

BRANCH OVERVIEW

MANDATE

Provide a wide range of professional and technical support for the planning, design, documentation, construction, renovation, commissioning, use, operation and maintenance of Government owned and funded facilities.

SERVICES

Using its own resources or through the management of private consultant services, the Branch is a central resource to the Department, providing professional and technical expertise in a variety of building related disciplines. It is also responsible for establishing, co-ordinating and maintaining standards for the design and technical performance of buildings and the workplace.

Advisory services and guidance are provided to:

- Capital Projects - including:
 - Capital Programs
 - Health Facilities
 - School Facilities
 - Post Secondary Institutions
 - Project Delivery
 - Program Management
- Properties - including:
 - Property Management
 - Property Development
 - Realty Services
- Other Departments, Boards and Agencies

Generally, services include standards setting, design advice, inspections, investigations, facility condition analysis, trouble-shooting, research, design reviews, specification reviews and general consultation on technical aspects of facility design, construction and maintenance.

A more detailed description is provided in the Section overviews that follow.

The most effective use and maximum value is obtained by introducing the specialist resources at the conceptual stages of a project and retaining the involvement until project completion.

ORGANIZATION

The organization chart on the reverse side provides an overview of the Branch structure, the Section head and primary contact person of each service area and the basic services provided.

The accompanying sheets in this bulletin provide a more detailed description of the expertise and services available from each group within the Branch

Services are provided by the following:

- Building Sciences Section
- Electrical Engineering Section
- Facility Evaluation and Standards Section
- Interior Design Standards Section
- Mechanical Engineering Section
- Site Services Section
- Advanced Facilities Technology

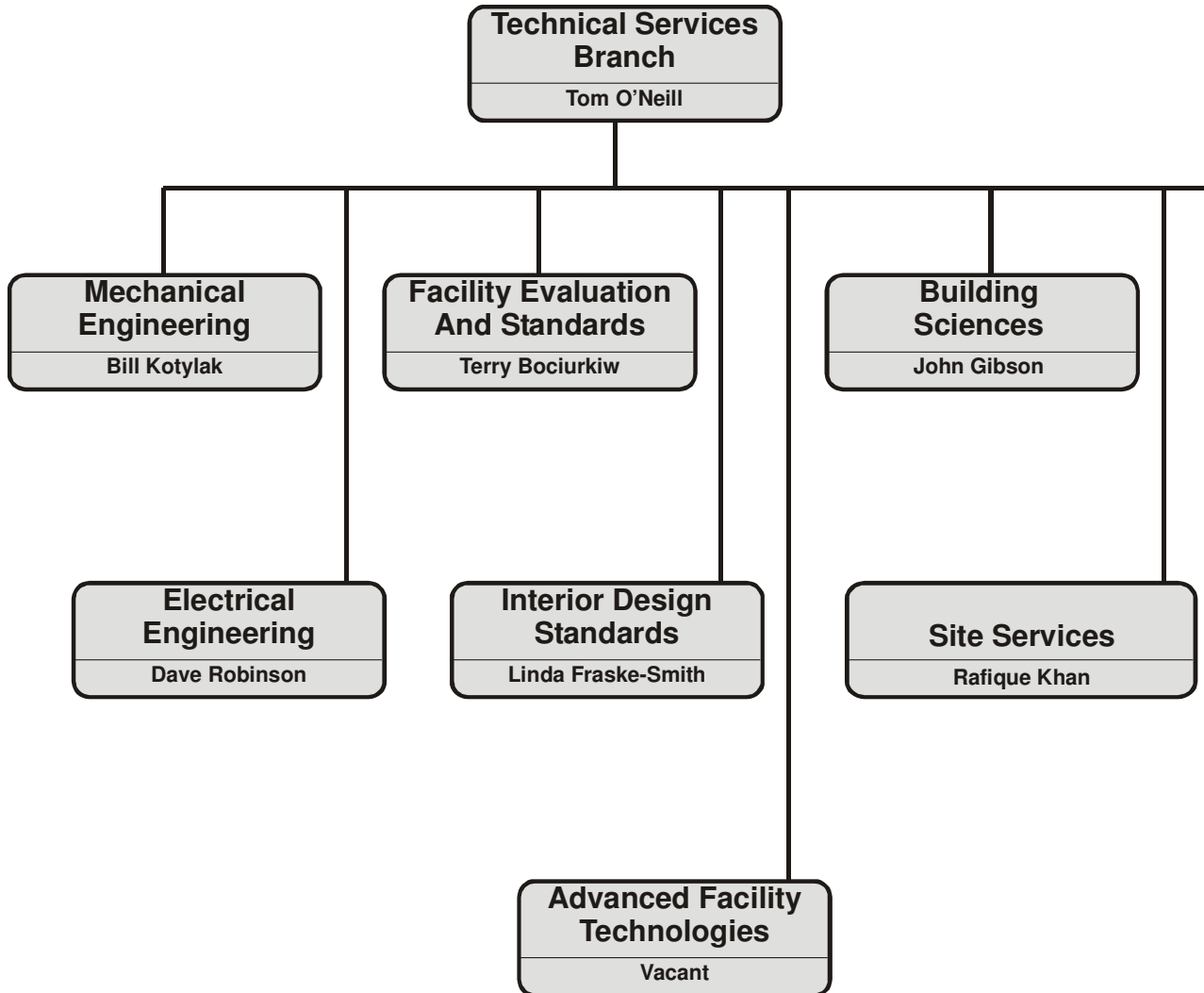
CONTACT

The overall Branch contact is:

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Services can be accessed either directly, by contacting the individuals listed in the write-up of each Section or through the appropriate project or facility manager.

ORGANIZATION CHART



BUILDING SCIENCES SECTION

MANDATE

The Building Sciences Section is composed of six Units and provides specialist expertise in the fields of Acoustics, Structural Engineering, Building Envelope, Building Environment, Energy Management and Preventive Maintenance Planning

ACOUSTICS UNIT provides specialist acoustic expertise in support of the acquisition, design, construction, commissioning, operation, maintenance and evaluation of government facilities.

STRUCTURES UNIT sets technical standards and provides structural expertise for design review and facility maintenance.

BUILDING ENVELOPE UNIT conducts investigations and provides specialist expertise to obtain walls, windows, skylights and roofs that function well and are cost effective for the life of the building.

BUILDING ENVIRONMENT UNIT provide specialist expertise in architectural and related subject areas of building materials, indoor air quality, hazardous materials, environmental assessments, occupational health and safety, accessibility, building and fire codes.

ENERGY MANAGEMENT UNIT provides services to facility managers with energy audits, energy monitoring, energy projects and support with utility companies

PREVENTIVE MAINTENANCE PLANNING UNIT provides services to facility managers to support computerized maintenance management system and maintenance planning.

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BUILDING SCIENCES SECTION

ACOUSTICS UNIT

EXPERTISE

- Speech privacy for open-plan and enclosed offices
- Sound transmission of walls, floors, ceilings
- Sound isolating enclosures for audiometric rooms, sound studios and mechanical equipment
- Acoustic properties of materials, such as ceilings, spray-ons and wall panels
- Acoustic design of interior spaces including classrooms, interview rooms, gymnasiums, courtrooms, auditoria, pools, cafeterias, and nursing stations
- Classroom Acoustics
- Occupational Health and Safety noise assessment
- Fire alarm audibility assessment
- Mechanical noise analysis and control
- Impact sound isolation
- Vibration severity of mechanical equipment
- Floor vibration for sensitive equipment
- Community noise evaluation
- Outdoor noise barriers
- Sound masking
- Sound reinforcement or recording systems
- Assistive listening systems
- Speech intelligibility evaluations

SERVICES

- Investigate acoustic, vibration or sound control problems and provide recommendations for appropriate action and estimate of cost
- Develop and maintain departmental design standards and guidelines for Capital Projects and Health Care facilities
- Provide technical content to Alberta Infrastructure Master Specification
- Provide design assistance to consultants for new construction and renovations
- Review projects throughout their development to confirm that design guidelines, requirements and standards have been considered
- Retain and monitor specialist consultants for the purpose of resolving acoustic problems
- Evaluate and test new products
- Conduct site inspections, testing and verification
- Provide commissioning advice or assistance

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BUILDING SCIENCES SECTION (CONTINUED)

STRUCTURES UNIT

STRUCTURAL EXPERTISE

- Foundation systems, slab on grade
- Cast-in-place concrete structure (reinforced and post-tensioned)
- Precast concrete structures (reinforced and pre-stressed)
- Underground structures (including water-proofing)
- Water reservoirs
- Retaining walls
- Structural steel and custom steel fabrications
- Light gauge steel framing
- Metal decking/cladding
- Masonry
- Timber structures, including glulam
- Structural loads due to use, occupancy, climate, earthquakes, materials storage, etc.
- Seismic evaluation and upgrading
- Parkade restoration and protection
- Corrosion control
- Corrosion of post-tensioning systems
- Concrete durability
- Concrete repair
- Demolition
- Preservation and restoration of structures, including historic structures

STRUCTURAL SERVICES

- Procurement and management of structural and geotechnical consultant services

- Design standards and guidelines
- Alberta Infrastructure Master Specification technical content
- Design review and assistance
- Construction inspection
- Structural investigations
- Evaluation of structural systems
- Monitoring of deteriorating structures
- Loading assessments
- Research
- Feasibility studies
- Resolution of structural construction problems
- Assistance in resolution of construction disputes
- Advice on design and construction of complex structures and of structures subject to unusual loads or conditions
- Advice on the upgrading of structures
- Solutions to underground leakage problems
- Demolition advice
- Preservation, restoration, and renovation advice
- General technical advice

CONTACTS

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BUILDING SCIENCES SECTION (CONTINUED)

BUILDING ENVELOPE UNIT

BUILDING ENVELOPE EXPERTISE

The Building Envelope Unit offers:

- Problem investigation and resolution for existing buildings.
- Design and construction guidelines, recommendations and advice for new designs, additions and renovations.
- Material assessments to establish acceptability.
- Utilization of research in practical ways.

BUILDING ENVELOPE SERVICES

Many problems can be avoided through timely involvement of specialist expertise. Involving Building Envelope Unit early in the design process is most effective in preventing concerns.

Envelope assemblies, if defective, allow uncontrolled flow of air, water and heat. Obvious signs of defects are water stains, condensation, frost, efflorescence, material degradation, mold and mildew, occupant discomfort, high energy use and various health and safety concerns. Hidden problems, if left unattended, can lead to more expensive repairs in the future.

- Investigate envelope problems and recommend appropriate action
Establish design guidelines for envelope assemblies
- Retain and manage specialist consultants to assist in the resolution of envelope problems
- Coordinate in-house roofing expertise

- Provide technical content for Alberta Infrastructure Master Specifications.
- Prepare envelope master details
- Provide design assistance to consultants for new buildings and retrofits. Present alternate solutions and help to determine which is the most appropriate
- Provide construction inspection assistance
- Evaluate the interrelationship of envelope and other building systems so that they work in conjunction with one another
- provide clinics to designers, contractors and operators to ensure technology and theory is understood by these groups
- Maintain centralized source of building envelope information

CONTACTS

For building envelope services

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BUILDING SCIENCES SECTION (CONTINUED)

BUILDING ENVIRONMENT UNIT

EXPERTISE

- Materials, products and systems performance
- Asbestos abatement
- PCB, lead, mercury, radioactive products, chlorofluorocarbons (CFCs) and WHMIS regulated chemicals investigations
- Mould investigations and remediation
- Site remediation
- Indoor air quality
- Barrier-free accessibility
- Building and fire code applications

SERVICES

Hazardous Materials Services

- Provides hazardous materials management services in Government occupied space.
- Conducts procedural workshops for Infrastructure personnel that must come into contact, through their work, with hazardous materials.
- Develop and maintain records of known hazardous materials in Government facilities.
- Maintain good operational communications with PAO, Workplace Health and Safety, (Alberta Human Resources and Employment), Regional Health Authority, Risk Management, Departmental Safety Officers and Municipal equivalencies, to ensure consistency of policy and procedures relative to hazardous materials management.
- Recommend direction of policy for and in relation to hazardous materials.
- Provides technical input to Infrastructure Master Specification.

Building Fabric

- Investigate performance problems of building materials and systems.
- Set standards for expected performance.

Environmental Services

- Respond to Alberta Infrastructure requests for environmental assessments and investigations.
- Assist in managing environmental consultants in conducting environmental assessments.
- Investigate indoor air quality problems.

Code and Regulations Services

- Advice on the interpretation of the Alberta Building and Fire Safety Codes, and Occupational Health and Safety Regulations as they relate to architectural, occupational health and safety, barrier free, and fire safety issues.
- Assist in the preparation of fire safety plans.
- Assist with Building and Fire Code reviews.

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BUILDING SCIENCES SECTION (CONTINUED)

ENERGY MANAGEMENT UNIT

EXPERTISE

- Monitoring of energy use
- Utility rate structures
- Energy planning and conservation
- Energy related building systems (mechanical, electrical, building envelope)
- Energy systems design, construction, operation and maintenance
- Energy codes
- Utility industry and systems

SERVICES

- Energy audits
- Energy technologies and practices
- Performance standards
- Energy related operation and maintenance
- Energy efficiency projects
- Energy accounting
- Utility contracts
- Forecasting energy costs

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PREVENTIVE MAINTENANCE PLANNING UNIT

EXPERTISE

- Monitoring of the preventive maintenance program
- Review existing records of maintenance schedules to ensure safety, operation and compliance
- Minimum Preventive Maintenance Standards
- Preventive Maintenance planning and implementation
- Beta tests of Computerized Maintenance Management System (CMMS) software to meet current client needs.
- Review of available records (drawings, operation and maintenance manuals, technical literature and facility evaluation reports) to assess operation and control strategies

SERVICES

- Determine design intent of H.V.A.C. and other systems installed in facility and ensure that the installation operates within the design standard
- Prepare investigation reports including photographs along with recommendations to enable corrective action to be carried out to minimize costs
- prepare on-site concise reports of the systems description and operating procedures.
- Prepare as required operation and maintenance manuals and preventive maintenance manuals (52 weeks and basic) ensuring user friendliness and understanding.
- Train all relevant site personnel in the correct use of the preventive maintenance program (CMMS and manual systems)
- Prepare training materials for the CMMS program
- Online CMMS support

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ELECTRICAL ENGINEERING SECTION

MANDATE

Provides specialist expertise in the Electrical Engineering discipline to all areas of the Department in support of the acquisition, design, construction, commissioning, operation and maintenance of facilities throughout the Province.

EXPERTISE

- Service and distribution system and equipment, low voltage (to 750v) and high voltage (to 25kv)
- Emergency and standby power generation systems
- Motor controls and control equipment, including line and reduced voltage starters, variable frequency drives, control panels and PLC controls
- Computer power supplies, including filtering, surge suppression and UPS systems
- Electric lighting systems, including lamps, ballasts and luminaires
- Fire alarm systems, both hard wired and multiplex
- Nurse call and Medic Alert systems
- Alarm systems including perimeter intrusion and internal security
- Video and television systems, including closed circuit, security and master antenna/cable systems
- Electrical communications systems, including public address and intercom
- Computer and integrated voice/data wiring systems
- Code requirements for electrical systems

SERVICES

- General technical advice
- Design advice and document review
- Trouble shooting and problem solving
- Maintenance advice and standard maintenance contracts
- Electrical product testing and advice
- Site inspection, testing and verification
- Design standards and guidelines
- Alberta Infrastructure Master Specification technical content
- System master planning, evaluation and maintenance planning
- Engineering studies, calculations and reports
- Short circuit and fault duty analysis.
- Overcurrent protection co-ordination.
- Utility rate and power consumption analysis.
- Load profile, control, demand and power factor analysis.
- Power quality monitoring and analysis.
- Lighting system measurements and evaluations.
- Fire alarm system evaluations, audits and verifications.
- Door control and intercom system analysis.

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FACILITY EVALUATION AND STANDARDS SECTION

MANDATE

- Develop and maintain the electronic evaluation module of the Building and Land Infrastructure Management System (BLIMS) for owned and supported buildings. BLIMS provides easy access to basic building information, pictures, condition information, functional information, reports, and recommendations to remedy deficiencies.
- Provide technical expertise and best practices for post occupancy reviews.
- Establish facility evaluation standards and methodology, provide training, and audits of completed evaluations.
- Develop and report on facility performance measures.
- Provide information to assist the Department with multi-year maintenance planning, strategic planning, disposition/acquisition planning and capital project planning.
- Prepare and maintain site plans and site records.
- Provide CAD standards, computerized drafting services and support of departmental graphics database applications.
- Develop and maintain technical standards, specifications and the Technical Resource Centre.

EXPERTISE

- General and specialized facility assessments
- Long and short term maintenance planning
- Building code and standards reviews
- Building repair, maintenance and capital upgrading
- Computer assisted drafting and information systems resources
- Serviceability and functional studies
- Architectural aspects of building design and maintenance
- Barrier free access requirements

SERVICES

- On-site reviews with users and property managers.
- Identify and rate energy use, environmental concerns, safety and other items related to functional performance of facilities.
- Rate condition and functionality of critical building components, building systems whole building.
- Review compliance with the Alberta Building Code and other standards.
- Post Occupancy reviews
- Assist with coordinating maintenance with on-going or planned capital development
- Life cycle maintenance planning.
- Assistance with technical or design related architectural problems
- Prepare and maintain site records for Infrastructure owned and administered properties.
- Compile and maintain property ownership and leasing site plans and mapping for the Calgary and Edmonton Transportation and Utility corridors.
- Drafting services / GIS

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INTERIOR DESIGN STANDARDS SECTION

MANDATE

Provide specialist expertise in the Interior Design discipline to Capital Projects, Property Management, Health Facility Projects, Senior's Lodge Program, School Facilities and other Departments.

EXPERTISE

- General Purpose Office Space, Healthcare and Housing Facilities and special use spaces.
- Interior finish products.
- Furniture and interior systems.
- Space planning.
- Barrier-free considerations.

SERVICES

- General and specialized technical advice.
- Develop design standards, guidelines and policies.
- Provide technical content to the Master Specifications.
- Provide design advice and document review.
- Provide space planning feasibility studies.
- Assist with the development of project scope and cost during initial planning phases.
- Investigate and analyze problems and recommend solutions.
- Development and maintenance of a comprehensive standard furniture program for government use.
- Retain and monitor design consultants
- Provide project management services
- Research and evaluate furnishings and interior finishes
- Research new and innovative ways of utilizing space
- Development of Standing Offers for the standard furniture program
- Management and maintenance of furniture recycle program and provision of services related to the recycling of furniture.
- Maintenance of a reference library of product catalogues, material samples and related technical literature.

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MECHANICAL ENGINEERING SECTION

MANDATE

Provide mechanical engineering expertise to all areas of the Department in support of the acquisition, design, construction, commissioning, operation and maintenance of Government owned and funded facilities.

EXPERTISE

Mechanical systems and equipment in all types of building facilities:

- heating
- cooling
- ventilation
- controls
- plumbing
- fire protection
- specialty

Commissioning of mechanical systems including:

- facility start up
- operation and maintenance manuals
- operator familiarization

Energy management control systems (EMCS):

- hardware
- software
- commissioning

Environmental issues

- refrigerants (CFC's)
- halons
- indoor air quality

Project planning and budget preparation for mechanical work

SERVICES

- Provide mechanical engineering and commissioning advice and guidance.
- Develop and update guidelines, requirements and standards for the design and commissioning of mechanical systems.
- Assist project management with the development of project scope and cost during the initial planning phases._
- Review projects throughout their development period, at intervals consistent with the risk involved, to confirm design guidelines, requirements and standards.
- Update mechanical technical content in the Master Specifications
- Write technical articles to communicate requirements or strategies developed by the Section
- Review and interpret codes applicable to mechanical systems
- Investigate and analyze problems with mechanical systems including recommendations for corrective action and estimate of cost.
- Review maintenance and retrofit projects to determine the feasibility and value added
- Evaluate and report on new mechanical systems and equipment
- Evaluate and report on new control systems
- Establish standards for control systems software
- Provide engineering support to property management in the operation and maintenance of mechanical systems including energy conserving strategies and environmental issues

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SITE SERVICES

MANDATE

Provide professional and technical support related to municipal engineering, site development, and landscape projects and programs for Government owned and funded facilities.

EXPERTISE

Site Services staff have experience and expertise in the following areas:

- Water distribution systems
- Water wells (development, licensing)
- Water treatment (chlorination, filters)
- Water reservoirs
- Sanitary sewer systems
- Sewage lift stations
- Sewage lagoons
- Sewage treatment mounds
- Storm sewer systems
- Storm water management
- Tunneling for utility crossings
- Geotechnical
- Municipal service agreements
- Fuel storage and piping systems
- Chain link fencing
- Security fencing and systems for Correctional Centres
- Erosion control
- Roads
- Parking lots
- Concrete (sidewalks, curbs, slabs)
- Paving stones
- Pedestrian trails
- Trailers and portable classrooms
- Legal surveys and legal plans
- Landscape Development:
 - Exterior and interior landscaping
 - Site upgrades and restoration
 - Soft and hard landscaping
 - Plant selections
 - Tree and site landscape evaluations
 - Topsoil, sodding and site grading
 - Seed selection and applications
 - Irrigation systems
 - Grounds maintenance
 - Horticulture

SERVICES

- Assist in the selection of new sites by assessing servicing needs and costs and advise on potential flood, environmental, geotechnical and access issues.
- Establish site and landscape design guidelines.
- Update site and landscape Master Specifications.
- Provide advisory services related to new municipal engineering, site development and landscape projects. Prepare scope of work, establish budgets, assist in consultant selection, negotiate consultant agreements, review contract documents, and respond to construction issues.
- Evaluate condition of existing site and landscape infrastructure, recommend solutions and provide cost estimates.
- Provide site and landscape design reviews on building projects.
- Complete tree assessments.
- Assist with landscape grounds maintenance and snow removal contracts.
- Update the "Manual for Maintenance of Grounds".
- Provide advisory services related to moving and providing trailers.
- Manage legal surveys and assist with right-of-ways.
- Review easement documents.
- Review local improvements.
- Prepare property disposition reports.
- Assist in the development of municipal service agreements.
- Prepare technical bulletins.

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