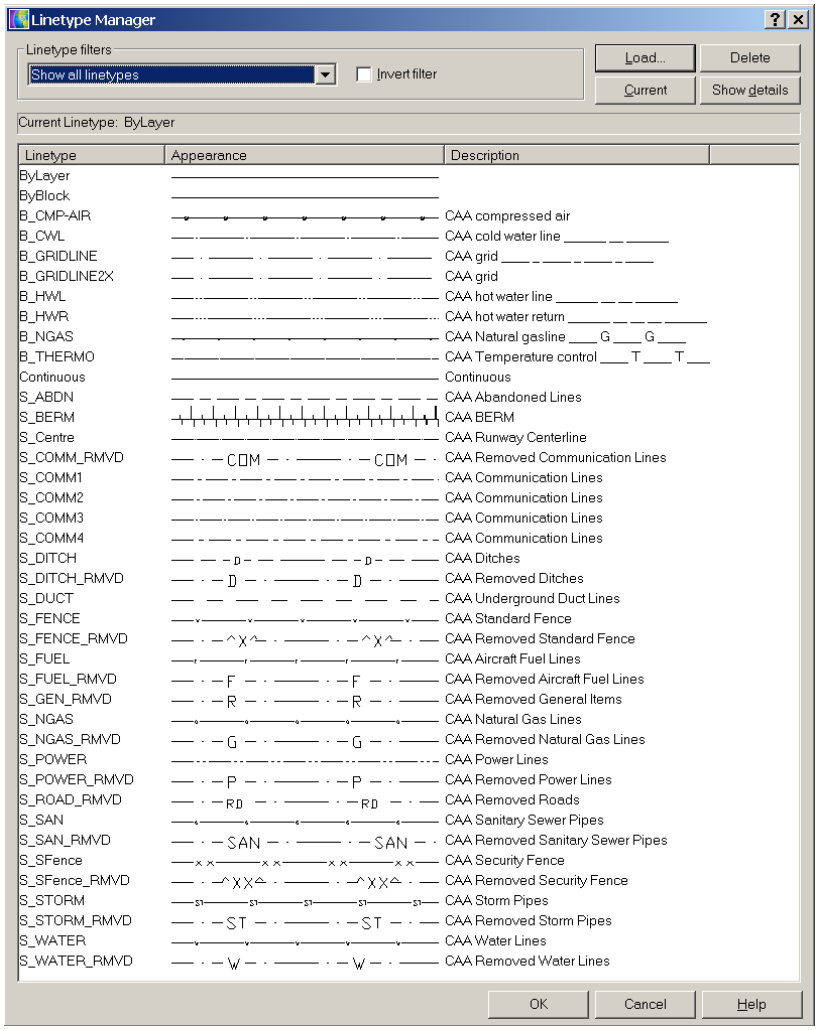
5.12 Line Type

The Airport Authority specific line type file CAA.LIN contains approved line types created for use with Airport Authority drawings. Line types are based on the ACADISO.LIN (AutoCAD metric) file.

For proper display of these airport specific lines the file CAA.SHX must be placed in an AutoCAD search directory. A copy of this file is available from the Airport Authority for external consultant use and is supplied in the Airport Authorities Standards package.

Line type names starting with "B" are used in the building drawings, names starting with "S" are used in the Site drawings. The remainder of the name describes the type of line for example S_SFENCE (Site Security Fence) or B_NGAS (Building Natural Gas), etc.

Site drawings contain a theme for removed and abandoned features. The abandoned features are known to be abandoned in place. The removed are items were once in place and removed by a previous project.



5.13 Standard Symbols & Blocks

AutoCAD blocks are used to group entities. These graphical blocks shall not be exploded. The use of nested blocks (blocks within blocks) shall not be used. Blocks should be created with linetype and color "ByLayer". This allows complete control over the appearance of the symbol. By default, the block will take on the properties of the layer it's placed on but can be changed to suit the requirements independent of the layer settings (not recommended, but mentioned for clarity of use).

There are three different types of Blocks: Real, Common and Symbol.

- Real are dimensionally accurate pictorial of a real object and inserted at 1:1.
- Common blocks are also real objects by are scaled to represent different sizes such as doors, lights, etc.
- Symbol are pictorial representation of the object not drawn to scale and are inserted into the drawing at a certain scale. Symbols are to drawn at the actual plotted size

and not smaller than 2.5mm. Symbols should be inserted using the plotted scale if they are inserted in model space and at 1 if inserted in paper space.

The Airport Authority Standard Symbols are available for use and are recommended for standardization throughout the files. Blocks are built on layer "0", the insertion point within the block should be at 0,0,0. Typically blocks used in the building are drawn so they display properly at a scale of 1:100 when inserted at a scale of 1. Blocks are inserted on the layer according to its use. Standard naming convention for blocks to include discipline letters then descriptive text. Example: E-FIDS (Electrical - Flight Information Display). The name should be short and concise, keeping the length to 8 characters.

When blocks contain attributes all relevant attribute fields are to be filled out.

5.13.1 **Mechanical Blocks**

CAA MECHANICAL LINETYPES AND SYMBOLS

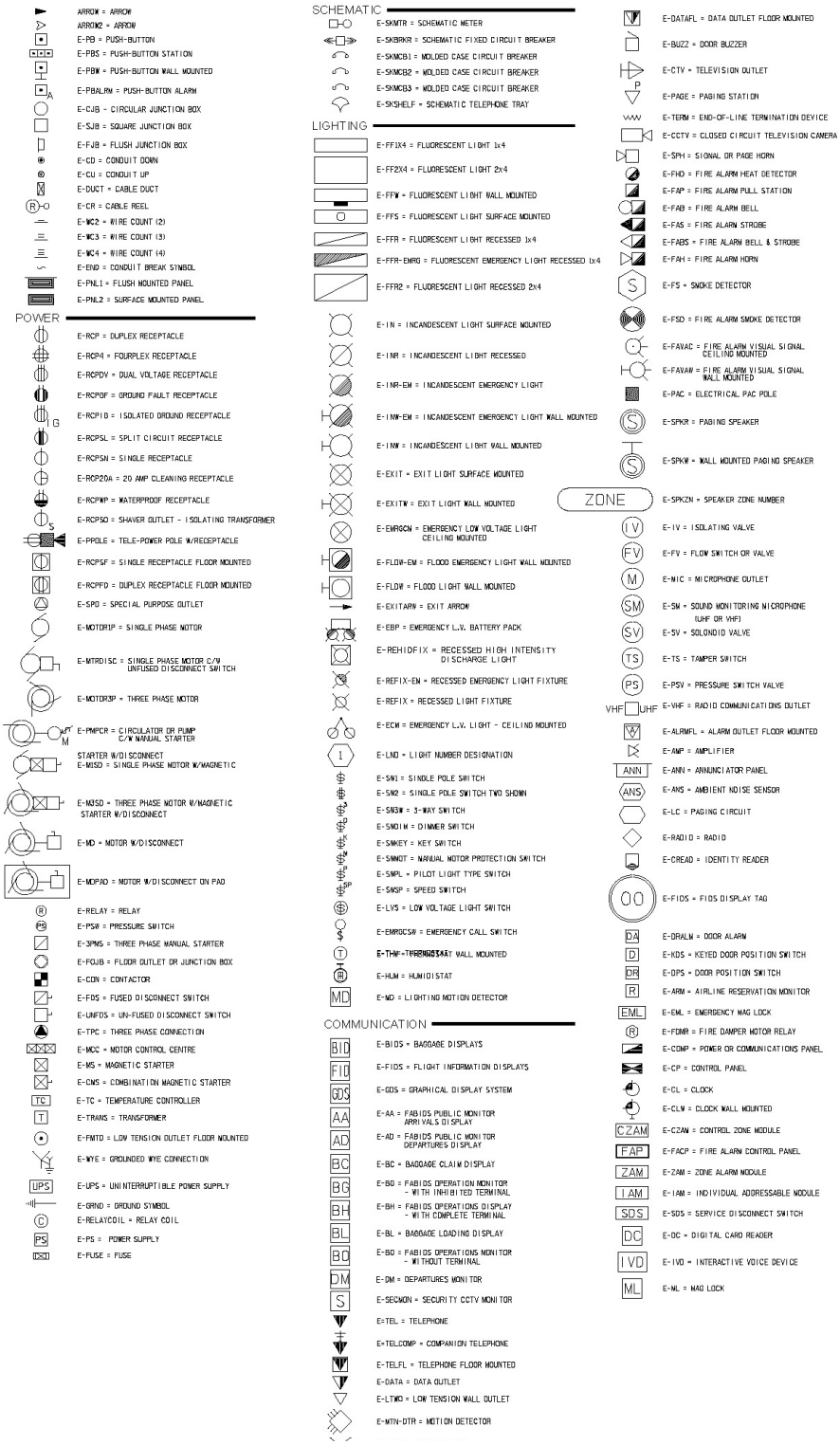
MECHANICAL BLOCKS

- PIPE DROP
- PIPE RISER
- PIPE BOTTOM TAKE-OFF
- PIPE TOP TAKE-OFF
- FLEXIBLE CONNECTION
- FLOW DIRECTION
- PIPE BREAK
- PIPE CAP
- CLEANOUT PLUG TYPE
- CLEANOUT FLOOR TYPE
- P-TRAP
- ANCHOR POINT
- RUNNING TRAP
- UNION
- STRAINER
- HOSE BIBB
- NON-FREEZE HOSE BIBB
- THERMOMETER
- ROOF DRAIN
- FLOOR DRAIN
- FUNNEL FLOOR DRAIN
- AIR VENT
- PUMP
- BALL VALVE
- BALANCING VALVE
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- PRESSURE REDUCING VALVE
- SAFETY OR RELIEF VALVE
- SOLENOID VALVE
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- BACKWATER VALVE
- PLUG VALVE
- SUPPLY DIFFUSER
- RETURN AIR GRILLE
- DOOR GRILLE
- FIRE DAMPER
- BALANCING DAMPER
- MOTORIZED DAMPER
- THERMOSTAT
- HUMIDISTAT
- SIAMESE CONNECTION
- FIRE EXTINGUISER
- FHC FIRE HOSE CABINET
- FIRE HYDRANT
- UPRIGHT SPRINKLER HEAD
- PENDANT SPRINKLER HEAD
- SIDEWALL SPRINKLER HEAD
- CONCEALED SPRINKLER HEAD
- DRY SPRINKLER HEAD

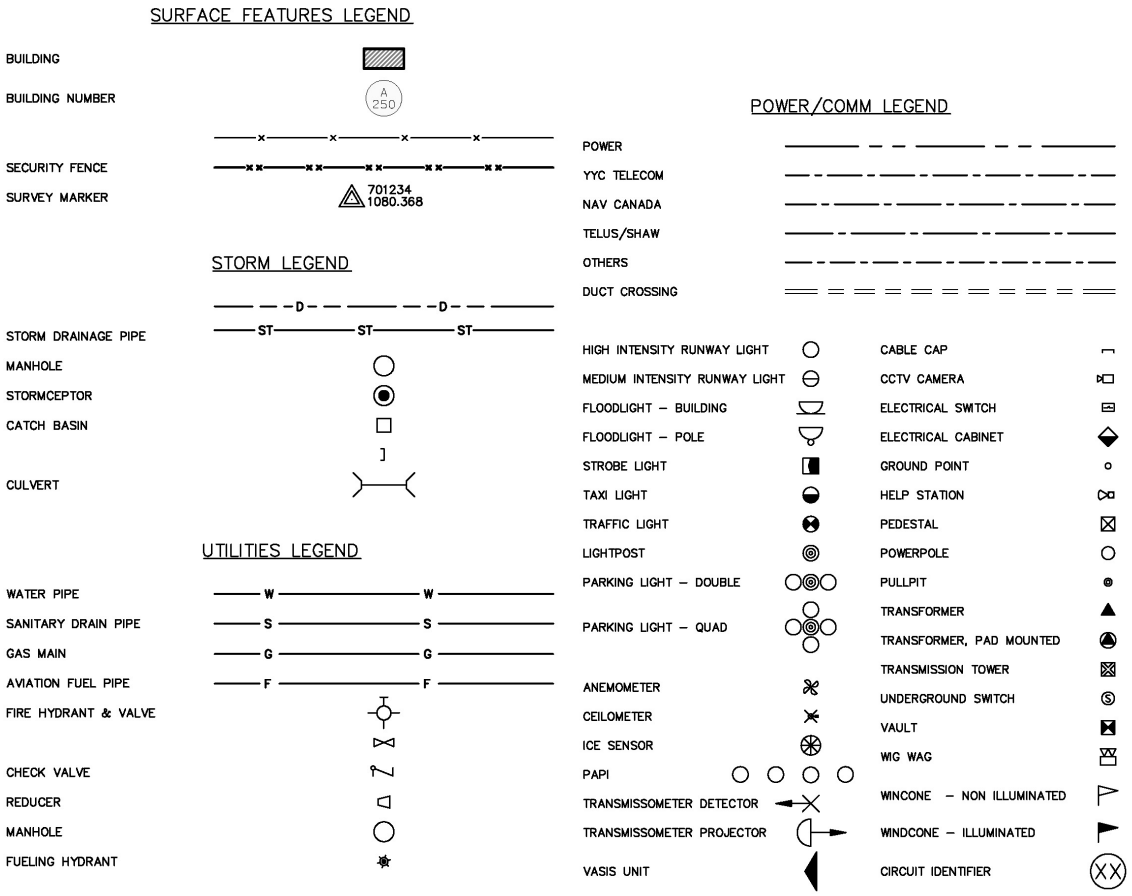
MECHANICAL LINETYPES

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER RECIRC.
- SANITARY ABOVE SLAB
- SANITARY ABOVE SLAB
- ST STORM SEWER ABOVE SLAB
- ST STORM SEWER ABOVE SLAB
- V SANITARY VENT
- LG LOW PRESSURE NATURAL GAS
- MG MEDIUM PRESSURE NATURAL GAS
- CA COMPRESSED AIR
- LS LOW PRESSURE STEAM
- F FUEL OIL
- RAD RADIATION HEATING SUPPLY
- RAD RADIATION HEATING RETURN
- 200 200F TEMP HOT WATER SUPPLY
- 200 200F TEMP HOT WATER RETURN
- 400 400F TEMP HOT WATER SUPPLY
- 400 400F TEMP HOT WATER RETURN
- CHW CHILLED WATER SUPPLY
- CHW CHILLED WATER RETURN
- GLYC GLYCOL COOLING SUPPLY
- GLYC GLYCOL COOLING RETURN
- GLYH GLYCOL HEATING SUPPLY
- GLYH GLYCOL HEATING RETURN
- REF REFRIGERANT
- FP FIRE LINE

5.13.2 **Electrical Blocks**



5.13.3 **Civil Blocks**



5.14 Pen Assignments

These pen assignments are provided to support the Airport Authority personnel in producing consistent hardcopy output to form the electronic submittals. The range of different types of lines should be kept to a minimum and once determined should be used consistently throughout the project.

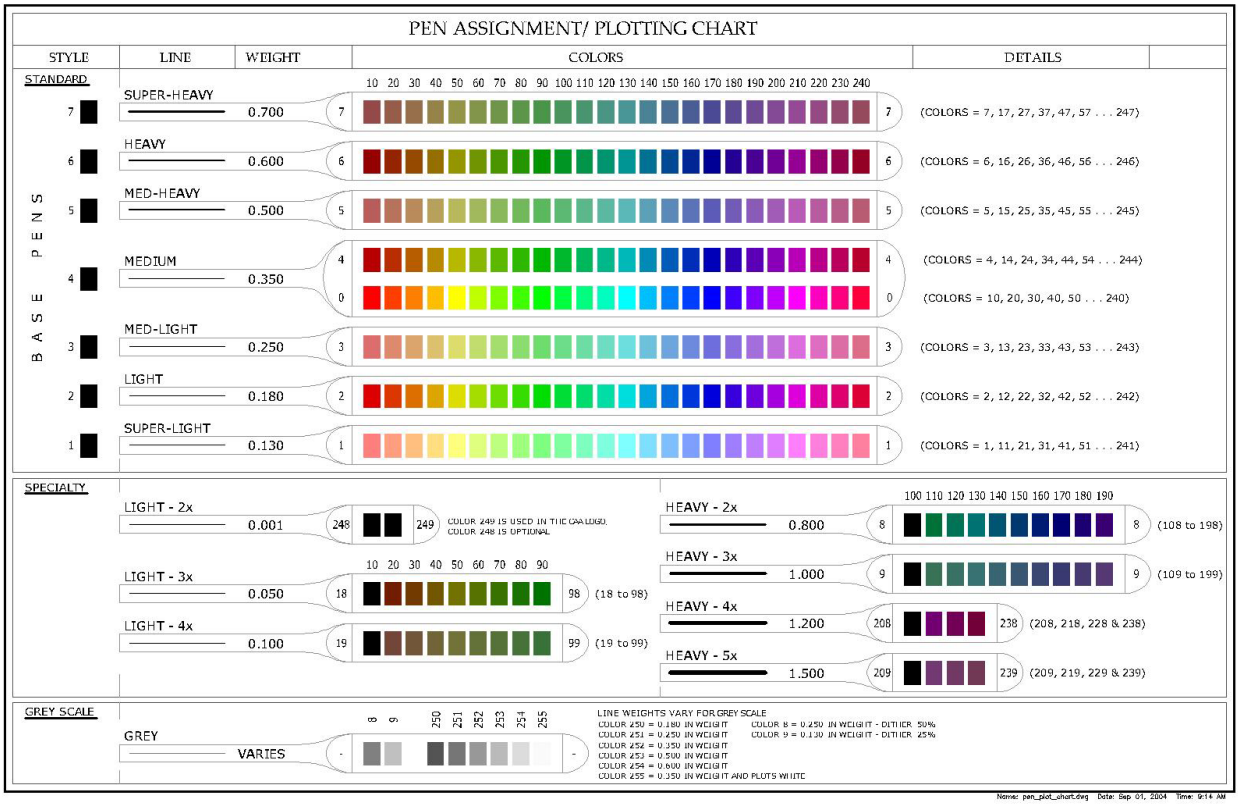
Consultants are solely responsible for the production and appearance of their hard copy submissions. Deliverables to the Airport Authority must contain CTB (or appropriate pen table) files so drawings can be reproduced later.

Submissions to the Airport Authority shall have color and linetype set by layer, colors and linetypes shall not be set by entity to ensure consistency and so files can interact and be referenced properly.

Airport Authority chart is setup with the last number of the color corresponding to the base pen thickness, for example 2, 12, 22 etc. are equal to a thickness of 0.18.

Variations are described below:

YYC_BW_HPv1.ctb – standard black & white
YYC_Color_v1.ctb - standard for color plotting with colors 1-7 set to black
YYC_Color_v2.ctb - standard for color plotting with all color are set to color



5.15 File Presentation

These Files presented are to conform to the following:

- Drawing files must be purged of all definitions that are not used such as layer, text styles, dimensions styles, layer filters, blocks, etc.
- A drawing must not contain any objects definitions without geometry such as empty text or blocks without objects.
- No objects shall reside on Layer "0" or DEFPOINTS except for objects contained in a block definition.
- A drawing must not contain any errors that are detectable using the Audit command.
- The drawing must be saved such as to be printed without any additional page setup.
- The main layout must be active and all viewports locked and set to the correct scale.

5.16 Room Numbering System

Room numbers assigned for the Air Terminal Building shall be assigned using the document Accepted Building Nomenclature - Grid Numbering (available upon request). This document

explains the radial grid system (both ATB and IFP) of the buildings that is used in the room number creation. Importance on assigning proper room numbers is described so reference to room number sequences is correct and features will not need to be renumbered to comply with the room numbering standard. Room numbers play an important role in the room lease documentation, mechanical equipment, and electrical power schedules.

5.17 Equipment Numbering

It should be noted the importance of communicating with the operations team, via the Airport Authority Project Manager / Project Coordinator to ensure new equipment such as elevators, escalators, electrical panels, electrical circuits are numbered in accordance with existing nomenclatures.

5.18 Project File Workflow

As the project evolves from Preliminary into Issued for Tender then into Issued for Construction, The Airport Authority requires a historic view of the project for future use. To facilitate this and keep the model up to date as the design and construction progress, a Bind/Bind copy may be made. IMPORTANT ensure to save this to a directory using the project class (preliminary, tender, construction) with a revision file number (see Section 3.2 File Naming Convention). This Bind/Bind copy will make a copy of the working file with all references bound into the one file. This process will allow historical viewing, plus allow the working model to stay intact for additional input and modifications as the project evolves.

At all stages, ensure the cover sheet is kept current with drawings issued and used. Multi-disciplined projects are to be delivered in one complete package.

6.0 DOCUMENT RESPONSIBILITY SCHEDULE

6.1 Submission Schedule

Responsibility timetable for submission of documents and digital data to SDS from In-House Design Team and External Consultants:

	In-House Design	External Consultants
Tender Documents		
PDF Files for printing	Tender advertising	One week prior to advertising
CADD Data Files	Tender advertising	Tender advertising
Addendum Documents		
PDF Files for printing	Tender close	Tender close
CADD Data Files	Tender close	Tender close
Construction Documents		
PDF Files for printing	Prior to construction start	Prior to construction start
CADD Data Files	Within 14 calendar days of PDF delivery	Within 14 calendar days of PDF delivery
Record Documents		
PDF Files for printing	Within 45 calendar days of project completion	Within 45 calendar days of project completion
CADD Data Files	Within 45 calendar days of project completion	Within 45 calendar days of project completion

Documents include, but are not limited to: drawings, specifications, O&M manuals, or other data required for future use by The Airport Authority.

6.2 Submission Cataloguing

Data files submitted by consultants shall be labelled to include project coding, file names, operating system, and date (See Section 2.2 for required formats). It is the consultant's responsibility to ensure that the projects sets are delivered together in complete packages in proper sequence order following the above time schedule.

6.3 Tender, Addendum, and Construction Stage Requirements

Data files submitted by consultants shall conform to the following:

1. Provide AutoCAD drawings using the File eTransmit command (See Section 5.3).
2. Provide PDF's of drawings and specification. PDF's are to be created at 1:1 scale based on the output paper size originally created for ISO B1. The PDF's are to include professional seals, permits and revision stating date and project stage.

6.4 Record Stage Requirements

Data files submitted by consultants shall conform to the following:

1. Record drawing process must also be underway prior to project substantial performance.

2. Record drawings shall be tied to project substantial performance.
3. Provide AutoCAD drawings using the File eTransmit command (See Section 5.3).
4. Provide PDF's of drawings, final specifications, operations & maintenance manuals, and any other record data related to the project. PDF's are to be created at 1:1 scale based on the output paper size originally created for ISO B1. The PDF's are to include professional seals, permits and revision stating date and project stage.
5. Submission timelines may be extended with the approval of Spatial Data Services. Extension Requests must be made at completion of construction.

7.0 RECORD DRAWINGS

7.1 Requirements

During the project life cycle the following file management routines should be incorporated to ensure a neat complete project history is compiled to help with the final creation of the record drawings. "Record Drawings" are certified drawings that stamped and signed by the professional of record and represent the final drawings issued and that incorporate such items as addenda, change orders, measurements and any significant modifications made during construction. These are usually a compendium of the original drawings, site changes known to the consultant and information taken from the contractors red line drawings and data.

1. All disciplines should use the current base plan (received from Architectural, Site or lead discipline) when producing the record drawing set.
2. Ensure that unique file naming conventions are used throughout the project, adding detail type and number (names) to describe the details and xref's accurately. Use unique drawing number assigned to project at project start-up.
3. Use of the project directories by discipline to arrange plots sheets separate from the master and external reference files.
4. At the issued for tender stage for the sake of reproducing this set of drawings at a later date, bind the set together and place the files in the sub-directory named "Tender". As the project construction cycle continues, add and make changes to the plots sheets and project xref models so when all details from change orders, field orders and on-site mark-ups have been added, the resulting project directory will contain a set of plot sheets and xref files that represent your final record drawings set.
5. Update the drawing revision note and date to record drawings.
6. Save the drawings in a final plot state with non-relevant layers frozen and non-relevant xref's detached.
7. Produce final plots to a PDF format of all sheets generated. These plots are to be plotted at 1:1 scale and on the paper size the drawing were created to be printed on (standard size is ISO B1 format). The PDF files are to include professional stamps and permits, with proper dates and record drawings revision notes in the revision area. DO NOT PASSWORD PROTECT PDF FILES.
8. Use the AutoCAD eTransmitt command (see section 5.3). Settings within command: format set to .zip, include all xrefs files, fonts files, plotting .ctb files, images files, etc.
9. Refer to the Deliverable Requirements – Consultant Checklist deliverable details of drawing sets, shop drawings and O/M manuals.

APPENDIX B – ECO PLAN FRAMEWORK

Environmental Construction Operations (ECO) Plan Framework

Instructions for Preparing ECO Plans for Alberta Transportation, City of Calgary and City of Edmonton Construction Projects

In partnership with:

Alberta

Calgary

Edmonton

TITLE:	Environmental Construction Operations (ECO) Plan Framework *Instructions for Preparing ECO Plans for Alberta Transportation, City of Calgary and City of Edmonton Construction Projects*
PREPARED BY:	Alberta Transportation The City of Calgary The City of Edmonton
DOCUMENT HOLDER:	Alberta Transportation, Environmental Regulation, Technical Standards Branch
DOCUMENT CONTROL:	The City of Calgary, Environmental & Safety Management, under the terms of the ECO Plan Framework Memorandum of Understanding (EXT 03 – ECO MOU).
EDITION:	2020 edition. This document replaces the 2017 edition released 30 January 2017.
RELEASE DATE:	6 July 2020
NOTE TO USERS:	Alberta Transportation, The City of Calgary, and the City of Edmonton do not accept any legal responsibility for the contents of this framework or any consequences, including direct or indirect liability, arising from its use. Users are responsible for making decisions, including compliance with all applicable statutes and regulations. In the event of a difference between this framework and a statute or regulation, the statute or regulation prevails.
PERMISSIONS:	
VERSION CONTROL:	If this document is hard copy, it is not controlled and may not be the most current version. Check the websites listed below for the most current version.
FOR FURTHER INFO:	Alberta Transportation, Environmental Regulation Technical Standards Branch.
ADDITIONAL COPIES:	To download a free electronic copy:

Alberta Transportation	**The City of Calgary**	**The City of Edmonton**
www.alberta.ca/transportation.aspx	www.calgary.ca	www.edmonton.ca

Table of Contents

Environmental Construction Operations (ECO) Plan Checklist

Project Name: _____

Contractor's On- Site Representative(s) (Name, Company, Email and Phone Number): _____

_____

ECO Plan submitted to (Name and Jurisdiction): _____

Note: All checklist items are required in the ECO Plan. Explain any deficiencies in the comments section.
Ensure that this three-page checklist is signed and submitted with the ECO Plan.

ECO Plan Framework Step		YES	NO	N/A
Step 1 – Description of Site Activities				
1.1	Site Activities	☐	☐	☐
1.2	Site Drawings	☐	☐	☐
1.3	Project Schedule	☐	☐	☐
Step 2 – Potential Environmental Impacts and Controls				
2.1	Permits, Approvals, Authorizations and Notifications	☐	☐	☐
2.2	Impacts and Mitigations	☐	☐	☐
2.3	Erosion and Sediment Control	☐	☐	☐
Step 3 – Hazardous Materials and Waste Management				
3.1	Hazardous Materials	☐	☐	☐
Step 4 – Environmental Emergency Procedures				
4.1	Environmental Emergency Prevention and Response	☐	☐	☐
Step 5 – ECO Plan Implementation				
5.1	Training and Monitoring	☐	☐	☐
5.2	Communication	☐	☐	☐
5.3	Documentation	☐	☐	☐
5.4	ECO Plan Update	☐	☐	☐

Explain any deficiencies in the ECO Plan:

_____

_____

_____

_____

ECO Plan Checklist for City of Calgary and City of Edmonton can be found in Environmental Construction Operations (ECO) Plan Framework Municipal Version.

Contractor Responsibilities

All Contractors must be aware of how environmental policy, regulation and law govern their work. The Contractor is responsible, either by its own actions or through its sub contractors, for providing the resources needed to develop and implement the ECO Plan. The Contractor is responsible for ensuring sub contractors understand their roles and responsibilities and operate in compliance with the ECO Plan.

Contractors must refer to the terms and conditions contained in applicable contractual and regulatory documents to be fully aware of their responsibilities. In general, Contractors must:

a) Identify the potential environmental issues and develop mitigation measures to prevent or minimize environmental impacts.

b) Identify and acknowledge permits, approvals, authorizations, notifications, guidelines, standards, policies and programs applicable to the project.

c) Prepare and update the ECO Plan in accordance with the latest version of the ECO Plan Framework.

d) Submit copies of the ECO Plan and all other required documentation to the consultant for Alberta Transportation projects or The City Project Manager for municipal projects.

e) Revise the ECO Plan as required based on reviewer (i.e., The City of Calgary, The City of Edmonton or the consultant for Alberta Transportation projects) comments.

f) Identify an on site individual to be the Contractor's On-Site Representative to maintain environmental controls and address any environmental issues or questions that arise. The Contractor must identify this individual within the ECO Plan and at the pre-construction meeting.

g) Train staff and sub contractors to identify, address and report potential environmental problems.

h) Review the ECO Plan requirements at orientation meetings, the pre-construction meeting, tailgate meetings etc.

i) Implement and maintain environmental mitigation measures in accordance with the ECO Plan.

j) Correct and record deficiencies in a timely and appropriate manner.

k) Take corrective action (e.g., shut down work) upon recognition that an impact to the environment may occur or has occurred.

l) Ensure that all sub contractors comply with the ECO Plan.

m) Monitor the work site to ensure that the ECO Plan is effective for all conditions, including inclement weather and shut-down periods. Document all monitoring efforts.

This ECO Plan is complete to the best of our abilities. The undersigned acknowledges and accepts the responsibilities detailed herein.

Contractor Principal-in-Charge Signature	Name (please print)	Date

Introduction

The Environmental Construction Operations (ECO) Plan Framework guides the development of ECO Plans for Alberta Transportation, The City of Calgary, and the City of Edmonton. ECO Plans ensure the following:

- The project is compliant with applicable regulations, bylaws and guidelines
- Environmental considerations are integrated into project decision-making

ECO Plan Process

The Contractor must prepare and implement an ECO Plan in accordance with the current version of the Department's manual entitled "Environmental Construction Operations (ECO) Plan Framework." The ECO Plan must be site specific and address all environmental regulations, conditions and sensitivities.

The ECO Plan Checklist must be completed and be signed by the Contractor Principal-in-Charge as part of the ECO Plan submission.

No work may begin until the Contractor has an accepted ECO Plan. Contractors must submit their ECO Plans to the appropriate jurisdiction at least 14 days prior to the scheduled start of construction. The reviewer will evaluate the ECO Plan and one of the following will result:

1. **Acceptance** – If the ECO Plan is accepted to the mutual satisfaction of the Contractor and the reviewer (reviewers may include the consultant for Alberta Transportation, The City of Calgary or The City of Edmonton), the Contractor will be advised that the ECO Plan is complete.

2. **Follow-up or Revision** – The reviewer will follow up with the Contractor if deficiencies are identified or questions are raised. Incomplete ECO Plans will be returned to the Contractor for revision. ECO Plans must be completed to the mutual satisfaction of all parties. Changes to accepted ECO Plans must be documented (see Table 5-3) and copies of the updated ECO Plan forwarded to the reviewer and other parties, as applicable.

This Framework provides instructions for developing ECO Plans for Alberta Transportation, The City of Calgary and The City of Edmonton. **Additional requirements** for City of Calgary and City of Edmonton can be found in *Environmental Construction Operations (ECO) Plan Framework Municipal Version*. All ECO Plans must follow the jurisdictional appropriate Framework and adopt the headings and structure provided.

Step 1
Description of Site Activities

1.1 Site Activities

Briefly describe the location and general construction activities that will occur as a result of the Contractor's activities, including any permanent and temporary structures. It is particularly important for the Contractor to describe specific on-site construction activities that could result in environmental impacts (e.g. working in/near a watercourse or wetland).

1.2 Site Drawing(s)

Provide site drawing(s) that contain standard map features (e.g., north arrow, scale, legend) and be at an appropriate scale to accurately show the location of the project components and activities relative to existing features. Annotated photographs can be included in this section. Table 1-1 summarizes some additional details that may be relevant to include on the site drawing(s).

Table 1-1 Example: Potential Details to include on the Site Drawing(s)

Site Location	Site Set-up and Layout	Erosion and Sediment Controls	Environmental Sensitivities
• Site location (e.g., municipal address; legal land description) • Project boundaries • Municipal boundaries, historic sites, protected areas (e.g., parks), federal land • Linear and other transportation components (e.g., railways, roads)	• Staging areas/ laydown • Borrow areas • Stockpile locations • Refuelling areas • Detour placement • Spill kits • Hazardous materials storage • Hazardous waste storage • Waste and recycling areas* • Office and parking* • Access/egress*	• Project-specific erosion and sediment controls as appropriate for the jurisdiction (see Step 2.3 and Table 2-3 for more details) including both temporary and permanent measures. • Storm water infrastructure	• Environmentally sensitive areas (e.g., wildlife habitat; waterbodies such as wetlands, and watercourses ; vegetation such as tree stands and rare plants) • Buffers around sensitive areas • Monitoring wells • Known Contamination

*Only apply to City of Calgary ECO Plans

1.3 Project Schedule

The ECO Plan will include a project schedule that presents the sequence and timing of construction activities. It will identify any time-sensitive environmental considerations including scheduled shut-downs and restricted work periods. For example, Restricted Activity Periods (RAP) may restrict the activities of the Contractor unless additional mitigation is completed (e.g. conducting bird nesting surveys prior to clearing within the RAP).

Step 2
Potential Environmental Impacts and Controls

2.1 Permits, Approvals, Authorizations and Notifications

The Contractor must provide instruction to their staff and sub-contractors how environmental conditions and/or restrictions prescribed within permit conditions, approvals, authorizations and the contract govern their work.

List the name and permit number of all required project permits, approvals, authorizations and notifications in this section. Compile all of the environmental conditions and restrictions prescribed by the regulatory agencies, which pertain to the Contractor, in a summary table (e.g., Table 2-1). Tender packages and Environmental Risk Assessments (Alberta Transportation) outline the regulatory requirements that the Contractor must address.

Retain copies of projects permits, approvals, authorizations and notifications (as well as the permit applications when relevant) on site during all activities. These documents, upon request, will be provided to the regulators during site visits and inspections.

Table 2-1 Example: Project Permits, Approvals, Authorizations and Notifications

Legislation	Environmental Conditions That Apply to the Contractor's Activities
Fisheries and Oceans Canada Fisheries Act Authorization	No in-stream work will occur between May 1 and July 15
	Operate machinery on land in a manner that minimizes disturbance to the bed and banks of the watercourse
	A fish rescue shall be undertaken in the isolated area and shall be released unharmed to an area containing sufficient flow and cover outside of the construction area
	etc.
Alberta Environment and Parks Water Act Approval	The Contractor shall not release sediment into any wetland or watercourse
	Develop a temporary erosion and sediment control plan prior to construction
	etc.
Notification under the Code of Practice for Watercourse Crossings	Where isolating the location of a works, the isolation must be carried out in a manner that isolates the location of the works from the flowing water in the water body, and eliminates the flow of surface water through the construction site.
	During a restricted activity period, when fish are spawning or migrating, an isolation method that blocks the entire width of a water body must not be in place for longer than 3 consecutive days, unless upstream and downstream fish migration is accommodated
	etc.

2.2 Impacts and Mitigations

The Contractor must identify environmental sensitive features and mitigate all project-related impacts. The Contractor and all sub-contractors must understand how to comply with all regulatory requirements and identify, mitigate, and monitor project related impacts. The Contractor must ensure that all project regulatory requirements and environmental impacts are complied with and mitigated.

The Contactor must identify specific regulatory requirements (other than permits, approvals, authorizations and notifications) and project impacts over which they have reasonable control. Identify project related impacts and mitigation measures that the Contractor must implement to remain compliant In Table 2-2.

The Contractor must refer to the Environmental Risk Assessment and the Tender Package to guide the development of Table 2-2 for Alberta Transportation projects. Municipal projects should refer to Contractor Environmental Responsibilities Package, Standard General Conditions, Special Conditions and Standard Specifications identified in the tender.

Table 2-2 Example: Project Regulatory Requirements and Environmental Sensitivities (other than permits, approvals, authorizations and notifications)

Legislation / Environmental Sensitivity	Regulatory Requirement / Environmental Sensitivity	Contractor's Mitigation
Migratory Birds Convention Act and its regulations	Avoid engaging in potentially destructive or disruptive activities during the Restricted Activity Period in order to reduce the risk of affecting migratory birds, their nests or eggs.	If vegetation removal is required during the Restricted Activity Period, the Contractor will have pre clearing surveys conducted by a qualified professional biologist to confirm that birds are not impacted by vegetation clearing and wetland disturbance activities. If active bird nests are found, a buffer will be established and no work shall be completed in that area until further surveys clear the area.
	etc.	
Dust Management	The Contractor shall manage dust during the construction period to reduce the impacts to neighbouring communities.	Throughout construction, haul roads will be regularly watered during dry conditions. Tackifiers and interim cover crops will be applied to soil stockpiles and completed.
	etc.	
City of Calgary Community Standards Bylaw 5M2004	A Person shall not engage in any activity that is likely to allow smoke, dust or other airborne matter to escape the Premises without taking reasonable precautions to ensure that the smoke, dust or other airborne matter does not escape the Premises.	Ensure equipment on site is in good working order. Remove equipment from site that is blowing black smoke. Do not haul or strip soil during windy conditions. Use water truck to supress dust.
	etc.	

2.2.1 Care of Water

2.2.1.1 Turbidity Monitoring

Turbidity monitoring is required if the Contractor has planned instream construction activities below the ordinary high water mark of the waterbody, or if it was identified in the tender package. The Contractor shall follow the latest version of Alberta Transportation's Turbidity Special Provision. The Turbidity Monitoring Plan shall form a part of the ECO Plan.

The Contractor will provide the following information in the ECO Plan:

- Type of watercourse, as per the special provisions definitions;
- Locations of transects, sampling points and frequency of monitoring; and
- Relationship between Total Suspended Solids (TSS) and turbidity in the watercourse.

Records of monitoring activity shall be provided to the Consultant weekly. The Contractor must immediately call the Environmental Response line at 1-800-222-6514 and must notify the applicable jurisdiction within 24 hours in the event of a reportable release.

2.2.1.2 Fish Capture and Release

The Contractor shall follow the latest version of Alberta Transportation's Fish Capture and Release Supplemental Specification found in the Standard Specifications for Highway Construction if fish capture and release is required. A Fish Capture and Release Management Plan must be developed and shall form part of the Contractors ECO Plan.

The Contractor will provide the following information in the ECO Plan:

- Fish Research Licence Number
- Locations for fish capture;
- Locations for cofferdams, nets and other isolation structures; and
- Fish release location.

2.2.1.3 Decontamination Protocol

If the decontamination protocol is required for the project the Contractor must describe how they will comply with:

- Alberta Environment and Park's (AEP) most current decontamination protocols as found on the Stop the Spread of Whirling Disease website for construction equipment.
- AEP's Decontamination Protocol for all other non-construction related equipment (i.e., personal gear, turbidity monitoring equipment, etc.).

2.2.1.4 Planned Dewatering

A Dewatering Plan shall be developed and form part of the Contractors ECO Plan if dewatering and/or isolation of the work is planned. This plan must include, but is not limited to:

- Location and size of pumps;
- Screen or mesh size if required due to fish presence (e.g. DFO End of Pipe Screen Guidelines);
- Discharge location(s); and
- Monitoring method to ensure sediment laden water is not released into a receptor.

2.3 Erosion and Sediment Control

Alberta Transportation and the Cities of Calgary and Edmonton require Erosion and Sediment Control Plans, including drawings on construction projects; however, each jurisdiction has its own specific requirements. Alberta Transportation projects refer to the latest version of the Alberta Transportation Erosion and Sediment Control Manual.

The Contractor must implement, inspect and maintain appropriate and site specific erosion and sediment control measures for the contract term. If project shut-downs are expected the Contractor must explain how they plan to monitor/maintain ESC during that period. The erosion and sediment control plan shall form a part of the ECO Plan.

Step 3
Hazardous Materials and Waste Management

3.1 Hazardous Materials

In Table 3-1, the Contractor must identify and describe in their ECO Plan material-specific handling, storage, containment and disposal procedures; these procedures must comply with all regulatory requirements (e.g. setback distance from a waterbody). The Contractor must keep all hazardous waste disposal receipts and manifests. All waste storage locations must be shown on the site drawing (Step 1.2).

Table 3-1 Example: Hazardous Materials and Associated Handling Procedures

Hazardous Material	Handling Procedure	Storage Location	Containment	Disposal
Diesel	On-site fuelling will follow best management practices.	Refuelling station (see Site Drawing, Step 2.3)	Double-walled fuel tank located on impervious tray with capacity to hold 110% of stored liquid volume. Concrete barriers, fire extinguisher and no smoking sign erected.	Empty storage container will be re-filled. If fuel is no longer needed it will be transported off site for use else ware.
Lubricating Oil	Contractor will provide secondary containment with capacity to hold 110% of stored liquid volume when lubricating oil is used.	Storage locker in laydown area (see Site Drawing, Step 2.3)	Fire-proof containment locker.	Used lubricating oils will be stored and removed from site, to an appropriate eco station, on a regular basis (e.g. weekly)

Step 4
Environmental Emergency Procedures

4.1 Environmental Emergency Prevention and Response

The ECO Plan must identify potential project-related incidents that may impact the environment. These incidents could be the result of natural events, accidents, human error or improper work practices.

The Contractor will develop a Spill Response and Disposal Plan as a part of their ECO Plan. The immediate reporting of environmental releases and spills is a requirement of provincial and federal environmental legislation.

Examples of potential incidents include:

- Contaminant spills and releases to land, water and air from fuels, oils, lubricants and chemicals
- Discovery of historic contamination
- Erosion and scour events of land (e.g., water, wind) and watercourses (e.g., bank erosion, flooding, berms and coffer dam failures)

The ECO Plan must provide emergency procedures to prevent and respond to potential incidents that may impact the environment. The emergency response procedures must include:

- Training provisions to make Contractor staff and sub contractors aware of their responsibilities during emergency situations
- A list of hazardous materials available on site including their location
- Initial response to an emergency, describing the steps to be taken to address a situation
- Immediate reporting of environmental incidents to appropriate authorities
- Post-emergency review, proper disposal, follow-up and improvement of procedures as needed

The Contractor is responsible to ensure that each emergency response procedure reflects current, regulatory requirements and any jurisdiction specific conditions.

The ECO Plan must include a current emergency contact list and describe where it will be posted on site; this list must include names and contact details for key personnel and applicable regulatory agencies.

Step 5
ECO Plan Implementation

5.1 Training

The Contractor must describe how they will train staff, including sub-contractors, to comply with the ECO Plan.

ECO Plans must be included as a topic in site orientations, pre-construction meetings and regular site meetings. Minutes of these meetings must be retained and available upon request. Topics for training and awareness sessions may include (but are not limited to) those listed in Table 5-1.

Table 5-1 Potential Topics for ECO Plan Training and Awareness Sessions

ECO Plan Training and Awareness — Potential Topics
ECO Plan Content and On-site Location
ECO Plan Team Roles and Responsibilities
Locations of Environmental Restrictions (e.g., wetlands, rare plants, bird nests, riparian areas)
Requirements of Project Permits, Approvals, Authorizations and Notifications
Potential Environmental Impacts, Mitigation Measures and Best Management Practices
Erosion and Sediment Control
Hazardous Materials and Waste Management
Monitoring and Reporting Procedures
Environmental Emergency Response Procedures (including locations of spill kits, contact information, etc.)

5.2 Monitoring

The Contractor will develop methods to monitor and inspect compliance with their ECO Plan.

The monitoring and inspection procedures must satisfy regulatory and contractual requirements and must also be appropriate for the nature and scale of the project and must consider the site characteristics, work activities and potential site specific environmental risks.

The Contractor is responsible for understanding and complying with reporting requirements and ensuring that all of the environmental controls are working and effective.

The Contractor must include the following project specific information in this section:

- Locations and items to be inspected
- Monitoring frequency
- Monitoring during scheduled shut downs
- Reporting requirements related to permits, approvals, authorizations and notifications

Deficiencies identified during monitoring activities must be immediately addressed.

5.3 Documentation

A copy of the most up-to-date ECO Plan and related documents (e.g. permits and regulatory documentation) must be retained at the construction site and available for inspection at all times. These documents must be kept current and be available to all personnel. Table 5-2 provides a non-comprehensive list of the types of documents that should be maintained as up-to-date copies on the project site.

Table 5-2 Example Types of Documentation to be Retained on the Project Site

Example — Documentation to be Retained on the Project Site
Current ECO Plan
Current Erosion and Sediment Control Report and/or Drawing(s)
Regulatory Permits, Approvals, Authorizations and/or Notifications, as well as their applications when relevant (often the application forms part of the approval)
Record of Environmental Incidents (e.g., spill and release records)
Hazardous Materials Inventory
Hazardous Waste Materials Inventory
Completed Environmental Monitoring Records
Site Orientation, Tailgate Meeting and Project Progress Minutes
Fuelling Logs
Relevant Memos Relating to Environmental Matters

5.4 ECO Plan Update

Provide ECO Plan update procedures in this section and include a circulation list for updated ECO Plans.

ECO Plans must be updated when the project, its site conditions and/or its activities change in a way not anticipated in the original document. For example, in the case of an unplanned winter shut-down, the ECO Plan must be revised to include the procedures and environmental protection measures required for the shut-down period. At a minimum the ECO Plan must also be reviewed for multi-year projects in advance of freeze-up in the fall and melt in the spring.

The Contractor is responsible for notifying (as appropriate) Alberta Transportation, The City of Calgary and/or The City of Edmonton of the changes once the ECO Plan is updated and prior to implementation. Modifications to the ECO Plan must provide an equal or better level of avoidance or mitigation. The Contractor shall communicate the changes to employees and relevant sub-contractors, and provide the necessary training before implementing the changes.

All subsequent changes must be documented once the initial version of the ECO Plan is approved (include a revision summary table such as Table 5-3). Clearly summarize what the changes are and where they are located in the document, referencing applicable sections, pages, drawings and/or table numbers. This revision summary table should be located at the front of the revised ECO Plan (just after the cover page). Forward the revised ECO Plan to the reviewer (i.e., The City of Calgary, The City of Edmonton or the consultant for Alberta Transportation projects) and other applicable parties.

Table 5-3 Example: ECO Plan Revision Summary Table

Date	ECO Plan Section	Specific Document Reference (Page #, Drawing # or Table #)	Description of Change
25 Jun. 2020	2.2	Page 4	Modify erosion and sediment control plan to further protect an environmental sensitive feature. See the updated site drawing.
	1.2	Site Drawing	Add Spill Kit location updated Site Drawing.
28 Aug. 2020	Table 3-2	Page 32	Updated to include solvent that is now required for the bridge work.

APPENDIX C – TRANSPORT CANADA ENVIRONMENTAL EFFECT EVALUATION FORM

ENVIRONMENTAL EFFECTS EVALUATION FORM

[Insert Project Title]

Transport Canada Transports Canada

Canada

- Table of Contents -

Add Row	Remove Row
Remove TOC	

-Section 1 -
Project Information and Section 82 Applicability

1.1 Project Information

Project Title

Project Location

OPI File No.

CIAR No.

1.2 Section 82 Applicability

1.2.1 Does the proposed project meet the definition of a "pr oject" under section 81 of the *Impact Assessment Act* (IAA)?

◯ Yes ◯ No

1.2.2 Will TC carry out the project or exercise a power, perform a duty or function, or provide financial assistance in relation to the project?

◯ Yes ◯ No

1.2.3 Is the project in response to an emergency under section 91 of the IAA?

◯ Yes ◯ No

1.2.4 Is the project excluded by the *Designated Classes of Projects Order* made under sec tion 88 of the IAA? I f unsure, see Exclusion List Checklist (RDIMS#: 15865212).

◯ Yes ◯ No

1.2.5 An authority has made a det ermination under section 67 or 68 of the *Canadian Environmental Assessment Act, 2012* with respect to the project. Is TC making a determination under section 82 of the IAA for the same project?

◯ Yes ◯ No ◯ N/A

- Section 2 -
Proponent Information

2.1 Proponent Information

Contact Name	
Organization Name	
Telephone	
Email	

2.2 Representative(s) and/or Environmental Consultant(s) (if applicable)

Contact Name	
Title	
Organization Name	
Telephone	
Email	

Add Contact | Remove Contact

- Section 3 - Authorities Involved

3.1 Transport Canada Involvement

◯ Lead Authority ◯ Authority

Involvement (click all that apply)	Additional details (if applicable)
☐ Project proponent	
☐ Intends to issue a regulatory permit, approval or authorization	
☐ Intends to grant a licence or interest in land	
☐ Intends to fund all or part of the project	
☐ Other	

3.2 Transport Canada Contact Information (NPP, funding group, etc.)

Contact Name

Title

Group

Telephone No.

Email Address

Add Contact | Remove Contact

3.3 Other Federal Authorities

3.3.1 Are other Federal Authorities involved?

◯ Yes
◯ No

Determining the type of EEERequired

Note: thisentiresection will disappear once theform isprinted to pdf.

Condensed Review

A condensed review can be used by TCEnvironmental Officers to meet TC's obligations under sections 81 to 91 of the IAA. All obligations in sections 81 to 91 must still be met for projects undergoing a condensed review, including taking into account the factors listed under subsection 84(1), and posting notices on the Registry site as per section 86.

A condensed review isappropriate for projects that are not likely to require additional in-depth analysis. Projects undergoing a condensed review must meet all of the following criteria:

- The proposed project and associated adverse environmental effectsare well understood;
- The proposed project is unlikely to adversely impact the Aboriginal or treaty rights of Indigenous peoples;
- The proposed project is likely to result in minor adverse environmental effects;
- All of these effects can be managed by "effective and established" mitigation measures; and
- All Authorities involved are in agreement that a condensed review isappropriate (if applicable).

Comprehensive Review

For projects that require a more in-depth analysis, a comprehensive review should be undertaken by TC Environmental Officers to meet TC's obligations under section 81 to 91 of the IAA. Projects should undergo a comprehensive review if they meet any of the following criteria:

- The proposed physical activitiesand physical works are not well understood;
- There is uncertainty around the potential for adverse environmental effectsarising from the proposed project;
- New technically and economically feasible mitigation measures must be developed for the project;
- The proposed project is likely to result in residual adverse environmental effectsafter mitigation measures are in effect; or
- There is disagreement between Authorities involved as to whether a condensed review is appropriate (if applicable).

Determination of Review Type

○ Condensed Review

◉ ComprehensiveReview

- Section 4 -
Project Background and Description

4.1 Project Location

4.2 Proponent's Rationale for the Project

4.3 General Description of the Project

Construction Phase:

Operation Phase:

Decommissioning and/or Abandonment Phase (if applicable):

4.4 Schedule of Work

- Section 5 -
Description of theEnvironment

5.1 Physical Environment

Add subsection | Remove subsection

5.2 Biological Environment

Add subsection | Remove subsection

5.3 Human Environment

Add subsection | Remove subsection

-Section 6 -
Federal Scope of theEnvironmental EffectsEvaluation

6.1 Effects to be Examined

As required by the IAA, thisEnvironmental EffectsEvaluation (EEE) will examine changes to the environment and the impact of these changes on the Indigenous peoples of Canada and on health, social or economic conditions prior to making a determination under s.82 of that Act. TheEEE will also consider the factors under subsection 84(1) of the IAA.

Where more than one authority must make a determination under s.82 of the IAA, it is important for authorities to work together in defining the project.

6.2 Valued Components to be Examined

Valued components refer to biophysical or human attributes that could be impacted by a project. The value of a component is not only based on its r ole in the ecosystem, but also to the value humans give it. For example, a component may be valued because of itsscien tific, social, cultural, economic, historical, archaeological or aesthetic importance.

TheEEE report will describe the valued components that could be affected by changes to the environment, as well asspeciesat risk and their critical habitatsasstipulated by Section 79 of the Speciesa t Risk Act. The list of valued components is presented in Table 7.1 of thisEEE report.

6.3 Federal Scope of Project

TheEEE considers the potential effects of the project within the spatial and temporal boundaries that correspond to the sectionsand periods in which the Project may interact with (or affect) the components of the ecosystem. The study areashould be delineated to identify the direct and indirect environmental effects that may be generated by the project.

The temporal boundary of the assessment includesall phases of the pr oject. The spatial boundary of the assessment is limited to physical activities carried out on federal lands in relation to physical works, or in other w ords, to the components of the project that are situated on federal lands.

[Identify what part of the overall project theEEE will be looking at. Ensure the specific spatial and temporal boundariesassociated with the project are also described.]

- Section 7 -
Environmental Effects and Mitigation Measures

7.1 Interaction Matrix - Project Components and the Environment

Project Components and Scope

List the project components in accordance with the federal scope of the evaluation, as described in Section 6.

✚ = potential positive effect

▬ = potential negative effect

[blank] = N/A

Project Phase	Activity	Environmental Components: Physical Environment: Terrain and topography	Soil quality	Sediments	Erosion and slope stability	Surface water quality	Surface water quantity	Groundwater quality	Groundwater quantity	Air quality	Climate change	Other	Biological Environment: Vegetation	Wetlands	Species at risk	Migratory birds	Wildlife and wildlife habitat	Fish and fish habitat	Other	Human Environment: Health and safety	Navigation	Health and socio-economic impacts	Natural and cultural heritage	Traditional use of lands	Historical or archeological sites	Other

Add | Remove

RDIMS

Select the help butt on for guidance material ?
RDIMS# 16513268

7.2 Synthesis Table - Negative Environmental Effects

Source of Environmental Effect		Environmental Effect			Residual Effects Evaluation						
Phase	Activity	Environmental Component	Description	BMPs or Mitigation Measures	Magnitude	Reversibility	Geographic Extent	Duration	Frequency	Significance of residual effect	Reference # (optional)

Add Remove

7.2.1 Rationale and/or additional information (if applicable):

7.3 Synthesis Table - Positive Environmental Effects

Source of Environmental Effect		Environmental Effect		
Phase	Activity	Environmental Component	Description	Reference # (optional)

Add Remove

7.3.1 Rationale and/or additional information (if applicable):

Canada

7.4 Best Management Practices & Mitigation Measures

7.4.1 Are best management practices (BMPs) or mitigation measures required for this project?

- ◯ Yes
- ◯ No

7.4.2 BMPs & Mitigation Measures - Physical Environment

Add subsection | Remove subsection

7.4.3 BMPs & Mitigation Measures - Biological Environment

Add subsection | Remove subsection

7.4.4 BMPs & Mitigation Measures - Human Environment

Add subsection | Remove subsection

7.5 Summary of Residual Effects (if applicable)

7.6 Cumulative Effects

- ◯ An assessment of cumulative effects is not required
- ◯ An assessment of cumulative effects is required

7.7 Other Effects

7.7.1 Include other considerations that have not been addressed in this form, such as effects of the environment on the project.

- Section 8 - IndigenousConsultation

8.1 Indigenous Consultation Consideration

8.1.1 Was a request submitted to the IndigenousRelations Directorate for IndigenousConsultation consideration?

- ◯ Yes
- ◯ No

8.1.2 Upon careful review and consideration of all information provided, the IndigenousRelations Directorate recommended:

- ◯ No further IndigenousConsultation
- ◯ IndigenousConsultation be considered

- Section 9 -
Monitoring and Follow-up

9.1 Monitoring and Follow-up

9.1.1 Isa Monitoring and/or Follow-up Plan required for this project?

- ◯ Yes, a Monitoring and/or Follow-up Plan has been developed
- ◯ Yes, a Monitoring and/or Follow-up Plan will be developed
- ◯ No

9.1.2 Will other Authorities be assisting in the monit oring and follow-up?

- ◯ Yes
- ◯ No

9.1.3 Will the Proponent be reporting on implementation of mitigation measures?

- ◯ Yes
- ◯ No

- Section 10 -
Factors under Section 84

10.1 Factors to Consider

An Authority's determination regarding whether the carrying out of the project is likely to cause significant adverse environmental effects must be based on a c onsideration of the following factors:

(a) any adverse impact that the project may have on the r ights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the *Constitution Act, 1982*;
(b) Indigenous knowledge provided with respect to the project;
(c) community knowledge provided with respect to the project;
(d) comments received from the public under subsec tion 86(1) of the IAA; and
(e) the mitigation measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project that the authority is satisfied will be implemen ted.

10.1.1 Was Indigenous knowledge provided with respect to the project?

◯ Yes
◯ No

10.1.2 Was community knowledge provided with respect to the project?

◯ Yes
◯ No

10.1.3 Were comments received from the public under subsec tion 86(1) of the IAA?

◯ Yes
◯ No

- Section 11 -
Environmental Determination

11.1 Determination

◯ After the implementation of mitigation measures, Transport Canada has determined that the carrying out of the project is not likely to cause significant adverse environmental effects.

◯ Transport Canada has determined that the carrying out of the project is likely to cause significant adverse environmental effectsand the Governor in Council must decide if those effectsare justified in the circumstances under subsection 90(3) of the Impact Assessment Act.

11.1.1 Describe how the factors under subsection 84(1) of the IAA have been considered in the determination:

- Section 12 -
Sign-Off

12.1 Sign-Off - Regional Environmental Advisor

Signature: Date:

AnalysisCompleted by: _____
Officer'sName

Title

12.2 Sign-Off - Environmental Programs

Signature: Date:

_____
Manager'sName

Title

The above has read thisEnvironmental Review and confirms that, based on the information provided by the Proponent, the components of the project occurring on federal landsare not likely to result in significant adverse environmental effects.

12.X Sign-Off - [insert signature type here]

Signature: Date:

_____
Name

Title

Department/Company

[Insert signature statement here. Click "?" at top of page for standardized wording.]

Add Sign-Off	Remove Sign-Off
Add Photo Annex	Remove Photo Annex

-Section 13-
References

13.1 References

13.1.1 Please identify any additional references [for example, any key documents reviewed to obtain a description such as an En vironmental Baseline Study (EBS), Project Specific EIS, etc.] and references to key documents, regulationsand/or best management practices that are to be used to ensure conformance, compliance and/or protection.

APPENDIX D – TENANT MONUMENT SIGN

YYC DEERFOOT NORTH MONUMENT SIGNS

DRAWING LIST

ARCHITECTURAL
BCW ARCHITECTS

A1.0	COVER PAGE AND DRAWING LIST
A1.1	FRONT AND SIDE ELEVATIONS
A1.2	SECTIONS & SIDE ELEVATION
A1.3	PLAN SECTIONS AND TOP VIEW

STRUCTURAL
TRL & ASSOCIATES, LTD.

S1.1	CONSTRUCTION NOTES
S1.2	CONSTRUCTION NOTES
S1.3	CONSTRUCTION NOTES
S2.1	MONUMENT SIGN FOUNDATION PLAN & BASE PLATE DETAILS
S2.2	MONUMENT SIGN SECTIONS

ELECTRICAL
MPP ENGINEERING

ESK-1	FRONT/BACK & SIDE ELEVATIONS
ESK-2	SECTIONS & SIDE ELEVATION
ESK-3	PLAN SECTIONS & TOP VIEW

BCW Architects

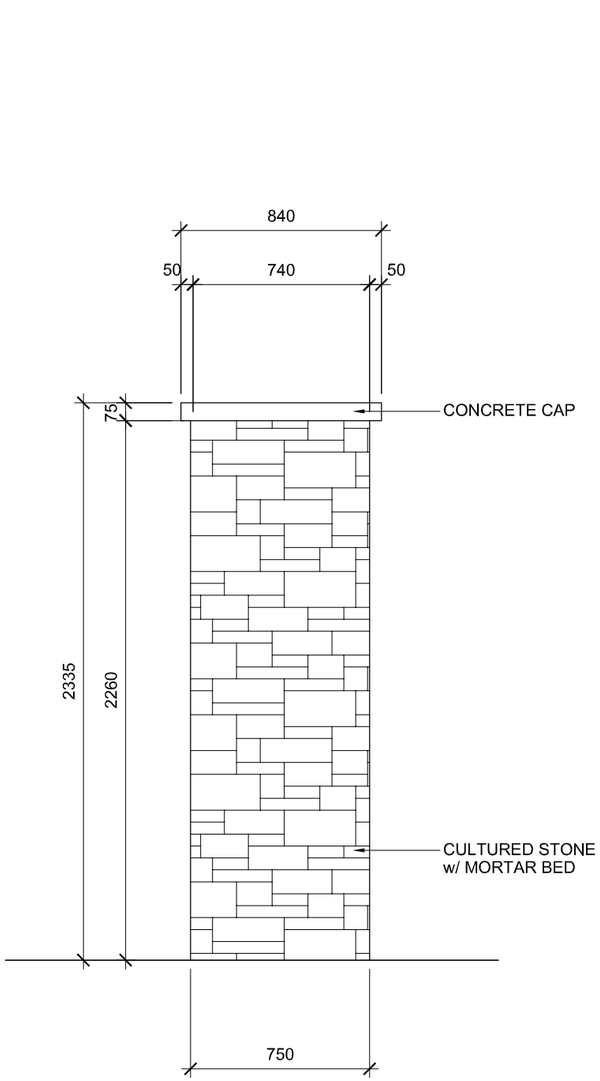
■ Project
YYC PYLON AND MONUMENT SIGNS
CALGARY, ALBERTA

■ Drawing
MONUMENT SIGN

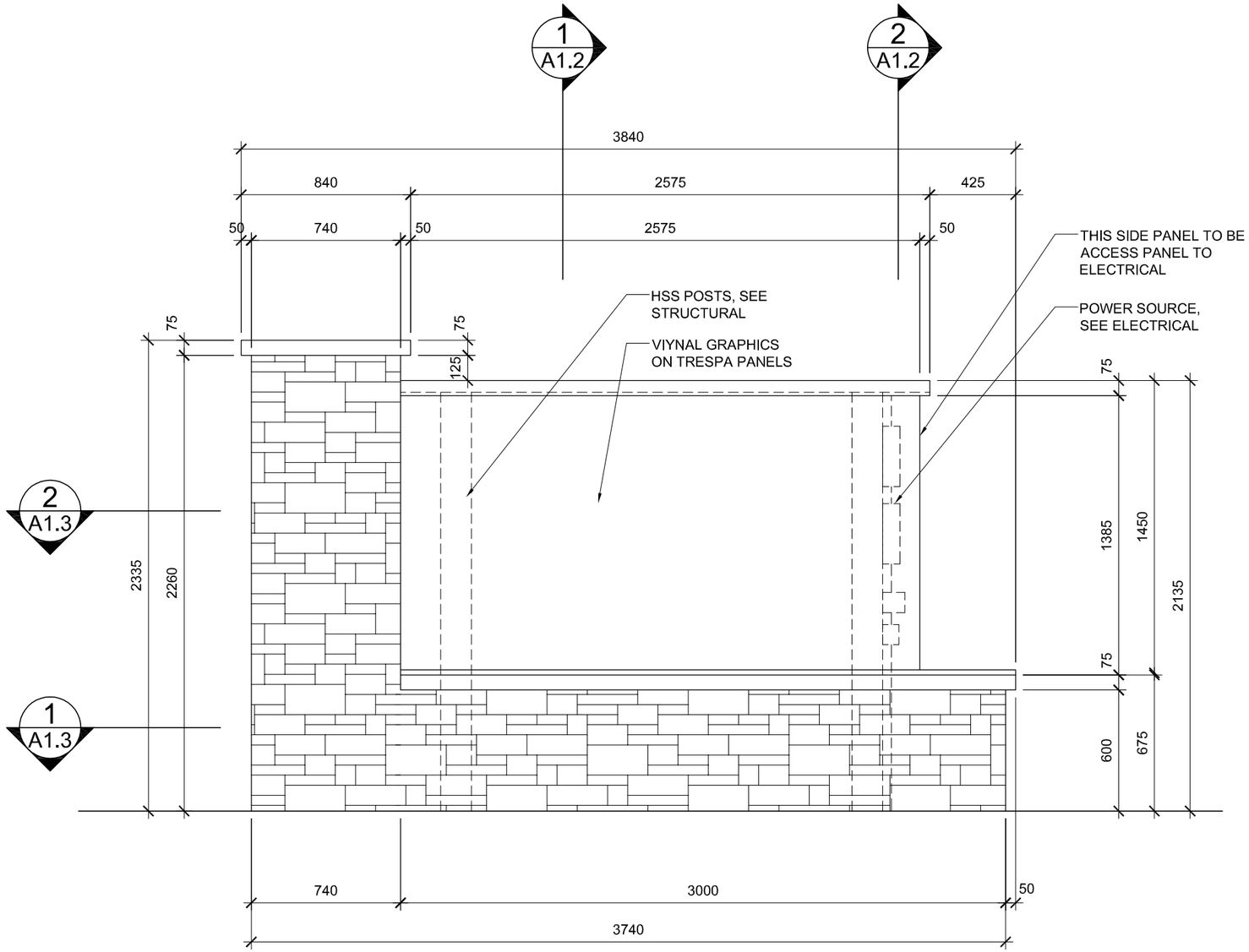
Date: 2013.11.17

Project No.: 12032

A1.0



SIDE ELEVATION



FRONT AND BACK ELEVATION

1
A1.1

MONUMENT SIGN - FRONT/BACK & SIDE ELEVATIONS

1 : 2 5

BCW Architects
Suite 130, 4528 16 Avenue NW, Calgary, AB Canada T3B 0M6
Telephone 403-283-1591 Fax: 403-270-8430
www.bcw-arch.com mail@bcw-arch.com

■ **Project**

YYC PYLON AND MONUMENT SIGNS

CALGARY, ALBERTA

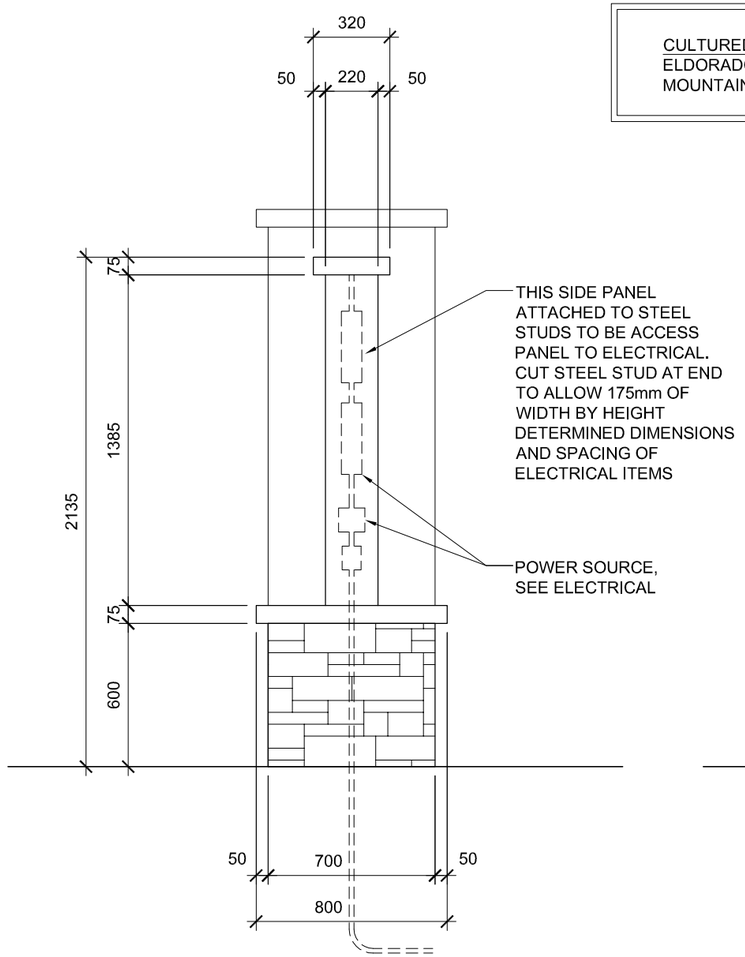
■ **Drawing**

MONUMENT SIGN

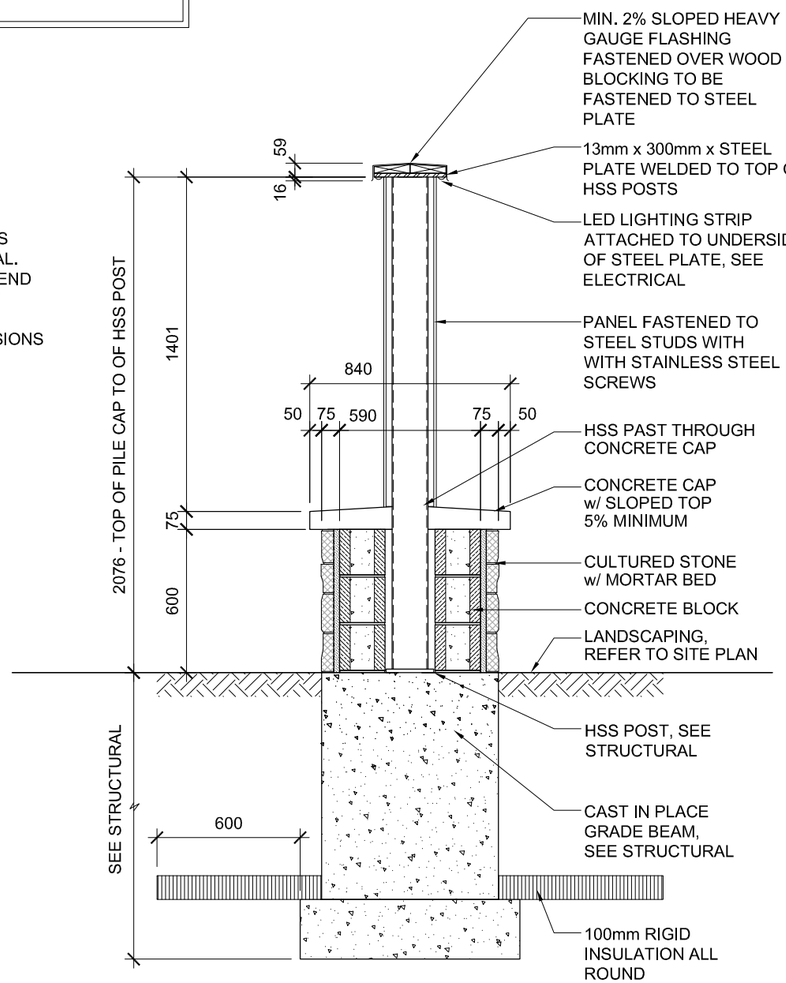
Date:	Project No.:
2013.11.17	12032

A1.1

CULTURED STONE
ELDORADO - SIERRA MOUNTAIN LEDGE.



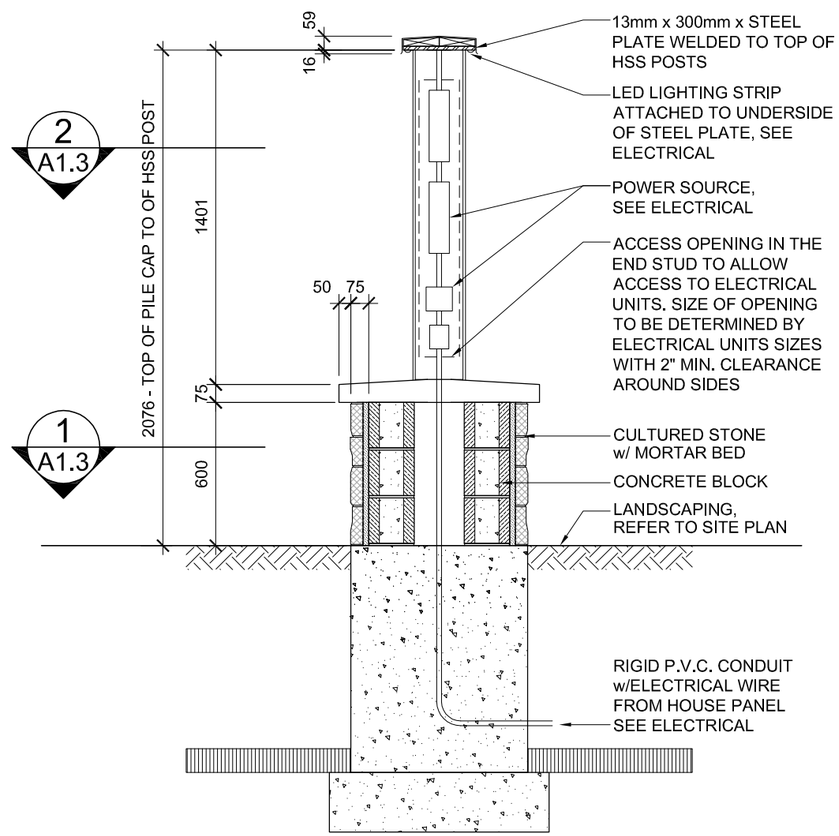
SIDE ELEVATION



SECTION 1

LED LIGHTING STRIP
SENSO SUPER MILES MODEL 551, APPLICATION "263 - OUTDOOR USE", COLOUR "40 (4000k)".

EXTERIOR PANEL:
ALUPANEL - "PURE WHITE", SINGLE SIDED. FASTENED AS PER MANUFACTORY'S SPECIFICATIONS



SECTION 2

1
A1.2

MONUMENT SIGN - SECTIONS & SIDE ELEVATION

1 : 2 5

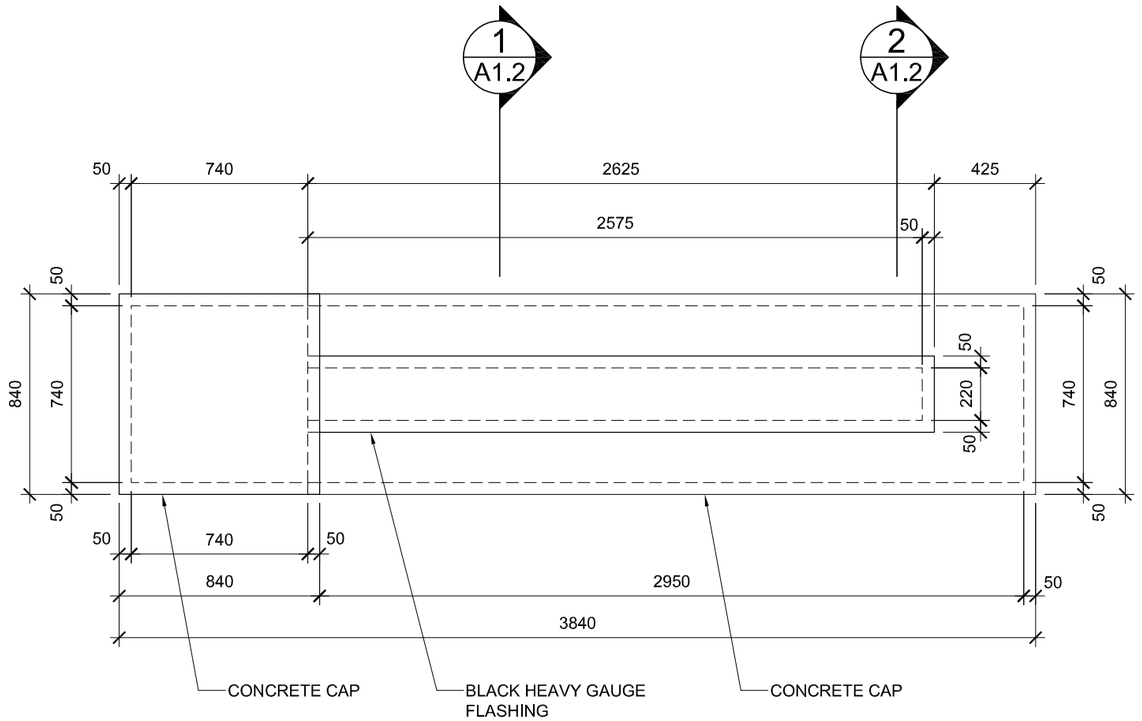
■ Project
YYC PYLON AND MONUMENT SIGNS

CALGARY, ALBERTA

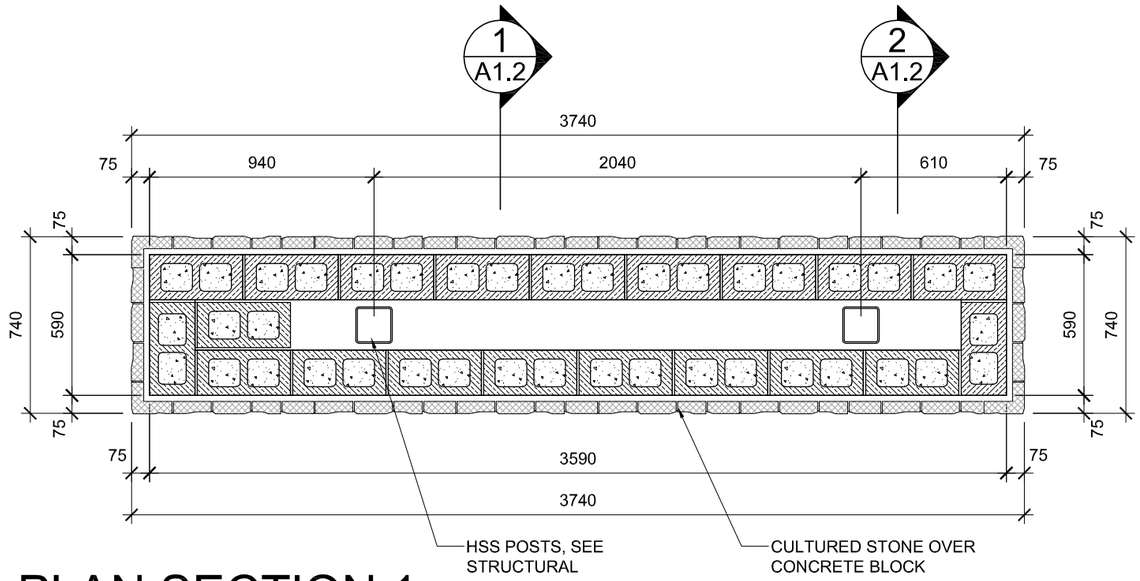
■ Drawing
MONUMENT SIGN

Date:	Project No.:
2013.11.17	12032

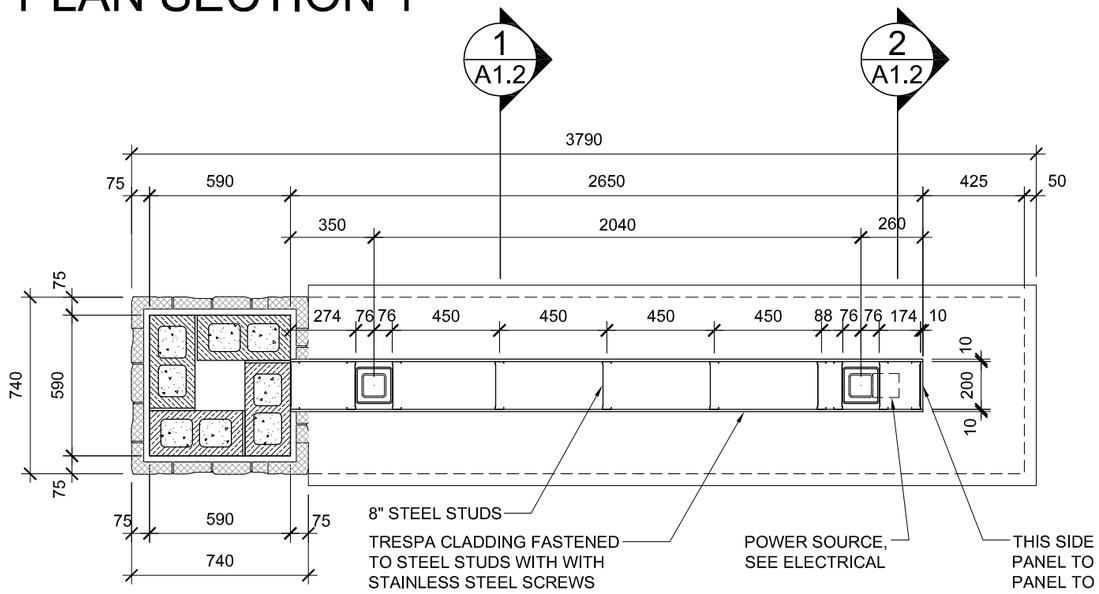
A1.2



TOP VIEW



PLAN SECTION 1



PLAN SECTION 2

1
A1.3

MONUMENT SIGN - PLAN SECTIONS & TOP VIEW

1 : 2 5

BCW Architects

Project
YYC PYLON AND MONUMENT SIGNS
CALGARY, ALBERTA

Drawing
MONUMENT SIGN

Date:	Project No.:
2013.11.17	12032

A1.3

GENERAL NOTES:

- DESIGN CODE: NATIONAL BUILDING CODE OF CANADA – LATEST
  ALBERTA BUILDING CODE – LATEST

DESIGN LOADS:

ENVIRONMENTAL LOADS:

SNOW:	Ss = 1.1 kPa (23 psf) + DRIFT Sr = 0.1 kPa (2.1 psf)
RAIN: (24HOUR)	= 103 mm (4.06")
WIND:	q(1/50) = 0.50 kPa (10 psf) q(1/10) = 0.40 kPa (8.4 psf)
SEISMIC:	Sa(0.2) = 0.15 Sa(0.5) = 0.084 Sa(1.0) = 0.041 Sa(2.0) = 0.023

GENERAL

–THE CONTRACTOR SHALL OBTAIN WHATEVER FIELD DIMENSIONS ARE NECESSARY TO COMPLETE THE WORK CALLED FOR ON THE DRAWINGS.

–DO NOT SCALE THE DRAWINGS.

–CHECK WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENINGS, INSERTS AND EMBEDMENTS REQUIRED IN CONCRETE.

–VERIFY ALL DIMENSIONS, ELEVATIONS, AND SCOPES OF WORK WITH THE DRAWINGS PRIOR TO COMMENCING CONSTRUCTION.

–IF ANY UNSOUND STRUCTURAL CONDITIONS ARE CREATED OR OBSERVED DURING CONSTRUCTION, REPORT THEM IMMEDIATELY TO TRL & ASSOCIATES LTD.

–STRUCTURAL DRAWINGS SHOW THE COMPLETE STRUCTURE. THEY DO NOT SHOW COMPONENTS WHICH MAY BE NECESSARY FOR SAFETY DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ON AND ABOUT THE WORK SITE DURING CONSTRUCTION.

–THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY RELOCATION OF PIPES, CONDUITS, PIPE HANGERS, ETC., THAT INTERFACE WITH CARRYING OUT THIS WORK.

–THESE NOTES AND DRAWINGS ARE TO READ IN CONJUNCTION WITH ALL OTHER RELATED DOCUMENTS.

–CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY BRACING, SHORING OR STRENGTHENING AS REQUIRED DURING CONSTRUCTION.

CONCRETE NOTES:

GENERAL NOTES:

–ALL CONCRETE, REINFORCEMENT, ACCESSORIES AND PROCEDURES SHALL MEET OR EXCEED THE APPLICABLE CSA STANDARD FOR THAT PRODUCT. USE ONLY PRODUCTS SUITABLE FOR THE INTENDED FINAL USE AND CONDITIONS PREVALENT DURING CONSTRUCTION. PROTECT ALL MATERIALS FROM THE WEATHER DURING STORAGE AND INSTALLATION.

–CEMENT: SULPHATE RESISTANT CEMENT AS REQUIRED CONFORMING TO CAN/CSA–A5/A8/A362–M89.

–AGGREGATES: CLEAN, WELL–GRADED, UNCOATED SAND AND COARSE AGGREGATES FROM AN APPROVED SOURCE CONFORMING TO CAN/CSA–A23.1–04

–WATER: POTABLE FROM AN APPROVED MUNICIPAL SOURCE.

–ADMIXTURES: SHALL CONFORM WITH CAN 3–A266M.

–READY MIX CONCRETE: DESIGNED AND SUPPLIED BY THE SUPPLIER IN A QUALITY CONTROLLED PLANT CONFORMING TO CAN/CSA–A23.1–04. UNLESS NOTED OTHERWISE, CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 25 MPa. SEE SCHEDULE THIS DRAWING FOR DETAILED REQUIREMENTS.

–CONCRETE EXPOSED TO FREEZE–THAW CONDITIONS SHALL MEET EXPOSURE CLASSIFICATION F–2, 25 MPa, MAXIMUM WATER/CEMENT RATIO 0.55, AIR CONTENT CATEGORY 2 AS SPECIFIED IN CAN/CSA–A23.1–04, UNLESS NOTED OTHERWISE.

–CONCRETE EXPOSED TO DEICING CHEMICALS SHALL MEET EXPOSURE CLASSIFICATION C–2, 32 MPa, MAXIMUM WATER/CEMENT RATIO 0.45, AIR CONTENT CATEGORY 1 AS SPECIFIED IN CAN/CSA–A23.1–04 UNLESS NOTED OTHERWISE.

–CONCRETE EXPOSED TO MULTIPLE EXPOSURE CONDITIONS SHALL MEET COMBINED EXPOSURE CLASSIFICATION REQUIREMENTS TO THE MOST SEVERE COMBINATION AS SPECIFIED IN CAN/CSA–A23.1–04 UNLESS NOTED OTHERWISE.

–SLUMP SHALL BE WITHIN THE RANGE OF 50mm TO 100mm PRIOR TO THE ADDITION OF SUPER PLASTISIZERS (2" TO 4"). GREATER SLUMPS SHALL NOT BE ACCEPTED UNLESS OTHERWISE SPECIFIED.

–PROVIDE AN APPROVED WATER REDUCING AGENT IN ALL CONCRETE MIX DESIGNS. FLY–ASH SHALL NOT BE USED IN SUSPENDED SLABS OR BEAMS. THE CONTRACTOR USES FLY–ASH AT HIS OWN RISK ON SLAB–ON–GRADE APPLICATIONS.

–PLACE CONCRETE AS A CONTINUOUS OPERATION STOPPING ONLY AT CONSTRUCTION JOINTS. CONSTRUCTION JOINTS SHALL BE ADEQUATELY DOWELLED AND KEYED. DETAILS AND LOCATIONS OF CONSTRUCTION JOINTS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.

–ALL CONCRETE SHALL BE PLACED IN ITS FINAL POSITION WITHIN 2 HOURS OF ORIGINAL BATCHING.

–CONCRETE TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA STANDARD CAN3–A23.2–04 "METHODS OF TEST FOR CONCRETE" BY AN INDEPENDENT MATERIALS CONSULTANT, WITH REPORTS SUBMITTED TO THE STRUCTURAL ENGINEER.

–CURING PROCEDURES AND PROTECTION OF CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF CSA STANDARD CAN/CSA–A23.1–04. NEW CONCRETE SHALL NOT BE ALLOWED TO FREEZE UNDER ANY CIRCUMSTANCES. THE CONTRACTOR SHALL PAY THE COSTS RELATED TO DAMAGE BY UNDER STRENGTH OR IMPROPERLY CURED CONCRETE.

REINFORCEMENT NOTES:

–ALL REINFORCING BARS SHALL BE MANUFACTURED AND MEET THE REQUIREMENTS OF CSA STANDARD G 30.18–M09, BILLET

–STEEL BARS FOR CONCRETE REINFORCEMENT.

–ALL REINFORCING BARS SHALL BE GRADE 400 MPa(60 ksi).

–EPOXY COATED REINFORCEMENT, WHERE SPECIFIED, SHALL BE MANUFACTURED, FABRICATED, STORED, HANDLED, AND INSTALLED IN STRICT ACCORDANCE WITH THE CSA STANDARDS AND INDUSTRY PRACTICE.

–SPLICES, BENDS, AND PLACEMENT SHALL CONFORM TO CAN/CSA–A23.1–M04 AND CAN3 A23.3–M04. REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE LATEST VERSION OF THE ACI DETAILING MANUAL. PROVIDE MATCHING CORNER BARS FOR ALL HORIZONTAL BARS AS DETAILED.

–ALL REINFORCING STEEL SHALL BE CHAIRED AND SECURELY TIED IN PLACE USING STANDARD TIES AND CHAIRS.

–ALL WELDED WIRE MESH SHALL BE MANUFACTURED AND MEET THE REQUIREMENTS OF CSA STANDARD G 30.5 WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCMENT.

–ALL WELDED WIRE MESH (WWM) SHALL BE SUPPLIED IN FLAT SHEETS. ALL WWM SHALL BE CHAIRED IN PLACE TO THE REQUIRED COVER AS SPECIFIED.

FOUNDATION NOTES:

–REFER TO THE SOILS REPORT PREPARED BY McINTOSH LALANI ENGINEERING ASSOCIATES LTD, CALGARY, AB. FILE NO. M.L.5324, DATED DECEMBER 2011.

–ALL FOOTINGS THAT BEAR ON NATIVE UNDISTURBED SOIL SHALL HAVE AN ALLOWABLE BEARING CAPACITY OF 100 KPa (2087 psf.). PRIOR TO PLACEMENT OF CONCRETE FOR FOOTINGS, THE CONTRACTOR SHALL RETAIN THE SERVICES OF A CERTIFIED TESTING LABORATORY TO VERIFY THAT THE SOIL IS ACCEPTABLE TO ACHIEVE THE SPECIFIED BEARING CAPACITY. WRITTEN CONFIRMATION OF THE INSITU SOIL BEARING CAPACITY SHALL BE FORWARDED TO TRL & ASSOCIATES WITHIN 24 HRS. OF TESTING. THE OWNER WILL PAY FOR THE COST OF ALL TESTING EXCEPT FOR RETESTS DUE TO DEFECTIVE WORKMANSHIP.

–FOOTING ELEVATIONS AND WALL DEPTHS SHALL BE CONFIRMED AND ADJUSTED IN ACCORDANCE WITH THE SOILS CONSULTANTS REQUIREMENTS. IN NO CASE SHALL THE DEPTH BE REDUCED TO LESS THAN THE REQUIRED FROST COVER WITHOUT WRITTEN INSTRUCTIONS FROM TRL & ASSOCIATES LTD. AND THE GOVERNING AUTHORITIES.

–UNLESS SHOWN OTHERWISE, FOUNDATIONS SHALL BE BACK FILLED EVENLY ON BOTH SIDES TO PREVENT MOVEMENT. BACK FILL HEIGHTS SHALL NOT VARY BY MORE THAN 300 mm (12 INCHES) FROM ONE SIDE TO THE OTHER. EXERCISE EXTREME CAUTION DURING BACK FILL OPERATIONS TO PREVENT DAMAGE TO THE CONCRETE.

–SUPPLY AND PLACEMENT OF ALL TEMPORARY SHORING AND BRACING IS THE CONTRACTORS RESPONSIBILITY AND SHALL MEET ALL APPLICABLE STANDARDS AND LAWS.

–ALL DISCREPANCIES IN DETAILS AND DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF TRL & ASSOCIATES LTD. PRIOR TO COMMENCING RELATED WORK. DRAWINGS ARE NOT TO BE SCALED.

PROFESSIONAL ENGINEER ALBERTA
WEN SHENG BU
Wensheng Bu
NOV 18, 2013
PERMIT NO. P07318

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TRL & associates
tomecek · raney · little & associates ltd.
consulting structural engineers
100 - 1616 10 th. Avenue S.W. · Calgary · Alberta · T3C 0J7
Phone: (403)244-4944 · Fax: (403)229-2110

Project
YYC PYLON AND MONUMENT SIGNS
CALGARY, ALBERTA

Drawing
CONSTRUCTION NOTES

Date: 2013.11.18
Project No.: 2013-220

S1.1

FORMWORK AND FALSEWORK

– FABRICATE AND ERECT FORM WORK IN ACCORDANCE WITH CAN/CSA–S269.3 TO PRODUCE FINISHED CONCRETE CONFORMING TO SHAPE, DIMENSIONS, LOCATIONS AND LEVELS INDICATED WITHIN TOLERANCES REQUIRED BY CAN/CSA–A23.1.

– CLEAN FORMWORK IN ACCORDANCE WITH CAN/CSA–A23.1, BEFORE PLACING CONCRETE.

– PREPARE ENGINEERED SEALED SHOP DRAWINGS FOR ALL FORMWORK AND FALSEWORK. DRAWINGS TO BE SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA.

– UNLESS OTHERWISE NOTED LEAVE FORMWORK IN PLACE FOR THE FOLLOWING MINIMUM PERIODS OF TIME AFTER PLACING CONCRETE

– WALLS	7 DAYS
– COLUMNS	1 DAY
– STRUCTURAL BEAMS AND SLABS	7 DAYS OR THREE DAYS WHEN REPLACED BY ADEQUATE RESHORING
– FOOTINGS AND ABUTMENTS	3 DAYS

– REMOVE FORMWORK WHEN THE CONCRETE HAS ACHIEVED 80% OF ITS DESIGN STRENGTH OR MINIMUM PERIODS NOTED ABOVE, WHICHEVER COMES LATER AND REPLACE IMMEDIATELY WITH ADEQUATE RESHORING.

– RESHORING TO REMAIN IN PLACE UNTIL CONCRETE HAS ACHIEVED FULL 28 DAY DESIGN STRENGTH AS VERIFIED BY CONCRETE TEST IN ACCORDANCE WITH A23.1

– PROVIDE ALL NECESSARY RESHORING OF MEMBERS WHERE EARLY REMOVAL OF FORMS MAY BE REQUIRED OF WHERE MEMBERS MAY BE SUBJECTED TO ADDITIONAL LOADS DURING CONSTRUCTION AS REQUIRED.

– SPACE RESHORING IN EACH PRINCIPAL DIRECTION AT NOT MORE THAN 3000 mm APART.

– RE–USE FORMWORK AND FALSEWORK SUBJECT TO REQUIREMENTS OF CAN/CSA–A23.1.

STRUCTURAL STEEL NOTES:

GENERAL:

–ALL STRUCTURAL STEEL, MISCELLANEOUS STEEL, ACCESSORIES AND PROCEDURES SHALL MEET OR EXCEED THE APPLICABLE CSA STANDARD FOR THAT PRODUCT. USE ONLY PRODUCTS SUITABLE FOR THE INTENDED FINAL USE AND CONDITIONS PREVALENT DURING CONSTRUCTION. PROTECT ALL MATERIALS FROM THE WEATHER DURING STORAGE AND INSTALLATION.

–DESIGN, DETAIL, AND FABRICATE ALL CONNECTIONS IN A QUALITY CONTROLLED SHOP TO CISC HANDBOOK OF STEEL CONSTRUCTION. UNLESS OTHERWISE INDICATED ON THE DRAWINGS CONNECTIONS ARE TO BE DESIGNED FOR 50% OF THE FACTORED SHEAR CAPACITY OF THE MEMBER, WITH A MINIMUM CONNECTION OF TWO BOLTS. SHOP DRAWINGS BEARING THE STAMP OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA ARE TO BE SUBMITTED FOR THE DESIGN OF ALL CONNECTIONS.

–PAINTING: ONE COAT SHOP PRIMER TO CISC/CPMA STANDARD 1–73A–COLOR AS PER ARCH.

–STRUCTURAL STEEL: STEEL SECTIONS W,S & WT CONFORMING TO CSA G40–20 AND CSA–G40.21, GRADE 350W OR ASTM A992 & A572 GRADE 50.

–STRUCTURAL STEEL: HOLLOW STRUCTURAL SECTIONS CONFORMING TO CAN3–G40.20–M81 AND CAN3–G40.21–M81, GRADE 350W.

–STRUCTURAL STEEL: STEEL PIPE SECTIONS CONFORMING TO ASTM A36

–STRUCTURAL STEEL PLATES, RODS, ANGLES & CHANNEL SHAPES SHALL CONFORM TO CSA G40.20–04 & CSA G40.21–04

–ANCHOR RODS: ANCHOR RODS, NUTS AND WASHERS CONFORMING TO ASTM F1554 (HOT DIPPED GALVANIZED WHERE SPECIFIED ON DRAWINGS).

–STRUCTURAL BOLTS: STRUCTURAL BOLTS, NUTS AND WASHERS CONFORMING TO ASTM A325.

–BOLLARDS: PIPE BOLLARDS FABRICATED FROM STANDARD WALL PIPE OR HSS QUALITY STEEL WITH A MINIMUM WALL THICKNESS OF 6.35 mm (0.25 INCH) (HOT DIPPED GALVANIZED WHERE SPECIFIED ON DRAWINGS).

–WELDING: WELDING, MATERIALS AND PROCEDURES CONFORMING TO CSA–W59–1982. ALL WELDING TO BE PERFORMED BY CERTIFIED WELDERS. A COPY OF CERTIFICATE SHALL BE FORWARDED TO TRL & ASSOCIATES LTD. AT THE START OF THE PROJECT WITH THE SHOP DRAWINGS AND AT THE START OF FIELD ERECTION FOR FIELD WELDING

–GALVANIZING: HOT DIPPED GALVANIZING CONFORMING TO CSA–G164–M1981, 2 MINIMUM 600 g/m.

–PAINTING: ONE COAT SHOP PRIMER PAINT (COLOR GREY OR AS SPECIFIED BY ARCHITECT) COMPLY WITH CICS/CPMQA STANDARD 1–73A.

EXECUTION:

–FABRICATE AND ERECT STEEL IN ACCORDANCE WITH CSA S16.1.

–DO NOT FIELD CUT MEMBERS WITHOUT WRITTEN PERMISSION FROM TRL & ASSOCIATES LTD.

–REPAIR ALL DAMAGE TO GALVANIZED FINISHES USING GALVALOY.

STRUCTURAL FIELD REVIEW:

–THE CONTRACTOR SHALL COOPERATE WITH ALL TESTING, INSPECTION AND QUALITY CONTROL PERSONNEL REQUIRED ON THE SITE AND WILL PROVIDE CASUAL LABOUR FORCES AS REQUIRED TO ASSIST IN ALL THE FIELD REVIEW PROCEDURES. THE CONTRACTOR SHALL GIVE REASONABLE NOTICE TO THESE AGENCIES PRIOR TO REQUIRING THEIR SERVICES.

–ALL REINFORCEMENT SHALL BE REVIEWED IN PLACE PRIOR TO PLACING THE CONCRETE BY TRL & ASSOCIATES LTD. ALL REINFORCEMENT SHALL BE IN PLACE AND SECURED AT THE TIME OF THE REVIEW. PROVIDE 24 HOURS NOTICE PRIOR TO POURS.

MASONRY NOTES:

–ALL MASONRY UNITS, GROUT, MORTAR, REINFORCEMENT, ACCESSORIES AND PROCEDURES SHALL MEET OR EXCEED THE APPLICABLE CSA STANDARD FOR THAT PRODUCT. USE ONLY PRODUCTS SUITABLE FOR THE INTENDED FINAL USE AND CONDITIONS PREVALENT DURING CONSTRUCTION. PROTECT ALL MATERIALS FROM THE WEATHER DURING STORAGE AND INSTALLATION.

MATERIALS:

–CLAY BRICK UNITS SHALL MEET CSA STANDARDS, CSA A82.1–M THROUGH CSA A82.5–M.

–CONCRETE BLOCK UNITS SHALL MEET CSA STANDARDS, CAN3–A165.2–M THROUGH CAN3–A165.4–M, MINIMUM 15 MPA.

–MORTAR, MORTAR PRODUCTS, GROUT AND REINFORCEMENT SHALL MEET APPLICABLE CSA STANDARDS AND ALBERTA BUILDING CODE REQUIREMENTS. UNLESS NOTED OTHERWISE, MORTAR SHALL BE TYPE S.

CONSTRUCTION:

–ALL CONSTRUCTION AND ASSEMBLIES OF MASONRY SHALL CONFORM TO THE REQUIREMENTS OF THE CSA STANDARDS AND THE ALBERTA BUILDING CODE.

–PROVIDE BLOCK WALL CONTROL JOINTS A MAXIMUM OF 12 METERS APART IN LOCATIONS REVIEWED BY THE OWNERS REPRESENTATIVE. PROVIDE A MINIMUM OF ONE VOID COREFILL EACH SIDE WITH 2–15M VERTICAL REINFORCEMENT. CAULK EACH JOINT WITH A FLEXIBLE CAULK DESIGNED FOR THIS PURPOSE INSIDE AND OUT.

–EXTEND ALL COREFILLS AND VERTICAL REINFORCEMENT CONTINUOUSLY FROM FOUNDATION TO TOP OF PARAPET. COREFILLS SHALL BE CAST IN A MAXIMUM OF 1200mm. (4 FOOT) LIFTS. LAP REINFORCING A MINIMUM OF 600mm. (24 INCHES).

–PROVIDE A SINGLE COURSE BOND BEAM C/W 2–15M REBAR BOTTOM CONTINUOUS AROUND THE TOP OF ALL WALLS AND AT EACH FLOOR LEVEL.

–PROVIDE A 1 COURSE LINTEL ABOVE ALL MAN DOORS LESS THAN 1200mm. (4 FEET) WIDE C/W 2–15M REBAR BOTTOM. EXTEND LINTEL A MINIMUM OF 200mm.(8 INCHES) BEYOND EACH SIDE.

–ABOVE ALL OPENINGS AND OVERHEAD DOORS, PROVIDE VERTICAL COREFILLS TO MATCH WALL COREFILL FROM LINTEL TO PARAPET. ENSURE A MINIMUM OF A 2 VOID COREFILL WITH 2–15M EACH VOID IS PROVIDED AT THE CENTRE OF OVERHEAD DOORS. LINTELS SHALL EXTEND A MINIMUM OF 400mm.(16 INCHES) BEYOND EACH SIDE (SEE PLANS AND DETAILS FOR LINTEL SIZES AND REINFORCEMENT).

–PROVIDE VERTICAL COREFILLS AS INDICATED ON PLANS AND DETAILS, BUT IN NO CASE SHALL A COREFILL EXCEED 2400mm (8 FOOT) CENTRES C/W 1 VOID C/W 1–15M EACH VOID. AT ADJACENT DOOR OPENINGS PROVIDE VERTICAL COREFILLS C/W 2 VOIDS W/ 1–15M EACH VOID FROM FLOOR TO BOND BEAM.

–ALL MASONRY TIES SHALL BE A MINIMUM OF 22 GAUGE GALVANIZED STEEL, SECURED TO SOLID FRAMING WITH GALVANIZED SCREWS (MINIMUM #10 SCREWS). TIE SPACING TO MEET PART 4 REQUIREMENTS.

–MASONRY UNITS SHALL BE SUPPORTED BY STEEL OR CONCRETE.

–TEMPORARY BRACING AND SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR.

–BLOCK UNDER STRUCTURAL SLABS TO HAVE DEFLECTION SPACE OF +/– 10mm.

PROFESSIONAL ENGINEER ALBERTA
WEN SHENG BU
Nov/18/2013
PERMIT NO. P07318

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consulting structural engineers
100 - 1616 10 th. Avenue S.W. - Calgary - Alberta - T3C 0J7
Phone: (403)244-4944 - Fax: (403)229-2110

Project
YYC PYLON AND MONUMENT SIGNS
CALGARY, ALBERTA

Drawing
CONSTRUCTION NOTES

Date: 2013.11.18
Project No.: 2013-220

S1.2

STEEL STUDS:

GENERAL:

–STEEL STUD STEEL FRAMING INCLUDES WIND BEARING STUDS, AXIAL LOAD BEARING STUDS, FLOOR JOISTS, CEILING JOISTS, ROOF JOISTS AND ROOF RAFTERS.

–UNLESS NOTED OTHERWISE ON DRAWINGS STUD SUPPLIER TO PROVIDE MIN. 16mm DEFLECTION TRACK BELOW ALL STRUCTURE FOR PARTITION WALLS AND WIND BEARING STUDS. –IN ACCORDANCE WITH CAN3–S136.

–CONFORM TO THE REQUIREMENTS OF SPECIFIED FIRE RATED ASSEMBLIES.

–DESIGN BRIDGING TO PREVENT MEMBER ROTATION AND MEMBER TRANSLATION PERPENDICULAR TO THE MINOR AXIS. PROVIDE FOR SECONDARY STRESS EFFECTS DUE TO TORSION BETWEEN LINES OF BRIDGING.

–MAXIMUM DEFLECTIONS UNDER SPECIFIED LOADS SHALL CONFORM TO THE FOLLOWING:

1. LIVE LOAD DEFLECTIONS OF WALL STUDS SUPPORTING MATERIALS SUSCEPTIBLE TO CRACKING (EG. MASONRY VENEER L/720. WALL STUDS SUPPORTING ALL OTHER MATERIALS L/360 (EG. METAL CLADDING, MANUFACTURED VENEERS).
2. FLOOR JOISTS L/360.
3. ROOF JOISTS AND RAFTERS L/360.
4. BUILDING SWAY DUE TO ALL EFFECTS 1/400 OF BUILDING HEIGHT OR 1/500 OF STOREY HEIGHT.

–THE SPACING OF MEMBERS SHALL NOT EXCEED THE FOLLOWING:

WALL STUDS	400mm (16") O/C
FLOOR JOISTS	400mm (16") O/C
CEILING JOISTS	600mm (24") O/C
ROOF JOISTS	600mm (24") O/C
ROOF RAFTERS	600mm (24") O/C

–WIND BEARING METAL STUDS.

–WIND BEARING METAL STUDS SHALL CONFORM TO THE MINIMUM SIZES AND SPACINGS DEFINED IN THE SCHEDULE BELOW, UNLESS NOTED OTHERWISE.

(A) WIND BEARING WALL STUDS SUPPORTING MATERIALS OTHER THAN BRICK MASONRY VENEER

–CONNECTIONS BETWEEN LIGHTWEIGHT STEEL FRAMING MEMBERS SHALL BE BY BOLTS, WELDING OR SHEET METAL SCREWS. RESISTANCES FOR SHEET METAL SCREWS SHALL BE BASED ON THE MANUFACTURER'S LOWER BOUND TEST VALUES MULTIPLIED BY THE APPROPRIATE RESISTANCE FACTOR, AS GIVEN IN CAN3–S136 M.

–SUBMIT SHOP DRAWINGS BEARING THE STAMP AND SIGNATURE OF A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA. INCLUDE ALL NECESSARY SHOP DETAILS AND ERECTION DIAGRAMS. INDICATE MEMBER SIZES, LOCATIONS, THICKNESS EXCLUSIVE OF COATING, COATINGS AND MATERIALS. INCLUDE CONNECTION DETAILS FOR ATTACHING FRAMING TO ITSELF AND FOR ATTACHMENT TO THE STRUCTURE. SHOW SPLICE DETAILS WHERE PERMITTED. INDICATE DESIGN LOADS.

MATERIALS

–STEEL COATINGS TO A 591 –– STEEL SHEET, COLD–ROLLED, ELECTROLYTIC ZINC–COATED.

–STEEL TO CAN3–S136 AND SHALL BE IDENTIFIED AS TO SPECIFICATION, TYPE, GRADE AND MECHANICAL PROPERTIES.

EXECUTION

–WELDS SHALL CONFORM TO CSA W59 AND/OR ANSI/AWS D1.3, WHICHEVER IS APPLICABLE. TOUCH–UP WELDS WITH ZINC RICH PAINT.

–SCREWS – PENETRATION BEYOND JOINED MATERIALS SHALL BE NOT LESS THAN 3 EXPOSED THREADS.

–LIGHTWEIGHT STEEL FRAMING SHALL BE ERECTED TRUE AND PLUMB WITHIN THE SPECIFIED TOLERANCES.

–ERECTION TOLERANCES IN ACCORDANCE WITH CSSBI 50M.

–CUTTING OF MEMBERS MAY BE BY SAW OR SHEAR. TORCH CUTTING IS NOT PERMITTED.

–SPLICING OF AXIAL LOAD BEARING MEMBERS IS NOT PERMITTED.

CONCRETE SCHEDULE:

LOCATION	TYPE	STRENGTH	% AIR	EXPOSURE	MAX. AGG. SIZE	SLUMP	COMMENTS
FOOTINGS	HS (TYPE 50)	30 MPa	4 TO 7	S–3,F–2	20 mm	75±25	NOTE 1,2
PIERS	HS (TYPE 50)	30 MPa	4 TO 7	S–3,F–2	20 mm	75±25	NOTE 1,2

NOTE 1: MODERATE SULPHATE CONTENT CONFIRM CONCRETE TYPE WITH GEOTECHNICAL REPORT
NOTE 2: SULPHATE CONTENT TO BE VERIFIED BY APPROVED TESTING FIRM

CONCRETE COVER TO REINFORCEMENT SCHEDULE:

LOCATION	COVER mm	(inches) NOTES
FOUNDATION WALLS:		
BOTTOM:	50mm	2"
SIDES AGAINST SOIL:	40mm	1.5"
INTERIOR:	25mm	1"
FOOTINGS		
TOP:	50mm	2"
BOTTOM:	75mm	3"
SIDES:	75mm	3"

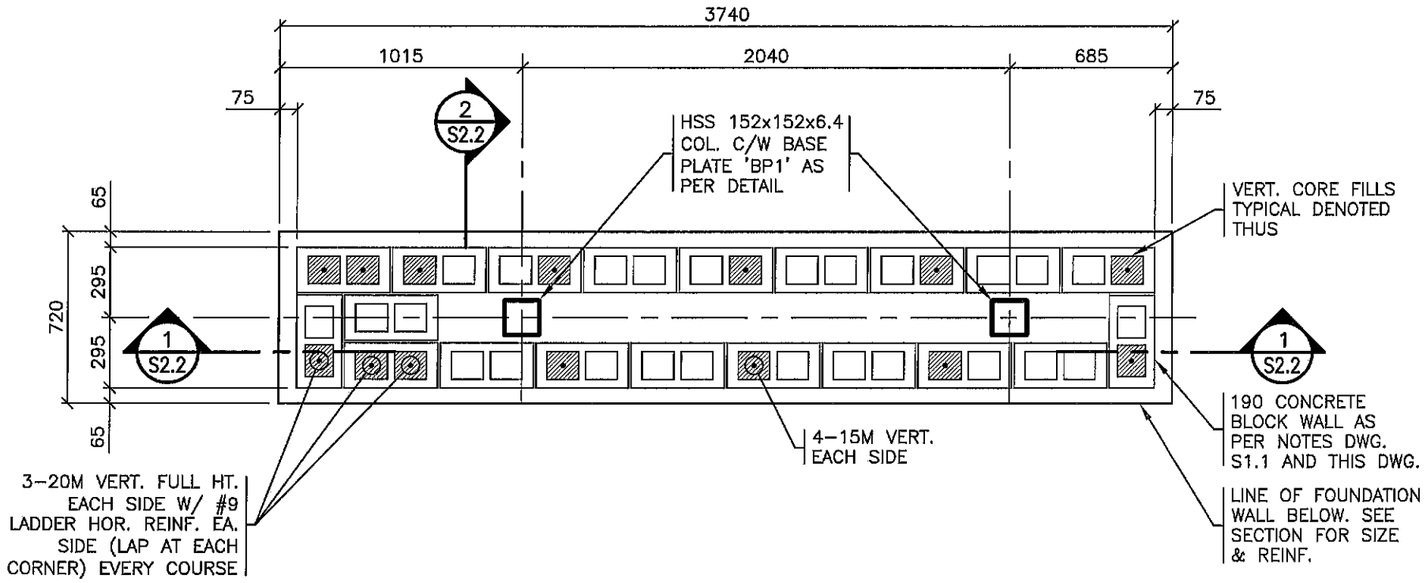
PROFESSIONAL ENGINEER
WEN SHENG BU
ALBERTA
NOV 18, 2013
PERMIT NO. P07318

BCW Architects

This Drawing is the property of the Architects and reproduction is prohibited without their written approval.
The Contractor is to check and verify all dimensions and report any discrepancies to the Architect prior to construction.
This Drawing is not to be used for construction unless properly signed and sealed by the Architect.
This Drawing is not to be scaled.

Consultant
& associates
tomecek · toney · little & associates ltd.
consulting structural engineers
Phone: (403)244-4944 · Fax: (403)229-2110

Project	Drawing	Date:	Project No.:
YYC PYLON AND MONUMENT SIGNS CALGARY, ALBERTA	CONSTRUCTION NOTES	2013.11.18	2013-220
		S1.3	

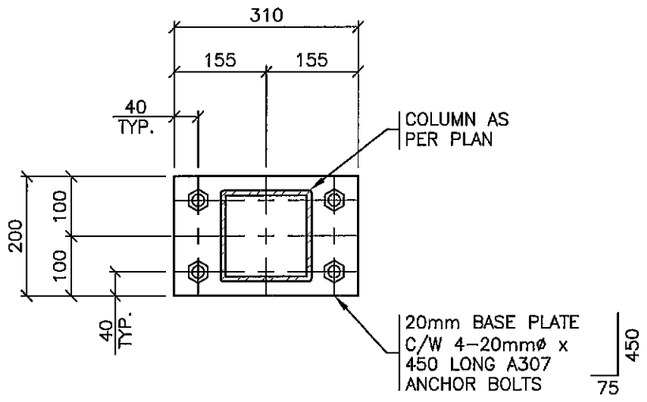


MONUMENT SIGN– FOUNDATION PLAN

SCALE = 1 : 25

NOTES:

– ALL HSS COLUMNS TO BE CLASS 'C' TYP. U.N.O.



BP1 / S2.1B **BASE PLATE**

SCALE 1:10

PROFESSIONAL ENGINEER ALBERTA
WEN SHENG BU
Wensheng Bu
Nov.18 2013
PERMIT NO. P07318

Consultant

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Project

YYC PYLON AND MONUMENT SIGNS

CALGARY, ALBERTA

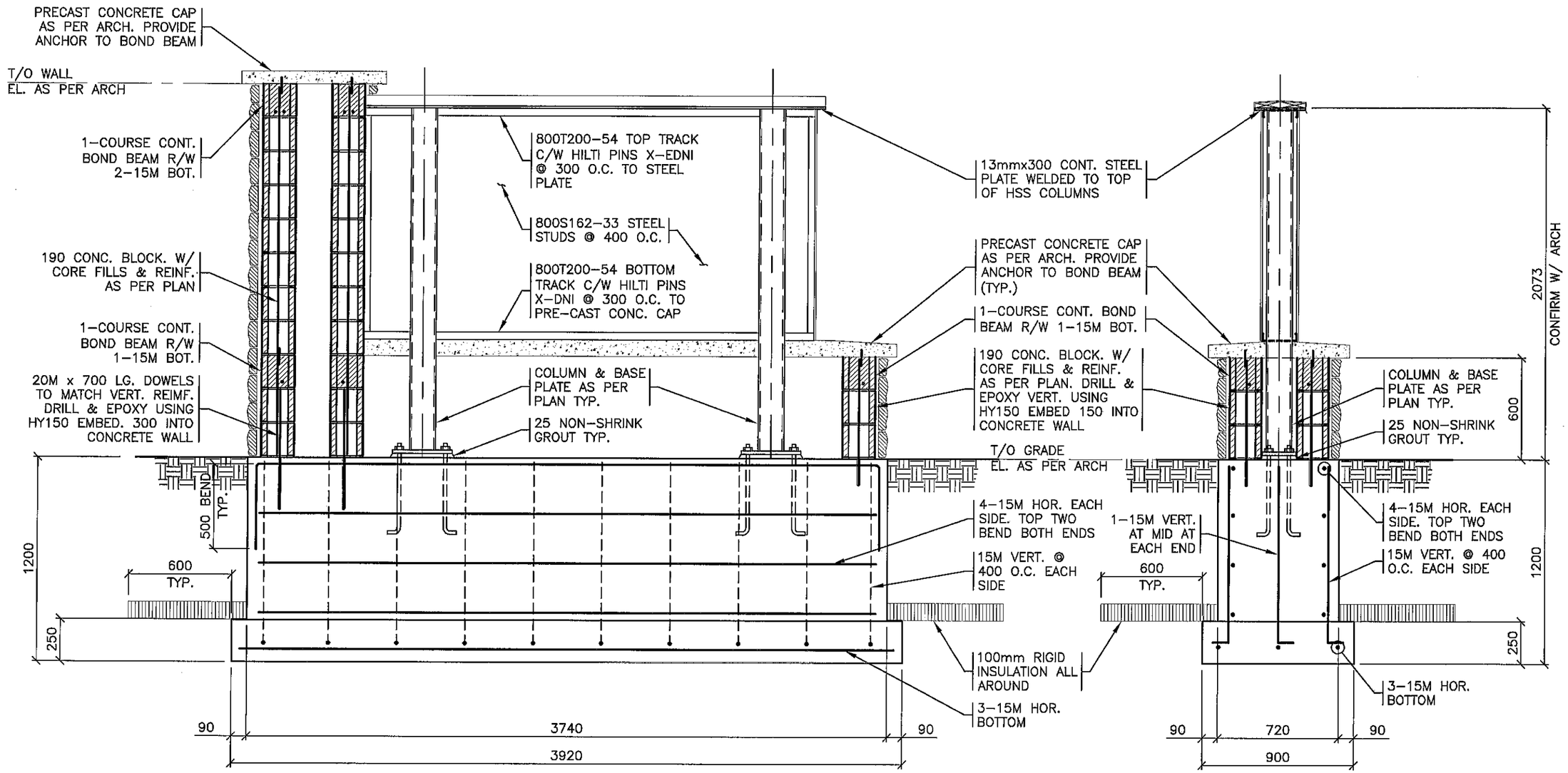
Drawing

MONUMENT SIGN
FOUNDATION PLAN
& BASE PLATE DETAIL

Date: 2013.11.18

Project No.: 2013-220

S2.1



PROFESSIONAL ENGINEER ALBERTA
WEN SHENG BU
Wensheng Bu
Nov 18, 2013
PERMIT NO. P07318

1 / S2.2 SECTION
SCALE 1:25

2 / S2.2 SECTION
SCALE 1:25

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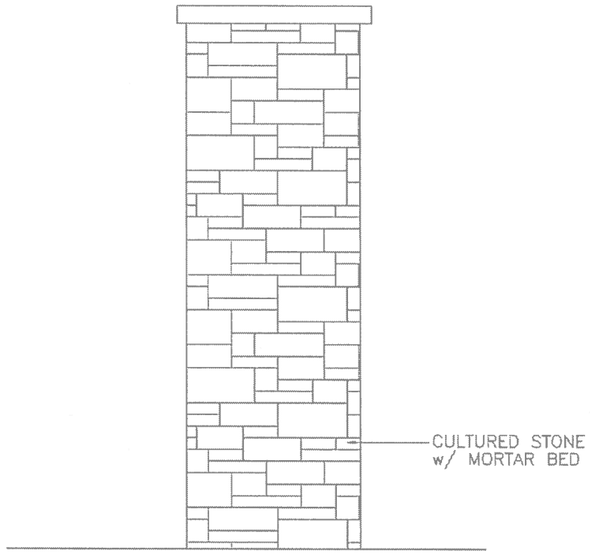
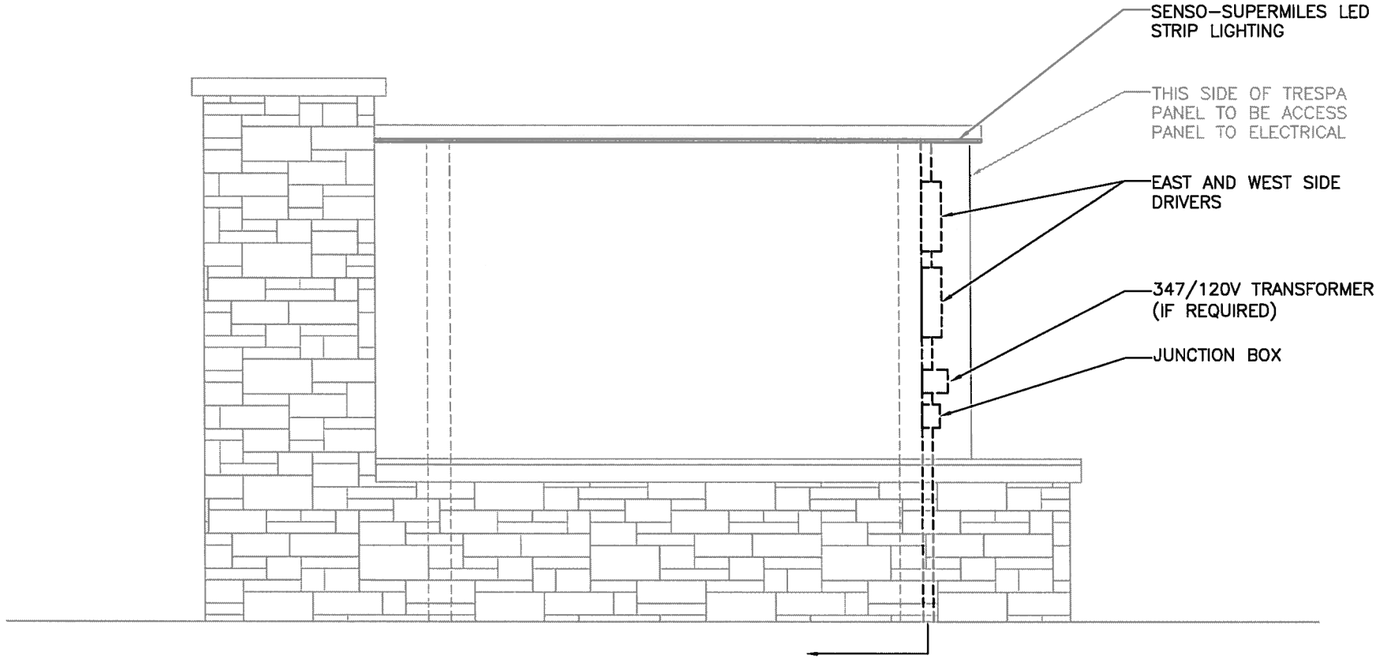
■ Project
YYC PYLON AND MONUMENT SIGNS
CALGARY, ALBERTA

■ Drawing
MONUMENT SIGN SECTIONS

Date: 2013.11.18
Project No.: 2013-220

S2.2





1
ESK–1

MONUMENT SIGN – FRONT/BACK & SIDE ELEVATIONS

SCALE N.T.S

0	CCN E07
REV.	ISSUED FOR

AIR CARGO FACILITY
SITE SIGNAGE
ELECTRICAL DETAIL

MP&P
MASKELL PLENZIK & PARTNERS ENGINEERING

PROJ. No.: 110704	
DATE: 10/04/2013	
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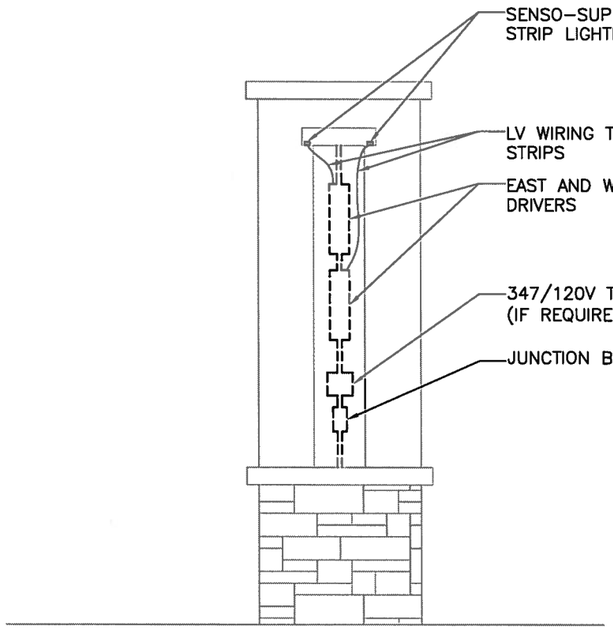
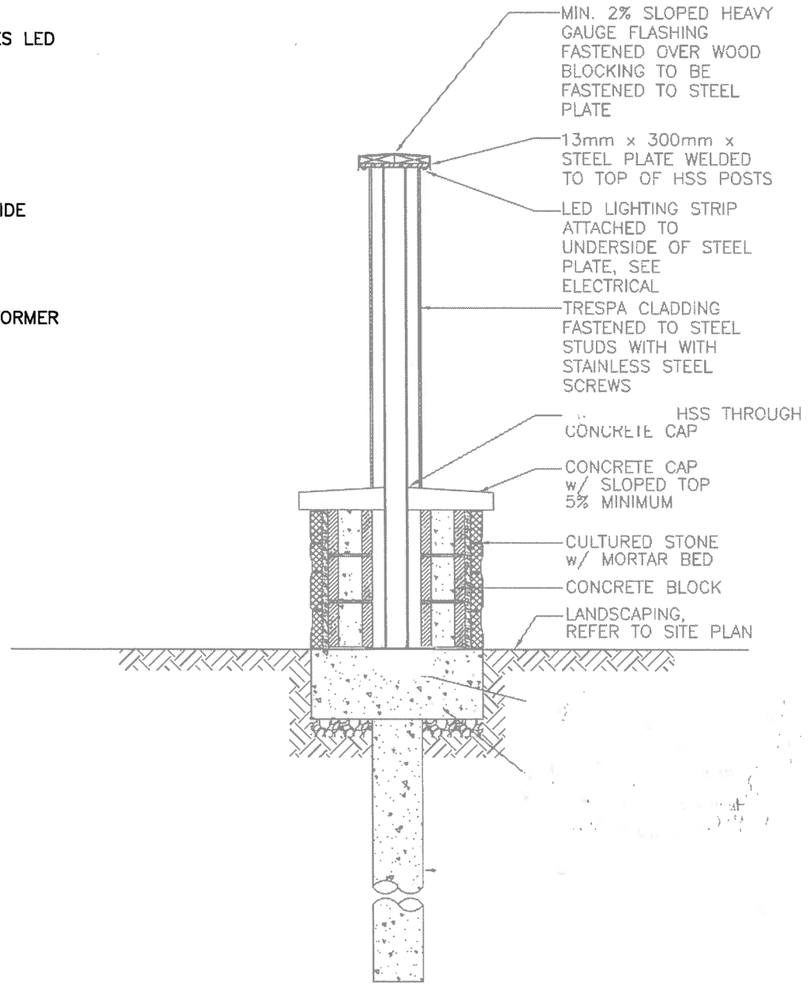
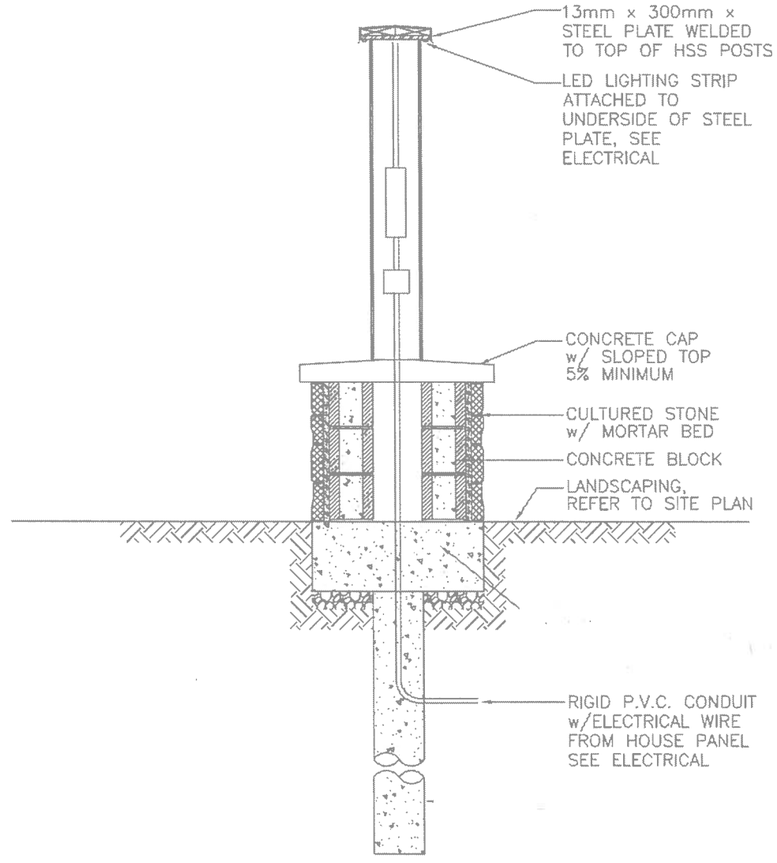
DWG. No. CCNE07-ESK1	Rev. 0





LED LIGHTING STRIP
SENSO SUPER MILES MODEL 551, APPLICATION "263 – OUTDOOR USE", COLOUR "40 (4000k)".

TRESPA METEON EXTERIOR PANEL:
"PURE WHITE", A05.0.0/ST, PANEL THICKNESS – 10 mm, SINGLE SIDED



1 / ESK–2 MONUMENT SIGN – SECTIONS & SIDE ELEVATION
SCALE N.T.S

0	CCN E07
REV.	ISSUED FOR

AIR CARGO FACILITY
SITE SIGNAGE
ELECTRICAL DETAIL

MP&P
MASKELL PLENZIK & PARTNERS ENGINEERING

PROJ. No.: 110704	
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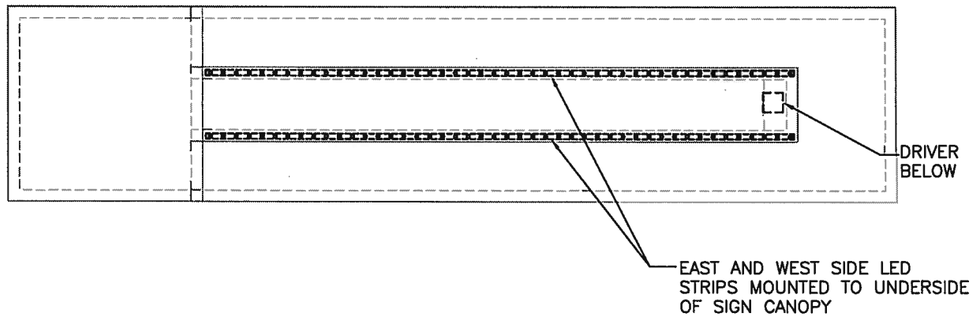
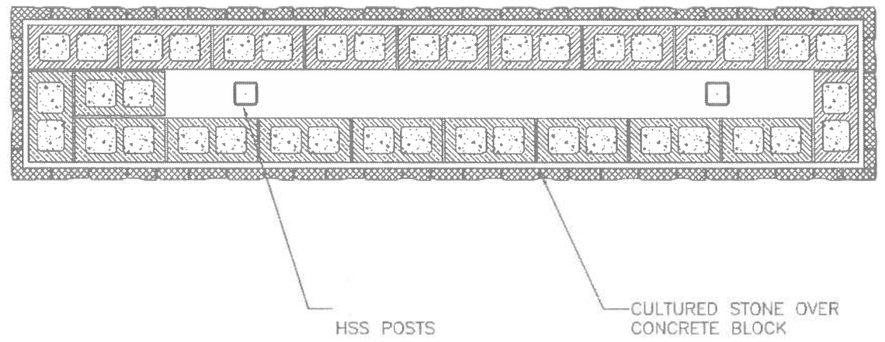
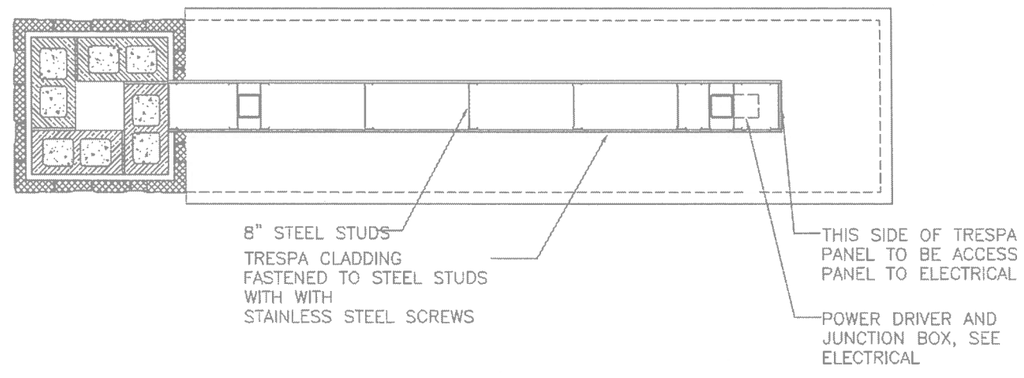






1 / ESK–3 MONUMENT SIGN – PLAN SECTIONS & TOP VIEW

SCALE N.T.S

0	CCN E07
REV.	ISSUED FOR

AIR CARGO FACILITY
SITE SIGNAGE
ELECTRICAL DETAIL

MP&P
MASKELL PLENZIK & PARTNERS ENGINEERING

PROJ. No.: 110704	
DATE: 10/04/2013	
SCALE: N.T.S	
DES: WC	DWN: JK
DWG. No. CCNE07-ESK3	Rev. 0

APPENDIX E – PROHIBITED LANDSCAPE PLANT MATERIAL

Calgary Airport Authority
Prohibited Landscape Plant Material
2021

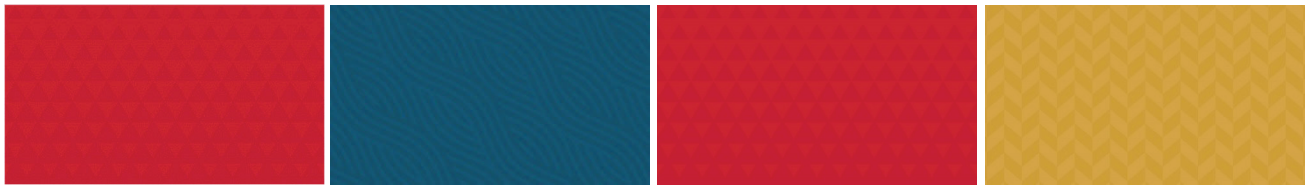
Common Name	Scientific Name
Serviceberry	*Amelanchier canadensis*
Alleghany serviceberry	*Amelanchier laevis*
Western white birch	*Betula commutate*
Yellow Birch	*Betula lutea*
River birch	*Betula nigra*
Paper Birch	*Betula papyrifera*
Grey Birch	*Betula populifolia*
Cutleaf peashrub	*Caragana arborescens*
Weeping caragana	*Caragana arborescens*
Tidy caragana	*Caragana microphylla*
Siberian dogwood	*Cornus alba*
Silverleaf dogwood	*Cornus alba*
Yellowdoe dogwood	*Cornus alba*
Flowering dogwood	*Cornus florida*
Japanese dogwood	*Cornus kousa*
Cornelian cherry	*Cornus mas*
Pacific dogwood	*Cornus nuttalii*
Red osier dogwood	*Cornus stolonifera*
Yellow twig dogwood	*Cornus stolonifera*
Rockspray cotoneaster	*Cotoeaster horizontalis*
Peking cotoneaster	*Cotoneaster acutifolia*
Early cotoneaster	*Cotoneaster adpressa praecox*
Hedge cotoneaster	*Cotoneaster lucida*
English hawthorn	*Crataegus oxyacantha*
Paul's scarlet hawthorn	*Crataegus sp.*
Toba hawthorn	*Crataegus x mordenesis*
Cockspur thorn	*Crutaegus crus-galli*
Russian Olive	*Elaeagnus angustifolia*
American beech	*Fagus grandifolia*
Purple beech	*Fagus sylvatica*

Common Name	Scientific Name
Weeping birch	*Fagus sylvatica*
Linden Tree	*Tilia*
Witch-hazel	*Hamamelis virginiana*
Oregon grape	*Mahonia aquifolium*
Betchel crabapple	*Malus ioensis*
Virginia creeper	*Partenocissus quinquenfolia*
Western sand cherry	*Partenocissus tomentosa*
Flowering almond	*Partenocissus triloba*
Pissard plum	*Prunus cerasifers*
Amur Cherry	*Prunus maackii*
Amur choke cherry	*Prunus maackii*
May day tree	*Prunus padus commutata*
Autumn flowering higan cherry	*Prunus subhirtella*
Shubert choke cherry	*Prunus virginana*
Schubert Chokecherry	*Prunus virginiana*
Alpine currant	*Ribes alpinum*
Austrian brier rose	*Rosa foetida*
Shining rose	*Rosa nitida*
Redleaf rose	*Rosa rubrifolia*
Burnett rose	*Rosa spinosissima*
White cedar	*Thuja occidentalis*
Korean spice viburnum	*Viburnum carlesii*
Wayfaring tree	*Viburnum lantana*
Highbush cranberry	*Viburnum sp.*

Generally, any tree or shrub that produces berries, acorns or plant species known to attract wildlife are prohibited from being planted on YYC lands.

****Common names vary from plant to plant for that reason it is important to use the scientific name for species identification.**

APPENDIX F –DEVELOPMENT SECURITY DEPOSIT POLICY



CONSTRUCTION & INSTALLATION PERMIT

DEVELOPMENT SECURITY DEPOSIT

Date Issued: **May 2023**

Updated:

Airport Authority Contact: **General Manager Development Services**

1. Policy

1.1. A development security deposit may be required by The Calgary Airport Authority (the "Authority") to serve as a financial guarantee for the protection of Authority assets and incentive for proponents to fulfill all of the terms and conditions related to their construction projects.

1.2. The requirement for a development security deposit may be waived in certain instances where other financial security of greater value is in place and is accessible for the purposes as set out in this Policy.

2. Applicability

- New land development;
- Renovation/expansion to existing land assets;
- New air terminal building development;
- Renovation/expansion to existing air terminal building development;
- Any development project at Springbank Airport;
- Projects by others, including service providers, as deemed applicable.

3. Procedures

3.1. Upon notification of a development project, the proponent will be informed that a development security deposit, normally in the form of a letter of credit, may be required before a Construction & Installation Permit (CIP) will be issued.

3.2. The development security deposit applicability and amount will be determined on a project by project basis through consultation with the appropriate Authority sponsor (usually Commercial Properties or Land Development) and the Development Services Coordinator based on the Fee Schedule Guide (see APPENDIX 'A').

3.3. The development security deposit letter of credit is to have an initial expiry date of 90 days after the anticipated construction completion, with an auto-renewal clause.

3.4. If the proponent remits a cash security deposit, the Authority shall pay interest at the end of each calendar year, and/or at the return of the development security deposit, interest on the security deposit calculated on a monthly basis equal to the difference between (i) the prime lending rate and (ii) 2%. Such rate shall be adjusted monthly on the first day of each month during the period that the security deposit is held based on the prime lending rate in effect on the first day of each calendar month.

3.5. The development security deposit must be received by the Authority prior to any CIP related to the project being issued.

3.6. The Authority will retain the development security deposit as restricted cash for the duration of the construction project (including 90 days after notification of completion of construction/occupancy).

3.7. The Authority may draw down upon the development security deposit at any time provided that appropriate notification has been given to the proponent and the response has been deemed insufficient or non-responsive in nature.

3.8. The Authority will return the development security deposit accompanied by a “Letter of Project Closure” to the proponent once all terms and conditions of the CIP have been satisfied. Under normal circumstances, the proponent will have 90 days upon completion of construction/occupancy to fulfill the terms and conditions of the CIP, including submission of as-built drawings. This time period may be extended at the discretion of the Authority.

APPENDIX 'A'
FEE SCHEDULE GUIDE

Project Type	Project Value	Security Type	Security Amount
Land Projects – New Development – Primary Lease Holder (No sub-lease)	No min/max	Letter of Credit Only	Min $5,000 up to 5% of value
Land Projects – Expansion / Renovations – Primary Lease Holder (No sub-lease)	No min/max	Letter of Credit Only	Up to 5% of value
Land Projects – Sub-Lease Holders	No min/max	Not Required*	N/A
Terminal Building Projects – As-builts Required	$5,000 or less	Cash or Letter of Credit	$500 fixed fee
Terminal Building Projects – As-builts Required	Over $5,000	Letter of Credit Only	Min $500 up to 5% of value
Terminal Building Projects – As-builts Not Required	No min/max	Not Required*	N/A
Springbank Airport – Primary Lease Holder	No min/max	Letter of Credit Only	Up to 5% of value
Springbank Airport – Sub-Lease Holders	No min/max	Not Required*	N/A
Other **	No min/max	Letter of Credit	To be determined

*Provided project does not require as-built drawing to be submitted, or does not affect existing main structural, electrical, mechanical and life / safety components of the building or site or modify Airport Authority assets in any way.

** May include projects by other agencies & organizations not covered by a lease / license agreement, on-going work by tenants / contractors / operators, etc.