**Seismic Project Identification Report**

**REPORT NO. SPIR-XX-XX**

**for**

**BLOCK #XX-X (BLOCK NAME)**

**SCHOOL NAME**

**School Address**

**Facility No: xxxxxxx**

**School District No. XX  
Name of School District**

**Structural Engineering Guidelines for the  
Performance-based Seismic Assessment and Retrofit of  
Low-rise British Columbia School**

| No. | Technical Topic | Summary |  |  |
| --- | --- | --- | --- | --- |
| 1 | School Name and School District |  |
| 2 | Block No. / Name |  |
| 3 | Floor Area |  |
| 4 | Year, Number of Storeys and Type of Construction |  |
| 5 | Soil Type |  | (Structural Engineer  Professional Seal and Signature) |
| 6 | Liquefaction Potential |  |  |
| 7 | Risk (H1/H2/H3/M/L) |  |  |
| 8 | Life Safety Retrofit Features |  |  |
| 9 | Phased Retrofit Features |  |  |
| 10 | Enhanced Performance Retrofit Features |  |  |
| 11 | Schedule |  | Date |
| 12 | Construction Risks |  |
| 13 | Cost Estimates |  |
| 14 | PDR Requirements |  |
|  |  |  |  |  |

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| --- | --- |
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**Figure 1.1: Elevation – Wing**

**Figure 1.2: Elevation – Wing**

**Figure 2.1: Key Plan for**

|  |  |
| --- | --- |
| **Identification of Retrofit Block (Box #2-1)** | |
|  | |
| **Adjacency (Box #2-2)** | |
|  | No Significant Adjacency Issues |
|  | Significant Adjacency Issues |
| **Adjacency Comments (Box #2-3)** | |
|  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **School District (Box #3-1)** | | | |  | | **Block Name (Box #3-2)** | | |
|  | | | |  | |  | | |
| **Structural Firm (Box #3-3)** | | | |  | | **Engineer-of-Record (Box #3-4)** | | |
|  | | | |  | |  | | |
| **Years of Construction (Box #3-5)** | | | |  | | **Floor Area (Box #3-6)** | | |
|  | | | |  |  |  |  | |
| **Construction Type (Box #3-7)** | | | |  | | **Site Classification (Box #3-8)** | | |
|  | | | |  |  |  | |  |
| **Comments on Construction Type (Box #3-9)** | | | | | | | | |
|  | | | | | | | | |
| **Number of Storeys (Box #3-10)** | | | | | | **Clear Storey Heights (Box #3-11)** | | |
|  | | |  | | |  | | |
| **Previous Seismic Upgrade (Box #3-12)** | | | | | | | | |
|  | No |
|  | Yes |
| **Previous Seismic Upgrade Details (Box #3-13)** | | | | | | | | |
|  | | | | | | | | |

|  |
| --- |
| **List of Testing Reports (Box #3-14)** |
|  |

**(1) Vertical Load-bearing Supports (VLS)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **VLS Type (Box #4-1)** | | |  |  | | | |
|  | | |  |  | | | |
| **VLS DDL (Box #4-2)** | | |  |  | | | |
|  | | |  |  | | | |
| **Supports Description (Box #4-3)** | | | | | | | |
|  | | | | | | | |
| **(2) LDRSs** | | | | | | | |
| **Number of LDRS Prototypes (Box #4-4)** | | | | | | | |
|  |  |  | |  | |  | |
| **LDRS Prototype Details (Box #4-5)** | | | | | | | |
| **Shaking Direction** | **Prototype No.** | **LDRS Prototype Description** | | | **Max DDL** | | **Capacity** |
|  |  |  | | |  | |  |
| **Comments on LDRS Prototypes (Box #4-6)** | | | | | | | |
|  | | | | | | | |

**(3) Out-of-Plane URM Walls**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **URM Walls (Box #4-7)** | | | | | | |
|  | No | |
|  | Yes | |
| **Out-of-Plane Prototype Details (Box #4-8)** | | | | | | |
| **Prototype No.** | | **Prototype Description** | | **Max. Height** | **Wall Thickness** | **Surcharge** |
|  | |  | |  |  |  |
| **Comments on Out-of-Plane Prototypes (Box #4-9)** | | | | | | |
|  | | | | | | |

**(4) Roof Diaphragm**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Roof Diaphragm Material (Box #4-10)** | | | | | | | | |
|  | Wood | |  | Concrete |
|  | Steel Deck | |  | Braced Steel |
| **Roof Diaphragm Prototype Details (Box #4-11)** | | | | | | | | |
| **Prototype No.** | | **Roof Diaphragm Prototype Description** | | | | **Span** | **Max. Movement** | **Capacity** |
|  | |  | | | |  |  |  |
| **Comments on Roof Diaphragm (Box #4-12)** | | | | | | | | |
|  | | | | | | | | |

**(5) Floor Diaphragm**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Floor Diaphragm Material (Box #4-13)** | | | | | | | | |
|  | Wood | |  | Concrete | |
|  | Steel Deck with Concrete Topping | |  | | |
| **Floor Diaphragm Prototype Details (Box #4-14)** | | | | | | | | |
| **Prototype No.** | | **Floor Diaphragm Prototype Description** | | | **Span** | | **Max. Movement** | **Capacity** |
|  | |  | | |  | |  |  |
| **Comments on Floor Diaphragm (Box #4-15)** | | | | | | | | |
|  | | | | | | | | |

**(6) Connections**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Connection Risk (Box #4-16)** | | | | | |
| **Connection** | **C/D** | **Non-Brittle** | | **Risk** |
| VLS / Roof Diaphragm |  |  | Yes |  |
|  | No |
| VLS / Floor Diaphragm |  |  | Yes |  |
|  | No |
| Roof Diaphragm / LDRS |  |  | Yes |  |
|  | No |
| Floor Diaphragm / LDRS |  |  | Yes |  |
|  | No |
| LDRS / Foundation |  |  | Yes |  |
|  | No |
| Other (Specify) |  |  | Yes |  |
|  | No |
| **Note**:  (1) Connections do not have an assigned RPR value (Chapter 5)  (2) Connection risk is determined as below:  (a) H (High): brittle connections with C/D < 1.0  (b) M (Medium): brittle connections with 1.0 ≤ C/D < 2.0  non-brittle connections with 0.5 ≤ C/D > 1.0  (c) L (Low): brittle connections with C/D ≥ 2.0  non-brittle connections with C/D ≥ 1.0  (3) In Note (2) above, capacity (C) values are overstrength values. | | | | |
| **Comments on Connections (Box #4-17)** | | | | | | |
|  | | | | | | |

**(7) Liquefaction**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Liquefaction Potential (Box #4-18)** | | | | |
| Significant Risk of Liquefaction for Hazard Return Period of 2500 Years |  | Yes |  |
|  | No |
| **Liquefaction Movement (Box #4-19)** | | | | |
| Risk of Significant Vertical Differential Movement |  | Yes |  |
|  | No |
| Risk of Punching Failure |  | Yes |  |
|  | No |
| Risk of Significant Horizontal Differential Movement |  | Yes |  |
|  | No |
| **Comments on Risk of Liquefaction (Box #4-20)** | | | | |
|  | | | | |

|  |
| --- |
| **Comments on Risk of Vertical Differential Movement (Box #4-21)** |
|  |

|  |
| --- |
| **Comments on Risk of Punching Failure (Box #4-22)** |
|  |

|  |
| --- |
| **Comments on Risk of Horizontal Differential Movement (Box #4-23)** |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk Assessment Results (Box #5-1)** | | | | |
| **Principal Element** | **Prototype No.** | **Prototype Description** | **PDE** | **RPR(2)** | |
| LDRS |  |  |  |  | |
| Diaphragm |  |  |  | – | |
| Out-of-Plane |  |  |  |  | |
| **Maximum PDE / RPR** | | |  |  | |
| **Liquefaction Risk** | | | |  | |
| **Existing Block Retrofit Priority Ranking** | | | |  | |
| **Note:**  (1)RPR – Retrofit Priority Ranking  (2) Liquefaction is not assigned a PDE value. The RPR value is assigned for liquefaction on the following basis:  (a) H (High): significant risk of structural failure due to liquefaction movement  (b) L (Low): no significant risk of structural failure due to liquefaction movement  (3) Maximum assigned RPR for an out-of-plane element is H3 for non load-bearing walls and is not restricted for load-bearing walls.  (4) Diaphragms do not have an assigned RPR value (refer to Guidelines and Commentary). | | | | | |
| **Comments on Seismic Deficiencies, Recommended Testing and Risk Assessment Results (Box #5-2)** | | | | | | |
|  | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Retrofit Options Documented (Box #6-1)** | | | |
| **No.** | **Retrofit Performance Level** | **Chapter** |
|  |  |  |
|  |  |  |
|  |  |  |
| **Comments on Documented Retrofit Options (Box #6-2)** | | | | |
|  | | | | |

**(1) Retrofit Concept**

**Figure 7.1: Typical Section –**

**Figure 7.2: Typical Section –**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Comments on Figure 7.1 and Figure 7.2 (Box #7-1)** | | | | | | | | |
|  | | | | | | | | |
| **(2) Retrofit LDRSs** | | | | | | | | | |
| **Number of Retrofit LDRS Prototypes (Box #7-2)** | | | | | | | | | |
|  |  |  |  | |  | |  | | |
| **Retrofit LDRS Prototype Details (Box #7-3)** | | | | | | | | | |
| **Shaking Direction** | **Prototype No.** | **LDRS Prototype Description** | | **Max PDE** | | **Max DDL** | | **Rm** | |
|  |  |  | |  | |  | |  | |
| **Comments on Retrofit LDRS Prototypes (Box #7-4)** | | | | | | | | | |
|  | | | | | | | | | |

**(3) Reference SPIRs**

|  |  |  |
| --- | --- | --- |
| **Reference SPIRs (Box #7-5)** | | |
| **Reference SPIR No.** | **Reference SPIR Description** | **Retrofit Cost ($ / m2)** |
|  |  |  |
| **Comments:** | | |

**(4) Scope of Retrofit**

Refer to Appendix A for details on the scope of work for both the structural and non-structural retrofits.

**(5) Retrofit Cost Estimate**

Refer to Appendix B for details on the retrofit cost estimate for the phased retrofit. A summary of the phased retrofit is given on page (iii).

**(6) Schedule**

|  |  |
| --- | --- |
| **Schedule (Box #7-6)** | |
| Duration of Construction Period | months |
| **Comments on Operational Disruption:** | |

**(7) Construction Risks**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Risks (Box #7-7)** | | | | | |
| **Risk Description** | **Significant Risk** | | | |
| Asbestos |  | Yes |  | No |
| Vermiculite |  | Yes |  | No |
| Lead Paint |  | Yes |  | No |
| **Risk Management Comments (Box #7-8)** | | | | | |
|  | | | | | |

**(1) Retrofit Concept**

**Figure 8.1: Typical Section –**

**Figure 8.2: Typical Section –**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Comments on Figure 8.1 and Figure 8.2 (Box #8-1)** | | | | | | | | |
|  | | | | | | | | |
| **(2) Retrofit LDRSs** | | | | | | | | | |
| **Number of Retrofit LDRS Prototypes (Box #8-2)** | | | | | | | | | |
|  |  |  |  | |  | |  | | |
| **Retrofit LDRS Prototype Details (Box #8-3)** | | | | | | | | | |
| **Shaking Direction** | **Prototype No.** | **LDRS Prototype Description** | | **Max PDE** | | **Max DDL** | | **Rm** | |
|  |  |  | |  | |  | |  | |
| **Comments on Retrofit LDRS Prototypes (Box #8-4)** | | | | | | | | | |
|  | | | | | | | | | |

**(3) Liquefaction Retrofit**

**Figure 8.3: Typical Section for Liquefaction Retrofit**

|  |
| --- |
| **Comments on Figure 8.3 (Box #8-5)** |
|  |

**(4) Reference SPIRs**

|  |  |  |
| --- | --- | --- |
| **Reference SPIRs (Box #8-6)** | | |
| **Reference SPIR No.** | **Reference SPIR Description** | **Retrofit Cost ($ / m2)** |
|  |  |  |
| **Comments:** | | |

**(5) Scope of Retrofit**

Refer to Appendix A for details on the scope of work for both the structural and non-structural retrofits.

**(6) Retrofit Cost Estimate**

Refer to Appendix B for details on the retrofit cost estimate for the life safety retrofit. A summary of the life safety retrofit is given on page (iii). Note that the retrofit cost estimate includes the liquefaction retrofit, where applicable.

**(7) Schedule**

|  |  |
| --- | --- |
| **Schedule (Box #8-7)** | |
| Duration of Construction Period | months |
| **Comments on Operational Disruption:** | |

**(8) Construction Risks**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Risks (Box #8-8)** | | | | | |
| **Risk Description** | **Significant Risk** | | | |
| Asbestos |  | Yes |  | No |
| Vermiculite |  | Yes |  | No |
| Lead Paint |  | Yes |  | No |
| **Risk Management Comments (Box #8-9)** | | | | | |
|  | | | | | |

|  |
| --- |
| **Summary of Enhanced Performance Retrofit (Box #9-1)** |
|  |

|  |
| --- |
| **Architectural Scope of Work (Box #10-1)** |
|  |

|  |
| --- |
| **Mechanical Engineering Scope of Work (Box #10-2)** |
|  |

|  |
| --- |
| **Electrical Engineering Scope of Work (Box #10-3)** |
|  |

|  |
| --- |
| **Architectural, Mechanical and Electrical Engineering Construction Risks (Box #10-4)** |
|  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TRB PDR Requirements (Box #11-1)** | | | | | |
| **No.** | **PDR Structural Details** | **TRB Requirement** | | | |
| 1 | Additional Field Testing |  | Yes |  | No |
| 2 | Custom Site Response Analysis |  | Yes |  | No |
| 3 | Ambient Vibration Testing |  | Yes |  | No |
| 4 | Additional Figures |  | Yes |  | No |
| 5 | Additional Photographs |  | Yes |  | No |
| 6 | Class C Cost Estimate |  | Yes |  | No |
| 7 | Other |  | Yes |  | No |
| **Note**: PDR Requirements are agreed to by both the Engineer-of-Record and the TRB. | | | | | |
| **Risk Management Comments (Box #11-2)** | | | | | |
|  | | | | | |

**Seismic Project Identification Report**

**APPENDIX A**

**SCOPE OF RETROFIT DETAILS**

**for**

**BLOCK #XX-X (BLOCK NAME)**

**SCHOOL NAME**

**Table A.1: Scope of Structural Phased Retrofit**

| **No.** | **Construction Activity** | **Approx. Quantity** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Table A.2: Scope of Structural Life Safety Retrofit**

| **No.** | **Construction Activity** | **Approx. Quantity** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Seismic Project Identification Report**

**APPENDIX B**

**SCOPE OF ARCHITECTURAL, MECHANICAL AND ELECTRICAL ENGINEERING WORK**

**for**

**BLOCK #XX-X (SCHOOL BLOCK)**

**SCHOOL NAME**

**Introduction**

This appendix is comprised of stamped reports, one report for each discipline, for the scope of work for architectural, mechanical and electrical engineering work.

**Seismic Project Identification Report**

**APPENDIX C**

**RETROFIT COST ESTIMATE REPORT**

**for**

**BLOCK #XX-X (SCHOOL BLOCK)**

**SCHOOL NAME**

**Retrofit Cost Estimate Report**

**Seismic Project Identification Report**

**APPENDIX D**

**LIQUEFACTION STRUCTURAL DETAILS**

**for**

**BLOCK #XX-X (SCHOOL BLOCK)**

**SCHOOL NAME**

**Liquefaction Retrofit Structural Details**

**Seismic Project Identification Report**

**APPENDIX E**

**REPRESENTATIVE STRUCTURAL DETAILS**

**for**

**BLOCK #XX-X (SCHOOL BLOCK)**

**SCHOOL NAME**

**Representative Structural Details**

**Seismic Project Identification Report**

**APPENDIX F**

**PHOTOGRAPHS**

**for**

**BLOCK #XX-X (SCHOOL BLOCK)**

**SCHOOL NAME**

**Photographs**

**Seismic Project Identification Report**

**APPENDIX G**

**RELEVANT REFERENCE DOCUMENTS**

**for**

**BLOCK #XX-X (SCHOOL BLOCK)**

**SCHOOL NAME**

**Relevant Reference Documents**