HAMILTON - WENTWORTH DISTRICT SCHOOL BOARD

CONCEPT DESIGN AND FEASIBILITY STUDY

March 30, 2016

Rev-01

GLENDALE SECONDARY SCHOOL

145 RAINBOW DRIVE, HAMILTON

Grguric Architects INCORPORATED

TABLE OF CONTENTS - GLENDALE SECONDARY SCHOOL

SECTION One – EXECUTIVE SUMMARY

1.1 Purpose

The purpose of this study is to provide assistance to the HWDSB in their decision making with regards to the Hamilton-Wentworth District School Board Secondary School Revitalization Program. This report will provide the Board with information and recommendations for making critical decisions to implement the revitalization of Glendale Secondary School. The School Board intends to revitalize and modernize all their existing Secondary Schools.

This Study has examined the following areas at Glendale Secondary School:

Instructional Spaces

- Science Labs & Prep Rooms
- Transportation Shop
- Specialization Support Program Spaces
- The Arts & Performing Arts
- Library

Operational Spaces

- Administration Offices
- Student Services
- Staff Room and Staff Workroom Areas
- Washrooms
- Operational Areas

1.2 Methodology

The design team included an experienced team of architects and engineers lead by Grguric Architects Incorporated and exp., both of whom have completed several similar studies in the past. The study provides a thorough review of the school's current enrollment, projected enrollment, educational suitability and adequacy of the current spaces. Our Team reviewed the current ability of the facility to provide a progressive and modern learning experience for its students along with a safe and comfortable learning environment.

Predesign meetings were conducted with the Principal, senior department heads and senior facility staff to review the existing spaces to determine the accuracy of floor plans with regards to room names and activities within these spaces. A review of each space was conducted referencing the HWDSB Tier 3 Programs & Specialty High Skills Major Programs (dated August 12, 2015). Interactive design meetings were conducted with the Principal and various department heads of the programs identified. Preliminary design layouts were provided based on these interactive design sessions and Board Standards for these spaces.

A thorough review of the HWDSB vision for its Secondary Program Strategy – June 2013 was reviewed during the preparation of this study for programming requirements as outlined in the Tier 1, Tier 2 and Tier 3 programs identified.

Tier 3 Programs identified in the Secondary Program Strategy at Glendale Secondary School:

- ESL / ELD
- International Baccalaureate
- Performing Arts
- Strings

Tier 3 Specialty High Skills Major Programs

- Arts and Culture – Arts
- Business
- Transportation

Tier 3 Intervention and Support

- Extended Support Programs
- Personalized Learning Support Programs

TIER 3 PROGRAMS

ESL /ELD

English as a **S**econd **L**anguage / **E**nglish **L**iteracy **D**evelopment ESL/ELD

The purpose of high school ESL/ELD credit courses is to provide students with language learning opportunities to assist them to develop the level of proficiency in English required for success in school, the community, post-secondary education and the workplace.

International Baccalaureate

The International Baccalaureate (IB) Diploma Programme is a preuniversity course of study, offered during the last two years of secondary school.

Performing Arts

The school's performing arts program is a four year program, from grade 9 through to grade 12. It is a focused program which allows students to develop skills and earn industry-recognized credentials in the Performing Arts sector while also meeting the requirements for a secondary school graduation diploma. Many of the courses included in this program include Drama, Dance, Music and Theatre Production classes.

Strings

Students participate in the study of music through performance, creation and analysis of music and music history.

TIER 3 SPECIALTY HIGH SKILLS MAJOR PROGRAMS

Business

The Glendale Business Department provides both entry level courses that introduce students to common business tools and senior level courses which prepare students for careers and further studies in Marketing, Accounting, Law, Entrepreneurship, International Business, and Sports & Entertainment Marketing.

Transportation*

The transportation program provides students with a strong foundation for a wide variety of careers in the transportation sector, from service, repair and modification of vehicles and vehicle systems to those related to the organization and management of transportation services and mass-transit systems.

*These programs lead to a Specialist High Skills Major (SHSM) designation for students who are heading towards apprenticeship training, college, university or the workplace. SHSM programs allow Grades 11 and 12 students to focus on a career path that matches their skills and interests while meeting the requirements of the Ontario Secondary School Diploma (OSSD). Students receive the SHSM seal on their diploma when they complete a specific bundle of eight to ten courses in their selected field, earn valuable industry certifications including first aid and CPR, and gain important skills on the job with employers through co-operative education.

1.3 OVERVIEW

Located at 145 Rainbow Drive, Hamilton, ON, Glendale Secondary School opened in 1959 and is part of the Hamilton-Wentworth District School Board. Located in East Hamilton, the School currently serves approximately 850 students. The forecasted enrollment projections for the year 2022 is approximately 1,051 students.

We have made several assumptions in the program analysis and estimated costing during the development of this study. Our analysis is based on varied costs for demolition and construction dependent on the complexities of the spaces and the final intent of this space. For example, a cost per square foot analysis is significantly higher for a high tech or complex space such as Transportation verses a standard classroom space. It should be noted that both the program needs and the cost estimates will need to be refined during the schematic design phase as the project advances through design development.

1.4 PROPOSED CONCEPT DESIGN

The proposed facility renovations will provide the school with modernized and updated spaces for its Tier 3 programming needs. These renovations will also address the facility needs outlined in the Board's Secondary Program Strategy Report. It should be noted that some spaces have already been renovated to address the current programming needs.

Some additional spaces have been identified during the interactive design sessions that require attention in order to meet the current Ministry of Education Standards with regards to program requirements.

Proposed renovations to Glendale Secondary School includes the following new programs:

- Extended Support Programs
- Personalized Learning Support

Proposed existing program spaces are to be renovated:

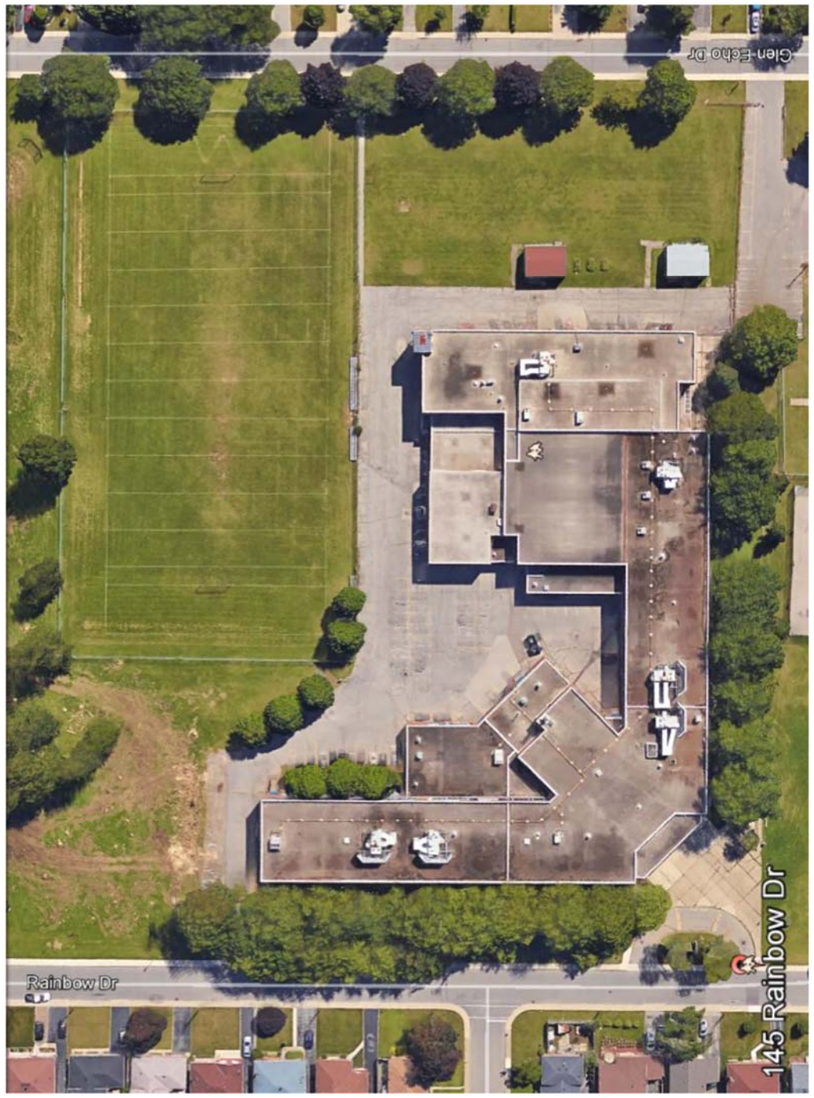
- Auditorium and Stage
- Strings Room – Completed in 2014
- Arts and Culture – Digital Media
- Transportation Shop
- Science Rooms and Prep Spaces
- Computer Business Rooms

Proposed renovations to the following support spaces:

- Library Commons
- Cafeteria and Kitchen / Servery
- Main Administration Office / Guidance
- Teachers Workrooms
- Washrooms

SECTION TWO – EXISTING CONDITIONS ASSESSMENT

A review of the existing facility was conducted by our Team in June 2015. The detailed report of the findings can be found in Appendix C, Facility Conditions Assessment Report dated June 26, 2015. In addition, the HWDSB commissioned its own consultants for a conditions assessment and a copy of this report is attached as Appendix D to this study.



SECTION THREE – SUMMARY OF CONCEPT DESIGNS

3.1 TIER 3 PROGRAMS

ESL / ELD
Currently there are three classrooms for this program and no additional classrooms or renovations will be required.

International Baccalaureate
There is no specific requirements to renovate classrooms or spaces assigned. The program is currently in place at Glendale Secondary School and no additional space is required.

Performing Arts

Auditorium and Stage - The existing space has not been renovated since constructed in 1959. The only modifications made to this space was to add a control room on the mezzanine level which resulted in the loss of much needed seating. The control room is not well used due to its position on the mezzanine and therefore it will be relocated to the main level to act as both the new control room and a new box office ticket sales center.

As a result of past water damages to the stage, the Board is currently replacing the stage floor with a proper cushion wood composite floor. The stage will have new accessories such as stage curtains and a new cyclotron to replace the damaged units.

As part of the 2016 renovations, the Auditorium will be upgraded with new theatre seating both at the main level and mezzanine level. The orchestra pit will be enlarged to better accommodate musical instruments for school productions. The backstage spaces will be renovated to provide proper dressing and makeup rooms, costume storage and a proper tech room.

New lighting systems for both the main auditorium and backstage will be required to properly facilitate the needs of the program. The space will be fully air- conditioned.

Music Room 1039C – this space will be update with new finishes and lighting only.

Dance Studio – This space was recently renovated, however the support spaces such as change rooms and washroom will need to be added.

3.2 TIER 3 SPECIALTY HIGH SKILLS MAJOR PROGRAMS

Arts and Culture: Arts

Set Design Classroom 1066 – In close proximity to the Theatre Arts space, this classroom will be completely renovated to facilitate skills development necessary to supplement the Performing Arts program.

Media Art Classroom 1041 – The existing room functions as the media arts and Arts & Culture classroom. We are proposing to completely renovate this space to provide computers around the perimeter of the room, a new sound room, and storage room for valuable equipment lockup. A new green screen and projector will be introduced into the space.

Transportation Shop
There is currently one **Transportation Shop 1063** and this space is operating to Ministry requirements for both facility use and size. New exhaust system is proposed. No extensive renovations are planned for this space. The two exterior overhead garage doors will require replacement.

3.3 TIER 3 INTERVENTION AND SUPPORT

Several Rooms are already functioning as Intervention and Support Classrooms. Some renovations will be required to convert existing rooms to properly function as support spaces to the existing Alternative Education Classrooms. These specialized programs require a low student to staff ratio.

Extended Support Programs
Offers intensive, continuous, and individualized support. Involves collaboration with parents and community partners in order to provide appropriate programming and transition to community supports. Room 1020A will be converted to function as a Live Skills Learning Classroom. A new Calming Room is planned to better assist the existing extended support classrooms 1008 and 1009. A new ortho washroom completed to School Board standards will be constructed. Interior renovations of the existing ESP classrooms will be undertaken.

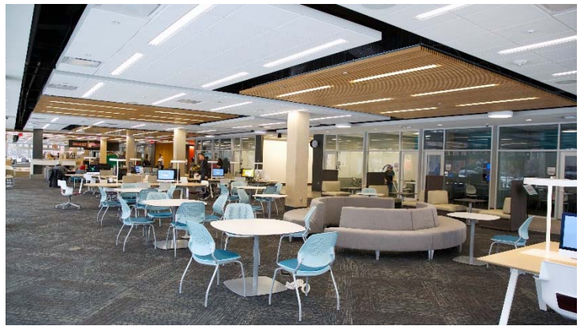
Personalized Learning Support Program
An individualized educational alternative program for students who cannot learn in a regular school setting. Students remain connected to their home school. The creation of a new Alternative Education Classroom 1064A will provide for life skills learning with the new kitchen and support space.

3.4 Non Program Space Renovations

Administration Area and Teachers Work Rooms
The main office area has been recently renovated, therefore the space will not need any updating. The Guidance space 1006 will require some modifications to accommodate a new meeting room 1007. Throughout the school we are proposing to open up small rooms and create larger and more functional Teachers Work Rooms. These will be located in close proximity to the various cluster of classroom types.

Library Commons
The existing library space will remain in its present location. A downsizing in perimeter shelving has been identified to provide more space for built in learning cubbies and furniture. The introduction of a Learning Commons environment is achievable with refreshed furniture and finishes and by introducing a more modernized look to the space. It is important to include sufficient provisions for power devices to support communal learning environments. The use of whiteboards and Wi-Fi connections will help facilitate the students work individually or in a group setting.

New Business Classroom 2033
Located on the second floor east wing, this space will provide for group learning and will be an extension of the Library Commons space. The corridor wall will receive new floor to ceiling windows that will provide both natural light and supervision to the room. The exterior window wall will have its windows enlarged to provide natural light to the Blended Learning Classroom. The classroom will have sufficient provisions for electrical devices that will support group based learning.



Cafeteria and Servery
The existing cafeteria and Servery will remain in its present location. A redesign of the interior spaces will place emphasis on generating smaller groups of tables rather than the long rows of tables as has been the norm. By breaking up the tables we can introduce better communication between groups and promote more of a student forum atmosphere within the cafeteria.

Science Labs

Science Labs
There are currently six existing science labs located on the second level west wing. Two are General Science Labs, two are Chemistry Labs, one is Physics Lab and one is a Biology Lab. The current locations are not suitable as labs and are proposing a reconfiguration of the Science rooms to bring them close to current Ministry Standards for size. Extensive renovations are required to bring these spaces along with the support prep rooms to Board standards. Our proposed design concepts addresses these Board standards. New workstation islands will be equipped with gas / electricity and data to better facilitate program needs. New fume hoods will be double sided to allow access from prep room and science room.

Washroom Facilities
The school was constructed in 1959 and the existing washrooms are for the most part the original fixtures. A complete removal and replacement will be necessary to modernize and improve these existing washroom facilities. A full review of the existing fixture counts as related to male and female users will need to be conducted in order to determine if any one group or both are deficient in washroom fixtures.

3.5 PHASING

The proposed renovations at Glendale Secondary School are extensive and it is for this reason that these renovations must be phased to occur during the summer months to reduce disruption to school operations during the school year.

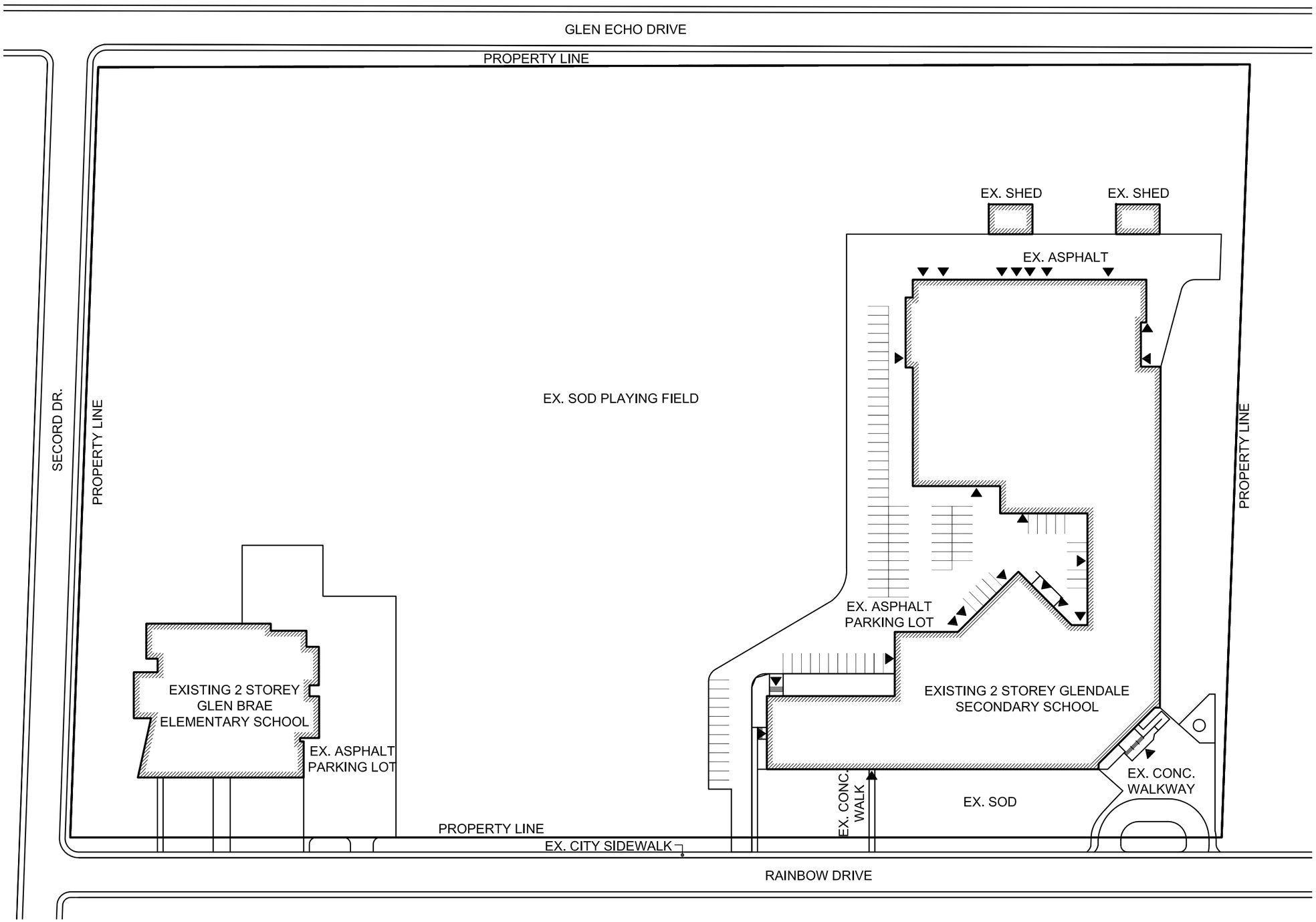
Proposed Phased Construction, as follows:

Phase One:	Summer 1 and fall as required - renovations to all Tier 3 Program spaces directly related to instructional spaces.
Phase Two:	Summer 2 – Cafeteria, Library and Administration Spaces
Phase Three:	Summer 3 – Non Instructional Spaces and Washrooms
Phase Four:	Summer 4 – Additional work as related for conditions assessment report

3.6 DRAWINGS

The following pages illustrate the existing floor plans and the subsequent Proposed Floor Plan for each level of the school.

Refer to the proposed floor plans for the extent of renovations, noted as a shaded area.



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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

SITE PLAN

PROJECT: 2015-09
SCALE: NTS
DRAWN: RS
DATE: 29/03/2016
REV. 01

HAMILTON-
WENTWORTH
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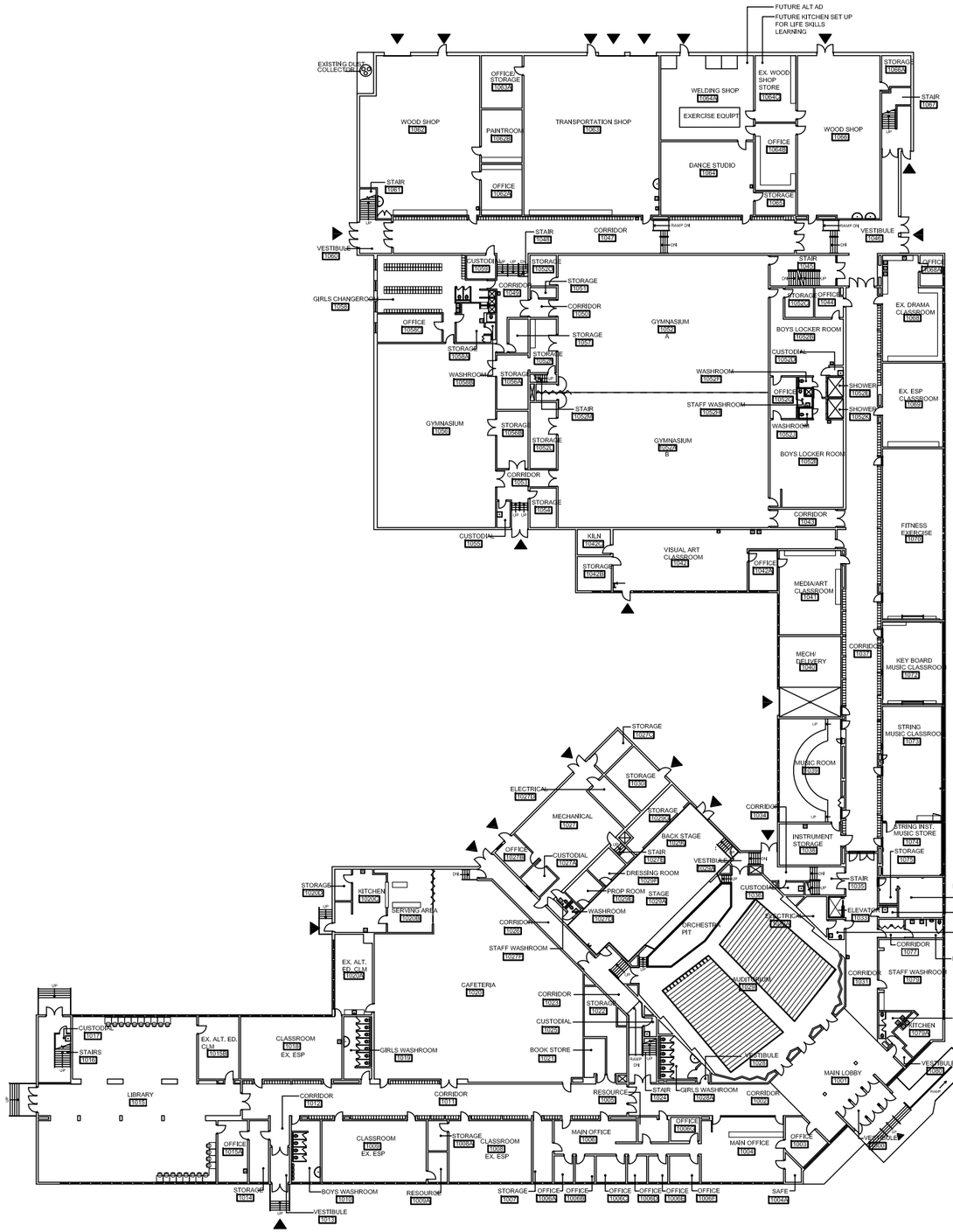
BOARD

A1



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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

EXISTING 1ST & 2ND FLOOR PLANS

PROJECT: 2015-09

SCALE: NTS

DRAWN: RS

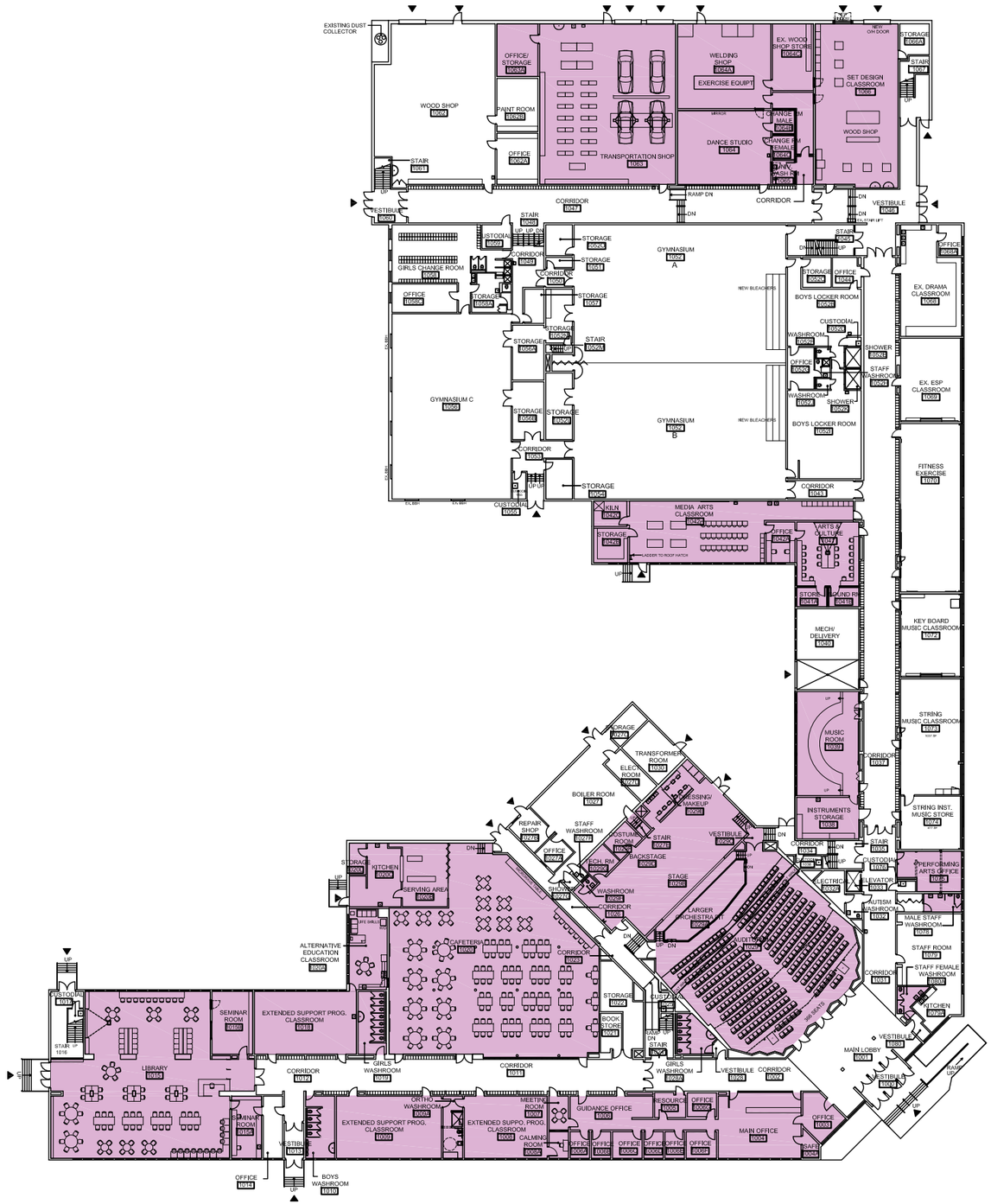
DATE: 29/03/2016
REV. 01

HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A2

LEGEND

- RENOVATION AREA
- EXISTING WALL TO BE DEMOLISHED
- EXISTING WALL TO REMAIN
- NEW WALL



0 8' 24' 32'
4' 40' 60'

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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

PROPOSED 1ST FLOOR PLAN

PROJECT: 2015-09
SCALE: NTS
DRAWN: RS
DATE: 29/03/2016
REV. 01

HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A3

LEGEND

- RENOVATION AREA
- EXISTING WALL TO BE DEMOLISHED
- EXISTING WALL TO REMAIN
- NEW WALL

0 4' 8' 24' 32' 40' 60'

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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

PROPOSED 2ND FLOOR PLAN

PROJECT: 2015-09

SCALE: NTS

DRAWN: RS

DATE: 29/03/2016
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HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A4

STORAGE 1027C
TRANSFORMER ROOM 1030
ELECT. ROOM 1027D
BOILER ROOM 1027
REPAIR SHOP 1027B
STAFF WASHROOM 1027F
OFFICE 1027A
COSTUME ROOM 1028F
STAIR 1027E
DRESSING/ MAKEUP 1029E
VESTIBULE 1029C
TECH. RM 1029G
BACKSTAGE 1029D
STAGE 1029B
SHOWER 1027G
WASHROOM 1029H
CORRIDOR 1026
LARGER ORCHESTRA PIT 1029A
AUDITORIUM 1029
STORAGE 1020D
KITCHEN 1020C
SERVING AREA 1020B
MICROWAVE TABLE
LIFE SKILLS
W/D
ALTERNATIVE EDUCATION CLASSROOM 1020A
442 SF
CAFETERIA 1020
6158 SF
CORRIDOR 1023
EXTENDED SUPPORT PROG. CLASSROOM 1018
943 SF
GIRLS WASHROOM 1019
STORAGE 1022
BOOK STORE 1021
CUSTODIAL 1025
RAMP DN
STAIR 1024
GIRLS WASHROOM 1028A
VESTIBULE 1028
CORRIDOR 1011
CORRIDOR 1002
MUSIC ROOM 1039
1349 SF
INSTRUMENTS STORAGE 1038
CORRIDOR 1037
CORRIDOR 1034
CUSTODIAL 1036
ELECTRICAL 1032A
STAIR 1035
CUSTODIAL 1076
ELEVATOR 1033
AUTISM WASHROOM 1032
STRING MUSIC CLASSROOM 1073
1037 SF
STRING INST. MUSIC STORE 1074
477 SF
PERFORMING ARTS OFFICE 1075
CORRIDOR 1077
MALE STAFF WASHROOM 1078
STAFF ROOM 1079
CORRIDOR 1031
STAFF FEMALE WASHROOM 1080A
KITCHEN 1079A
VESTIBULE 1080
MAIN LOBBY 1001
RAMP UP
UP
DN

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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

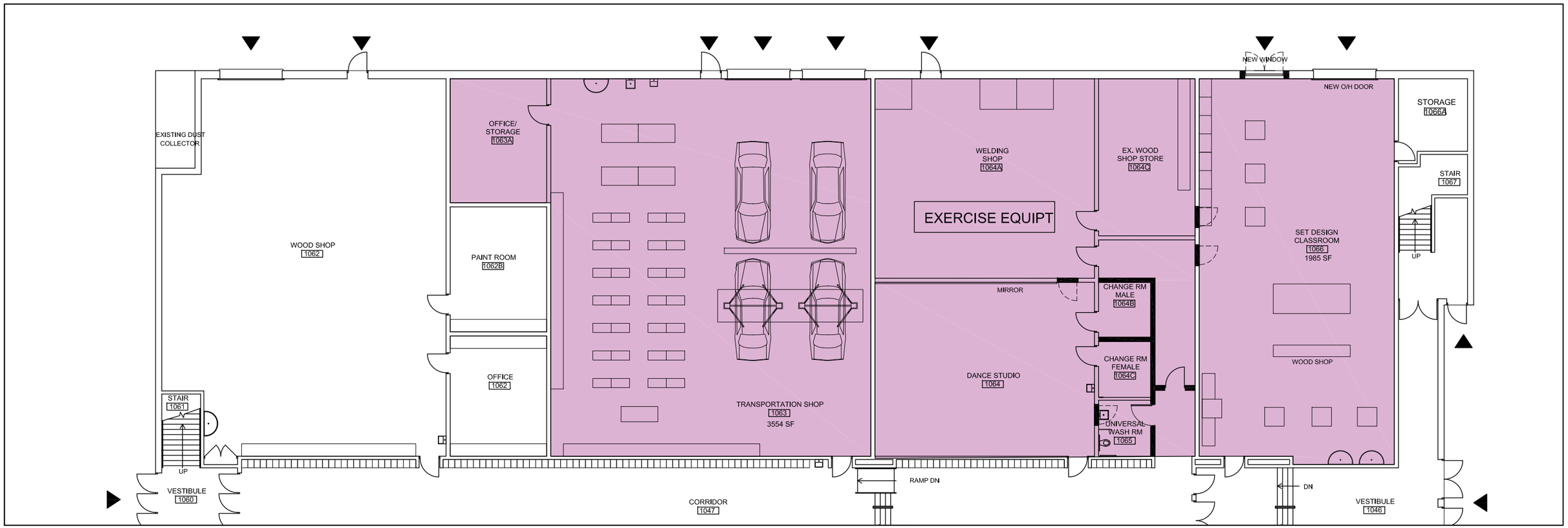
145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

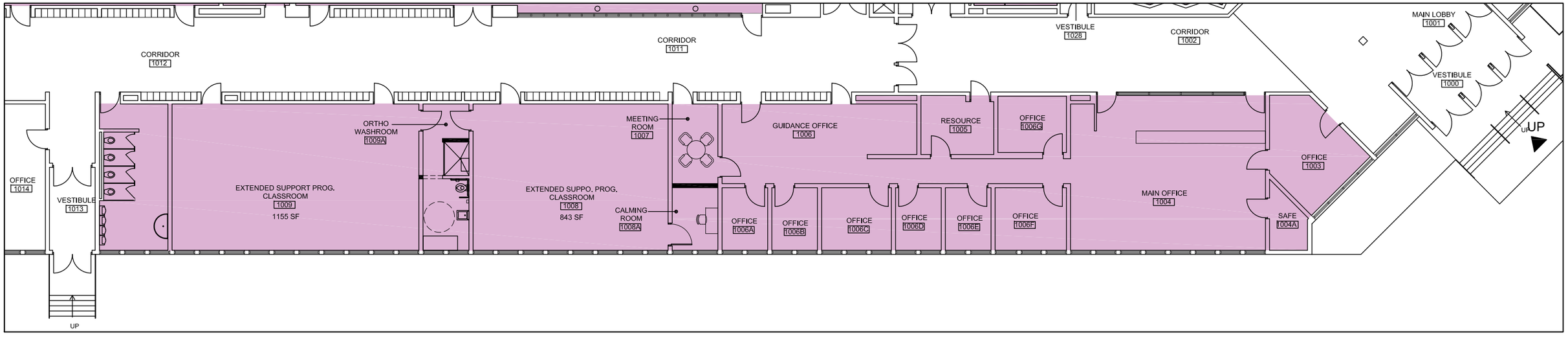
1ST FLOOR - ENLARGED PLAN

PROJECT: 2015-09
SCALE: 1/16"=1'-0"
DRAWN: RS
DATE: 29/03/2016
REV. 01

HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A5


EXISTING DUST COLLECTOR
WOOD SHOP
1062
OFFICE/ STORAGE
1063A
PAINT ROOM
1062B
OFFICE
1062
STAIR
1061
UP
VESTIBULE
1060
TRANSPORTATION SHOP
1063
3554 SF
CORRIDOR
1047
WELDING SHOP
1064A
EXERCISE EQUIPT
DANCE STUDIO
1064
MIRROR
EX. WOOD SHOP STORE
1064C
CHANGE RM MALE
1064B
CHANGE RM FEMALE
1064C
UNIVERSAL WASH RM
1065
RAMP DN
NEW WINDOW
NEW O/H DOOR
SET DESIGN CLASSROOM
1066
1985 SF
WOOD SHOP
STORAGE
1066A
STAIR
1067
UP
DN
VESTIBULE
1046



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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

1ST FLOOR ENLARGED PLANS

PROJECT: 2015-09

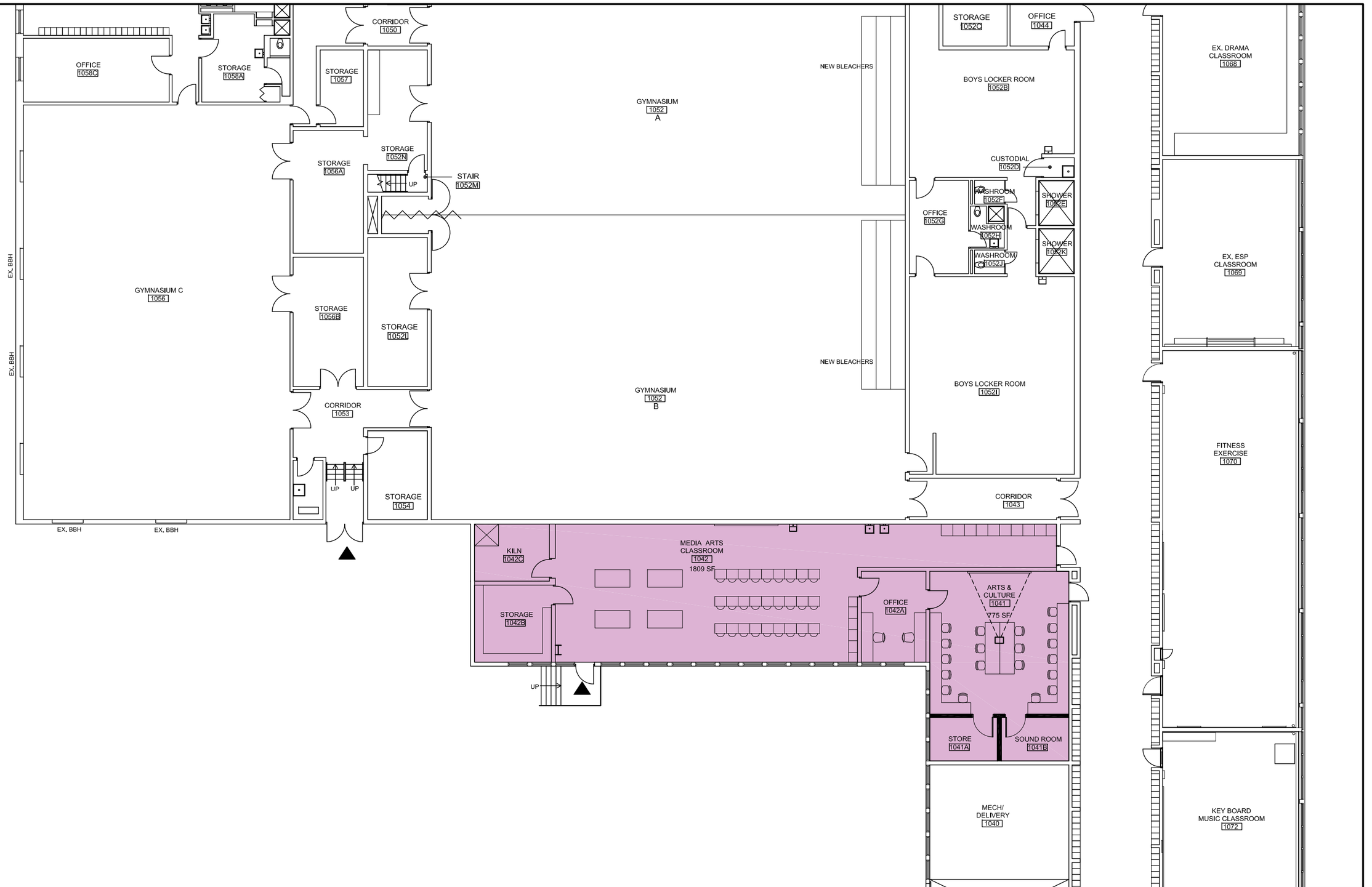
SCALE: 1/16" = 1'-0"

DRAWN: RS

DATE: 29/03/2016
REV. 01

HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A6



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1ST FLOOR ENLARGED PLAN

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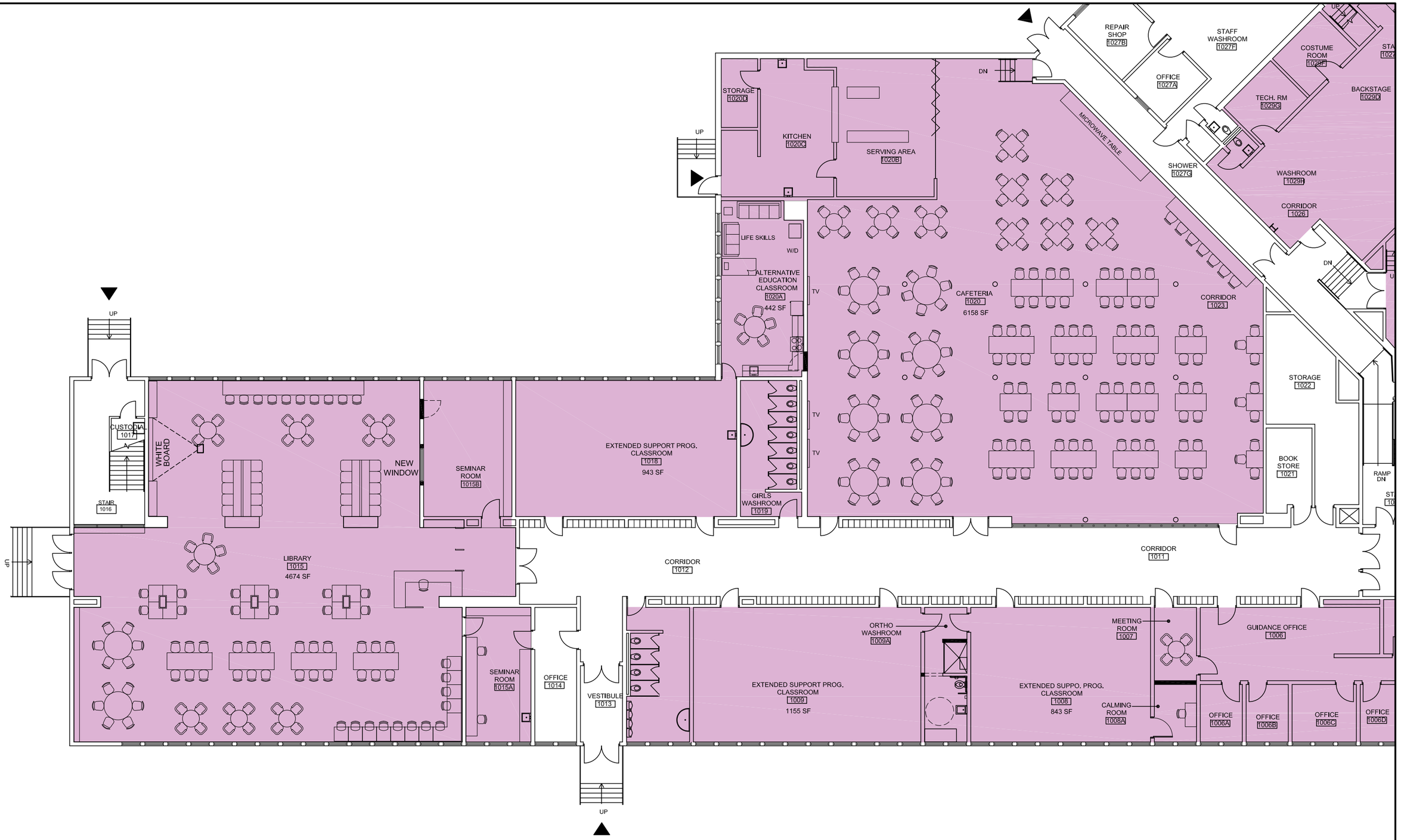
HAMILTON-
WENTWORTH
DISTRICT
SCHOOL
BOARD

A7



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FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

1ST FLOOR ENLARGED PLAN

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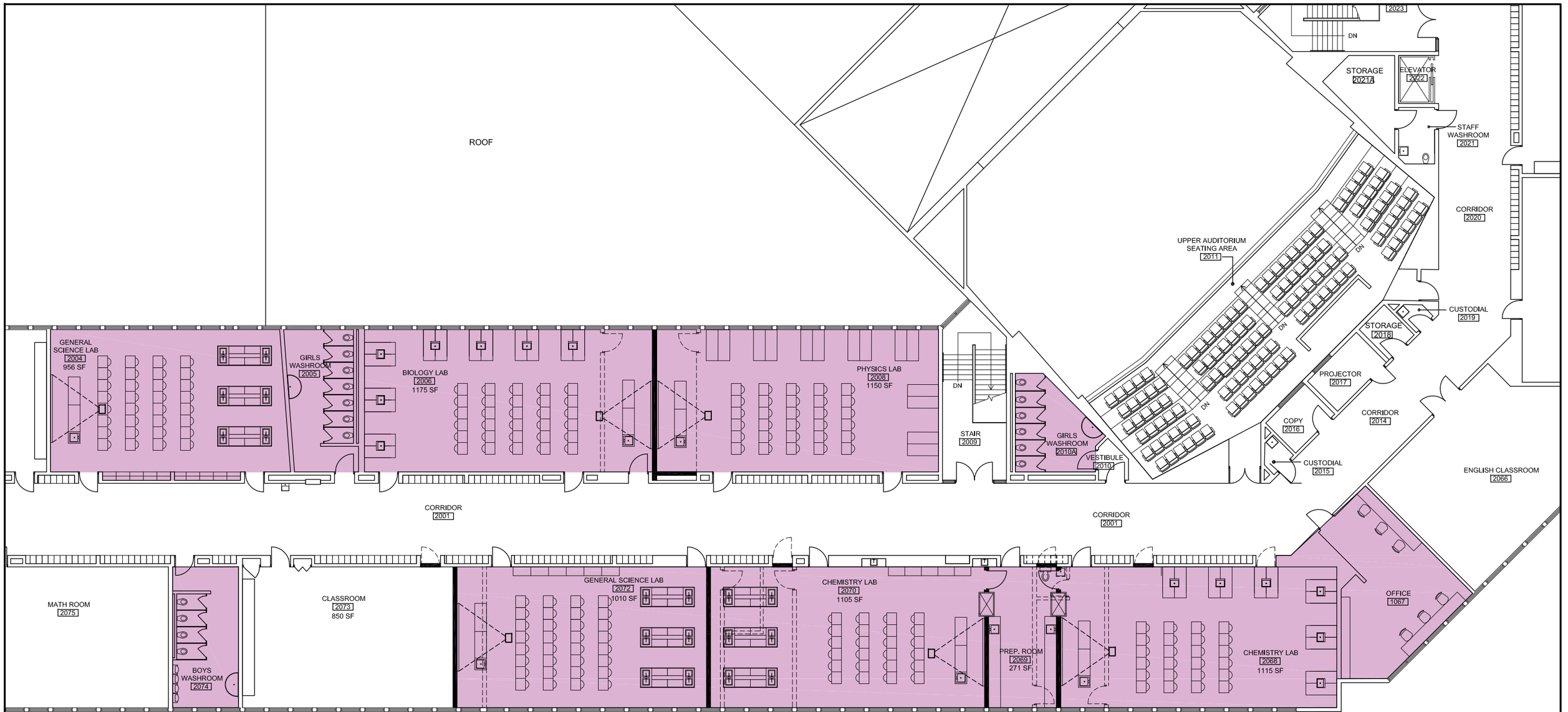
HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A8



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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

2ND FLOOR ENLARGED PLAN

PROJECT: 2015-09
SCALE: 1/16" = 1'-0"
DRAWN: RS
DATE: 29/03/2016
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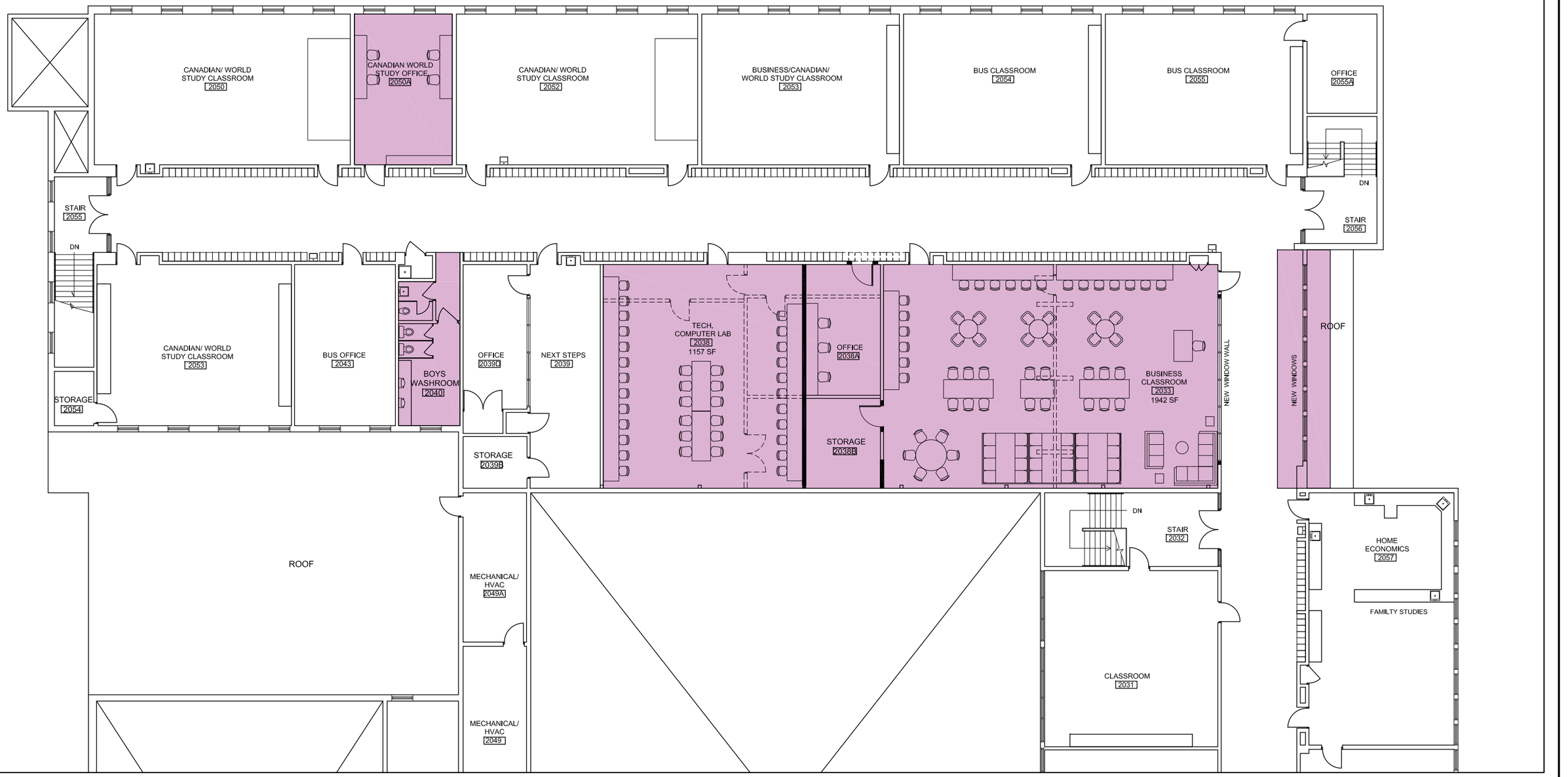
HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A9



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GLENDALE SECONDARY SCHOOL
FEASIBILITY STUDY & CONCEPT DESIGN

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

2ND FLOOR ENLARGED PLAN

PROJECT: 2015-09
SCALE: NTS
DRAWN: RS
DATE: 29/03/2016
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HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

A10

APPENDIX A

exp. Mechanical

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T: 905.525.6069 • www.exp.com

Hamilton Wentworth District School Board

Glendale Secondary School

Mechanical Services Feasibility Study & Concept Design

Project Number
GR8-00016023-00

Prepared By:
Murray Wickham, P.Eng., LEED AP
Erick Korthuis

Date Submitted
March 29, 2016 (Revision 1)

TABLE OF CONTENTS

1.0 INTRODUCTION

The existing Glendale Secondary School was opened in 1959 and is located at 145 Rainbow Drive in Hamilton, Ontario.

The Hamilton-Wentworth District School Board is proposing to renovate the existing Science Laboratories, Washrooms, Administration Office spaces, Technology Labs (Shops), Cafeteria, Auditorium, Music Room, Kitchen/Servery and Library and to create new Computer Labs, Media Arts Classroom, Theatre/Dance Studio, Dance Studio, Offices, Alternative Education, Wood Shop/Set Design Classroom, Tech Computer Lab and Extended Learning Classrooms by renovating existing spaces and building a new Addition to the existing Music Room.

Some of the information in this Design Brief related to existing conditions is based on information from a site review completed on February 26, 2016.

This report documents the feasibility and the proposed mechanical systems that are consistent with, and anticipated for, the proposed renovations.

This report, prepared by **exp** Services Inc., is intended for the exclusive use of Hamilton-Wentworth District School Board and Grguric Architects Inc. None of **exp** Services Inc., Hamilton-Wentworth District School Board and Grguric Architects Inc. assume any liability for the use of this report, or for the use of any information disclosed in the report, or for damages resulting from the use of this report, by other parties.

2.0 CODES, STANDARDS & GUIDELINES

Guidelines and interpretations of the requirements of the latest editions of the following Codes, Standards will be addressed in the design of this project:

- Ontario Building Code (OBC)
- Ontario Fire Code (OFC)
- Ontario Gas Utilization Code
- ASHRAE 62.1, Ventilation for Acceptable Indoor Air Quality
- ASHRAE 90.1, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings
- NFPA 10, Portable Fire Extinguishers
- Hamilton-Wentworth District School Board Design Guidelines

3.0 DESCRIPTION OF SCOPE APPLICABLE TO ALL PROPOSED AREAS OF RENOVATION

3.1 Existing Mechanical Conditions

- Plumbing fixtures, Sciences Lab fume hoods, emergency eyewash/shower stations and Science Lab sinks complete with associated trim, isolation valves, hot/cold water and sanitary drain pipes serving areas of renovation are to be removed from the site
- Existing buried sanitary and storm pipes serving area of renovation to be power flushed after all construction at the site is complete
- Existing supply air diffusers and/or grilles and a portion of existing ductwork serving areas of renovation are to be removed from the site
- After all construction at the site is complete, existing interior supply, return and exhaust ductwork, approximately 4500 mm from diffusers/grilles, is to be power vacuumed
- Existing local fan equipment serving the areas of renovation to be removed from the site
- Redundant controls in areas of renovation are to be removed from site
- All existing heating equipment (unit heaters, cabinet heaters, heating coils) that are being reused are to be cleaned and lubricated
- New firestopping to be supplied and installed in gaps between existing pipes/ductwork and existing walls surrounding the renovated area
- Existing equipment being reused to be water and air balanced to match original design documents
- All existing fire extinguishers to be inspected and charged
- Existing wall radiation that is being reused shall be cleaned and enclosures replaced with similar style. New enclosures to be painted
- Existing floor drain grates to be replaced with new, similar in style
- Science Lab emergency exhaust system and all accessories are to be removed from the site.

Refer to Architectural Demolitions Plans for Rooms/Areas being renovated.

3.2 New Mechanical Requirements

- Type L Copper pipe for new domestic water pipes
- Schedule 40 steel pipe for new heating pipes
- Schedule 40 steel pipe for new gas pipes
- PVC plastic pipe for new sanitary and storm pipes

- DWV copper pipe for new vent pipes
- Type ACR copper piping for new refrigerant pipes
- Type M copper for new condensate pipes
- Borosilicate glass drain pipe for new Science Labs
- New double check valve backflow assembly in existing incoming domestic water and fire pipe
- New Washroom and Change Room supply, return and exhaust ducts are to be aluminum
- New supply, return and exhaust ductwork, unless otherwise noted, are to be galvanized steel fabricated to SMACNA Duct Construction Standards
- Extend existing supply, return and exhaust duct systems complete with new diffusers and grilles to suit the area of renovation, unless otherwise indicated
- New HVAC equipment to be connected to the existing Building Automation System (BAS)
- Supply and install new diffusers and/or grilles serving areas of renovation
- Supply and install additional fire extinguishers to meet the latest Codes and Standards

3.3 Seismic Considerations

All new mechanical systems will be seismically braced to comply with the OBC, should it be determined that seismic bracing is required for this site/building. If seismic restraint systems are required, they shall include lateral supports for all suspended systems and lateral seismic resistance for all vibration isolated and fixed mounted equipment.

4.0 DESCRIPTION OF SCOPE APPLICABLE TO SPECIFIC ROOMS/AREAS OF RENOVATION

4.1 Washrooms - All Floors

- Existing wall radiation is to be reused
- Existing exhaust system to be reused
- Install new plumbing fixtures as per Architectural Layout and School Board Standards
- Refer to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.2 Cafeteria/Kitchen Servery Renovation

- Existing supply/return air systems are to be reused
- Existing wall radiation is to be reused
- Existing Kitchen exhaust system complete with all accessories is to be reused
- Supply and install a new gas-fired heating rooftop unit (2000 CFM) to serve existing Servery exhaust hood. New unit to be installed on Servery roof
- Refer to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.3 General Offices

- Existing supply/return air systems are to be reused
- Existing wall radiation is to be reused
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.4 General Office - Guidance

- Existing supply/return air systems are to be reused
- Existing wall radiation is to be reused
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.5 Alternate Education/Kitchen

- Existing supply/return air systems are to be reused
- Demolish and remove from site all existing radiation
- Supply and install new perimeter building hot water heating pipes and heating equipment to suit new room layout. New pipes to be connected to the existing building heating system
- Existing stainless steel sink is to be removed from the site. Supply and install new stainless steel sink and all accessories, and reconnect to existing sanitary and domestic water pipes
- Supply and install a new range hood, exhaust ductwork and wall louvre to outdoors
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.6 Wood Shop/Set Design Classroom

- Existing supply/return air systems are to be reused
- Demolish and remove from the site all existing exhaust air systems and all accessories
- Supply and install a new sawdust collector (6000 CFM) complete with spark arrestor system, exhaust air system and connect to Owner supplied equipment
- Existing heating equipment and accessories are to be removed from site and replaced with new. New equipment to match existing conditions
- Refer to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.7 Library/Offices/Seminar Rooms

- Existing supply/return air system are to be reused
- Existing wall radiation is to be reused
- Refer to General Scope Applicable to All Proposed Areas of Renovation - New Mechanical Requirements

4.8 Science Labs/Prep Rooms

- Existing supply/return air systems are to be reused
- Existing wall radiation is to be reused

- Demolish and remove from site all existing sanitary, domestic water and natural gas piping serving the old Science Labs
- Demolish and remove from site all existing fume hoods serving old Science Labs
- Demolish and remove from site all existing emergency exhaust systems, fans and associated ductwork, serving the old Science Labs
- New Science Lab exhaust air extraction duct to be internally lined, PVC coated, Class B negative pressure
- Supply and install new sanitary piping and connect to all new sinks, emergency eyewash, fume hoods, and floor drains. Sanitary pipe to be connect to new neutralizing tank located on the First Floor. New pipe to be connected to the existing building sanitary system
- Supply and install new domestic hot, cold and recirculation water and natural gas pipes to serve new Instructors Work Benches complete with isolation and solenoid valves. Install solenoid valves on new cold water and natural gas pipes serving Student Work Benches. New pipes to be connected to the existing systems complete with isolation valves and all accessories. Solenoid valve to be controlled by a key switch located at the Instructor's Work Bench and to an emergency panic button located on the wall beside the door leaving the Room.
- In the Chemistry Lab, supply and install new two-sided fume hoods (800 CFM each) complete with roof mounted exhaust fan, ductwork and air proving switch to serve new Science Lab
- Supply and install a new emergency exhaust system (1500 CFM) complete with exhaust fan, ductwork, exhaust grille and air proving switch to serve new Science Lab. Fan to be manually operated
- Supply and install new dedicated Classroom Instructor Work Bench exhaust system complete with roof exhaust fan and associated exhaust ductwork. Fan to be manually operated from Instructor's Work Bench
- New Instructor's Work Bench and fume hood exhaust air extraction duct to be internally lined, PVC coated, Class B negative pressure
- Supply and install one (1) floor type neutralizing tank (200 gallon capacity) complete with limestone chips to serve new Chemistry Labs. Neutralizing tank to rest on the First Floor
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.9 Office

- Existing supply/return air systems are to be reused

- Demolish and remove from site existing baseboard heating equipment and associated heating piping
- Demolish and remove from site a portion of existing supply duct, return duct, diffusers/grilles and accessories to serve new room layout. New ductwork to be connected to the existing building systems
- Supply and install new building hot water heating piping and baseboard heating equipment to suit the new layout. New pipes to be connected to the existing building heating system
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.10 Staff Room/Male Staff Washroom/Female Staff Washroom

- Install new plumbing fixtures as per Architectural Layout and School Board Standards
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.11 General Science/Prep Room

- Existing supply/return air systems are to be reused
- Existing wall radiation to be reused
- Demolish and remove from site all existing sanitary, domestic water and natural gas piping serving the old General Science and Prep Room
- Demolish and remove from site all existing exhaust systems, fans and associated ductwork serving the old General Science and Prep Room
- Demolish and remove from site all existing all existing fume hoods serving old General Science
- Supply and install new sanitary piping and connect to all new sinks, emergency eyewash and floor drains. New piping to be connected to the existing building sanitary system
- Supply and install new domestic hot, cold and recirculation water and natural gas pipes to serve Instructors Work Benches complete with isolation and solenoid valves. Install solenoid valves on the new cold water and natural gas pipes serving Student Work Benches. New pipes to be connected to the existing systems complete with isolation valves and all accessories. Solenoid valve to be controlled by a key switch located in the Instructor's Work Bench and to an emergency panic button located on the wall beside the door leaving the Room

- New General Science Lab exhaust air extraction duct to be internally lined, PVC coated, Class B negative pressure
- Supply and install a new emergency exhaust system (1500 CFM) complete with exhaust fan, ductwork, exhaust grille and air proving switch to serve new General Sciences Lab. Fan to be manually operated
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.12 Tech Computer Lab

- Existing rooftop heating/air conditioning unit is to remain. Existing supply and return air ductwork to be modified to suit new rooms (Tech Computer Lab, Next Steps, and Next Steps Office). Existing rooftop air conditioning unit thermostat to be relocated into Computer Lab.
- Duct system serving Next Steps to be complete with supply air diffusers, return air grille and by-pass box complete with room thermostat.
- Duct system serving two (2) Offices to be complete with supply air diffusers, return air grille and dedicated by-pass box with room thermostat
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.13 Extended Learning Classrooms (Ortho Washroom)

- Supply and install new sanitary sewer piping to serve new plumbing fixtures. Piping to be connected to the existing building sanitary system
- Install new plumbing fixtures as per Architectural Layout and School Board Standards
- Supply and install new domestic hot, cold and recirculation pipe distribution system to all new plumbing fixtures. New pipes to be connected to the existing building systems complete with isolation valves and all accessories
- Supply and install new indoor in-line exhaust fan (300 CFM), ductwork, grilles, outdoor wall louvre and all accessories to serve dedicated area Washrooms
- Existing rooftop heating, air conditioning unit is to remain. Existing supply and return air ductwork to be modified to suit new room. Existing rooftop air conditioning unit thermostat to be relocated into Extended Learning Classroom
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.14 Theatre/Dance Studio/Washroom

- Supply and install new sanitary sewer piping to serve new plumbing fixtures. Piping to be connected to the existing building sanitary system
- Install new plumbing fixtures as per Architectural Layout and School Board Standards
- Supply and install new domestic hot, cold and recirculation pipe distribution system to all new plumbing fixtures. New pipes to be connected to the existing building systems complete with isolation valves and all accessories
- Supply and install new indoor in-line exhaust fan (300 CFM), ductwork, grilles, outdoor wall louvre all accessories to serve dedicated Washrooms
- Existing return ductwork system to be partially removed and capped
- Existing supply/return air systems are to be reused
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.15 Dance Studio/Change Rooms

- Existing air handling unit and ductwork system are to remain
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.16 Auditorium/Stage/Dressing Room/Costume Room

- Supply and install new sanitary sewer piping to serve new plumbing fixtures. Piping to be connected to the existing building sanitary system
- Install new plumbing fixtures as per Architectural Layout and School Board Standards
- Supply and install new domestic hot, cold and recirculation pipe distribution system to all new plumbing fixtures. New pipes to be connected to the existing building systems complete with isolation valves and all accessories
- Supply and install new indoor in-line exhaust fan (500 CFM), ductwork, grilles, outdoor wall louvre and all accessories to serve dedicated Dressing Rooms, Costume Room and Tech Room.
- Existing air handling unit and ductwork system serving the Auditorium are to remain
- Supply and install a new 50 Ton DX coil into existing air handling unit serving the Auditorium, complete with refrigerant piping, outdoor condensing unit and all accessories
- Upgrade existing building control system to accommodate the new air conditioning system

- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.17 Music Room/Practice Rooms/Instrument Storage

- Demolish and remove from site existing sink and accessories. Remove a portion of sanitary and domestic water pipes
- Demolish and remove from site existing humidification system. Cap and seal water pipes beyond finished wall
- Supply and install new stainless steel sink and reconnect to existing plumbing services
- Demolish and remove from site all existing radiation
- Supply and install new perimeter building hot water heating pipes and heating equipment to suit new room layout, New pipes are to be connected to the existing building heating system
- Existing supply/return ductwork to remain
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.18 New Vestibule (Adjacent to Music Room)

- Supply and install heating equipment and heating piping to suit new room layout. New pipes to be connected to the existing building heating system
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.19 Performing Arts Office

- Extend existing supply and return duct system to suit new room layout
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.20 Arts & Culture Classroom

- Existing wall radiation is to be reused
- Existing supply/return air systems are to be reused
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.21 Computer Lab (First Floor)

- Existing wall radiation is to be reused
- Supply and install a 3 Ton variable refrigerant flow (VRF) cooling system to serve room. Supply one (1) dedicated indoor fan coil unit, refrigerant piping, condensate drain and remote condensing unit located on the existing roof of the new Media Arts Classroom
- Existing supply/return air systems are to be reused
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.22 Transformer

- Existing exhaust fan, ductwork, accessories and exhaust/relief louvres are to be removed from the site
- Supply and install new room exhaust fan, ductwork, accessories and exhaust louvre to suit new room layout
- Supply and install new roof relief air gooseneck and ductwork to suit new room layout
- Refer also to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

4.23 Automotive Shop

- Demolish and remove from the site all existing exhaust air systems and all accessories
- Supply and install new specialized exhaust air systems complete with exhaust fan and associated ductwork and connect to Owner supplied equipment. i.e. Carbon monoxide system (500 CFM); Finishing exhaust system (800 CFM); Welding exhaust system (1500 CFM)
- Existing heating equipment and accessories are to remain
- Refer to General Scope Applicable to All Proposed Areas of Renovation - Existing and New Mechanical Requirements

APPENDIX B

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• Hamilton Wentworth District School Board

Glendale Secondary School

Electrical Services Feasibility Study & Concept Design

Project Number
GR8-00016023-00

Prepared By:
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Date Submitted
March 29, 2016 (Revision 1)

TABLE OF CONTENTS

1.0 INTRODUCTION

The existing Glendale Secondary School was opened in 1959 and is located at 145 Rainbow Drive, in Stoney Creek, Ontario.

The Hamilton-Wentworth District School Board is proposing to renovate the existing Science Laboratories, Washrooms, Administration Office spaces, Technology Labs (Shops), Cafeteria, Auditorium, Music Room, Kitchen/Servery and Library and to create new Computer Labs, Media Arts Classroom, Theatre/Dance Studio, Offices, Alternative Education, Set Design Classroom, Tech Computer Lab and Extended Learning Classrooms by renovating existing spaces and building a new Addition to the existing Music Room.

This report documents the feasibility and the proposed electrical systems that are consistent with and anticipated for, the proposed renovations.

This report, prepared by **exp** Services Inc., is intended for the exclusive use of Hamilton-Wentworth District School Board and Grguric Architects Inc. None of **exp** Services Inc., Hamilton-Wentworth District School Board and Grguric Architects Inc. assume any liability for the use of this report, or for the use of any information disclosed in the report, or for damages resulting from the use of this report, by other parties.

2.0 CODES, STANDARDS & GUIDELINES

Interpretations of the requirements of the latest editions of the following Codes, Standards and Guidelines will be addressed in the design of this project:

- Ontario Building Code (OBC)
- Ontario Fire Code (OFC)
- Ontario Electrical Safety Code (OESC)
- IES Recommended Practices and Guidelines
- ASHRAE/IES 90.1, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings
- Hamilton-Wentworth District School Board Design Guidelines

3.0 GENERAL ELECTRICAL CONSTRUCTION SCOPE - ALL AREAS OF RENOVATIONS

3.1 Selective Demolition of Existing Electrical Systems

Unless noted otherwise, all existing electrical systems in the areas of renovation will be disconnected and removed. This includes all power distribution equipment and cabling, branch circuit wiring/conduit, selected fire alarm system devices, public address system, lighting, lighting controls, receptacles, communication outlets, CCTV cameras, music, security systems and wiring for mechanical equipment.

Existing electrical systems that are to be demolished will be disconnected and removed back to source. Where the removed devices are deemed suitable, they will be relocated/re-used.

Refer to Architectural Demolitions Plans for Rooms/Areas being renovated.

3.2 Electrical Power & Distribution

.1 Primary Power Supply

The proposed renovations are expected to result in an increased net electrical peak demand load and, as a result, the existing incoming electrical service supply will have to be reviewed to determine if it is adequate.

.2 Power Distribution

Refer to the selective demolition section of this Report.

Unless indicated otherwise, existing 600/347V and 120/208V power distribution, lighting and receptacle panelboards will remain.

New electrical panelboards will be provided in all new General Science Rooms, Science Labs, Technology Labs (Shops) and Music Room. Refer to Typical Room Specific Electrical Requirements section of this Report.

New panelboards will be fed from existing distribution panels.

All new panelboards will be complete with copper bus.

Conductors for all new feeders will be copper.

.3 Branch Circuit Wiring

Branch circuit wiring systems will be provided throughout all areas of renovation to all new loads as well as existing-to-remain loads as required. Conductors for all branch circuit wiring will be copper. Loads will typically be supplied with power from the nearest panelboard.

.4 Receptacles

Receptacles will be provided throughout the areas of renovation as required for equipment, housekeeping and convenience and also as required by Codes and Standards. Refer to the Typical Room-Specific Electrical Requirements section of this Report.

3.3 Fire Alarm System

Refer to Selective Demolition section of this Report.

The Building is equipped with an existing two-stage, non-addressable, Simplex fire alarm system complete with a Simplex 4100 Series control panel, initiating devices and audible signalling devices (bells).

The existing main Control Panel located in the existing Custodial Office on the First Floor will be upgraded to accept new devices.

Existing-to-remain fire detectors, pull stations, signalling devices, etc., outside of the renovated areas and not affected by the renovations will be reconnected to the new Control Panel. New devices (including strobe visual signalling devices) will be added as required in the areas of renovation, in order to ensure compliance with Codes, Standards and Guidelines, i.e.:

- Manual pull stations (2-stage) at all required exits
- Heat detectors in all Utility, Service and Storage Rooms
- Visual signal appliances (i.e. strobes) in all public areas and areas with high ambient sound levels

- The entire system will be tested and verified as per Code requirements

3.4 Lighting

Refer to the Selective Demolition section of this Report.

Unless noted otherwise, all existing lighting systems outside the areas of renovation and not affected by the renovations will remain. New lighting systems and controls will be provided as required in the areas of renovation,

Existing luminaires that are to be removed will be disconnected and removed from site. Lighting ballasts containing PCBs, if found during the Demolition phase, will be disposed of in accordance with Ministry of Environment regulations.

.1 New Lighting Systems - Interior

All new lighting will utilize energy efficient dimmable LED lamp technology in order to provide daylight harvesting where required and for dimming of classrooms lighting during Audio Visual presentations. High colour rendering, warm and neutral white LED's will be specified as appropriate to suit each application.

Luminaires suitable for use with a 120V power supply will be used.

In general, new interior lighting systems will be provided for the areas of renovation. Lighting systems will be integrated with the building architecture as much as possible. Luminaires that cannot be concealed within an architectural element will be well shielded using either a frosted white or prismatic refracting lens.

Refer to Typical Room Specific Electrical Requirements section of this Report.

.2 New Lighting Systems - Exterior

Exterior lighting fixtures will be provided on the existing building to serve the new Cafeteria Patio area.

All new lighting will utilize energy efficient LED lamp technology with colour rendering of 70 or better and colour temperature tolerance of 4100 to 4300 K.

.3 Lighting Controls

In general, lighting controls with multi-level control will be provided in accordance with the Codes, Standards and Guidelines.

Except for Washrooms, low voltage lighting control system comprised of switches, vacancy sensors and a dimmable daylight control strategy will be specified on all renovated Rooms/ Areas in accordance with ASHRAE/IES 90.1 Standards.
Washrooms will be equipped with occupancy sensors for automatic On/Off of the light fixtures.

.4 Emergency Lighting and Exit signs

Emergency Lighting and Exit signs will be provided in the areas of renovation as required in order to satisfy the requirements of the Ontario Building Code. Emergency lighting systems will consist of battery units and remote heads as required to meet Code requirements.

Exit signs will be LED "green running man" pictogram type.

3.5 Miscellaneous Electrical Work

.1 Communication Cabling (IT/Voice)

Refer to the Selective Demolition section of this Report.

Existing Network/Voice incoming service (fibre optic [FO] cable) will remain.

The existing horizontal copper cabling distribution is comprised of one (1) Main IT Closet on the First Floor and Satellite Racks with Network switches and patch panels located in various rooms throughout the School. The Main IT Closet will remain however any Satellite Racks located within the areas of renovation will be relocated and upgraded as required to accommodate the renovations and the new cabling requirements. Refer to Typical Room Specific Electrical Requirements section of this Report.

Existing wireless (Wi-Fi) access point devices, currently located throughout the School, including in Classrooms, Labs, Shops, Library and Cafeteria, will remain and be reused.

New Cat. 6e cables will be run from the new outlets that are required in the areas of renovation, to the IT Closet or nearest existing satellite rack located on the same floor as the outlet.

.2 Clock Systems

Refer to Selective Demolition section of this Report.

The building is currently equipped with an existing 120 VAC synchronous impulse type master clock system located in the First Floor Main Office that operates various 120V synchronous impulse type secondary clocks throughout the School Corridors. This system will remain and be reused.

The Building is also equipped with an existing 120V wireless clock system with receiver located in a Storage Room on the Second Floor and clocks in Classrooms, Shops and Labs. This system will remain, existing clocks will be reused and new clocks provided as required.

.3 Emergency Call Systems (Washrooms)

In accordance with the School Board Design Guidelines, an emergency call system (tone/visual type) will be provided for all Staff Washrooms. An emergency call station located adjacent the toilet complete with corridor indicating light will be installed outside the Washroom. Calls will be annunciated at a new annunciator that will be located at the First Floor Main Office.

.4 Public Address and Program Bell System

Refer to the Selective Demolition section of this Report.

The School is currently equipped with an existing P/A & Program Bell System complete with speakers throughout the School that will remain and be upgraded as required in order to accommodate the work associated with the proposed renovations.

The main control console is located in the Main Office on the First Floor.

New speakers complete with integral call switch will be provided in all new Classrooms, Labs, Music Room and Shops.

.5 Wiring For Mechanical Equipment

Refer to the Selective Demolition section of this Report.

Motor starters, variable frequency drives, disconnect switches, power and control wiring will be provided for any new mechanical equipment that is required. Refer to the Mechanical Services Feasibility Study and Concept Design Brief, for information regarding such equipment.

.6 Security System

Refer to the Selective Demolition section of this Report.

The School is currently equipped with a security system comprised of a main control panel located in the Custodial Office on the First Floor, key pads and door status/monitoring contacts at exterior doors. This system will remain and be upgraded as required.

Unless noted otherwise, existing door status/monitoring contacts outside of areas of renovation and not affected the renovations will remain.

New door status/monitoring contacts will be added as required at Exterior Doors and Staff Rooms and connected to existing system.

.7 Closed-Circuit Television System (Security Cameras)

The School is currently equipped with a system comprised of existing head-end equipment located in the Main Office on the First Floor and cameras located in Corridors and Library. This system will remain as is and equipment will be reused.

.8 Music System

Existing music system in the Cafeteria will remain and be reused.

.9 Modular Control Panels

New surface mounted panels will be provided near each Room main entrance door complete with duplex receptacles, data and telephone outlets, public address speaker, light switches, clock, telephone handset and thermostat in all of the renovated Classrooms, Labs, Technology Labs (Shops), Teacher's Workrooms, Learning Commons Areas, Hospitality Room, Cosmetology Room and Graduated Support/Special Education Areas.

.10 Seismic Restraint Systems

All electrical systems will be seismically braced to comply with the OBC if it is determined that it is required for this site/building. If seismic restraint systems are required, they shall include lateral supports for all suspended systems and lateral seismic resistance for all vibration isolation and fixed mounted equipment.

3.6 Typical Room-Specific Electrical Requirements

.1 Washrooms

All renovated Washrooms to be complete with the following:

- Surface mounted lighting fixtures
- Ceiling mounted occupancy sensors for automatic On/Off of lighting
- Infrared hands-fee sinks, toilets and urinals
- One (1) hand dryer per four (4) stalls

.2 Office/Workroom/Guidance Areas

- Recess mounted lighting fixtures

.3 Cafeteria

- Recessed lighting fixtures

- Receptacles, power connections for equipment and communication outlets as required

.4 Cafeteria Servery

- Recessed lighting fixtures

.5 Technology Labs (Shops)

- Suspended direct/indirect linear light fixtures
- Dedicated 120/208V-3 phase-4 wire and 600V-3 phase-3 wire electrical panels complete with emergency Power-Off pushbuttons for Shop equipment only
- Power connection for motorized blinds
- Power and data cabling connection for motorized display screen, overhead projector and interactive board
- Power connections for overhead doors
- Power reels
- Receptacles and data outlets perimeter walls as required
- Three (3) receptacles (20A/120V) at each student workstation

.6 Science Labs/Classrooms

- Suspended direct/indirect light fixtures
- Dedicated 120/208V-3 phase-4 wire electrical panel complete with emergency Power-Off pushbuttons.
- Eight (8) receptacles and eight (8) data outlets along perimeter walls
- Ground Fault Interrupter receptacles at each Lab Station and Teacher Desk/Demo Station. Power to receptacles to be controlled from Teachers Desk
- Power to Gas Shut-Off valve with interlock to Fire Alarm System
- Receptacles and data outlets for the following:
  - Overhead Projector
  - Interactive Board
- Two (2) receptacles and two (2) data outlets at Teacher's Desk
- One (1) data outlet at each Lab Station

.7 General Science Rooms

Refer to Classrooms.

.8 Classrooms

- Suspended direct/indirect linear lighting
- Eight (8) receptacles and eight (8) data outlets along perimeter walls
- Four (4) receptacles for Tablet charging
- Six (6) floor-mounted receptacles
- Receptacles and data outlets for the following:
  - Overhead Projector
  - Interactive Board/Monitor
- Two (2) receptacles and two (2) data outlets at Teacher's Desk.

.9 Office

- Recessed lighting fixtures
- Receptacles and Communication Outlets along perimeter walls for general use
- Two (2) Receptacles and two (2) Communication Outlets at each Workstation
- Receptacles and communication outlets for the following
  - Overhead Projector
  - Interactive Board/Monitor
- Wireless (Wi-Fi) access point
- Modular control panel

.10 Theatre/Dance Studio

- Suspended direct/indirect linear fluorescent fixtures
- Dedicated 120/208V-3 phase - 4 wire and 600V-3 phase-3 wire electrical panels,
- Power and data cabling connection for motorized display screen, overhead protector and interactive board
- Receptacles and data outlets along perimeter walls, as required

.11 Dance Studio/Change Rooms

- Refer to Theatre/Dance Studio, above.

.12 Auditorium/Stage/Dressing Rooms/Costume Room

- Recessed light fixtures in Dressing Room/Costume Room/Control Room
- Lighting in Stage area to remain
- Lighting in Auditorium to be recessed type, dimmable. Existing site spotlights serving Stage are to remain

.13 Music Room/Practice Rooms/Instrument Storage

- Refer to Classrooms

.14 Performing Arts Office

- Recessed light fixtures

.15 Arts & Culture Classroom

- Refer to Classrooms

.16 Computer Lab (First Floor)

- Suspended direct/indirect lighting fixtures
- Receptacles and communication outlet along perimeter walls, as required to general use
- Receptacles and communication outlets for the following
  - Overhead Projector
  - Interactive Board/Monitor
- Wireless (Wi-Fi) access point
- Two (2) receptacles and two (2) communication outlets at each Workstation
- Modular control panel

.17 Alternative Education

- Recessed lighting fixtures
- Receptacles and communication outlets along perimeter walls
- Three (3) Receptacles and three (3) communication outlets at each Guidance Desk/Station
- Receptacles and communication outlets for the following
  - Overhead Projectors
  - Interactive Board/Monitor
  - TV
  - Wireless (Wi-Fi) Access Point
- Access control system (card reader)

APPENDIX C

Grguric Architects Incorporated

Glendale SS Facility Conditions Assessment Report

June 26, 2015

GRGURIC
ARCHITECTS
INCORPORATED

FACILITY CONDITIONS ASSESSMENT

OF

Glendale Secondary School

145 Rainbow Drive, Hamilton ON L8K 4G1

PREPARED FOR

Hamilton Wentworth District School Board

JUNE 26, 2015

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1.0 ACCESSIBILITY REVIEW

On the ground floor level the east wing Corridor 1047 and Vestibule 1046 each have stair transitions of four and three risers, respectively. Accessibility is provided at these stairs by means of a wall mounted stair lift system (Photo 1.0.A). The south access doors from Vestibule 1046 has an asphalt ramp to the doors providing some means of accessibility at this location (Photo 1.0.B). This building has one barrier free accessible entrance at the main entrance, complete with concrete ramp and automatic door operators (Photo 1.0.C). This building has an existing elevator providing accessibility to the entire second floor area (Photo 1.0.D). A single unisex washroom located each on the ground and second levels are the only available barrier free washroom facilities. There are no barrier free provisions in the existing change rooms or showers.

Photo 1.0.A – Corridor 1047

Photo 1.0.B – Vestibule 1046

Photo 1.0.C

Photo 1.0.D

2.0 INTERIOR SPACES

2.1 Flooring

Vinyl Tiles (VAT)

The original vinyl asbestos tiles show signs of advanced surface wear. Common throughout the facility, damaged tiles have been randomly replaced with newer tiles of differing colour and pattern. Surface scuff marks are commonly associated with desks and work tables. The following are some common examples of the tile conditions encountered.

- Random patterns of replacement tiles (Photo 2.1.A)
- Surface wear through scuffing and rubbing (Photo 2.1.B)
- Delaminated or missing sections of rubber base (Photo 2.1.C)
- Chipped edges at floor joint trims and differing tile types in same corridor (Photo 2.1.D)

Photo 2.1.A - Classroom 1009 (Room 107)

Photo 2.1.B – Science Lab 2004 (Room 206)

Photo 2.1.C - Classroom 2000 (Room 243)

Photo 2.1.D – Corridor 2020

Other Flooring:

Terrazzo: The existing terrazzo flooring finish is found predominately in the corridors, entrances and stair wells, as well as, in the washrooms, change rooms and showers. The terrazzo finishes remain in good condition and only require regular maintenance upkeep. The floor transition stairs in Corridor 1047 have several incidences of chipped terrazzo finishes at the stair nosings (Photo 2.1.E). The surface finish in the change rooms shower areas has extensive water based and rust staining between shower source and the floor drain (Photo 2.1.F).

Photo 2.1.E – Vestibule 1046

Photo 2.1.F – Boys Change Room 1052B

Gymnasium Wood Flooring: The existing hardwood flooring in the gymnasium is exhibiting signs of advanced surface wear to the finish. In some areas, the finish coat is worn down to the bare wood. Surface deterioration includes the paint coat markings (Photo 2.1.G). Along the west side of the court is a small area of recently replace hardwood flooring strips. There is an obvious distinction between the newer and older flooring finishes appearance (Photo 2.1.H).

Photo 2.1.G – Gymnasium 1052

Photo 2.1.H – Gymnasium 1052

2.2 Ceilings

The corridors throughout the facility have acoustic ceiling tiles and they were generally found to be in good and serviceable condition. There are examples of water damage and broken or chipped edges (Photo 2.2.A). The T-bar grids in the facility are original and exhibit signs of surface discoloration. Other than the ground floor shop classrooms, the classrooms in the facility are typically finished with a metal lathe and plaster ceiling finish and surface mounted 12x12 perforated acoustic tile arranged in linear panels. In most cases, classrooms were found to have several missing 12x12 tiles (Photo 2.2.B). For the most part these ceiling types remain in good condition requiring paint refinish and some repairs. There are several classrooms along with the stairwell ceilings that are continuously finished in the 12x12 perforated tile surface mounted to the plaster ceiling. Before completing renovation to this ceiling finish the 12x12 tiles should be tested for ACM. Photo 2.2.C below, illustrates a segment of missing expansion joint trim found in the ceiling finish of the Music Classroom 1039. Generally the plaster ceiling finish in the washrooms remain in good condition, however in the Girls Washroom 1019, the plaster ceiling has some areas where the paint finish has sustained moisture related damage and exhibits signs of surface bubbling and finish peeling (Photo 2.2.D).

Photo 2.2.A – Corridor 1011

Photo 2.2.B – Classroom 2078 (Room 201)

Photo 2.2.C - Music Room 1039 (Room 126)

Photo 2.2.D – Girls Washroom 1019

2.3 Auditorium

The equipment and finishes in the auditorium exhibit an advanced state of wear and in most cases have exceeded normal life cycle usage. The existing wood bench seating type is outdated for current theatres and auditoria that are typically outfitted with individual seats, offering better comfort and superior acoustic properties. Several of the existing benches have extensive surface finish wear, down to the original wood (Photo 2.3.A).

The existing flooring finishes consist of carpeting along the aisles and resilient sheet flooring over the extent of the bench seating. The existing resilient sheet flooring shows extensive surface wear and staining and the carpeting is in need of replacement (Photos 2.3.B and 2.3.C). The existing stage wood flooring and subbase have been removed and stripped down to the existing concrete slab surface. The installation of a new flooring system would require the concrete surface to be skim coated and levelled to cover over the existing bumpy surface (Photo 2.3.D).

Photo 2.3.A – Auditorium

Photo 2.3.B - Auditorium

Photo 2.3.C – Auditorium

Photo 2.3.D – Auditorium

Other observations include the following:

- Orchestra pit sump pump: the adjacent carpet flooring is still damp from a recent surface flooding. This points to an operational problem with the pump that will need to be addressed (Photo 2.3.E).
- Stage Back Room wood flooring requires refinishing or replacement.
- The existing A/V System should be reviewed for upgrades: example – the older type of stage lighting could be replaced with current and more efficient LED Systems (Photo 2.3.F).
- The 2-piece washroom does not conform to current codes and would need be revised (Photo 2.3.G).
- Oversized doors: the existing steel plate exterior doors are difficult to operate and latch close and offer no insulation value (Photo 2.3.H).


Photo 2.3.E – Orchestra Pit Sump Pump


Photo 2.3.F – Auditorium Stage


Photo 2.3.G – Auditorium Washroom


Photo 2.3.H – Auditorium Exterior Doors

2.4 Other Interior Spaces

Walls

Masonry painted wall finishes generally remain in good condition. There are a few examples of movement cracks along the masonry joints (Photo 2.4.A and 2.4.B). These areas should be monitored for any signs of further cracking.

Photo 2.4.A – Classroom 1009 (Room 107)

Photo 2.4.B - Computer Room 2035 (Rm. 238B)

Interior Doors

The solid core wood doors and wood frames, typical for this facility, generally remain in good condition. The typical stained veneer door finish, show signs of surface wear and discoloration and will require refinishing. Some of these solid core wood doors have a painted finish. The wood frames include decorative wood trims on both sides and have a white painted finish. These door frames and trims are in need of repainting as they are exhibiting signs of surface finish wear (Photo 2.4.C). There are a few doors that rub with the floor resulting in difficult operations. These doors should be undercut.

The existing hollow metal doors and frames in the facility are exhibiting signs of surface finish wear and deterioration (Photo 2.4.D). As in this example, some existing hollow metal door frames show signs of extensive moisture related deterioration that will need to be replaced (Photo 2.4.E). The metal doors at this location have a painted wood slat finish on the exterior side (Photo 2.4.F).

Photo 2.4.C – Classroom 1009 (Room 107)

Photo 2.4.D – Classroom CO-OP 2039

Photo 2.4.E – Vestibule 1060

Photo 2.4.F – Vestibule 1046

Washrooms

The existing Boys and Girls washroom facilities generally remain in fair to good condition, however, they are equipped with inefficient fixtures and other aging equipment such as the toilet partition and accessories. The tall style urinals in the Boys washrooms sit on a raised curb (Photo 2.4.G). The older style Bradley wash fountains exhibit signs of wear (Photo 2.4.H). These facilities will eventually be in need of upgrading to replace the aging Bradley wash fountains, toilet partitions and plumbing equipment with newer efficient fixtures (Photos 2.4.I and 2.4.J) and given that there are no barrier free access provisions in these existing Boys and Girls washroom groups, these upgrade works can be combined.

Photo 2.4.G – Boys Washroom 2040

Photo 2.4.H – Boys Washroom 1010

Photo 2.4.I – Girls Washroom 1019

Photo 2.4.J – Girls Washroom 1028B

Other Equipment

Millwork: The millwork in the facility remains in fair and ongoing serviceable condition. The typical chalkboard millwork unit located at the front of class, consists of angled chalkboard slabs encased in a wood frame around the perimeter and with integrated cabinets below (Photo 2.4.K). The following are some examples of existing millwork items in advanced state of wear requiring repair or replacement.

- Sink counter unit in the Art Room (Photo 2.4.L)
- Boys Change Room wood box construction benches with damaged painted surface finish (Photo 2.4.M).
- Science Lab benches with worn surface finishes and damaged gable ends (Photo 2.4.N)

Photo 2.4.K Classroom CO-OP 2039

Photo 2.4.L – Art Room 1042 (Room 130)

Phot 2.4.M – Boys Change Room 1052B

Photo 2.4.N – Science Lab 2010 (Room 211)

3.0 BUILDING ENVELOPE

3.1 Exterior Walls

This building has a cavity wall construction comprised of an interior concrete block wall, an uninsulated cavity space and exterior face brick cladding. The south and west facing façades have continuous horizontal strip-type glazing arrangement on both levels with a continuous exposed aggregate finish spandrel panel between the windows. The aggregate spandrel panels are in good condition. The overall wall construction and cladding elements generally remain in good condition. There are some areas where damage or deteriorated conditions were noted and the following is a summary of some of the observations made:

- Cracked brick at upper corner of window and cracking along mortar joint to the left of same window is due to absence of a control joint at this location (Photo 3.1.A)
- Existing glazed tile with extensive surface damage sustained from previous impact. Missing segment of stainless steel cover plate at base of wall exposing steel column to the elements. (Note that column is uninsulated per original design detail (Photo 3.1.B).
- The south facing exterior wall along Vestibule (and corridor) 1046 is comprised of a metal pipe frame construction with painted metal spandrel panels and glazed panels. This segment of exterior wall construction is showing signs of rusting along the lower mullion frame and the lower spandrel which is in contact with top of concrete foundation wall and missing a proper base flashing (Photo 3.1.C)
- There are two noted examples of deteriorated brick facing along the exterior stair landing base wall. This moisture based damage was caused by the absence of a proper drip edge along the bottom of the landing slab and led the moisture accumulation on the brick cladding below. In the illustrated example, the landing slab has spalled exposing the rebar within (Photo 3.1.D).

Photo 3.1.A

Photo 3.1.B

Photo 3.1.C

Photo 3.1.D

3.2 Windows

The windows in this facility consist of 20 year old replacement aluminum windows with sealed double glazed units at the fixed panels and single glazing at the horizontal sliders. The typical window has clear glass vision panels, with upper insulated metal spandrel panel and frames prefinished in a paint colour. The windows remains in a serviceable condition, however, given the advanced state of wear they are nearing the end of their lifecycle and will require replacement as soon as in five years' time. The following are some of the observations made along with illustrations outlining the various issues with the existing window system in place.

- Prefinished surface colour is wearing and fading. The column metal colour trim has deteriorated at the base revealing the insulation behind (Photo 3.2.A).
- The column metal cover trim is rusting at base resulting in punctures in the cover. This is due to moisture infiltration and accumulation behind the cover (Photo 3.2.B).

Photo 3.2.A

Photo 3.2.B

- In this example, located at the Cafeteria Servery west exterior wall, the caulking has deteriorated and detached from the frame at the corner base of the window. This area is exposed to water infiltration. The probable cause of the effervescence on the brick face would be from surface moisture accumulation on the brick. A potential source originating from the above sill could be due to moisture infiltration occurring below the sill flashing (Photo 3.2.C).
- In this example, the lower limit of the interior spandrel panel finish is exhibiting water staining caused by exterior water infiltration between the mullion and spandrel panel outside (Photo 3.2.D).

Photo 3.2.C

Photo 3.2.D – Science Lab 2070 (Room 211)

- The interior gypsum board finish around the column has sustained moisture related damage at the sill level. The source of this moisture originated from an improperly closed slider window during precipitation events. There may have also been some impact type damage at this location (Photo 3.2.E).
- This example may partly explain image "E". The slider tracks have accumulated debris and moisture leading to difficult slider operation and in some cases, blockage. As in image "E", the adjacent gypsum board finish is exposed to external moisture and starting to sustain some damage. In this same image the interior caulking between sill and window frame has broken away exposing some gaps (Photo 3.2.F).

Photo 3.2.E – Science Lab 2070 (Room 211)

Photo 3.2.F – Classroom 2078 (Room 201)

4.0 SITE

The school is located in an established neighborhood and shares a large property with Glen Brae Elementary School to the north. The limited vehicular access to the main entrance area is provided by the small drop-off loop off of Rainbow Drive (Photo 4.0.A). Parking is located to the north side of the building and away from the main entrance area. The following are some observations of the site related items noted:

- The asphalt parking area to the north driveway along the north and east side of the school are exhibiting signs of aging and wear and there are some areas along the driveway where the surface is cracking and spalling. This area has had some previous asphalt infill patching (Photo 4.0.B).
- Concrete curbs along the entrance loop near the main entrance have sustained some impact related damage and deteriorated over time (Photo 4.0.C).
- In the same drop-off loop the catch basin elevation is located above the adjacent asphalt paved surface and, as a result, the ponding water around the catch basin is causing damage to the surrounding asphalt paving (Photo 4.0.D).


Photo 4.0.A - Driveway Entrance


Photo 4.0.B - Site


Photo 4.0.C - Site


Photo 4.0.D - Site

5.0 RECOMMENDATIONS

1.0 ACCESSIBILITY REVIEW

It is recommended that additional barrier free access be added from the ground floor to the south side of the property where the sports field and parking area is located. For example, the exterior door access from Corridor 2041 to the playing field area to the north can be made accessible with proper door hardware and exterior grade leveling. The door and frames at this location are in need of replacement as noted below. Additional barrier free washroom facilities should be phased in with future washroom renovation projects; refer to washroom recommendations below. In addition, the existing change rooms lacking barrier free washroom and shower facilities should be updated to provide them.

2.0 INTERIOR SPACES

2.1 Flooring

Vinyl Asbestos Tile: The existing vinyl asbestos tile flooring is at the end of its viable life cycle and replacement is recommended. This undertaking would also remove an existing ACM component in the building.

Terrazzo: The terrazzo flooring finish remains in good conditions and only requires regular maintenance including routine dusting and scrubbing and periodic resealing. The water and rust stain finishes found in the shower areas will require an appropriate neutral cleaner. Stains that are left far too long may be absorbed into the surface and difficult to remove. Some of the terrazzo stair nosing edges in Corridor 1045 were damaged and had broken off pieces. These areas should be repaired to prevent further damage spread.

Wood Sport Flooring: The existing wood flooring in the main Gym 1056 and 52A, is showing signs of extensive surface wear throughout the space, including deteriorated surface sealant and painted line marking. It is recommended that the entire floor area be sanded down to bare wood, resealed and repainted. It is also recommended that prior to sanding, the entire surface be inspected for any loose or damaged wood floor strips and replaced with new. The refinished surface should undergo regular maintenance including frequent dust mopping and cleaning with a solution recommended by the finish manufacturer. The floor should be screened and recoated once a year.

Due to the greater thickness of the existing gymnasium flooring system, there is a minor difference in floor levels at the vestibules to the change rooms. This difference is currently accommodated with a sharp sloped transition down to the change room floor level (Photos 2.1.A & 2.1.B below). Should the change rooms be updated to accommodate barrier free provisions, it is recommended that a landing and floor slope transition be added within the vestibules.

Photo 2.1.A – Boys Change Room 1052B

Photo 2.1.B – Boys Change Room 1052B

2.2 Ceilings

We recommend the replacement of existing acoustic ceiling tiles that exhibit water stains and other types of damage. Review existing pipes in ceiling space above and ensure there is adequate insulation around pipes to prevent condensation. The existing acoustic ceilings in the corridors are generally in good condition and its replacement would be a longer term consideration.

In the classrooms with the plaster ceilings and surface mounted 12x12 acoustic ceiling tiles arranged in panels; a short term renovation solution would include repainting the ceiling and replacement of missing tiles. Long term solution would be to remove the acoustic tile panels, patch and paint ceiling. If acoustics is a concern, acoustic panels can be surface mounted to the ceiling.

2.3 Auditorium

It is recommended that the existing auditorium undergo extensive renovation and upgrades to replace older and outdated equipment and finishes. Renovations should include the following listed items:

- Replace existing flooring with new resilient flooring over the area extent of the seating and a durable carpet flooring along the aisles.
- Replace the existing bench seating with new auditorium individual seating equipped with fold up seats and adjoining armrests.
- All existing paintable surfaces including walls and ceilings to be repainted.
- Install new stage flooring system along with proper sub-base and preparation including floor leveling.
- The Orchestra Pit layout and function should be reviewed against current program needs. Adjustments should be made to suit new requirements. Renew and repair sump pump.

- Include renovations of spaces located behind the stage area including washroom, and updates to finishes, lighting and equipment as needed.
- Replace exterior stage loading door with new insulated door and updated hardware.
- Electrical upgrades to include new LED light fixtures and new stage lighting equipment and controls.

2.4 Other Interior Spaces

Interior Doors: The typical solid core wood door stained veneer finish will require refinishing. A few doors were noted to rub against the floor resulting in difficult operation. The entire facility should be inspected for similar conditions and these and any other doors should be undercut accordingly. New refinishes to include repainted wood door frames. Hollow metal doors and frames should be repainted. The existing door handset hardware (lever type) was generally found to be in fair condition with several cases of poor operation. It is recommended in the short term that door hardware be reviewed and replaced as needed. Long term recommendations would include facility wide hardware upgrades.

Washrooms: The existing washroom facilities are generally in good condition, however, they are equipped with older inefficient fixtures and it is recommended that the washrooms should be eventually updated. Other than two single unisex washrooms there are no other barrier free accessible washroom facilities within the existing Boys and Girls washroom group. It is recommended that additional barrier upgrades be provided and this could include general updates to the other existing washroom facilities.

Other Equipment:

Millwork - The existing millwork in the facility remains in serviceable condition, however, it is recommended that any future renovations of rooms should include replacement of the existing millwork within the room. The School Board may want to consider in the short term the replacement of existing damaged millwork as noted in this report. Future classroom renovations should replace existing chalk board and cabinet units to current Board standards for teaching walls.

Lockers - The existing lockers appear to be in good condition. Lockers should be reviewed for any damaged doors, panels or shelves. All repairs or replacement of damaged locker doors or related equipment to remain as part of ongoing maintenance program.

3.0 BUILDING ENVELOPE

3.1 Exterior Walls

It is recommended that repairs are made as noted in the exterior wall observations including:

- Replacing missing cover plates at exposed steel column.
- Replace existing exterior metal frame spandrel and glazed walls at Vestibule 1046 with new glazed and spandrel panel aluminum curtain wall type system that will provide thermal efficiency and a longer lifespan.
- Repairs and upgrades at the exterior door stair and landing should include brick and concrete repairs and replacement of handrail with new to current code standards.

3.2 Windows

The existing windows are still in serviceable condition, however, replacement would be recommended in five years' time. With some general repairs, maintenance and cleaning, the current lifespan may be increased by several years. In the short term, window sealants should be inspected and repaired/replaced to ensure continuity in the weather envelope.

4.0 SITE

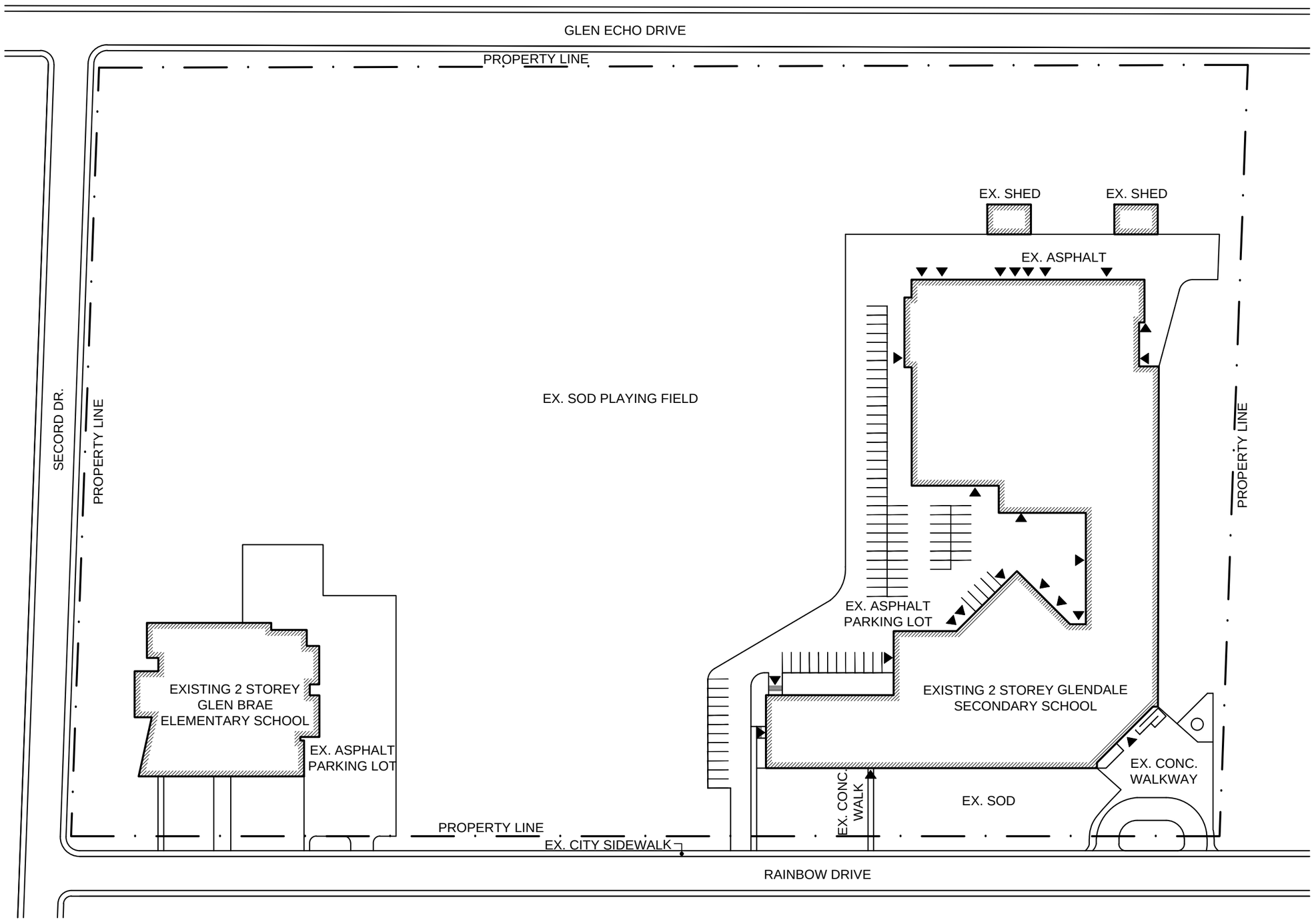
The existing asphalt at the rear parking area is generally in fair condition. Deteriorating area should be removed and repatched in the short term. Longer term needs would include asphalt replacement.

The concrete paved entrance plaza and the drop-off loop at the front entrance area will require upgrades. Due to its current condition the existing concrete paved surface in front of the entrance area 'plaza' will require replacement. The concrete curbs and sidewalks along the drop-off loop will require replacement and the deteriorating asphalt will need to be replaced and the catch basins adjusted accordingly. The drop-off loop layout will require modifications to better accommodate additional vehicles including smaller barrier free accessible buses. This work would also include upgrades to the plaza as noted above.

6.0 OPINION OF PROBABLE COST

The probable costs for each repair and/or replacement is detailed in the table below. The estimated costs in the table are divided into short-term and long-term categories. The costs for the mechanical and electrical recommended repairs for current needs and maintenance of integrity have been complied as short-term costs. Improvements to M&E system functions have been compiled as long-term costs. The order of magnitude costs indicated are in 2015 values and is our opinion of probable construction cost to repair or replace the indicated component based on our experience.

Description of Work	Estimated Costs		
	Short Term 1-5 yrs. (±)	Long Term 6-10+ yrs	Total
Interior			
Vinyl tile flooring replacement (all classrooms & 2Flr Corr.)	170,000	170,000	
Ceilings: initial repairs; long term: painting upgrades	15,000	40,000	
Ceilings, long term: corridors ACT replacement		90,000	
Door & frame refinishing		40,000	
Repainting: classrooms		80,000	
Washroom upgrades (costs phased)	100,000	100,000	
Auditorium upgrades	450,000		
Other general upgrades	20,000	50,000	
Door hardware repair or replacement	10,000	80,000	
Building Envelope			
Window & entrances replacement		380,000	
Other exterior repairs (maintenance)	50,000	50,000	
Roofing: short term replacements (refer to attached report)	50,000		
Roofing: long term replacements (refer to attached report)		120,000	
Site			
Drop-off loop work & other paving repairs	100,000	30,000	
Long term: new asphalt paving		250,000	
Mechanical (refer to attached report)			
Short & long term needs, improvements	230,000	6,900,000	
Electrical (refer to attached report)			
Short & long term needs, improvements	380,000	1,100,000	
Auditorium: electrical upgrades	200,000		
Total	**$1,775,000**	**$9,480,000**	**$11,255,000**



SITE PLAN

SCALE: NTS

GRGURIC
ARCHITECTS
INCORPORATED

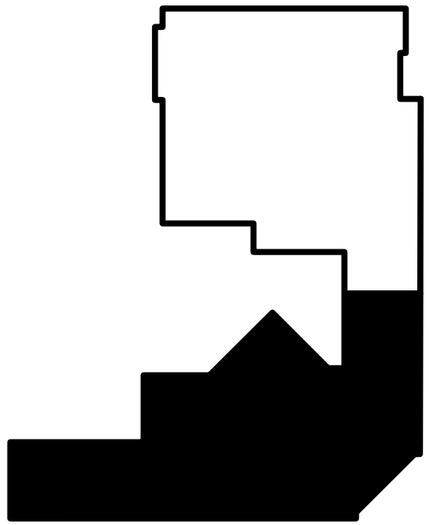
GLENDALE HIGH SCHOOL
FACILITY CONDITIONS ASSESSMENT

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

DATE:
MAY 20th, 2015

HAMILTON WENTWORTH
DISTRICT SCHOOL BOARD

A1



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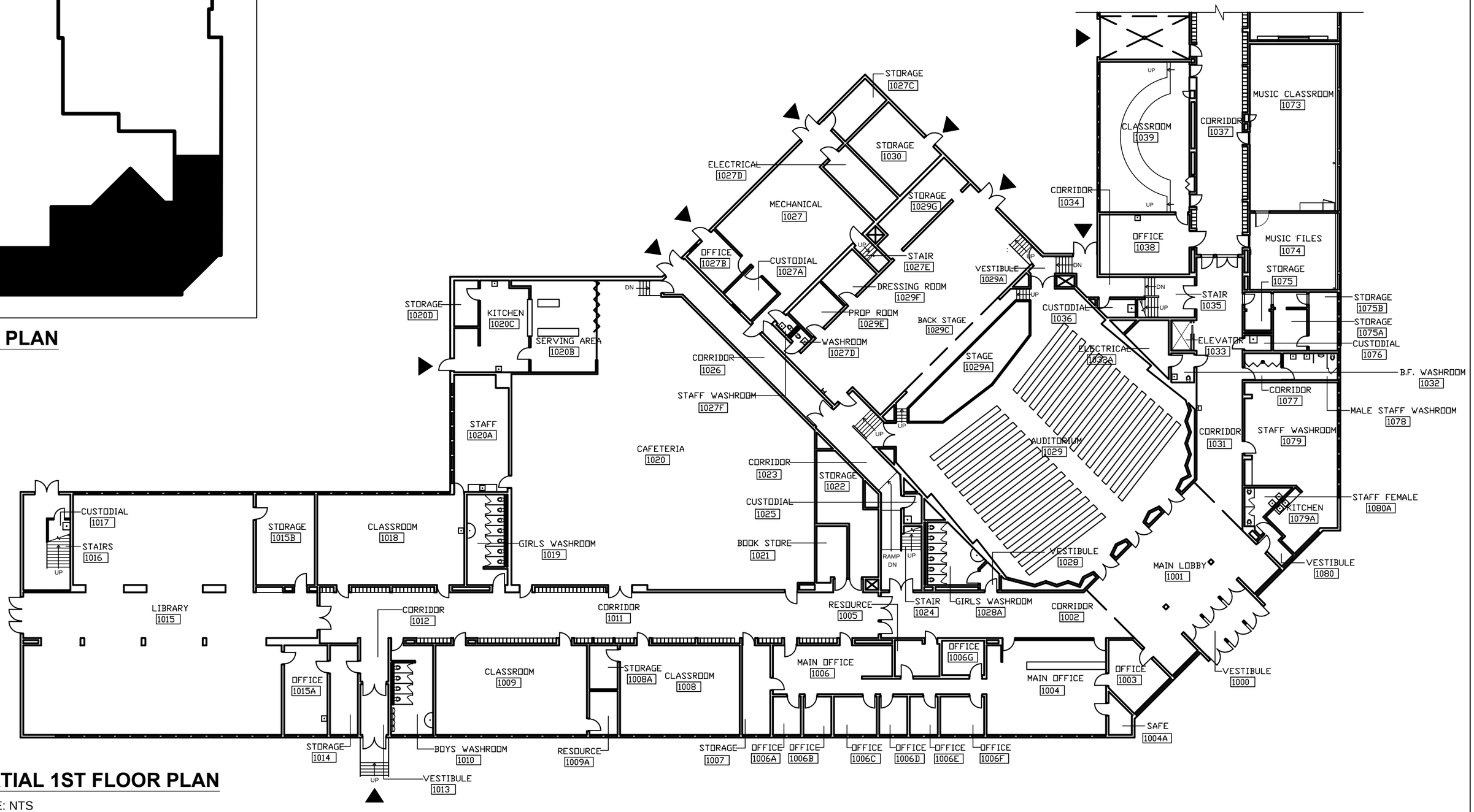

PARTIAL 1ST FLOOR PLAN

SCALE: NTS

GRGURIC ARCHITECTS INCORPORATED

GLENDALE HIGH SCHOOL
FACILITY CONDITIONS ASSESSMENT

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

DATE:
MAY 20th, 2015

HAMILTON WENTWORTH DISTRICT SCHOOL BOARD

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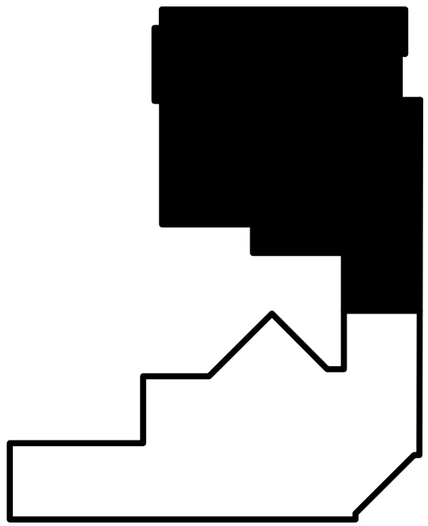

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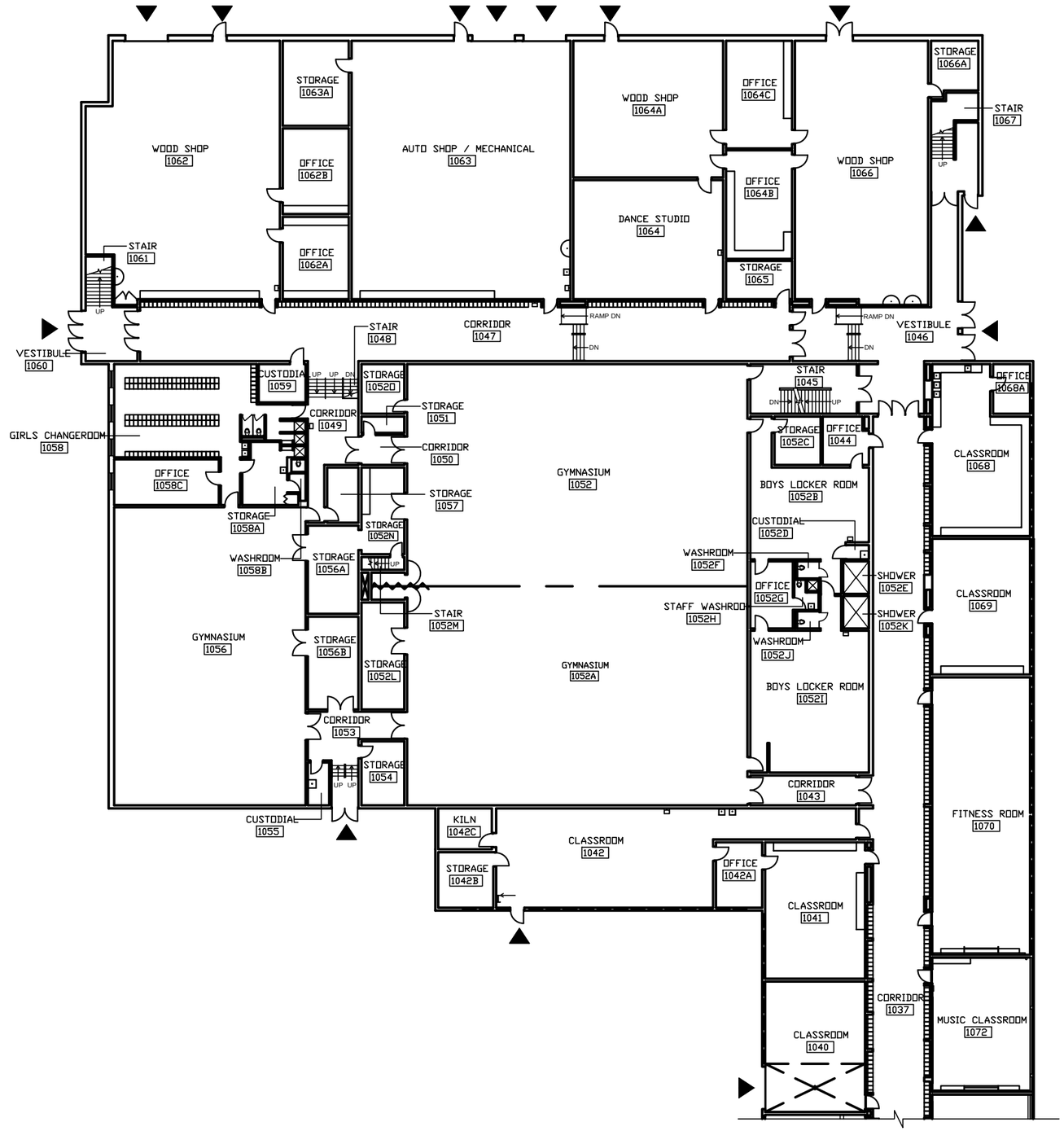


PARTIAL 1ST FLOOR PLAN

SCALE: NTS

GRGURIC ARCHITECTS INCORPORATED

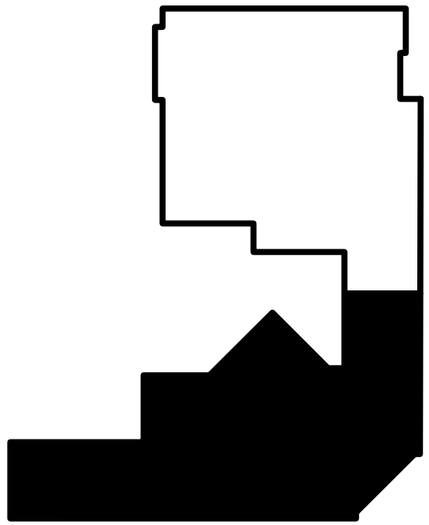
GLENDALE HIGH SCHOOL
FACILITY CONDITIONS ASSESSMENT

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

DATE:
MAY 20th, 2015

HAMILTON WENTWORTH DISTRICT SCHOOL BOARD

A3



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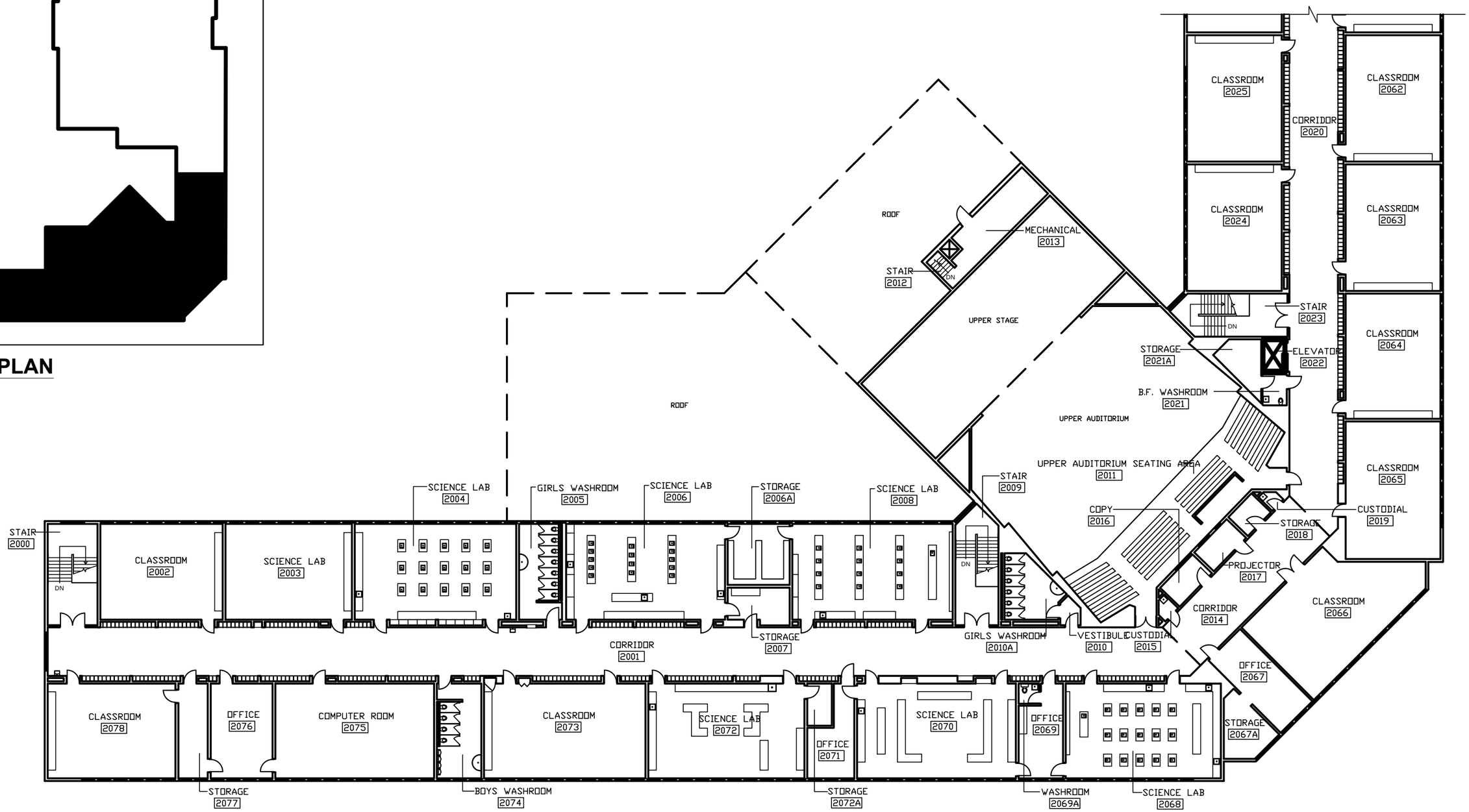

PARTIAL 2ND FLOOR PLAN

SCALE: NTS

GRGURIC ARCHITECTS INCORPORATED

GLENDALE HIGH SCHOOL
FACILITY CONDITIONS ASSESSMENT

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

DATE:
MAY 20th, 2015

HAMILTON WENTWORTH DISTRICT SCHOOL BOARD

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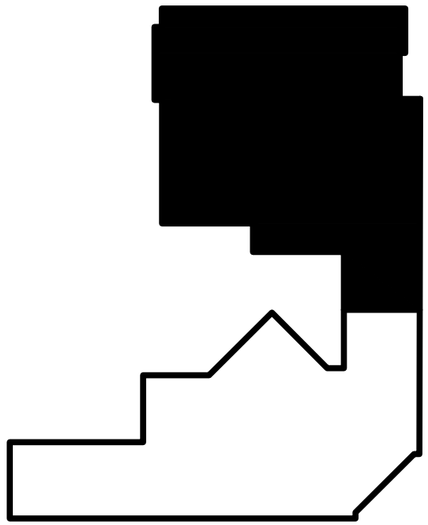

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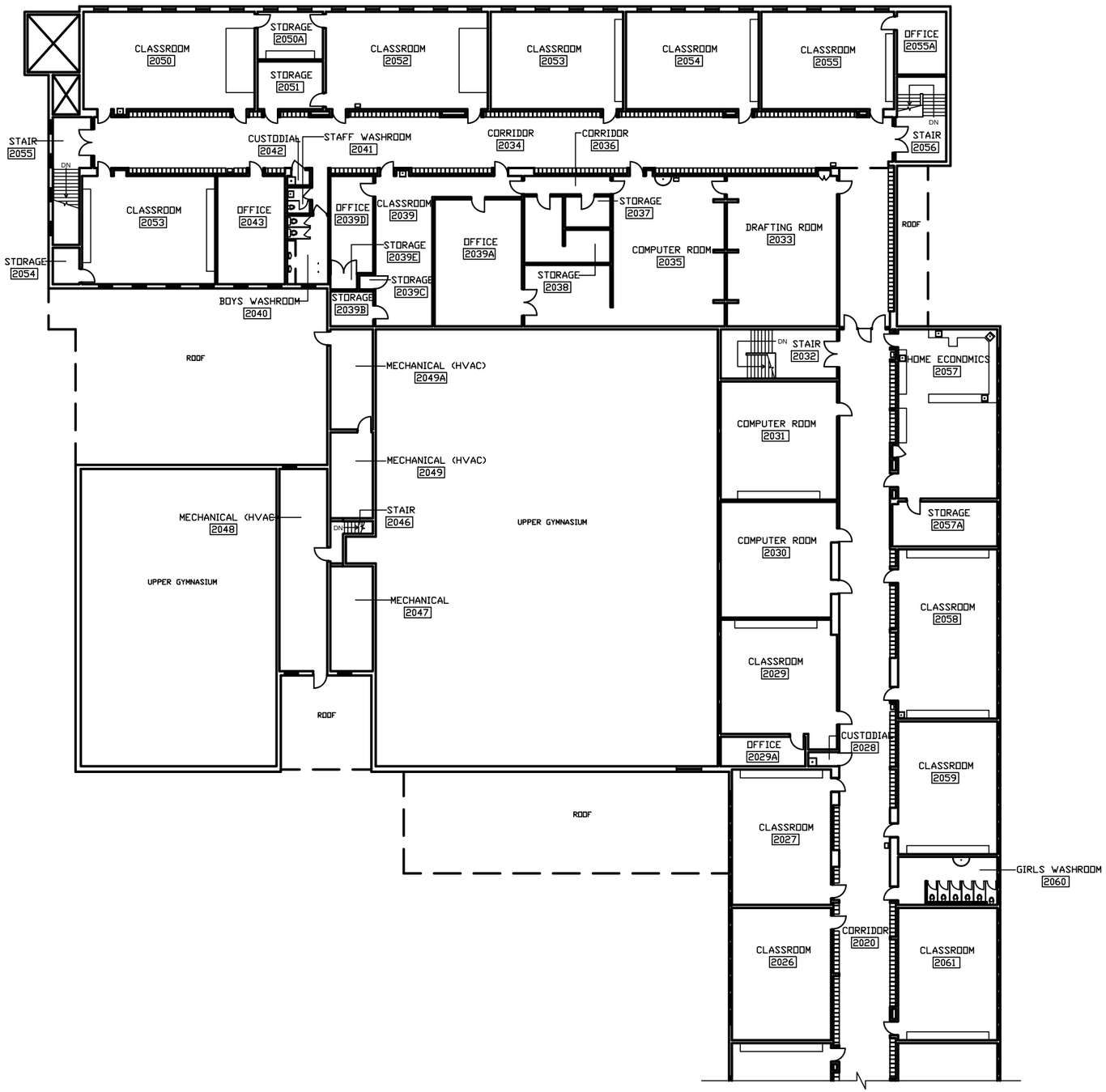

PARTIAL 2ND FLOOR PLAN

SCALE: NTS

GRGURIC ARCHITECTS INCORPORATED

GLENDALE HIGH SCHOOL
FACILITY CONDITIONS ASSESSMENT

145 RAINBOW DR, HAMILTON, ONTARIO L8K 4G1

DATE:
MAY 20th, 2015

HAMILTON WENTWORTH DISTRICT SCHOOL BOARD

A5

ROOF CONDITION ASSESSMENT
GLENDALE SECONDARY SCHOOL
145 RAINBOW DRIVE
HAMILTON, ONTARIO

Prepared for:

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Table of Contents

1.0 Introduction

Alspex Building Consultants Inc. (Alspex) was retained by Grguric Architects Incorporated to conduct a visual Roof Condition Assessment of the roof systems at Glendale Secondary School, located at 145 Rainbow Drive, Hamilton, Ontario.

Field review of this assessment was carried out on May 14, 2015 under ideal weather conditions.

Appendix A - Photographs contains overall and close-up views of the building, roof areas and typical deficiencies.

Appendix B – Roof Plan, Drawing A1 is provided as a reference only in conjunction with this report, identifying the Roof Areas. Approximate size of each area is also provided.

2.0 Scope of Work

The purpose of this visual Roof Condition Assessment was to determine the 'as is' condition of the Built-Up Asphalt and Gravel Roof and Modified Bituminous Membrane roof systems and provide recommendations for repair or replacement.

Our observations and recommendations are itemized within this report under separate headings. Our observations, recommendations and opinions are based on our visual assessment and components exposed to view.

The scope of work for this roof assessment included the following:

1. Discussion with custodial staff
2. Visual review of roof surface to identify deficiencies.
3. Assessment of 'as is' roof system performance
4. Description and photographic documentation of deficiencies.
5. Written documentation outlining our observations and recommendations for repair or replacement.

3.0 Discussion

The subject facility, Glendale Secondary School, is a two-to-three storey high secondary school, with low slope roof systems.

As per the custodial staff, there are no active 'roof leaks'.

All roof areas comprise of Built-Up Asphalt and Gravel Roof Systems (BUR) areas. Total roof area is approximately **8,704 square metres** (93,692 sq. ft.).

Roof areas designations and approximate sizes are referenced in Appendix B – Roof Plan, Drawing A1.

The BUR on areas 204, 305, 306, 401 & 402 appear to be approximately 5-7 years old.

The BUR on areas 201, 202, 301, 302, 303, 304, 504, 505, 601 and 701 appear to be approximately 8-12 years old.

The BUR on areas 203, 501, 502 and 503 appear to be approximately 12-15 years old.

The majority of the roof areas drain to an internal roof drainage system. Roof Areas 203 drains to a scupper into the building

General description of roof areas and deficiencies are as follows:

1. All roof areas comprise of built-up asphalt and felt membrane with an asphalt flood coat and gravel surfacing.

2. During our roof review, we also noted deficiencies with the masonry wall at the south-east corner of Area 303 – N/E wall supporting Area 502 above. There is mortar cracks and shifting of the masonry units.

3. We also noted that the window sill at base of north, east and west walls at the windows of Area 701 do not provide a watertight unction. The metal sill is loose or has been dislodged, the sealant has failed/cracked and there is no membrane flashing under the metal sill to provide watertight seal.

4. Several membrane blisters have been noted throughout the roof areas. Also noted membrane cap sheet and FR-40 open laps.

5. There is vegetation and moss growth on numerous roof areas and under mechanical platforms. Of major concern is the excessive vegetation growth on west wall of Area 501 and 502 and south wall of Area 503, where 'tree growth' is present.

6. The transition between Areas 503 and 601 has failed. The cap sheet has slipped, numerous blisters and open laps are present throughout length of transition.

7. Wind scoured corners on Area 402.

4.0 Observations

Area	Roof System	Approximate Area	Condition
201	Asphalt and Gravel	13 sq. m	Fair Drain clogged, vegetation/moss
202	Asphalt and Gravel	55 sq. m	Fair Drain clogged
203	Asphalt and Gravel	33 sq. m	Fair scupper clogged, vegetation
204	Asphalt and Gravel	8 sq. m	Good
301	Asphalt and Gravel	98 sq. m	Fair Drain clogged, vegetation
302	Asphalt and Gravel	453 sq. m	Fair Drains clogged, vegetation, conduit sleeve cap not secured and sealant failing
303	Asphalt and Gravel	210 sq. m	Fair Drain clogged, vegetation, membrane blisters, mortar joints failing with bricks dislodged on north-east wall above on Area 502
304	Asphalt and Gravel	199 sq. m	Fair Drain clogged, vegetation
305	Asphalt and Gravel	204 sq. m	Good Drains clogged, vegetation
306	Asphalt and Gravel	72 sq. m	Good
401	Asphalt and Gravel	119 sq. m	Good Minor debris at drain clogged, Drain cap to be secured
402	Asphalt and Gravel	393 sq. m	Fair to Good Drains clogged, wind scouring at three corners Damaged fan hood

Observations (Cont'd)

Area	Roof System	Approximate Roof Area	Condition
501	Asphalt and Gravel	1225 sq. m	Fair Drains clogged, excessive vegetation and tree growth, exposed bitumen & felt and FR40 laps open
502	Asphalt and Gravel	1748 sq. m	Fair Drains clogged excessive vegetation, FR40 laps open, cracked caulking
503	Asphalt and Gravel	1397 sq. m	Fair Drains clogged excessive vegetation and tree growth, membrane blister, missing gas line support, missing metal flashing on sleepers, membrane cap sheet slippage and blistering at transition onto Area 601
504	Asphalt and Gravel	1077 sq. m	Fair Drains clogged, vegetation, metal flashing at wall under window blown off, insulation under mechanical unit deteriorated
505	Asphalt and Gravel	28 sq. m	Fair Drain clogged, vegetation
601	Asphalt and Gravel	936 sq. m	Fair Drains clogged, exposed felt/membrane blister Membrane transition onto Area 503 failed
701	Asphalt and Gravel	436 sq. m	Fair Drains clogged, open cap sheet flashing laps Window sills at three sides open to moisture infiltration – no membrane flashing under metal and sealant has failed/cracked
702	Open to below		
	Total Area	8,704 sq. m	

Our assessment and opinions are based on items, materials and systems exposed to view or accessible. Professional experience and judgment was applied in analyzing and interpreting the information obtained and in providing our recommendations and forming our conclusions. Any use, reliance or decisions made from this report by a third party is responsibility of such third party. Alspex does not accept any responsibility on decisions or actions made and based on this report by any third party.

5.0 Recommendations and Budgets

Based on our visual review and condition of existing roof systems, the following recommendations are provided.

Year	Recommendation	Areas	Size	Scope of Work	Preliminary Budget
2016-2017	Roof Replacement (Does not include repairs to masonry wall)	303	210 m^2	Provide insulated 2-Ply Modified Bituminous Membrane	$35,000.00 to $45,000.00
2019-2020	Roof Replacement	301 & 302	551 m^2	Provide insulated 2-Ply Modified Bituminous Membrane	$90,000.00 to $120,000.00
2015-2016	Roof Repairs	Transition between Area 503 & 601	33m x 1 m	Provide deck support, 2-Ply Modified Bituminous Membrane, gravel stop	$5,000.00 to $7,000.00
2015-2016	Roof Repairs - Clean all drains and scuppers - Remove debris/vegetation - apply cold adhesive and gravel at 'wind scoured corners' - repair membrane blisters - repair FR-40 membrane flashings - apply sealant at exhaust stack	All Areas and where noted		Cash Allowance	$8,000.00 to $12,000.00

Preliminary budgets have been provided as a guideline only. Actual costs will depend on final design considerations, time of tendering, restrictions imposed on contractor regarding schedule, insurance requirements, etc.

6.0 Conclusions

Based on our visual assessment and observations, Area 303 may require replacement within the next two (2) years. Immediate repairs are required along the transition between Areas 503 and 601.

All other areas should provide another 5-10 years of service life, but remedial work is required to repair blisters, exposed felt, open laps and removal of excessive vegetation and growth.

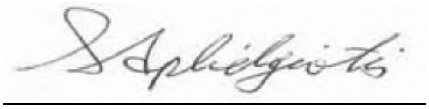
An annual maintenance program should be implemented to clean debris and vegetation around drain/scupper areas to allow better drainage of roof surface.

Although not part of our roof assessments, we noted failing masonry units on Area 303 and failing flashings at base of windows of Area 701. These deficiencies should be addressed.

We trust that we have completed this assignment within our terms of reference and have provided you with the required information.

Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,



Spyros Aplidgiotis, C.E.T., RRO
Managing Director
Alspex Building Consultants Inc.

Encl.: Appendix A – Photographs, 7 pages
Appendix B – Roof Plan, 1 Page

Appendix A
Photographs

Photograph 1 – S/W elevation of school
Orange arrow – Area 401
Yellow arrow – Area 503

Photograph 2 – S/E elevation of school
Orange arrow – Area 503
Red arrow – Area 203
Yellow arrow – Area 504

Photograph 3 – N/W view of Area 303
Red arrow – debris/vegetation on roof surface
Blue arrow – membrane blister
Yellow arrow –Area 302

Photograph 4 – South-east corner on Area 303 (North-east wall of Area 502
Red arrow – cracked mortar joints and loose/dislodged bricks

Photograph 5 – West view of Area 301
Yellow arrow – debris/vegetation on roof surface and around drain

Photograph 6 – N/W view of Area 302
Yellow arrow – debris/vegetation on roof surface and around drains

Photograph 7 – Close-up view of HVAC unit on Area 302 from Photo#6
Yellow arrow – conduit cap not secured

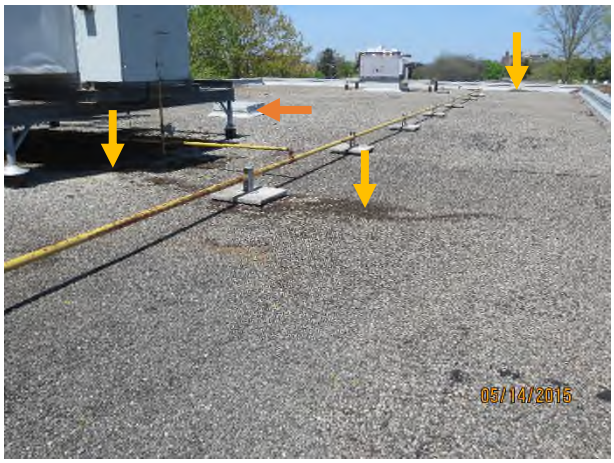
Photograph 8 – West view of Area 302
Yellow arrows – debris/vegetation

Photograph 9 – North view of Area 501
Yellow arrows – excessive vegetation growth along west wall (tree line) on roof area
Orange arrow – water ponding

Photograph 10 – East view of Unit on Area 501 in Photo#9
Red arrows – exposed bitumen and felt

Photograph 11 – View of typical mechanical platform in Photo#9
Yellow arrow – vegetation/moss growth under platform

Photograph 12 – North side of Unit on Area 501 in Photo#9
Red arrow – open FR40 flashing laps



Photograph 13 – N/W view of Area 501
Yellow arrows – vegetation
Orange arrow – abandoned curb

Photograph 14 – South-west corner on Area 501
Red arrow – ponding water on roof surface. Consider new drain at this location when re-roofing
Orange arrow – excessive vegetation and 'tree growth'

Photograph 15 – South view of Area 502
Yellow arrows – vegetation clogging drains
Orange arrow – dry vegetation

Photograph 16 – N/E view from centre of Area 502
Orange arrow – Area 503
Yellow arrow – Area 601

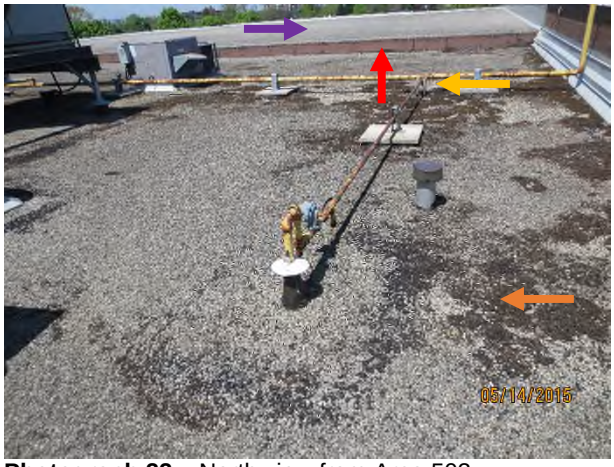
Photograph 17 – East side of stack in Area 502
Red arrow – cracked caulking

Photograph 18 – S/E view of area 401
Yellow arrow – damaged drain cover

Photograph 19 – N/E view of Area 502
Yellow arrow – excessive vegetation growth along east wall (tree line)
Orange arrow - vegetation growth under platform

Photograph 20 – East view of Unit in Photo#19
Red arrow – open FR40 flashing lapstem

Photograph 21 – East view of Area 503
Yellow arrows – vegetation and tree growth
Orange arrow – clogged drain
Blue arrow – failed transition between Areas 601 and 503



Photograph 22 – North view from Area 503
Orange arrow – dry vegetation, **Yellow arrow** – missing gas line support, **Purple arrow** – Area 601
Red arrow – cap sheet slippage, blistering, open laps at transition between 503 & 601

Photograph 23 – Close up view of in Photo#21/22
Orange arrow – open side overlap
Red arrow – slippage and blistering along entire joint
Blue arrow – no gravel stop on Area 601

Photograph 24 – North view of Area 304
Orange arrow – debris/vegetation around drain

Photograph 25 – South side of Area 304
Orange arrows – debris/vegetation/moss growth

Photograph 26 – West view of Area 202
Orange arrow – debris around drain

Photograph 27 – North view of Area 402
Red arrow – wind scouring at corners, otherwise roof surface in good condition and drains well

Photograph 28 – N/E view of Area 402
Red arrow – wind scouring at corner
Orange arrow – damaged fan hood

Photograph 29 – N/E view of areas 305(Left) & 306(Right)
Orange arrows – debris/vegetation on Area 305 and drain area clogged
Yellow arrow – Area 306 – in good condition

Photograph 30 – East view of Area 505
Yellow arrow – debris/vegetation
Orange arrow – some asphalt bleed through – not a concern at this time

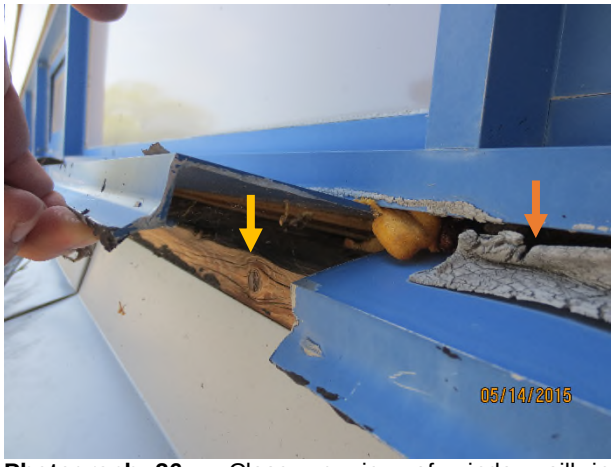
Photograph 31 – S/W view of Area 504
Orange arrows – debris/vegetation, **Yellow arrow** – Area 701, **Red arrow** – vegetation under mechanical platform, **Blue arrow** – insulation pad under A/C unit deteriorating

Photograph 32 – East view of A/C unit on Area 504, Photo#31
Orange arrow – deteriorated insulation under wood sleepers

Photograph 33 – North view of Area 701
Orange arrow – minor debris around drain,

Photograph 34 – N/W corner of Area 701
Orange arrow – mod. bit. cap sheet flashings in asphalt with some side laps open

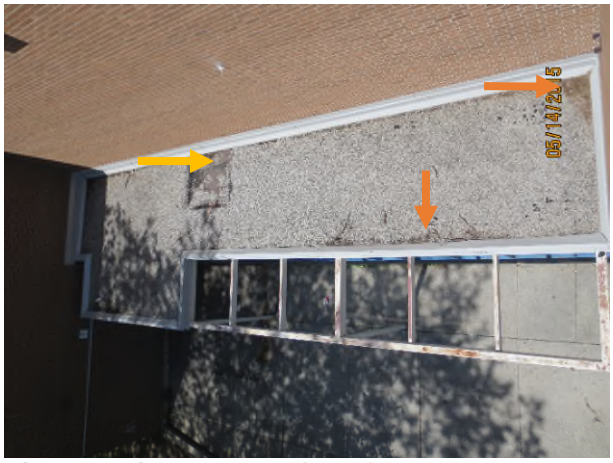
Photograph 35 – South view of east wall of Area 701 in Photo#33
Orange arrow – loose metal flashing at window sill, not weather tight below and failed sealant



Photograph 36 – Close up view of window sill in Photo#35
Yellow arrow – no membrane flashing on wood
Orange arrow – failed/cracked sealant

Photograph 37 – North view of Area 204
Orange arrow – minor debris around drain, roof in good condition

Photograph 38 – North view of Area 201
Orange arrow – moss growth on roof surface



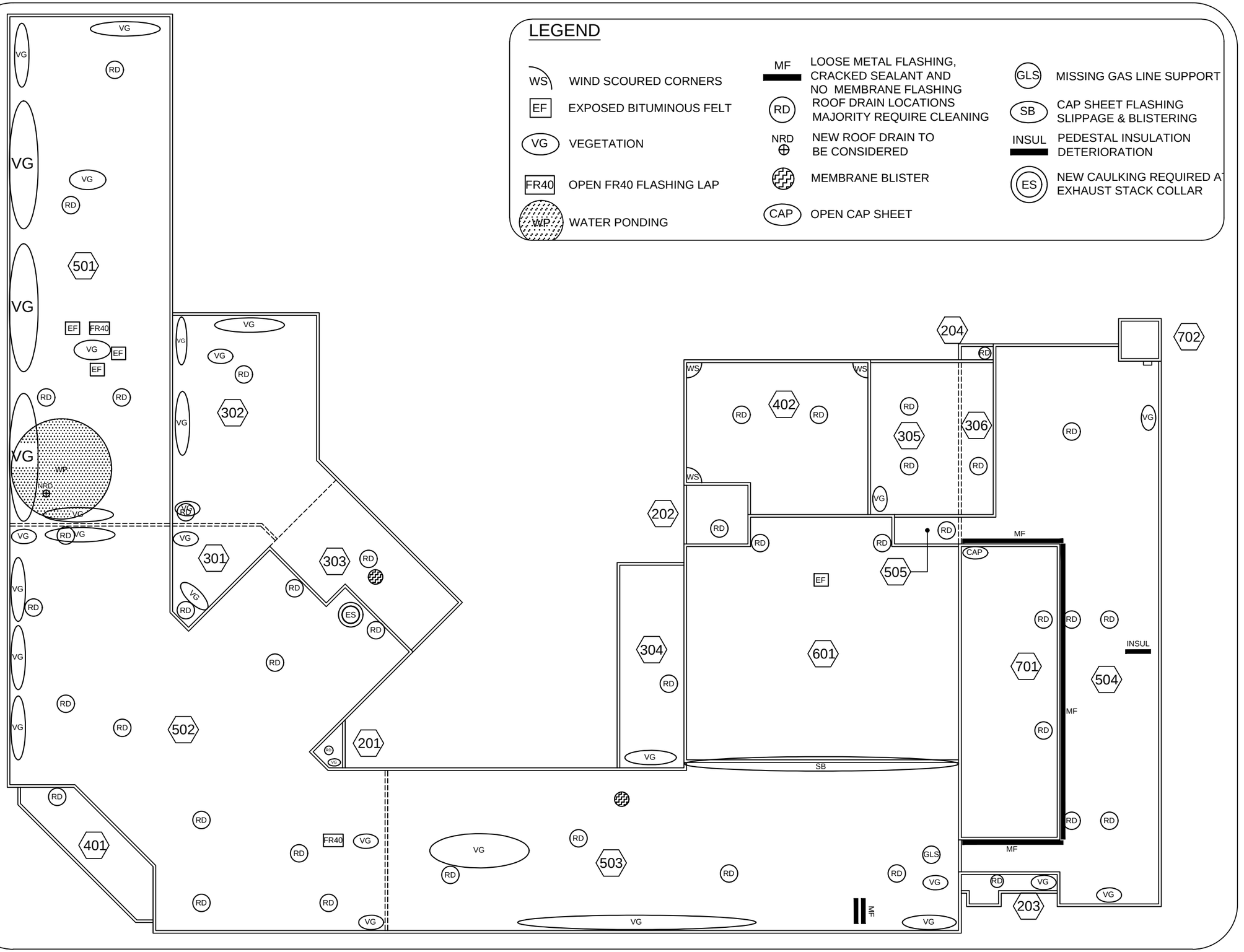
Photograph 39 – West view of Area 203
Orange arrow – minor debris/vegetation
Yellow arrow – debris/vegetation at scupper

Photograph 40 – Close-up of depression/sump in Photo#39
Orange arrow – debris/vegetation clogging scupper, cleaning required

Photograph 40 – Example of wind scouring at N/E corner on Area 402

Photograph 41 – East view on Area 601
Orange arrow – membrane blister on roof surface

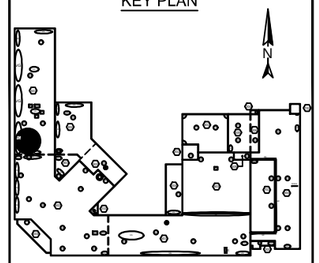
Appendix B
Roof Plan – Drawing A1



LEGEND

- WS — WIND SCOURED CORNERS
- EF — EXPOSED BITUMINOUS FELT
- VG — VEGETATION
- FR40 — OPEN FR40 FLASHING LAP
- WP — WATER PONDING
- MF — LOOSE METAL FLASHING, CRACKED SEALANT AND NO MEMBRANE FLASHING
- RD — ROOF DRAIN LOCATIONS MAJORITY REQUIRE CLEANING
- NRD — NEW ROOF DRAIN TO BE CONSIDERED
- MEMBRANE BLISTER
- CAP — OPEN CAP SHEET
- GLS — MISSING GAS LINE SUPPORT
- SB — CAP SHEET FLASHING SLIPPAGE & BLISTERING
- INSUL — PEDESTAL INSULATION DETERIORATION
- ES — NEW CAULKING REQUIRED AT EXHAUST STACK COLLAR

KEY PLAN



LEGEND

ROOF	AREA (m²)
201	13
202	55
203	33
204	8
301	98
302	453
303	210
304	199
305	204
306	72
401	119
402	393
501	1225
502	1748
503	1397
504	1077
505	28
601	936
701	436
TOTALS	8704

NO.	REVISION / ISSUE	DATE
2		
1	ISSUED WITH REPORT	08/01/2015

CONSULTANT
ALSPEX BUILDING CONSULTANTS INC.
66 WESTLAWN DRIVE
HAMILTON, ONTARIO, L9B 2K9
Tel: 905-575-0038 Fax: 905-575-0038
e-mail: info@alspex.ca

CLIENT
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET, UNIT B
HAMILTON, ONTARIO
L8G 1J8

PROJECT
ROOF CONDITION ASSESSMENT
GLENDALE SECONDARY SCHOOL
145 RAINBOW DRIVE
HAMILTON, ONTARIO

CONSTRUCTION NORTH

PROJECT NO. GHR15-028B	DRAWING TITLE KEY PLAN
DRAWN BY A. APLIDIOTIS	
DATE MAY 2015	DRAWING NO. A1
SCALE NOT TO SCALE	

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GLENDALE SECONDARY SCHOOL
BUILDING ASSESSMENT REPORT
May 15,2015

NO.	DESCRIPTION	PHOTOGRAPH	EXISTING CONDITIONS	SUITABILITY FOR LONG TERM USE	SYSTEM LIFE (YRS)	ESTIMATED REMAINING SERVICE LIFE (YRS)	CODE	BUDGET REPLACEMENT COST ($)
M1	**DRAINAGE SYSTEMS**							
M1.1	**STORM DRAINAGE**		The existing sewer is a separate 15" storm sewer running out to the Municipal sewers. The sewers have not been recently traced and videoed and all of the original rain water leaders are piped to this original sewer. The sewers are original vintage 1959 interior cast iron and exterior vitreous clay tile. The 1962 Tech wing addition storm sewers exit the North of the addition and run to the 1959 exterior storm sewers. Storm sewers within the building are run down the centre of the ground floor corridors. Rain water leaders are piped in vertical chases to roof drains. Roof drains were changed with the last roof replacement.	In the future, the under ground sewer system should be lined or replaced completely.Lining of the larger sized pipe will be more economical than replacement. The sewer should be reconditioned out to the city sewer(s). During any renovations to the building, it should be planned to replace the storm sewers. This would necessitate saw cutting the ground floor with significant excavation outdoors.	60	4	2	$1,500,000
M1.2	**SANITARY DRAINAGE**		The existing interior above grade sanitary drainage material is cast iron with leaded joints. Buried sanitary sewers are indicated as cast iron on the original building drawings. Sanitary sewer mains run down the centre of the corridors and out to the municipal sewer. The sewers have not been recently traced and videoed and all of the original sanitary risers are piped to this original sewer. The sewers are original vintage 1959 interior cast iron and exterior vitreous clay tile.	In the future, the under ground sewer system should be lined or replaced completely. The sewer should be reconditioned out to the city sewer(s). During any renovations to the building, it should be planned to replace the sanitary sewers. This would necessitate saw cutting the ground floor with significant excavation indoors and outdoors.	60	4	2	$1,000,000
M1.3	**PLUMBING FIXTURES AND TRIM**	 	Washrooms on the Ground floor small washrooms have been renovated within the past 20 years. The plumbing fixtures are generally new within the past 20 years except for the north washrooms.	Many of the plumbing fixtures are in good condition and should be retained. On the ground floor north washrooms, the fixtures are original and should be replaced. The original plumbing fixtures are high water flow units. Replacement with new low flow fixtures will reduce water consumption however, with the age condition of the sanitary sewer system, these changes should be considered carefully due to possible operational problems with low flow fixtures.	40		4	$200,000

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M2	**DOMESTIC HOT AND COLD WATER PIPING**							
M2.1	**INCOMING WATER SERVICE**		The 4" main city / fire water service enters from the street into the basement at the front entrance of the School. A main 4" supply runs in the tunnel system from there to the Boiler room. The 4" potable meter and water service is original and a new 4" Watts St.St. 757 double check assembly backflow preventer has been installed in the Boiler Room on the potable water system.	The potable water piping systems are copper pipe and fittings. The plumbing mains passing through the ground floor ceiling space were replaced with new copper type L mains in 1996 when the Corridors were renovated. This constitutes over 90% of the plumbing supply piping within the building. For existing piping greater than 25 years old, there is likely a component of leaded solder on the joints and fittings. Any sections of main cold water supply that are more than 25 years old should be replaced. Annual testing of the backflow preventer is required by Code.	40		3	$80,000
M2.2	**PIPING**		The existing hot and cold water piping in some parts of the original piping systems may be piped in galvanized steel with screwed fittings. This piping is over 56 years old at this time and is due for replacement.The galvanizing on the internal water surfaces can be erroded away and may cause rust coloured water in some situations. In most areas and in all corridors, piping has been replaced during renovations with copper piping. Piping over drywall or sprayed textured ceilings was not replaced in 1996. New piping branches had ball vavles installed in 1996 that are still operable and can isolate sections of the School.	The original remaining piping systems have exceeded their expected lifespan. High city water pressure may cause unpredictable piping failures. Any remaining galvanized potable water piping systems should be replaced with copper piping and lead free soldered joints. All new potable mains should be insulated with over-sized hangers and vapour barriers and new isolation ball valves installed at each riser set.	40		2	$500,000
M2.3	**INSULATION**		Domestic piping insulation on corridor mains is fiberglass insulation dating from the renovations of the year 1996. Original air cell asbestos will still be on some piping located in inaccessible locations such as plaster ceilings.	Asbestos insulation within the Boiler room has been removed by an asbestos abatement firm. All new piping will require new mineral fibre insulation and complete vapour barrier protection.			2	$200,000

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NO.	DESCRIPTION	PHOTOGRAPH	EXISTING CONDITIONS	SUITABILITY FOR LONG TERM USE	SYSTEM LIFE (YRS)	ESTIMATED REMAINING SERVICE LIFE (YRS)	CODE	BUDGET REPLACEMENT COST ($)
M2.4	WATER HEATING SYSTEMS		Domestic water is heated in the Boiler room via a gas fired copper tube style heater with three conventional glass lined storage tanks. The water heater is a natural draft venting system to the main chimney. The domestic hot water is piped into the basement level tunnel system of the School and distributed to the washrooms and main Kitchen. There is a recirculation loop and pump on the water mains to the boiler room.	The existing water heating system is acceptable and is recently installed. Demand is met by the systems with minimal standby losses. No changes are froeseen for the next 5 years.	25	5	2	$40,000
M3	HYDRONIC HEATING							
M3.1	PIPING AND ELEMENTS	 	The School contains a significant amount of hydronic heating and relies heavily on the tunnel mounted piping loops for the distribution of the heating energy. Typical rooms include 2 row 24 sloped top wall fin heating elements and pnuematic control valves.Entrance heaters at the stairwells and main entrances do contain hydronic heaters and these units should be repiped with new piping.The hydronic heating piping appears to be original 1956 vintage piping material and is steel with screwed joints. The piping has exceeded it's service life and requires replacement. Some piping risers are located in uninsulated exterior walls, making them susceptible to freezing. The majority of the heating piping is contained within the perimeter subgrade tunnels that encompass the building. Racks on the walls of the tunnels contain the heating supply, return and reverse return piping. The piping risers to the perimeter wall fin heaters occurs in each classroom at the exterior wall. Valving from 1956 will be on the heating systems in the tunnels and will not be servicable. Direct buried piping for the Technical wing runs from the Boiler room. The buried 4" steel piping dates from 1962 and is due for replacement.	Replacement of the hydronic piping and horizontal mains in tunnels to the Boiler Room will be extremley expensive. Architectural finishes and pipe routing will dictate the type of replacement heater and the possible pipe routing to the heaters. An alternate heating system should be considered for the school due to the very high cost of repairing / replacing the existing hydronic heating piping systems.Tunnels are still contaminated with asbestos insulation and a confined space entry zones which will raise the cost of any work in the tunnels.Concerns over asbestos in the confined space will make the work very slow.	60	5	2	$1,500,000
M3.2	PUMPS		In-line and base mounted Heating pumps are located in the Boiler mechanical room. The pumps were new in 1996 as part of the heating plant. No operational difficulties are noted with the pumping systems.	Pumps are acceptable and may be replaced on an as needed basis.Variable speed drives can be added although most pumping lops appear to be constant volume loops.	25	5	2	$80,000

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M3.3	**INSULATION**		Heating piping thermal insulation in most cases is fiberglass material although there is still significant asbestos insulation within the tunnel systems. All corridor piping and Boiler room piping was re-insulated in 1996 with fiberglass material and is in a suitable condition to continue to provide service for at least 25 years.	All remaining asbestos insulation in the tunnels should be removed by an asbestos abatement company. All new piping will require new mineral fibre insulation and complete vapour barrier protection. Costing for the removal is beyond the scope of this report. Assistance from a speciality consultant is required for estimation.	40	20	2	$250,000
M3.4	**BOILERS**		The heating boilers located in the School Boiler Room provide the primary heating of the hydronic heating loop for the School. Four PK Thermific non-condensing boilers range in age from 1992 to 1996. The four boilers vent to the original vertical masonry chimney through a gas liner. The Heating loops are rest for outdoor air temperature however the boilers are non-condensing type boilers and the radiation heating requirement does not allow for temperautre rests below 150 DegF HWS.	The boilers have a service life of 25 years as are due for replacement. Major changes to the School may consider alternate heating systems from the hydronic system and these options should be reviewed and evaluated prior to replacing the boilers.	25	5	2	$300,000
M4	**FIRE PROTECTION**							
M4.1	**SPRINKLERS**		There are currently no fire protection sprinklers in the School.	We recommend the addition of extra fire extinguishers on each floor for increased building protection.			4	$10,000

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GLENDALE SECONDARY SCHOOL
BUILDING ASSESSMENT REPORT
May 15,2015

NO.	DESCRIPTION	PHOTOGRAPH	EXISTING CONDITIONS	SUITABILITY FOR LONG TERM USE	SYSTEM LIFE (YRS)	ESTIMATED REMAINING SERVICE LIFE (YRS)	CODE	BUDGET REPLACEMENT COST ($)
M4.2	**STANDPIPE**		A 1 1/2" fire standpipe system is original to the School and is fed from a combined standpipe /domestic water service in the Boiler room. Hoses in the standpipe cabinets appear to be 75 foot hoses in lieu of the usual 100 foot hoses.	Hose distances should be checked from each cabinet to ensure full coverage of all School areas from the cabinets.	50	30	1	$50,000
M5	**HVAC**							
M5.1	**VENTILATION**		Local aluminum roof type exhaust fans provide washroom ventilation.The Central ventilation systems provides the ventilation air and free cooling for the School.	The original central ventilation system for the School was based on negative pressure ventilation using roof fans and operable windows in each teaching space. In 1996, a multi-phase renovation was completed that converted the School to a mixed air tempering systems with heating and cooling. The temperature of the supply air was temered in the heating season with gas heat and with DX cooling systems during the cooling season. All new supply and return air ductwork was installed to provide the air distribution. The rooftop HVAC units are now 19 years old and are still in service. Expected service life for this type of equipment is 20 to 25 years.	30	10	2	$90,000
M5.2	**COOLING SYSTEMS**		Landlocked rooms on the Second floor used for computer rooms are served by HVAC heat / cool units above each room.Units are from 1997 and are in fair condition.	The existing cooling systems all appear to be functional.The condensing units have 1996 and 1997 serial numbers. The drawings from 1996 indicate that the equipment was new.The remaining operational lifespan is estimated at 5 to 10 years.	25	5	3	$250,000
M5.3	**AIR HANDLERS**		Trane Custom Heat /Cool units are powered on 600 volts and are mounted above the roof on galvanized structural frames. Temperature control is by the BAS and the units are used during occupied periods only.The AHUs are packaged AHUs with side mounted DX condensing units. The units operate on R22 refrigerant. The phase out period for R22 should not affect the servicability of these units. Replacement equipment will utilize a different refrigerant or refrigerant blend.	Custom RTU AHUS were installed in 1997 to provide tempered air during heating and cooling seasons for the ventilation air in the teaching areas. Units can free cool during the winter and provide "neutral" temperature supply air. The systems do not provide heating but tempered air only. Non-condensing gas burners on indirect heat exchangers provide the heating. The units should remain servicable for 5 years and can be directly replaced when warranted with custom replacement units without roofing issues. Natural gas piping on the roof exhibits some surface corrosion that requires painting for piping protection.	25	5	3	$600,000

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BUILDING ASSESSMENT REPORT
May 15,2015

NO.	DESCRIPTION	PHOTOGRAPH	EXISTING CONDITIONS	SUITABILITY FOR LONG TERM USE	SYSTEM LIFE (YRS)	ESTIMATED REMAINING SERVICE LIFE (YRS)	CODE	BUDGET REPLACEMENT COST ($)
M5.4	**DUCTWORK**	 	The ventilation air ductwork from the custom AHUs is insulated with 2" thick isocyarnate insulation covered with Sarnofil roofing membrane. This is a heavy duty and expensive membrane that is excellent condition after 19 years of operation above the roof level.	The concealed air distribution ductwork within the corridor ceiling spaces supplies and returns air from the teaching rooms to the rooftop HVAC units. The supply air ductwork is thermally insulated in the ceiling spaces of the Ground and Second floor and is suitable for low pressure supply air up to 1" WG.	35	15	3	$250,000
M5.5	**EXHAUST FANS**	 	Aluminum exhaust fans serve washroom areas, are curb mounted and were new in 1996.Belt drives are servicable for many years.The original large centrifugal aluminum exhaust fans were removed during the 1996 renovation. Curbs were removed and roof deck in-filled.	The exhaust fans are suitable for long term use. Fan capacities are adjustable if required.Most of the low pressure fans are 120 volt, single phase power supplies and are BAS controlled for occupied / unoccupied cycles.	30	10	3	$40,000

Filer Engineering Ltd.
1046 Botanical Drive
Burlington, Ontario L7T 1V1
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GLENDALE SECONDARY SCHOOL
BUILDING ASSESSMENT REPORT
May 15,2015

NO.	DESCRIPTION	PHOTOGRAPH	EXISTING CONDITIONS	SUITABILITY FOR LONG TERM USE	SYSTEM LIFE (YRS)	ESTIMATED REMAINING SERVICE LIFE (YRS)	CODE	BUDGET REPLACEMENT COST ($)
M5.6	**FIRE DAMPERS**		Fire dampers are required in the ductwork that passes through floor or wall fire separations. Existing fire dampers were mostly installed in 1996 during the rough-in phase for the distribution ductwork and the grilles.Corridor supply and return air openings to each teaching space are protected by fire dampers in the vertical plane. Access for the sidewall grille fire dampers are through the grilles. Fire dampers are located at the plaster membranes located on the underside of the steel joists on the roof and second floor levels.	Fire dampers require annual inspection and testing throughout the life span of the dampers.There are frequently missed during regular maintenance andservice calls. A schedule and location fro all fire dampers is recommended to allow for orderly checking of condition and operation.	40	20	1	$50,000
M6	**CONTROLS**							
M6.1	**CONTROLS**		The existing Cathdral and Basement Heating and cooling control system is a Jhonson Direct Digital Controls (DDC) system which controls the Cooling controls, the Boilers, pumps, the ventilation dampers and the supply fans.	This DDC BAS control system has been installed and functional since 1996. All major mechanical equipment is connected and controlled by the BAS system. Replacement of terminal controllers when failures occur is the usual method of gradually upgrading the BAS system to newer hardware. The origian lheating controls for each room are pneumatic and should be reworke when the decision on the hydronic piping systems is made. It is likely that the existing heating system should be changed to another type of system suitable for the use of the building.	25	5	2	$200,000
				TOTAL ESTIMATED BUDGET COST:				$7,190,000

'Categories: 1. Code and Regulatory Compliance 2. Capital Replacement 3.Maintenance 4. Building System Upgrades

Equipment List	Year	Quantity
PK Boilers N-1900c	1996	4
Roof Exhaust Fans	1996	20
Kitchen Supply Fan	1996	1
Kitchen Exhaust Fan	1996	1
Domestic Water Heater	1996	1
Domestic Water Storage Tanks	1996	3
Rooftop HVAC unit Room 236 5 tons Ht / Cool	1996	1
Rootop HVAC unit Library 20 tons Ht/ cool	1996	1
Sump pumps- Front Entrance	1997	2
Trane 250 - 9500 cfm	1997	1
Trane 250 - 9500 cfm	1997	1
Carrier 15 ton Cafeteria	1997	1
Carrier 7.5 ton Administration	1997	1
Auditorium Unit	1997	1
Trane 250 - 7700 cfm	1997	1
Trane 250-7300 cfm	1997	1
Electrical Shop Carrier 7.5 ton	1997	1
Trane 250-8500 cfm	1997	1
Trane 250 Tech Wing 7500 cfm	1997	1
Computer Room Carrier 7.5 ton	1997	1
Basement Kitchen Heating Fan-Delhi 9215F	1997	1
Radiation Pumps	1997	2
Boiler Pumps	1997	4
Tech Wing Heating Pumps	1997	2
Dust Collector	1997	1

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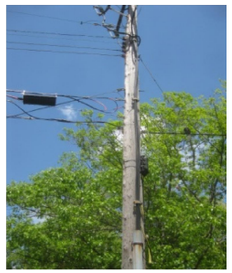
Hamilton Wentworth District School Board
Glendale Secondary School
Building Review - Electrical

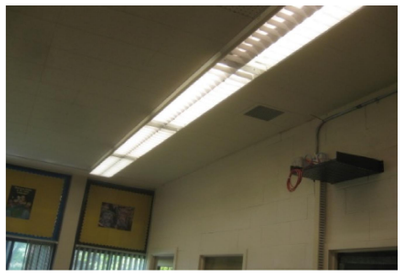
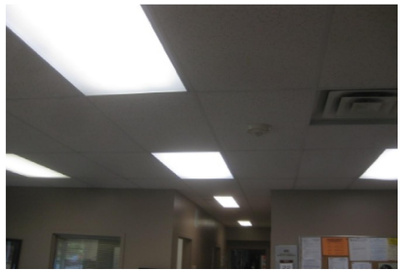
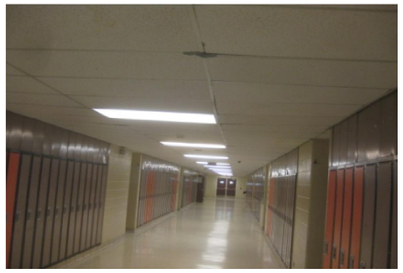
2015-05-25

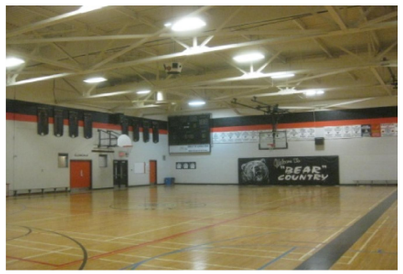
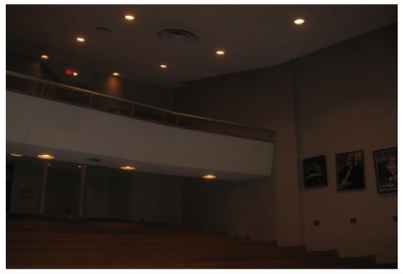
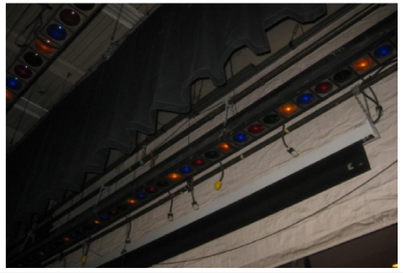
Rev A

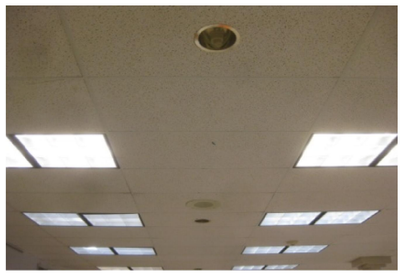
No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
1.0	**HYDRO SERVICE**					
1.1	Incoming HV Cables		Overhead and underground 15kV single circuit, 3-phase cables in underground conduit to Utility Owned Transformer Room. Cables owned by Horizon Utilities. Cables appear to have been replaced in the last 10 years.	Recommend power shut-down to megger test each conductor. Perform thermal inspection testing of HV terminations.	$10,000.00	5 years
1.2	Main Switchboard	 	Siemens 1200A, 347/600kV, 3-phase two section switchboard located in the Main Electrical Room. Section 1 contains a 1000A main breaker, Utility C/T compartment and digital meters. Section 2 contains a 1200A, 347/600V, 3-phase distribution board with 9 breakers feeding various 600V loads throughout including one 500A breaker feeding a 500kVA, 600V/120-208V transformer in the adjacent room. This transformer feeds a Siemens 1600A, 120/208V, 3-phase distribution board with 12 breakers feeding various panel boards throughout. This equipment was installed in 1997 to replace existing.	Recommend power shut-down to clean the 1200A switchboard and the 1600A distribution board, inspect and torque all breaker connections. Recommend megger testing of 500kVA transformer. Test and adjust all breakers (replace as necessary). Perform thermal inspection testing of all connections, breakers and bus bars.	$35,000.00	10 years

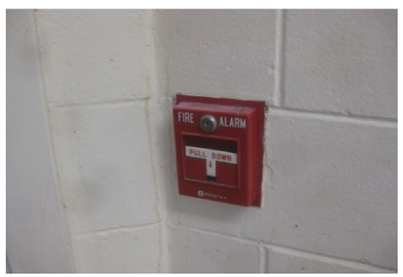
No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
2.0	**POWER DISTRIBUTION**					
2.1	Panel Boards	 	Numerous Siemens 100A & 200A, 120/208V 3-phase panel boards throughout. Panel boards in most areas were replaced during 1997 building renovations. Some original 1959 panel boards existing in shop classrooms etc.	Recommend visual inspection of all 1997 panel boards and breakers. Recommend relpacing all remaining 1959 panel boards and updating of panel board index cards.	$15,000.00 (for 1997 panel boards) + $50,000.00 (for 1959 panel boards)	10 years for 1979 panel boards. 20 years for replacment panel boards.
2.2	Receptacles		Numerous grounded receptacles throughout installed during 1997 renovations. Recessed, surface mounted and wireway mounted. Numerous older grounded receptacles throughout. Recessed, surface mounted and wireway mounted.	Recommend visual inspections & testing in areas of concern or high use.	$5,000.00	Subject to test results.

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
3.0	**LIGHTING**					
3.1	Exterior Lighting:					
3.1.1	Building Fixtures	 	Older high pressure sodium wall pack fixtures around the building exterior mounted at approximately 20ft. Older high pressure sodium canopy fixture at main entrance. Some with broken lenses	Recommend replacing all fixtures with new LED wall pack fixtures and canopy light fixtures. Recommend new exterior lighting control system.	$75,000.00	Original fixtures have reached service life.
3.1.2	Parking Lot / Roadway Fixtures		No original parking lot or roadway pole light fixtures.	Recommend review of need for pole lighting in existing parking lot and roadway areas.	$5,000.00	New

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
3.2	Interior Lighting:					
3.2.1	Classroom / Office Fixtures	 	Most classrooms have original 1x4 surface "Kawartha" light fixtures upgraded to T8 lamps 20 years ago. 10% of classrooms have new 1x4 T8 Troffer fixtures installed in the last couple of years. Most office areas have newerl 1x4 & 2x4 T8 Troffer light fixtures installed in the last couple of years or during the 1979 renovations.	Recommend replacing all existing fixtures with new LED equivalents. New occupancy sensors should be provided.	$250,000.00	Original fixtures have reached service life.
3.2.2	Corridor Fixtures		Newer 1x4 & 2x4 T8 Troffer light fixtures installed in the 1979 renovations.	Recommend replacing all existing fixtures with new LED equivalents. Occupancy sensors should be provided.	$100,000.00	Original fixtures have reached service life.

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
3.2	Occupancy sensors					
3.2.3	Gymnasium Fixtures		New 2x4 6 lamp T5HO suspended gymnasium fixtures with wire guards. Installed in 2012 in all 3 gymnasiums. Occupancy sensors also provided.	Recommend cleaning, relamping and re-ballesting existing fixtures as required.	$5,000.00	New
3.2.4	Auditorium Fixtures		Original incandescent downlight fixtures with "Strand" low voltage control system.	Recommend retrofitting existing fixtures with LED light sources. Recommend review and repair of existing low voltage control system as necessary.	$40,000.00	Original fixture light sources have reached service life.
3.2.5	Theatrical Lighting		Existing fixtures, dimmers & controls appear to be approximately 20 years old.	Recommend replacing existing light fixtures, dimmers, controls and dimmer board with new equipment to meet current Board standards.	$150,000.00	Original equipment has reached service life.

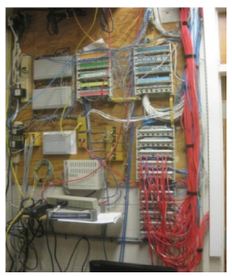
No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
3.2	Interior Lighting (continued):					
3.2.6	Cafeteria Fixtures		Newer 2x4 T8 Parabolic Troffer 6" cf down light fixtures installed in 1998.	Recommend replacing all existing fixtures with new LED equivalents. Occupancy sensors and dimming controls should be provided.	$50,000.00	Original fixtures have reached service life.
3.2.7	Shop Classroom & Service Area Fixtures		Original suspended "Kawartha" light fixtures upgraded to T8 lamps 20 years ago.	Recommend replacing all original fixtures with new LED equivalents. Occupancy sensors should be provided.	$30,000.00	Original fixtures have reached service life.

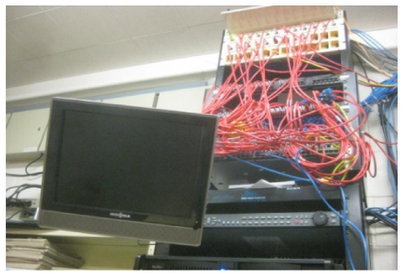
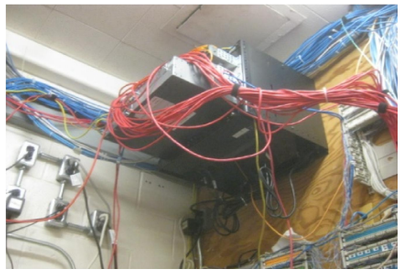
No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
4.0	**LIFE SAFETY SYSTEMS**					
4.1	Fire Alarm System:					
4.1.1	Main Fire Alarm Panel		Newer Simplex 4100 addressable panel located in Caretaker's Room off of Boiler Room. Approximately 20 years old.	Recommend replacing existing panel with new Simplex equipment.	$100,000.00	Original equipment has reached service life.
4.1.2	Fire Alarm Annunciators		Newer Simplex unit located in Front Vestibule. Approximately 20 years old.	Recommend replacing existing annunciatior with new Simplex equipment and adding new annunciator in Main Office Area.	$10,000.00	Original equipment has reached service life.
4.1.3	Fire Alarm Devices		Newer Simplex addressable devices throughout. Approximately 20 years old.	Recommend replacing all devices and related wiring with new Simplex units.	$250,000.00	Original equipment has reached service life.

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
4.2	Emergency / Exit Lighting:					
4.2.1	Exit Signs		Newer Lumacell self-powered LED exit & combination emergency/exit lighting units throughout. Installed in 1979.	Recommend replacing with new LED units.	$50,000.00	Original equipment has reached service life.
4.2.2	Emergency Battery Units		Newer Lumacell self-powered double-head halogen emergency lighting battery units throughout. Installed in 1979.	Recommend replacing with new LED units.	$50,000.00	Original equipment has reached service life.

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
5.0	**COMMUNICATIONS SYSTEMS**					
5.1	P/A and Clock System:					
5.1.1	Main P/A Console		Newer Dukane MCS 350 unit located in Bookstore Room. Approximately 10 years old.	Recommend unit be inspected, tested & repaired as necessary by equipment manufacturer.	$5,000.00	5 years
5.1.2	Administrative Units		Two newer Dukane units located on secretary desk in Main Office and in Vice Principal's Office. Approximately 10 years old.	Recommend providing four additional units for Principal, Attendance Secretary, Guidance & one other.	$4,000.00	Existing - 5 years and New
5.1.3	Classroom Units		Newer Dukane speaker, call switch and handset in classroom MCP panels throughout. Installed in the 1979 renovations.	Recommend units be inspected, tested & repaired as necessary by equipment manufacturer.	$15,000.00	5 years

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
5.1	P/A and Clock System (continued):					
5.1.4	Corridor Speakers		Newer Dukane recessed units throughout. Installed in the 1979 renovations.	Recommend units be inspected, tested & repaired as necessary by equipment manufacturer.	$8,000.00	5 years
5.1.5	Master Clocks		Newer Dukane Master clock control located in Main P/A Console. Digital clocks in classroom MCP's & on corridor ceilings. Analogue closkc in gymnasiums. Installed in the 1979 renovations.	Recommend units be inspected, tested & replaced as necessary by equipment manufacturer.	$20,000.00	5 years
5.1.6	Modular Control Panels (MCP's)		Newer MCP's installed in classrooms during 1979 renovations. No MCP's in shop classrooms.	No action required for existing classroom units. Recommend supplying new units in all shop classrooms.	$50,000.00	Existing - 10 years and New

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
5.2	Data and Telephone Wiring:					
5.2.1	Fibre D-Mark		Existing Rogers/Atria Networks Fibre D-mark is located in Electrical Room.	No action required.	$0.00	10 years
5.2.2	Bell D-Mark		Existing Bell Canada multi-pair cable D-mark is located in Server Closet in Bookstore Room.	No action required.	$0.00	10 years

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
5.2	Data and Telephone Wiring (continued):					
5.2.3	Main Server	 	Existing main Data Server equipment is located in Server Closet in Bookstore Room. Numerous remote DAP's throughout building. Equipment appears to be 10 + years old.	Recommend reviewing all data wiring within building and upgrading as required.	$40,000.00	5 years
5.2.4	Data / Telephone Outlets		Numerous data outlets throughout building. Most installed in the 1079 renovations.	Recommend reviewing all data outlets within building and upgrading as required.	$80,000.00	5 years

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
6.0	**SECURITY SYSTEMS**					
6.1	Intrusion Security System:					
6.1.1	Security Panel		DSC Maxsys PL4020 security panel is located in Caretaker Office off of Boiler Room. Only security keypad is located at security panel. Equipment appears to be 10+ years old.	Recommend new security panel, several keypads & all new wiring.	$50,000.00	Original equipment has reached service life.
6.1.2	Security Devices	 	DSC security devices including door contacts & motion detectors throughout. Equipment appears to be 10+ years old.	Recommend new devices to replace existing plus additional to provide sufficient coverage & all new wiring.	$30,000.00	Original equipment has reached service life.

No.	Description	Photograph	Existing Condition	Proposed Changes/Recommendations	Budget Costs	Est. Remaining Service Life (Years)
6.2	CCTV Surveillance System:					
6.2.1	Video Recorder		GeoVision CCTV video recorder and camera multiplexer located in Bookstore Room. Equipment appears to be 10 + years old.	Recommend reviewing all recording, camera multiplexing and TV monitor equipment and upgrading as required.	$40,000.00	5 years
6.2.2	Cameras		Numerous Bosch existing interior & exterior cameras. Equipment appears to be 10 + yraes old.	Recommend new colour digital interior & exterior cameras to provide sufficient coverage & all new wiring.	$50,000.00	Original equipment has reached service life.
6.3	Access Control System:					
6.3.1	Access Control	Photo unavailable	No existing access control system.	Recommend new access control system including door strikes, card readers, etc.	$40,000.00	New

APPENDIX D

HWDSB Condition Assessment

Glendale Building – ID 9078-1

Hamilton-Wentworth District School Board

Condition Assessment

Glendale, Building ID 9078-1

Facility Name (SFIS)	Glendale
Ministry Building Number	9078-1
GFA (m2)	12823
Year Built by Original/Additions	1960
Replacement Value - OTG	$29,155,700
Official FCI (%)	18.28
Comparable FCI (%)	29.17
Asset Address	145 Rainbow Drive
Asset City	Hamilton
Asset Postal Code	L8K 4G1
-- ACCESSIBILITY CHECKLIST --	----------
Designated parking space	No
Path of travel to the main entrance door.	No
Designated entrances	No
Path of travel to all floors/elevations.	No
Elevator	No
Instructional spaces entrance doors.	No
Fire policy and fire safety plan	No
Fire alarm system with strobe and audible signals	No
Communal washrooms	Yes
Designated washroom	No
-- ENERGY CHECKLIST --	----------
Energy efficient boiler	Yes
Energy audit report	No
Energy efficient domestic hot water heater	No
Energy efficient recovery system	No
Energy efficient HVAC pumps and fan motors	No
Energy efficient interior lighting	Yes
Building Automation System	Yes
Energy efficient faucets	No
Energy efficient urinals and toilets	No
Architectural and Site Assessor	Ramin Saeedi
Mechanical and Electrical Assessor	Mark Pantchevski

How to read the final report

The Final Report contains assessment information for 5 years for this facility.

Asset details reported are either populated from the SFIS system (e.g. GFA, year built etc) or calculated based on Ministry's criteria (e.g. Replacement Value – OTG, Official FCI, Comparable FCI etc).

Accessibility and Energy assessment lists are provided in a yes/no format. For a full description of accessibility/energy definitions please check the TCPS database, Asset Narratives, under the Narratives Tab.

Asset Narratives include the following:

- Architectural & Structural Summary –a brief summary of the asset including construction dates and areas of the original and additions. A brief description of the structure, the exterior wall system, the roof assembly system and the building interiors.
- Mechanical Summary – a brief summary of the mechanical systems.
- Electrical Summary – a brief summary of the Electrical systems.
- Site Summary – a brief summary of the Site systems.
- Limitations – a summary of the scope of work and the Tactical Planning Window.

Building Elements listed are only the ones that require replacement in the next 5 years; their condition is Critical if failed or risk of imminent failure is observed, or Poor if it is not functioning as intended with significant repairs within the next two (2) years, or Fair if normal deterioration and minor distress is observed requiring repairs within three (3) to five (5) years.

2011-2015 Cost and Year information is a snapshot from the assessment and cannot be edited in TCPS.

2011-2015 Priority is the value of the Event priority calculated when the assessment data was imported in TCPS and stored in this read-only field.

Estimated Cost and Fiscal Year are values that can be edited at any time by end users.

Event Priority is a field populated with labels like Urgent, High, Medium and Low based on the Event Priority Value. This value is calculated based on the Element Type and Element Condition.

Photos are provided at the event level: old photos are suffixed with the world "Old", new photos are suffixed with the date of assessment.

A copy of this report in PDF format is saved in the TCPS database. You can access it by selecting the Asset Instance in Data Manager and opening this report in PDF format from the Document Tab.

1. Architectural & Structural Executive Summary

Glendale SS Building ID-9071-1 was assessed on May 08, 2013 by VFA, is located at 145 Rainbow Drive, Hamilton, Ontario. The original facility is a two story structure of block construction without basement. The original building is constructed in 1960. The addition one was added in 1963.It has been indicated there is another addition which has been completed in 1980.
The total size of the building is 12,824 square meters. The site is 2.02 hectares. The structure of the GYM, workshops, and Cafeteria are of Metal roof decking, steel trusses, steel joists and load bearing masonry. It was indicated that the roof coverings has been replaced in 2009.
The interior finishes consist of terrazzo, mainly vinyl composite tiles, ceramic tiles, hard wood flooring, painted masonry and gypsum board walls and, gypsum board acoustic ceilings.
The exterior walls of the school are brick veneer and Pre-cast concrete finished assembly.
Typical spaces in the school include auto shops, wood shop, library/resource center, music room, theater art class, auditorium, gymnasiums, weight room, computer rooms, science labs, administration office, and mechanical service space and general instructional classrooms.

2. Mechanical Executive Summary

2013 - Overall, the mechanical equipment is in fair condition.

Heating for Glendale Secondary School is provided by four gas fired hot water boilers updated in 1999. The boilers provide hot water to perimeter fin tube radiators, force flow heaters, unit ventilators and air handlers. There are four air handlers which supply heating and ventilation throughout the school. Additional HVAC to the school is provided by six rooftop air handlers, seven rooftop HVAC units, one condenser unit and one split cooling system installed in 1997. Addition cooling for the school is provided by window AC units. The remaining ventilation is provided by rooftop exhaust fans and various internal exhaust fans.

Domestic hot water for the school is provided by a gas fired boiler and three water storage tanks installed in 1995.

The HVAC controls for the school are provided by a pneumatic controls system, building automation system and Direct Digital Controls.

The school has one elevator serving two floors and two stair lifts. All conveying devices are in good condition.

Fire protection for the school is provided by a standpipe system and fire extinguishers.
Comments on exceptions: Based on age of components and observed site conditions the following mechanical equipment has exceeded their theoretical useful life and will require replacement within the tactical planning window.

- Plumbing fixtures age aged and in poor condition.

- Domestic water distribution is aged in fair condition and a study is recommended.

- Sanitary waste distribution is aged in fair condition and a study is recommended.

- Rain water drainage distribution is aged in fair condition and a study is recommended.

- The exterior section of the natural gas piping is aged, corroded and in fair condition.

- Heating distribution piping system is aged, in poor condition and a study is recommended.

- The central air handlers are original and in fair condition.

- The terminal HVAC units are original and in poor condition.

- The standpipe system in the school is aged and in fair condition.

- The fire extinguishers are aged and in poor condition.

- The two woodshop dust collectors are aged and in poor condition.

- Dedicated exhaust fans for the science rooms are undersized and in critical condition.

3. Electrical Executive Summary

2013 - Electrically Glendale Secondary School is in good condition.

The main electrical equipment in the school was updated in 1999 and updates include man switchgear, secondary switchgear and secondary transformers. The fire alarm panel and end devices are in good condition.

Emergency lighting is provided by wall mounted battery pack units. The interior lighting within the building is in good condition with CFL, incandescent lamps and T8 lamps with electronic ballasts. Exterior lighting is provided by HID fixtures and light standards for the parking area. Exit lighting is in good condition.

Security system includes a panel, motion detectors, sensors, CCTV and keypads, with surveillance updated in 2006.

A new PA main console was recently installed.

Emergency power was updated in 2010. The information technology system is in good condition.
Comments on exceptions: Based on age of components and observed site conditions the following electrical equipment has exceeded their theoretical useful life and will require replacement within the tactical planning window.

- Branch wiring is aged in fair condition and a study is recommended.

4. Site Summary

2013-The site - Glendale SS is bounded by residential Properties on the west and, Secord Drive to the north side of the site. There is Glen Cho Public school on south side of the site. The Glen Cho Drive is on the east side of the site.

Typical walkways service the site, with asphalt concrete landing or stairs at most building entrances.

There is a wall mounted sign on top of the facing southwest of the building which displays school name; the building access off Rainbow Drive and there are paved parking on the north of the site.

Definitions for Energy Checklist

Energy audit report: An ASHRAE Level I energy audit report was completed within the last three years.

Energy efficient boiler: The energy efficient boiler provided is a condensing boiler installed within the last five years or is energy star rated.

Energy efficient domestic hot water heater: The energy efficient domestic hot water heater provided is direct or power vented natural gas fired or has an electric heat coil.

Energy efficient recovery system: The building is provided with a Heat Recovery Unit (HRU).

Energy efficient HVAC pumps and fan motors: The energy efficient HVAC pumps and fan motors are reportedly provided with a variable frequency drive.

Energy efficient interior lighting: The provided interior lighting is controlled by motion sensors or building automation system and/or the interior light fixtures are provided with T8 or T5 fluorescent lamps and electronic ballast.

Building Automation System: The building has a comprehensive Direct Digital Control (DCC) automation system to monitor and control the mechanical system.

Energy efficient faucets: Approximately 50% of the lavatory faucets are provided with aerators and motion sensors.

Energy efficient urinals and toilets: Approximately 50% of the urinals and toilets are provided with a low flow flush valve (less than 1.6 gpf)

Definitions for Accessibility Checklist

Designated parking space: The provided designated Barrier Free Accessible parking space is a minimum 2,400 mm wide and is clearly marked with an accessibility sign.

Path of travel to the main entrance door: The provided accessible path of travel from the designated Barrier Free Accessible parking

space to an accessible building entrance is a minimum 910 mm wide and includes curb cuts and ramps

Designated entrances: The provided designated Barrier Free Accessible entrance is a minimum 850 mm wide to allow a mobility device, clearly marked with an accessibility sign and is provided with an automatic door open device.

Path of travel to all floors/elevations: The Barrier Free Accessible path of travel is provided with either an accessible ramp or a vertical transportation device where a floor or an elevation difference exists.

Elevator: The provided Barrier Free Accessible Elevator has the following: clear audible communication indicating floors and up/down direction; doors, which open long enough and a minimum 900 mm wide; and a control panel, which is provided with Braille and an emergency call system and where the top is at a maximum height of 1,400 mm above floor.

Instructional spaces entrance doors: The instructional spaces are provided with an entrance door which is a minimum of 850 mm wide.

Fire policy and fire safety plan: Fire policy and fire safety plans are reportedly in place for the evacuation of people with disabilities.

Fire alarm system with strobe and audible signals: Fire alarm system is reported to include strobe lights and audible signals

Communal washrooms: There is a Barrier Free Accessible washroom stall, which is a minimum of 1,500 x 1,500 mm, in the each boys and girls washroom on each accessible floor.

Designated washroom: A designated Barrier Free Accessible washroom is provided on each floor, and is equipped with the following: an automatic door open device; grab bars; emergency call button; lever handle or motion sensor faucets; and a lavatory, where an insulated knee space is provided and the height of lavatory top is a maximum of 815 mm above the floor.

Limitations

This report has been prepared to meet the Ministry of Education (EDU) objectives for the Condition Assessment Program for Educational Facilities in Ontario. The purpose of the Condition Assessment Program was to assess the current physical condition of the schools and associated site features, and to validate information currently contained in the online capital renewal database software Total Capital Planning Solution (TCPS).

The validation of data was limited to a five year period, which is defined as the current assessment year plus four years. Information contained in the database beyond this period was not validated or reviewed.

The provided event costs are intended for global budgeting purposes only. The event costs were adjusted to include regional factors and were based on an approved unit cost list. Actual event costs for the work recommended may differ since the event costs can only be determined after preparation of tender documents, which would consider: specific design conditions, site restrictions, effects of ongoing building operations and construction schedule. The approved cost threshold for the Condition Assessment Program is $ 10,000.

Barrier Free Accessibility and Energy Conservation Measures assessments were limited to a preapproved checklist presented on Page 2. The assessment of portables (classrooms not integrated with the building envelope), solar photovoltaic panels, other solar energy collectors, wind turbines, sheds, less than 45 sq.m., play-equipment/structures, score boards, goal posts and flag poles, fire extinguishers, decommissioned swimming pools, window coverings, black/white boards, benches, gymnastic equipment and the appropriateness of room space were excluded from the scope of work. Information related to these components contained in the database was not updated to reflect condition observed. Information related to events which are either planned or in progress, and currently locked were not updated.

All Elements

B SHELL

B20 Exterior Enclosure

B2030 Exterior Doors

Element Instance : B2030 Exterior Doors

Description 2013 -The exterior doors and frames were observed to be primarily painted metal with single glazed Georgian wired glass.

Condition Assessment 2013 - The original exterior door assemblies were observed to be aged and worn beyond useful life with worn finishes, corroded frames, and deteriorated door seals.

Last Replacement Year	1960
Theoretical Life	27
Technical Condition	Poor

Replacement [B2030 Exterior Doors]

Event Type: Replacement Priority: High

Brief Description	Replacement [B2030 Exterior Doors]
Estimated Cost	$58,344
Fiscal Event Year	2015
2011-2015 Cost	$58,344
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation 2013 - The exterior door assemblies were observed to be aged and worn beyond useful life. Replacement of the door assemblies is suggested.

May 2103- Typical Exterior door.

May 2013- corroded exterior door.

May 2013-Corroded frame of exterior door.

Element Instance : B2030 Exterior Doors

Description 2013 - Exterior door hardware's are consist of panic bars, push bars, kick plates, butt hinges and door pulls.

Condition Assessment 2013 - The exterior door hardware was observed to be aged and worn. Corrosion noted on various components.

Last Replacement Year	1960
Theoretical Life	15
Technical Condition	Poor

Replacement [B2030 Exterior Doors]

Event Type: Replacement

Priority: High

Brief Description	Replacement [B2030 Exterior Doors]
Estimated Cost	$29,172
Fiscal Event Year	2015
2011-2015 Cost	$29,172
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 - The aged and worn exterior door hardware is suggested be replaced in conjunction with exterior door replacement.

May2013- Typical exterior door hardware.

May 2013- Typical exterior door closer.

May 2013- Typical exterior door higes.

C INTERIORS

C10 Interior Construction

C1020 Interior Doors

Element Instance : C1020 Interior Doors

Description	2013 - Interior doors were observed to include finished wood veneer solid core wood doors and painted metal doors hung in painted metal frames. Some doors were observed with Georgian wired glazing.
Condition Assessment	2013 - The majority of doors were observed to be aged and worn beyond useful life. Wood doors had damaged veneers, painted metal doors had chipped paint, some glazing was non tempered .

Last Replacement Year	1960
Theoretical Life	25
Technical Condition	Fair

Replacement [C1020 Interior Doors] [01.5-050 Interior Doors

Event Type: Replacement Priority: Medium

Brief Description	Replacement [C1020 Interior Doors] [01.5-050 Interior Doors
Estimated Cost	$72,930
Fiscal Event Year	2015
2011-2015 Cost	$72,930
2011-2015 Priority	Medium
2011-2015 Year	2015

Recommendation 2013 - The interior doors have exceeded their useful life. Replacement of the interior doors is suggested.

May 2013- Typical interior door.

May 2013- Damaged interior wood door.

May 2013- Typical interior hollow metal door.

Element Instance : C1020 Interior Doors - Original Building

Description

2013 - Interior door hardware featuring classroom knob locksets, door pulls, hinges, door closer and floor stops.

Condition Assessment

2013 - The interior door hardware is original and has exceeded its effective rated design life. The components are appearing worn with reports of some reliability issues.

Last Replacement Year	2007
Theoretical Life	15
Technical Condition	Fair

Replacement [C1020 Interior Doors - Original Building]

Event Type: Replacement Priority: Medium

Brief Description	Replacement [C1020 Interior Doors - Original Building]
Estimated Cost	$80,172
Fiscal Event Year	2015
2011-2015 Cost	$80,172
2011-2015 Priority	Medium
2011-2015 Year	2015

Recommendation

2013 - The interior door hardware has exceeded its effective design rated life. Replacement is recommended.

May 2013- Typical interior door hardware.

May 2013- Typical interior door closer.

May 2013- Typical interior door hinges.

C1030 Fittings

Element Instance : C1030 Fittings

Description

2013 - Classroom fittings include cabinetry, millwork items, counters and countertops with associated accessories and anchoring devices.

Condition Assessment 2013 - At the time of the assessment all cabinetry, millwork items, counters and countertops were in a fair condition

Last Replacement Year	1960
Theoretical Life	20
Fittings Type	Unspecified
Technical Condition	Fair

Replacement [C1030 Fittings]

Event Type: Replacement Priority: Medium

Brief Description	Replacement [C1030 Fittings]
Estimated Cost	$364,956
Fiscal Event Year	2015
2011-2015 Cost	$364,956
2011-2015 Priority	Medium
2011-2015 Year	2015

Recommendation 2013 - As all the cabinetry, mill-work items, counters and counter-tops have exceeded their expected useful life and are in fair condition the recommendation is to replace them.

May 2013- Typical Millwork fitting in the science classrooms.

May 2013- Worn millwork fitting.

Element Instance : C1030 Fittings

Description 2013 - Painted metal washroom partitions were observed in the building.

Condition Assessment 2013 - The painted metal washroom partitions were observed to be aged and worn. Corrosion, damaged finishes and missing hardware was noted.

Last Replacement Year	1960
Theoretical Life	15
Fittings Type	Unspecified
Technical Condition	Poor

Replacement [C1030 Fittings]

Event Type: Replacement Priority: High

Brief Description	Replacement [C1030 Fittings]
Estimated Cost	$58,395
Fiscal Event Year	2015
2011-2015 Cost	$58,395
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation 2013 - The washroom partitions were observed to be aged and worn beyond useful life. Replacement is suggested.

May 2013- Typical washroom partition in school.

May 2013- Worn and stained washroom partition.

C30 Interior Finishes

C3010 Wall Finishes

Element Instance : C3010 Wall Finishes - Original Building

Description 2013 - Interior painted wall finishes were observed to include, concrete block, plaster and gypsum wallboard surfaces.

Condition Assessment 2013 - The interior wall finishes were observed to be aged and worn. Peeling, marks, chips and discolouration were deficiencies noted on wall surfaces.

Last Replacement Year	1995
Theoretical Life	10
Wall Finishes Type	Unspecified
Technical Condition	Poor

Replacement [C3010 Wall Finishes - Original Building]

Event Type: Replacement Priority: High

Brief Description	Replacement [C3010 Wall Finishes - Original Building]
Estimated Cost	$196,829
Fiscal Event Year	2015
2011-2015 Cost	$196,829
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation 2013 - The aged and worn interior painted wall finishes suggested to be replaced.

May 2013- Damged wall covering on the second floor classrooms.

May 2013- Faded interior wall covering.

May 2013- deteriorated paint wall covering.

May 2013- Interior wall covering.

C3020 Floor Finishes

Element Instance : C3020 Floor Finishes

Description 2013 - Vinyl Asbestos 9" x 9" floor tile and vinyl base was observed in the school.

Condition Assessment 2013 - The VAT floor finish observed to be aged and worn beyond useful life. The tiles were chipped, cracked and locally no longer bonded.

Last Replacement Year	1960
Theoretical Life	20
Floor Finishes Type	Unspecified
Technical Condition	Poor

Replacement [C3020 Floor Finishes]

Event Type: Replacement Priority: High

Brief Description	Replacement [C3020 Floor Finishes]
Estimated Cost	$291,924
Fiscal Event Year	2015
2011-2015 Cost	$291,924
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 - The VAT floor finish observed to be aged and worn beyond useful life. Replacement of the VAT floor finish suggested to update the appearance and mitigate any potential health concerns.

May 2013- Worn VAT floor covering.

May 2013- Worn VAT floor covering.

May 2013- Damaged VAT floor covering.

Element Instance : C3020 Floor Finishes - Original Building

Description 2013 - Carpet floor covering in Resource Center

Condition Assessment 2013 - At the time of the assessment the Resource Center carpet floor covering was in fair condition, it was showing signs of age and wear

Last Replacement Year	1995
Theoretical Life	10
Floor Finishes Type	Unspecified

Technical Condition Poor

Replacement [C3020 Floor Finishes - Original Building] [01.5-070C04 Carpeting

Event Type: Replacement Priority: High

Brief Description	Replacement [C3020 Floor Finishes - Original Building] [01.5-070C04 Carpeting
Estimated Cost	$110,670
Fiscal Event Year	2015
2011-2015 Cost	$110,670
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation 2013 - The carpets located in the Resource Center, Music and, auditorium are subjected to frequent foot traffic. Excessive wear was evident in those area. Replacement of carpet is recommended.

May 2013- Carpet floor covering in the auditorium.

May 2013- Stained carpet floor covering in the music room.

May 2013- Worn carpet flooring in the Library.

Element Instance : C3020 Floor Finishes - Original Building - gym

Description 2013 - Original finished hardwood strip flooring and wood base situated on the stage, GYM and, isolated classroom..

Condition Assessment 2013 - The original hardwood strip flooring is worn, scratched and in poor condition.

Last Replacement Year	1995
Theoretical Life	20
Floor Finishes Type	Unspecified
Technical Condition	Fair

Replacement [C3020 Floor Finishes - Original Building - gym]

Event Type: Replacement

Priority: Medium

Brief Description	Replacement [C3020 Floor Finishes - Original Building - gym]
Estimated Cost	$111,894
Fiscal Event Year	2015
2011-2015 Cost	$111,894
2011-2015 Priority	Medium
2011-2015 Year	2015

Recommendation

2013 - The hardwood strip flooring on the stage is in poor condition. Refinishing or replacement of the hardwood flooring is recommended.

May 2013- Worn hardwood flooring in the GYM.

May 2013- Worn hardwood flooring in the GYM area.

C3030 Ceiling Finishes

Element Instance : C3030 Ceiling Finishes

Description 2013 - Gypsum board ceilings

Condition Assessment 2013 - At the time of the assessment the gypsum board ceilings were in poor condition

Last Replacement Year	1960
Theoretical Life	15
Ceiling Finishes Type	Unspecified
Technical Condition	Poor

Replacement [C3030 Ceiling Finishes]

Event Type: Replacement Priority: High

Brief Description	Replacement [C3030 Ceiling Finishes]
Estimated Cost	$49,572
Fiscal Event Year	2015
2011-2015 Cost	$49,572
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation 2013 - The gypsum board ceilings are original and have passed there EUL and should be refinished

May 2013- Peeling paint ceiling covering

May 2013- Peeling paint ceiling covering in the girls washroom.

May 2013- Peeling ceiling paint in the classroom.

Element Instance : C3030 Ceiling Finishes

Description 2013 - Acoustical 12"x12" ceiling tile system on substrate secured to the structure above.

Condition Assessment 2013 - The 12" x 12": acoustic ceiling tile is original to the building and additions. There is some signs of staining and damage, and the ceiling system has exceeded its useful life expectancy.

Last Replacement Year	1960
Theoretical Life	25
Ceiling Finishes Type	Unspecified
Technical Condition	Poor

Replacement [C3030 Ceiling Finishes]

Event Type: Replacement

Priority: High

Brief Description	Replacement [C3030 Ceiling Finishes]
Estimated Cost	$51,102
Fiscal Event Year	2015
2011-2015 Cost	$51,102
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 - The 12" x 12" acoustic tile ceiling system has exceeded its useful life and is known to contain asbestos materials. Replacement planning is recommended as to update the appearance of the facility and remove any potential health concerns.

May 2013- Stained 12x12 ceiling tiles.

May 2013- Damaged 12x12 ceiling tiles.

D SERVICES

D20 Plumbing

D2010 Plumbing Fixtures

Element Instance : D2010 Plumbing Fixtures

Description

2013 - The washroom plumbing fixtures include vitreous china water closets, lavatories, urinals, wash basins and showers in the change rooms. Classroom sinks and drinking fountains are also provided in various locations.

Condition Assessment

2013 - The majority of the plumbing fixtures appear to be functioning, but are in fair condition. Some fixtures (15%) have been replaced overtime. The majority of the fixtures have surpassed their normal service life and are inefficient.

Last Replacement Year	1963
Theoretical Life	25
Technical Condition	Poor

Replacement [D2010 Plumbing Fixtures]

Event Type: Replacement

Priority: High

Brief Description	Replacement [D2010 Plumbing Fixtures]
Estimated Cost	$229,500
Fiscal Event Year	2015
2011-2015 Cost	$229,500
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 - Replacement of the original and aged plumbing fixtures in the building (85%) is recommended based on the age, condition and remaining useful life.

May 2013 - Original Floor Mounted Urinals

May 2013 - Aged Water Closet

May 2013 - Aged Wash Basin

May 2013 - Aged Shower Fixtures

D2020 Domestic Water Distribution

Element Instance : D2020 Domestic Water Distribution - Original Building

Description

2013 - The building domestic water system includes a main line, water meter, pressure reducer and associated piping and insulation. At the time of assessment the majority of the domestic water distribution system was estimated to be original to the dates of construction of the additions and original building. Domestic water piping is the boiler room was updated with the replacement of the boilers.

Condition Assessment

2013 - The domestic piping system is mostly concealed and therefore the current condition is not fully known. However due to the age, the expected wear and the theoretical useful life, the system is assessed as being in fair condition.

Last Replacement Year	1960
Theoretical Life	37
Domestic Water Distribution Type	Unspecified
Technical Condition	Fair

Replacement [D2020 Domestic Water Distribution - Original Building]

Event Type: Replacement Priority: Medium

Brief Description	Replacement [D2020 Domestic Water Distribution - Original Building]
Estimated Cost	$306,000
Fiscal Event Year	2016
2011-2015 Cost	$306,000
2011-2015 Priority	Medium
2011-2015 Year	2016

Recommendation

2013 - Based on the age and theoretical useful life of the domestic water piping system replacement is recommended. A study is recommended to determine the current condition, remaining service life, current service requirements and the cost of replacement.

May 2013 - Aged Domestic Water Distribution Piping

May 2013 - Aged Domestic Water Distribution Piping

May 2013 - Aged Domestic Water Piping and Filtration

Study

Event Type: Study

Priority: Medium

Brief Description	Study
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200
2011-2015 Priority	Medium
2011-2015 Year	2014

D2030 Sanitary Waste

Element Instance : D2030 Sanitary Waste

Description

2013 - The sanitary waste distribution system for the school is provided by various types of piping. The majority of the piping is reported to be aged or original to the construction dates of the school.

Condition Assessment

2013 - Much of the sanitary waste water distribution system is concealed with only small areas of the system being visible during the assessment. The visible sections of the piping were observed to be functional but aged. The waste water distribution system is past its rated useful life of 37 years.

Last Replacement Year	1960
Theoretical Life	37
Technical Condition	Fair

Replacement

Event Type: Replacement Priority: Medium

Brief Description	Replacement
Estimated Cost	$204,000
Fiscal Event Year	2016
2011-2015 Cost	$204,000
2011-2015 Priority	Medium
2011-2015 Year	2016

Recommendation

2013 - Planned replacement of the waste water distribution system is recommended based on age and condition.

May 2013 - Aged Sanitary Waste Piping

Study

Event Type:	Study	Priority:	Medium

Brief Description	Study
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200
2011-2015 Priority	Medium
2011-2015 Year	2014

Recommendation 2013 - A study is recommended to determine the condition of the sanitary waste piping system, the required recommended scope of work and the cost for system renewal.

D2040 Rain Water Drainage

Element Instance : D2040 Rain Water Drainage

Description 2013 - Rain water drainage for the school is provided by roof drains and cast iron distribution piping and is reported to be original to the construction dates of the school.

Condition Assessment 2013 - Much of the rain water drainage system is concealed with only small areas of the system being visible during the assessment. The visible sections of the rain water piping were observed to have minor corrosion. The rain water drainage system is past its rated useful life of 37 years.

Last Replacement Year	1960
Theoretical Life	37
Technical Condition	Fair

Replacement

Event Type:	Replacement	Priority:	Medium

Brief Description	Replacement
Estimated Cost	$102,000
Fiscal Event Year	2016
2011-2015 Cost	$102,000
2011-2015 Priority	Medium
2011-2015 Year	2016

Recommendation 2013 - Planned replacement of the rain water drainage system is recommended based on age and condition.

May 2013 - Aged Rain Water Drainage Piping

Study

Event Type: Study Priority: Medium

Brief Description	Study
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200
2011-2015 Priority	Medium
2011-2015 Year	2014

Recommendation 2013 - A study is recommended to determine the condition of the rainwater drainage distribution system, the required recommended scope of work and the cost for system renewal.

D30 HVAC

D3010 Energy Supply

Element Instance : D301002 Gas Supply System - Original Building

Description

2013 - The building includes a natural gas supply and distribution system for the boilers, kitchen, science rooms and rooftops. New natural gas piping was installed in 1999 with the installation of the boilers.

Condition Assessment

2013 - The exterior sections of the gas piping located on the rooftops is showing signs of rust over the majority of the pipe run. The piping is nearing the end of its anticipated service life and consideration of renewal is recommended.

Last Replacement Year	1960
Theoretical Life	35
Technical Condition	Fair

Replacement [D301002 Gas Supply System - Original Building]

Event Type: Replacement

Priority: High

Brief Description	Replacement [D301002 Gas Supply System - Original Building]
Estimated Cost	$18,000
Fiscal Event Year	2017
2011-2015 Cost	$18,000
2011-2015 Priority	High
2011-2015 Year	2017

Recommendation

2013 - Replacement of the corroded gas piping is recommended. Event deferral may result in pipe corrosion and leaks.

May 2013 - Natural Gas Supply Piping - Exterior Section is Corroded

May 2013 - Natural Gas Supply Piping - Exterior Section is Corroded

D3040 Distribution Systems

D304003 Heating/Chilling water distribution systems

Element Instance : D304003 Heating/Chilling water distribution systems - Original Building

Description

2013 - Heating piping, which is mostly concealed, provides hot water to air handling units, perimeter radiant heaters and force flow heaters throughout the building.

Condition Assessment

2013 - Partial upgrade of the heating piping was undertaken in 1999 with installation of the boilers, however the quantity and condition of original piping in the Original building and Addition 1 is unknown. As original piping has exceeded its expected useful life, further investigation is recommended to determine current condition and possible need for replacement. With age, piping leaks may occur, damaging the building interiors.

Last Replacement Year	1960
Theoretical Life	45
Technical Condition	Poor

Replacement [D304003 Heating/Chilling water distribution systems - Original Building]

Event Type: Replacement Priority: Urgent

Brief Description	Replacement [D304003 Heating/Chilling water distribution systems - Original Building]
Estimated Cost	$1,530,000
Fiscal Event Year	2015
2011-2015 Cost	$1,530,000
2011-2015 Priority	Urgent
2011-2015 Year	2015

Recommendation

2013 - Pending the outcome of the recommended study, replacement of the building's heating piping and distribution system may be required. In the current condition piping leaks may occur damaging the building interiors. The work associated with this project is expected to disturb material(s) suspected of containing, or known to contain asbestos, (ACMs). Testing of the suspected ACMs should be conducted prior to the initiation of any demolition and the costs should be adjusted based on the findings. The cost of hazardous materials abatement is not included in the replacement cost.

May 2013 - Aged Heating Water Distribution Piping - Worn Insulation

May 2013 - Heating Water Distribution Piping - Aged Piping in Boiler Room

May 2013 - Heating Water Distribution Piping - Aged Piping in Workshops

Study [D304003 Heating/Chilling water distribution systems - Original Building] [03.1-170 Heating Piping Systems

Event Type:	Study	Priority:	Urgent

Brief Description	Study [D304003 Heating/Chilling water distribution systems - Original Building] [03.1-170 Heating Piping Systems
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200
2011-2015 Priority	Urgent
2011-2015 Year	2014

Recommendation 2013 - The heating piping system are original to the building construction date. A study is recommended to be conducted to determine the condition, remaining service life and replacement cost.

D304007 Exhaust Systems

Element Instance : D304007 Exhaust Systems - Addition 1

Description 2013 - The science classrooms are equipped with exhaust fans, for exhausting the rooms when natural gas is used.

Condition Assessment 2013 - At the time of assessment it was reported that when gas is used in the science rooms the smell of gas is spread throughout the ventilation system to other classrooms and the library. The RTU for the library is shut off on a consistent basis to prevent gas from being pulled into the library until the concerns are resolved. The exhaust fans in the science classrooms are either undersized or a rezoning of the ventilation for the science rooms is required.

Last Replacement Year	1963
Theoretical Life	22
Technical Condition	Critical

Study

Event Type:	Study	Priority:	High

Brief Description	Study
Estimated Cost	$10,200
Fiscal Event Year	2013
2011-2015 Cost	$10,200
2011-2015 Priority	High
2011-2015 Year	2013

Recommendation 2013 - A study is recommended to determine the best course of action to eliminate the smell of natural gas escaping the science rooms into the ventilation system and into other sections of the school.

May 2013 - Undersized Science Room Exhaust Fans

D304008 Air Handling Units

Element Instance : D304008 Air Handling Units

Description 2013 - A portion of the HVAC in the school is provided by 4 central air handling units which are original to the construction dates of the school.

Condition Assessment 2013 - The 4 original central air handlers are original and have well exceeded the end of their predictable service life of 35 years.

Last Replacement Year	1960
Theoretical Life	35
Technical Condition	Fair

Replacement [D304008 Air Handling Units]

Event Type: Replacement Priority: High

Brief Description	Replacement [D304008 Air Handling Units]
Estimated Cost	$326,400
Fiscal Event Year	2016
2011-2015 Cost	$326,400
2011-2015 Priority	High
2011-2015 Year	2016

Recommendation 2013 - Due to age and mechanical wear, the central air handlers should be replaced within the next 5 years for reliability.

May 2013 - Original Central Air Handler

May 2013 - Original Central Air Handler

D3050 Terminal & Package Units

Element Instance : D3050 Terminal & Package Units

Description	2013 - The building is equipped with hot water perimeter fin tube radiators and forced flow heaters in the entrance areas which are original to the building construction dates.
Condition Assessment	2013 - Although the fin tube radiation units have been properly maintained, the system has degraded in condition over the years. Due to age, wear and tear the units will require replacement soon.

Last Replacement Year	1963
Theoretical Life	25
Technical Condition	Poor

Replacement [D3050 Terminal & Package Units]

Event Type:	Replacement	Priority:	High

Brief Description	Replacement [D3050 Terminal & Package Units]

Estimated Cost	$1,734,000
Fiscal Event Year	2015
2011-2015 Cost	$1,734,000
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 - Replacement of the aged fin tube radiation units and forced air units is recommended based on condition and theoretical life.

May 2013 - Aged Fin Tube Radiators

May 2013 - Aged Fin Tube Radiators

May 2013 - Aged Entrance Heaters

May 2013 - Aged Forced Flow Heaters

D40 Fire Protection

D4020 Standpipe Systems

Element Instance : D4020 Standpipe Systems - Original Building

Description	2013 - The standpipe system in the school is original and consists of standpipes and fire hoses housed in fire cabinets.
Condition Assessment	2013 - The standpipe system is generally in fair condition, but is past its useful life. No deficiency was reported during the assessment.

Last Replacement Year	1960
Theoretical Life	47
Technical Condition	Fair

Replacement [D4020 Standpipe Systems - Original Building]

Event Type: Replacement Priority: High

Brief Description	Replacement [D4020 Standpipe Systems - Original Building]
Estimated Cost	$180,000
Fiscal Event Year	2017
2011-2015 Cost	$180,000
2011-2015 Priority	High
2011-2015 Year	2017

Recommendation

2013 - Replacement of the standpipe system is recommended based on the age and theoretical useful life of the system. Planning for renewal is recommended to maintain functionality during and emergency.

May 2013 - Original Standpipe Fire Cabinet

May 2013 - Original Standpipe System Piping

Study

Event Type: Study

Priority: High

Brief Description	Study
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200

2011-2015 Priority	High
2011-2015 Year	2014

Recommendation 2013 - A study is recommended to determine the condition of the standpipe system, the required recommended scope of work and the cost for system renewal.

D4030 Fire Protection Specialties

Element Instance : D4030 Fire Protection Specialties - Original Building

Description 2013 - The fire protection system in the school includes a variety of fire extinguishers located throughout the school. The last replacement of the fire extinguishers is reported to have been in 1997.

Condition Assessment 2013 - The fire extinguishers are reportedly inspected regularly and are functional. Fire extinguishers have a rated useful life of 10 years.

Last Replacement Year	1997
Theoretical Life	10
Fire Protection Specialties Type	Unspecified
Technical Condition	Poor

Replacement [D4030 Fire Protection Specialties - Original Building]

Event Type: Replacement Priority: Urgent

Brief Description	Replacement [D4030 Fire Protection Specialties - Original Building]
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200
2011-2015 Priority	Urgent
2011-2015 Year	2014

Recommendation 2013 - Based on the age and theoretical useful life replacement of the outdated and aged fire extinguishers is recommended within the next three years.

May 2013 - Aged Fire Extinguishers

D50 Electrical

D5020 Lighting & Branch Wiring

D502001 Branch Wiring

Element Instance : D502001 Branch Wiring - Original Building

Description

2013 - The branch wiring system consists of cabling, raceways, conduit, wiring, bus ducts and wiring terminal devices. Flexible conduit and cabling is provided to motors and other mechanical equipment.

Condition Assessment

2013 - Apart from minor renovations the majority of the branch wiring system in the original building and additions 1 are original. The branch wiring is in poor to fair condition and is past its theoretical useful life.

Last Replacement Year	1960
Theoretical Life	40
Technical Condition	Fair

Replacement [D502001 Branch Wiring - Original Building]

Event Type: Replacement

Priority: Medium

Brief Description	Replacement [D502001 Branch Wiring - Original Building]
Estimated Cost	$2,040,000
Fiscal Event Year	2016
2011-2015 Cost	$2,040,000
2011-2015 Priority	Medium
2011-2015 Year	2016

Recommendation

2013 - Based on the age of the branch wiring, replacement is recommended. An in depth study should be conducted to determine the current condition, remaining useful life cost of replacement.

May 2013 - Original Panel Board

Study

Event Type:	Study	Priority:	Medium

Brief Description	Study
Estimated Cost	$10,200
Fiscal Event Year	2014
2011-2015 Cost	$10,200
2011-2015 Priority	Medium
2011-2015 Year	2014

Recommendation 2013 - A study is recommended and would provide a more detailed condition, remaining useful life and cost of replacement or repair of the branch wiring system.

D5090 Other Electrical Services

D509099 Other Special Systems and Devices

Element Instance : D509099 Other Special Systems and Devices - Dust Collectors

Description 2013 - The woodshop machinery in the two woodshop classes is serviced by two dust collectors which are located at the exterior of the woodshop classes.

Condition Assessment 2013 - The dust collectors were reported to be to be working fairly well with minor issues reported. The dust collectors are located outside and being exposed to the elements, excessive rusting was visible at the time of assessment.

Last Replacement Year	1963
Theoretical Life	35

Technical Condition Poor

Replacement

Event Type: Replacement

Priority: Urgent

Brief Description	Replacement
Estimated Cost	$183,600
Fiscal Event Year	2014
2011-2015 Cost	$183,600
2011-2015 Priority	Urgent
2011-2015 Year	2014

Recommendation 2013 - Replacement of the two original dust collectors is recommended based on age and condition.

May 2013 - Original Partially Enclosed Dust Collector

May 2013 - Original Partially Enclosed Dust Collector - Excessive Rusting

May 2013 - Original Dust Collector - Excessive Rusting

G BUILDING SITEWORK

G20 Site Improvement

G2020 Parking Lots

Element Instance : G2020 Parking Lots - Site

Description 2013 - Asphalt paved parking lot with line painting for parking stalls.

Condition Assessment 2013 - The asphalt paved parking lot is in poor condition with pot holes, alligator cracking.

Last Replacement Year	1960
Theoretical Life	20
Technical Condition	Poor

Replacement [G2020 Parking Lots - Site]

Event Type: Replacement Priority: High

Brief Description	Replacement [G2020 Parking Lots - Site]
Estimated Cost	$72,930
Fiscal Event Year	2015
2011-2015 Cost	$72,930
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 - The asphalt-paved parking lot is in poor condition with pot holes and alligator cracking. Reconstruction of the parking lot recommended.

May 2013- North side Asphalt paved parking with alligator cracking on the surface.

May 2013- Parking lot.

G2030 Pedestrian Paving

Element Instance : G2030 Pedestrian Paving - Site

Description

2013 - Concrete and Asphalt Paved sidewalks situated around the perimeter of the building on the North and West sides.

Condition Assessment

2013 - The asphalt and concrete paved surfaces are showing signs of uneven and cracked surfaces with signs of vegetation growth and isolated areas of spalling and deteriorated concrete.

Last Replacement Year	1960
Theoretical Life	22
Technical Condition	Poor

Replacement [G2030 Pedestrian Paving - Site]

Event Type:	Replacement	Priority:	High

Brief Description	Replacement [G2030 Pedestrian Paving - Site]
Estimated Cost	$21,828
Fiscal Event Year	2015
2011-2015 Cost	$21,828
2011-2015 Priority	High
2011-2015 Year	2015

Recommendation

2013 – Based on the observed damage to the concrete and asphalt paved pedestrian repairs are recommended as soon as possible.

May 2013- Deteriorated concrete pedestrian.

May 2013- Uneven surfaced asphalt sidewalk.

Hamilton-Wentworth District School Board

Report Summary

Saved Report Name	Final Report Template mod1
User Name	william lo
Report Type	Text With Pictures
Report Name	Condition Assessment
Start Year	2013
Number of Years	5
Priority	Default
Structure / Instance	Glendale, Building ID 9078-1
Filter	Parent Criteria Summary: Structure parent - A SUBSTRUCTURE OR Structure parent - B SHELL OR Structure parent - C INTERIORS OR Structure parent - D SERVICES OR Structure parent - G BUILDING SITEWORK - where the detail criteria for the parent node is - Technical Condition <> Not Assessed ;
Asset Photos	Default Photos Only
Current Backlog FCI	No
Element Photos	No Photos
Include Element ACL Criteria	No
Exclude Elements Without Events	Yes
Include Event level details	Yes
Event Photos	All Photos
Include Costlines	No
Printed Date	10/30/2013