

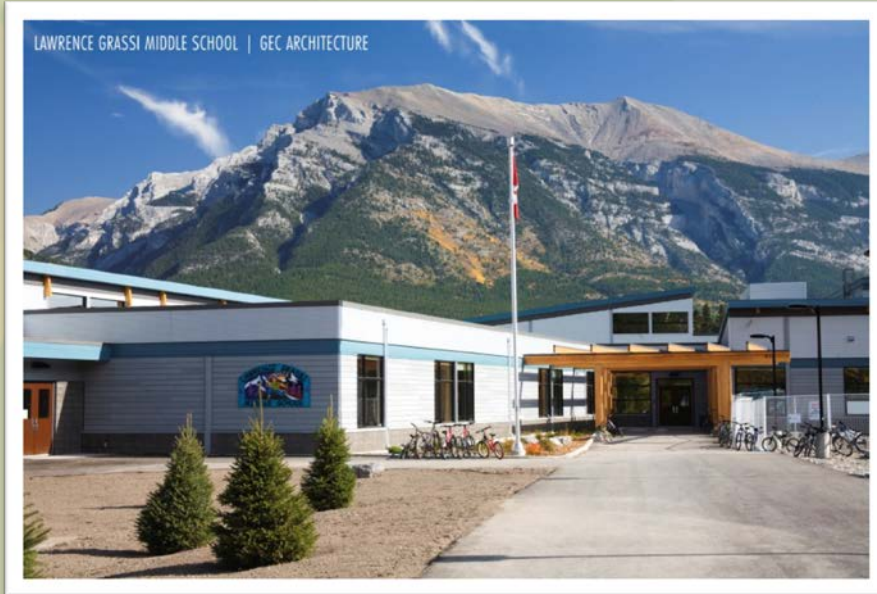
Alberta Education

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*Learning in 21st Century Schools
8th Regional Workshop
Antigua, Guatemala*

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Alberta's School Capital Program



***Overview of Capital Program
Planning Framework
Education Specifications***

***Project Delivery Systems
Schools of the Future
Questions and Answers***

Program Overview

- Education is a provincial responsibility.
- Funding for new schools and for major renewal projects are approved by Minister of Education.
- Local school boards identify unique program needs and set priorities for capital projects.
- Approved capital projects can be delivered as:
 - Grant funded to school board
 - Government delivered



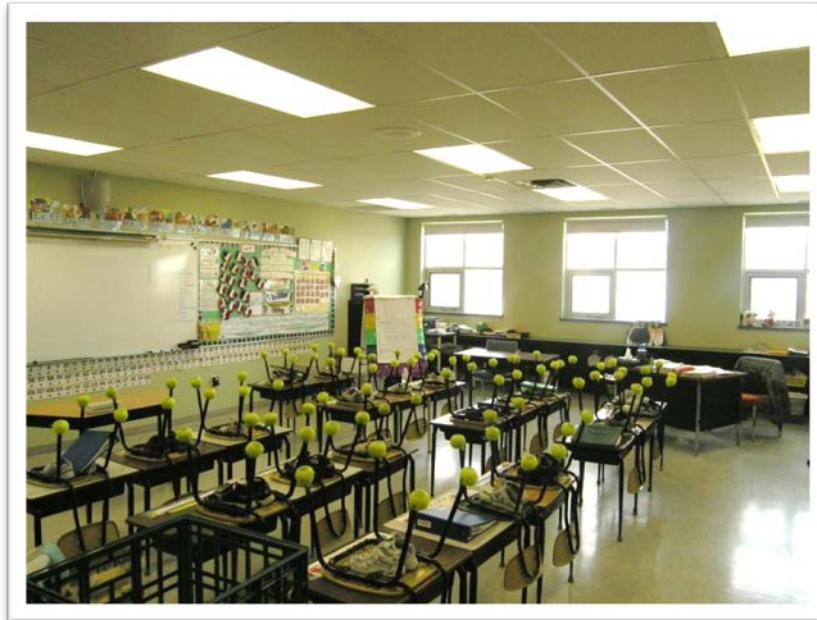
Recent Capital Programs

- Since 2011, the Government of Alberta has approved 232 school capital projects over three phases.
- Projects include new schools and major modernizations / additions and replacements:

Phase 1 (2011)	Phase 2 (2013)	Phase 3 (2014)
35 projects	120 projects	77 projects
\$550 million	\$2.67 billion	\$2.0 billion
12 - P3s 5 – DB 17 – DBB	0 - P3 (Rejected) 41 - DB 76 - DBB 12 - CM, 1 IPD	

Recent Capital Programs

- Other capital programs:
 - Infrastructure Maintenance and Renewal (IMR)
 - Modular Classroom Program



Key Drivers

- Schools reflect 21st century learning and *Inspiring Education*
- Buildings meet LEED Silver requirements
- Capital partnerships and joint projects are encouraged



Key Drivers

- Technical and performance specifications geared to Temperate Climate (-30 to +30 degrees C)
- 25% total project cost goes into mechanical systems
- Support is about \$3200/m², adjusted upward for location
- Full end user participation and public engagement

Key Drivers

- Design considerations

- Physical activity areas and gymnasias
- Total built area per student is $\sim 10\text{m}^2$
- Instructional to non-instructional area ratio is about 60:40
- Wrap-around services space is provided
- Risks: floods, snow load, methane, radon, hazardous materials



Planning Framework

Capital Plan Submissions

- School boards submit their three-year capital plans to Alberta Education every year.
- Three-year capital plans must:
 - ✓ Identify the highest priority needs for the three-year period
 - ✓ Include a detailed breakdown of costs by facility
 - ✓ Extensive data on enrolment demand
 - ✓ Demonstrate that the school board has evaluated its ability to deliver the requested projects during the three-year period
 - ✓ Include a completed copy of the “Site Readiness Checklist” for new or replacement school projects
 - ✓ Comprehensive justification or business case

Government Evaluation of Submissions

- Once three-year capital plans have been received, Alberta Education follows up with jurisdictions to ensure that:
 - Scope of project(s) is/are clearly defined
 - Rationale for priority ranking is clear
 - Project is ready to proceed, i.e. site is ready and serviced
- Alberta Education reviews all submissions and identifies the highest province-wide priorities for new, replacement and modernization projects in consultation with Alberta Infrastructure.
 - Capital Project Assessment and Scoring Tool
 - Overlay project intangibles

Prioritization

- **Alberta Education prioritizes the projects using several criteria to determine the recommended projects for Education Minister's approval.**
 - **Health and Safety**
 - **Enrolment Pressures**
 - **Alternatives or Options**
 - **Utilization**
 - **Program Functionality**
- **Upon Minister approval, Alberta Education prepares and submits the annual capital request to Alberta Treasury Board for consideration of funding approval.**



Education Design Standards

Education Design Standards

- School jurisdictions have flexibility in the design of their new schools to determine how they wish to address the needs of students and staff.
- Education Design Standards specify the “instruction” and “non-instruction areas” and Area per Student by capacity according to the grade levels that the facility accommodates.

Education Design Standards

- Within these standards, school jurisdictions have some flexibility to determine how they will divide and allocate that area.
- Where possible or appropriate, jurisdictions are encouraged to use or adapt one of the standard designs that has been developed by Alberta Infrastructure.

Project Delivery Systems

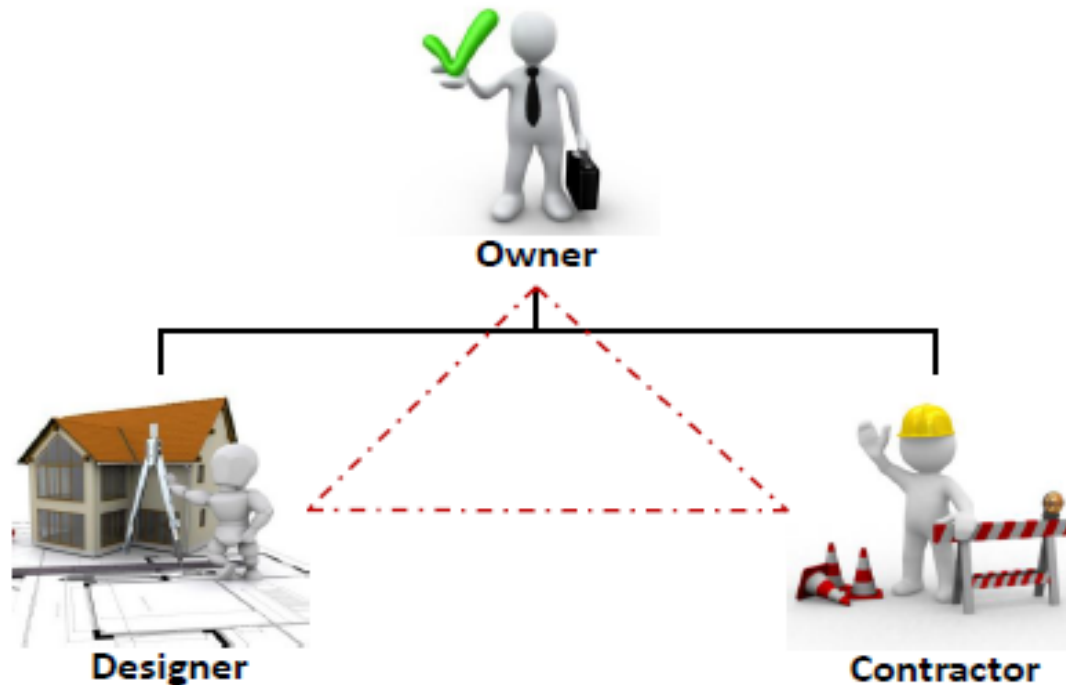
...a project delivery system (PDS) is a broad term that describes the relationship between the project participants, who are usually the owner, consultants, and contractor.

...it dictates the contracts that will be required and determines the expected interactions among the participants.

Capital Project Delivery

- **A decision to proceed with a particular approach depends on:**
 - Overall capital program goals, e.g., completion timelines, total scope
 - Specific project characteristics, complexity
 - Opportunity to ‘bundle’ projects
 - Market conditions
 - Capacity to deliver
- **Major approaches include:**
 - Design-Bid-Build
 - Design-Build
 - Construction Management
 - Integrated Project Delivery
 - Design-Build-Finance-Maintain

Project Delivery: Design-Bid-Build



- This is a traditional project delivery system for most projects and used extensively throughout the 20th Century.

Design-Bid-Build



- Three distinct, linear phases:
 1. Design – a design contract is awarded to an Architect.
 2. Bid – Construction bid documents are prepared based on Consultant documents and Contractors submit lump sum bids.
 3. Build – Contractor initiates construction and the Owner monitors performance.

Design-Bid-Build



■ Advantages

- Familiar and common, roles are well defined.
- Well developed contract documents and procedural guidelines.
- Owner maintains control of design, finishes, and the overall process.
- Project award is based on lowest bid that is received through a competitive bidding process.

Design-Bid-Build



■ Disadvantages

- Award based on lowest bid may not consider the Contractor qualifications and experience.
- Can be the slowest method.
- Contract documents are fixed prior to construction, and design changes can be costly and can affect project schedule.

Project Delivery: Design-Build



- A “turnkey” type of delivery system where the design and construction services are provided by a single entity the “Design-Builder”.

Design-Build



- Design-Build integrates the Consultant (designer of record) and the General Contractor.
- Utilizes a two phase procurement process:
 - Request for Qualifications (RFQ) – a prequalification process is completed through a public Request for Qualifications. This is to shortlist the most qualified and experienced firms.
 - Request for Proposals (RFP) – the shortlisted firms are invited to submit a bid to complete the project. Typically, the lowest compliant bid determines the successful design-build firm.
- Generally, there are only two distinct entities in this arrangement – the Owner and the Design-Builder. The Design Build entity is usually led by a Contractor who forms a contract with the design firm.
- Alberta Infrastructure employs a Design-Build variation by engaging a Bridging Consultant to develop the design drawings to approximately 25%. This ensures that a basis of design is established which the Design-Builder must follow.

Design-Build



- **Advantages**

- Minimal contractual relationships to manage. A single point of responsibility.
- Design-Build team carries the majority of the risk, thus reducing the chances for change orders.
- The project costs and schedule are known factors at the beginning of a project.
- A “Fast Track” method can be implemented by the Design Build team which can shorten construction time.

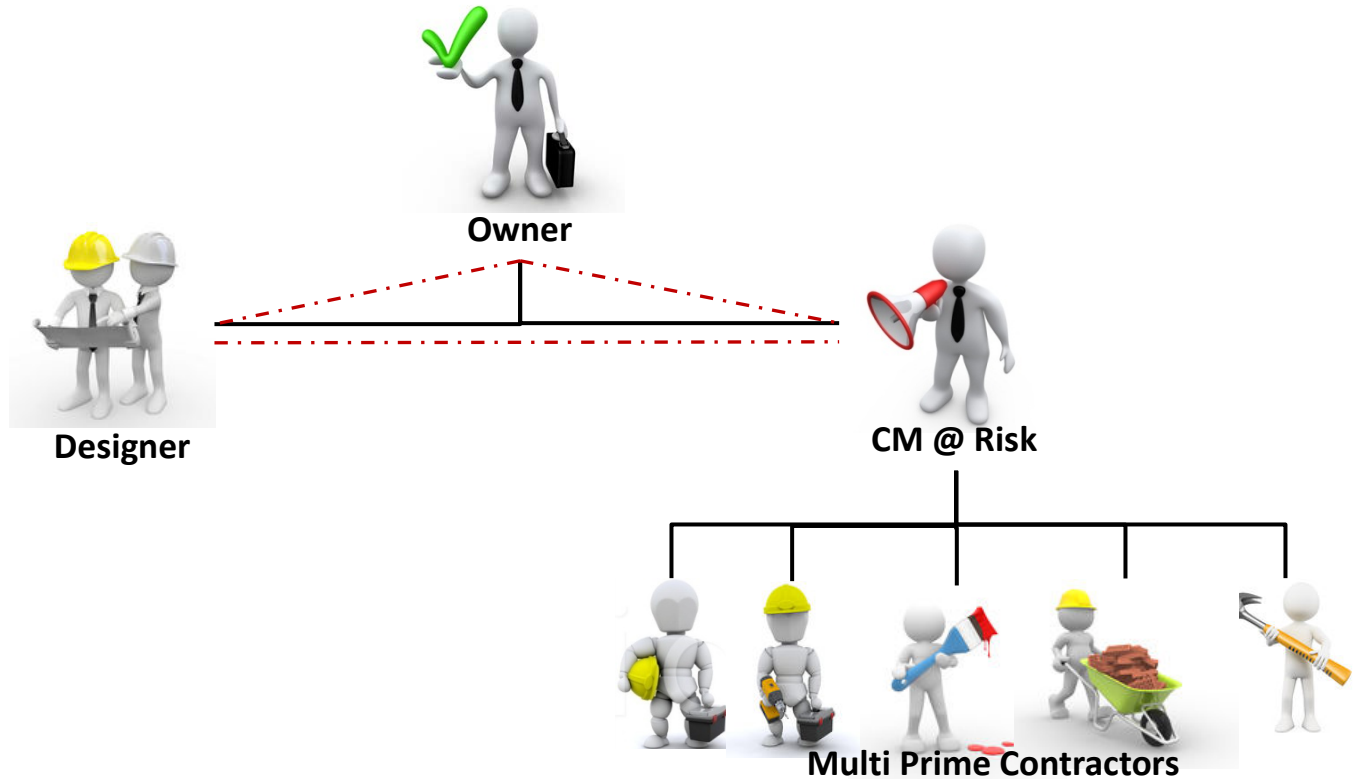
Design-Build



- **Disadvantages**

- Owner has the least amount of control of the design, finishes, and overall process.
- Owners may have limited experience with this system and may be uncomfortable with the integration of services.
- Quality of finishes and/or products may suffer if appropriate performance specifications are not developed.
- Change orders reduce the cost advantages of using design-build.
- Specific users needs must be identified prior to tender.

Project Delivery: Construction Management



- A delivery system that relies on expertise of a Construction Manager to deliver the project, and allows design and construction to overlap.

Construction Management (CM)



- Similar to DB, this method utilizes a two phase procurement process to select a Construction Manager (CM):
 - RFQ
 - RFP
- CM uses two contracts which require the Prime Consultant and the Construction Manager to manage the components of the project schedule to formulate sequential bid packages.
- Each major building component can be designed and tendered in sequential stages.

Construction Management



■ Advantages

- Construction Manager provides significant expertise into all aspects of the project.
- Phasing of work in occupied buildings can benefit from the CM's expertise.
- Fast-tracking may result as design and construction can overlap.
- The CM can manage the budget and schedule,
- Sub-trades are procured through public competitive bidding by the CM.
- The CM can be selected based on considerations other than cost, e.g., qualifications, experience and supporting personnel.

Construction Management



■ Disadvantages

- Open-ended nature of many CM contractual arrangements.
- Total project cost is not known until all bid packages are awarded.
- Potential reduction in competition for trade contractors because of the added bidding requirements.
- Possibility of overlaps or gaps in the scopes of work of individual stages.

Integrated Project Delivery (IPD)



- The owner, the consultant and the contractor enter into one contract function as a collaborative team to design and construct the project.

Integrated Project Delivery



- All parties share the risks and rewards.
- IPD projects are complex, involving unique programs, requirements and/or systems integration.
- Two key resources are required:
 - IPD Coordinator: A neutral project advocate for the Owner, the Consultant and the Contractor as the team collectively defines the project vision.
 - Technology Based: Integrated technology sharing is developed to streamline the flow of documentation, communication and work flows.

Integrated Project Delivery



■ Advantages

- May optimizes team performance by collaboratively working towards a common vision.
- IPD team has incentives to do what is best for the project, rather than what might be best for themselves.
- Encourages stakeholders to make decisions at appropriate times in relation to project schedule which in turn can reduce project timelines.
- There is no one way to do a project by IPD, each is different so the method is flexible.

Integrated Project Delivery



■ Disadvantages

- Costs may increase as team members are involved throughout the entire project rather than at specific stages.
- Decision-making is constant, e.g. project team may decide to increase the project budget in favour of reducing overall life cycle maintenance costs.
- Getting all of the IPD team members to agree can be difficult.
- Flexible nature means that specific processes and templates are not available.
- Requires “buy-in” and commitment from all stakeholders and any personnel added to project.

Design Build Finance Maintain (DBFM) or P3



- Alberta has undertaken 3 major initiatives since 2007.

Key Project Stages

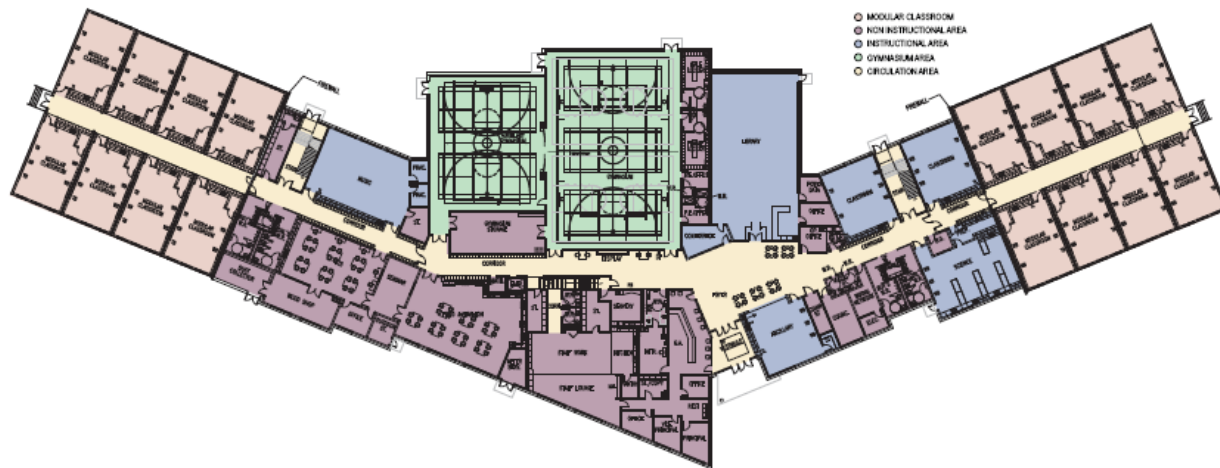
- Stage 1: Start-up
- Stage 2: Schematic Design
- Stage 3: Interim Submissions
- Stage 4: Pre-tender cost estimates and Construction Drawings
- Stage 5: Tender and Award
- Stage 6: Post-Tender
- Stage 7: Construction
- Stage 8: Project Close out



Schools of the Future

Prototype Schools

- Kindergarten to Grade 9 School, capacity of 900 students



Prototype Schools

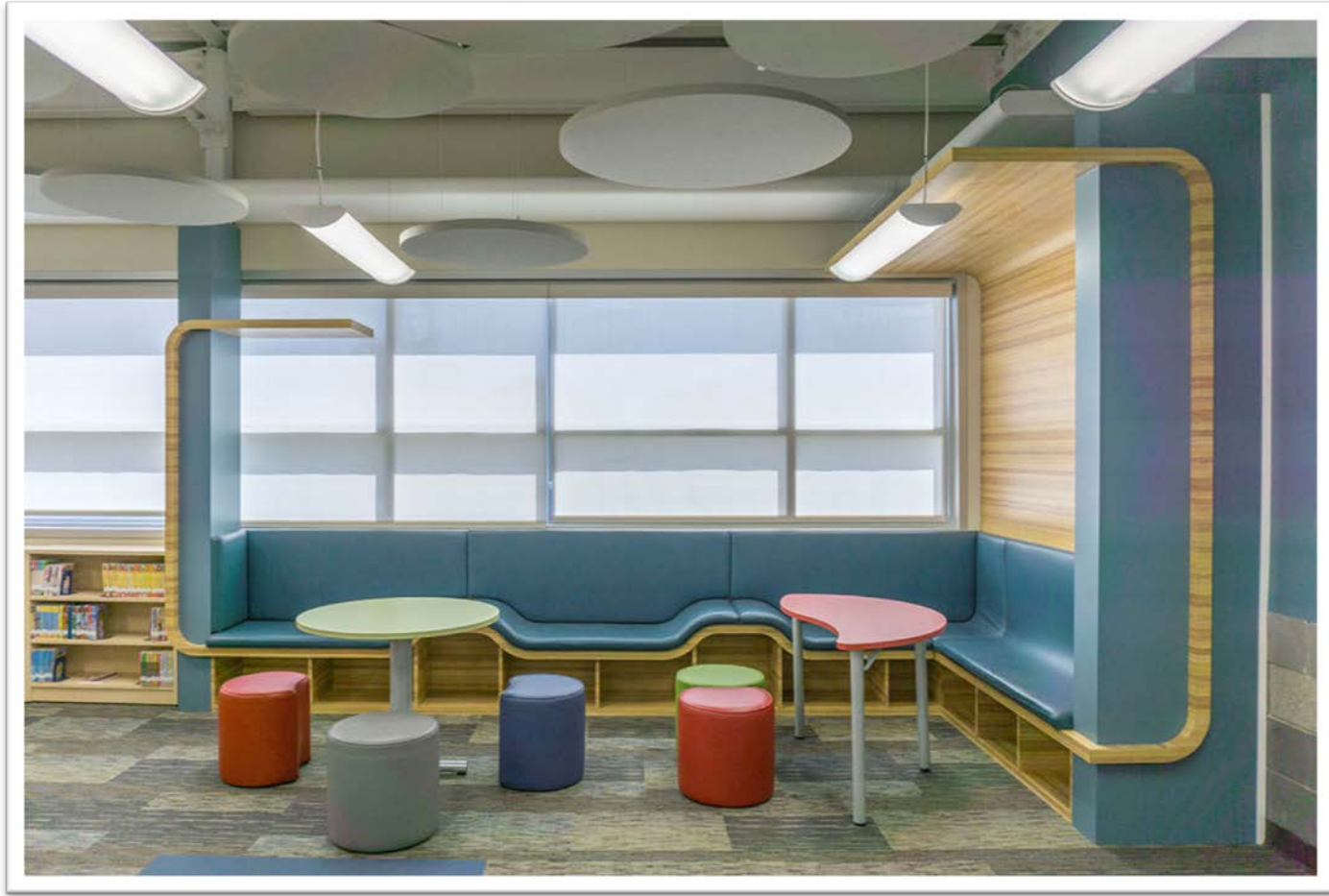


Alberta

Prototype Schools



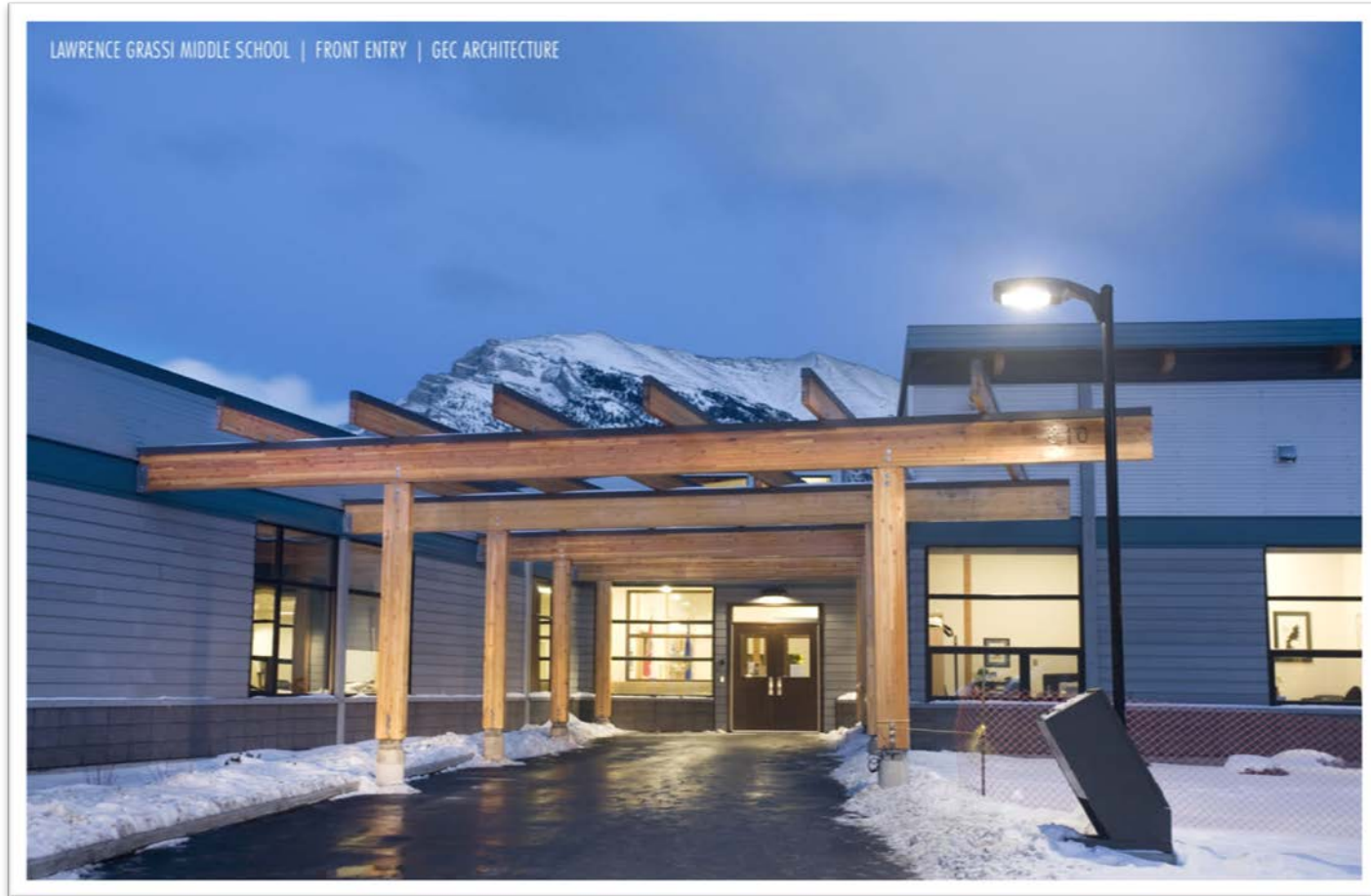
Prototype Schools



Prototype Schools



Prototype Schools



Prototype Schools



Conclusion

Elements of Alberta's School Capital Program: Summary



- Overall Capital Program

- Ensure clear understanding of funding parameters, program goals and delivery timelines.
- Identify optimal project delivery methodologies.

Elements of Alberta's School Capital Program: Summary



- Prior to project approvals
 - Ensure sufficient time for comprehensive project scope development.
 - Identify potential joint partners and prepare partner funding agreements.
 - Ensure clear design guidelines and space allocation framework are in place.
 - Consider project bundling and optimum delivery method.
 - Ensure procurement documents and procedures are in place.
 - Establish and maintain clear technical and performance specifications.

Elements of Alberta's School Capital Program: Summary



- **Planning and Design Stage**
 - Allow time for stakeholder engagement in design.
 - Establish and utilize prototype designs.
 - Use cost consultants to confirm project design is on scope and budget.

- **Project Delivery**
 - Choose the best delivery method that meets the need.
 - Initiate early and continuing involvement of end users and regulatory agencies.
 - Implement monthly reporting and payment system.

Thank You for Listening!

- Questions, Comments?

