## **BELMONT HIGH SCHOOL**

**EXISTING CONDITIONS SUMMARY** 



#### AGENDA Existing Conditions Summary

01 / Civil
02 / Landscape
03 / Architectural
04 / Structural
05 / Mechanical & Electrical
06 / Plumbing
07 / Fire Protection

## **01/ CIVIL ENGINEERING**

**EXISTING CONDITIONS SUMMARY** 

PERKINS+WILL

#### 01/ CIVIL ENGINEERING: ANALYSIS / TOPOGRAPHY

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## 01/ CIVIL ENGINEERING: ANALYSIS / WETLAND RESOURCE AREAS

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### 01/ CIVIL ENGINEERING: ANALYSIS / STORM DRAINAGE

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### 01/ CIVIL ENGINEERING: ANALYSIS / SEWER SERVICE

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#### 01/CIVIL ENGINEERING: ANALYSIS / WATER, GAS, AND ELECTRIC SERVICES

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## **02/LANDSCAPE**

**EXISTING CONDITIONS SUMMARY** 

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#### 02/LANDSCAPE: SITE ANALYSIS/ CONTEXT

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## 02/LANDSCAPE: SITE ANALYSIS/ REGULATORY CONSTRAINTS

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#### 02/LANDSCAPE: SITE ANALYSIS/ SOIL ASSESSMENT

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## 02/LANDSCAPE: SITE ANALYSIS/ENVIRONMENTAL ASSETS

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## 02/LANDSCAPE: SITE ANALYSIS/ CIRCULATION + PARKING

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#### 02/LANDSCAPE: SITE ANALYSIS/EXISTING PROGRAM

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#### 02/LANDSCAPE: SITE ANALYSIS/ BUILDABLE AREAS

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# **03/ARCHITECTURE**

**EXISTING CONDITIONS SUMMARY** 

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### 03/ARCHITECTURE: LEVEL 01 FLOOR PLAN

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## 03/ARCHITECTURE: LEVEL 02 FLOOR PLAN

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#### 03/ ARCHITECTURE: ROOF LEVEL FLOOR PLAN

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#### PERKINS+WILL

	TOTAL	245,413 SQFT
	SPECIAL EDUCATION	5,980 SQFT (2.4%)
	VOCATIONS & TECHNOLOGY	2,472 SQFT (1.0%)
	DISTRICT OFFICES	875 SQFT (3.0%)
	MEDIA CENTER	6,301 SQFT (2.6%)
	HEALTH & PHYSICAL EDUCATION	60,445 SQFT (24.6%)
	DINING & FOOD SERVICE	12,282 SQFT (5.0%)
	CUSTODIAL & MAINTENANCE	11,530 SQFT (4.7%)
	COURTYARD (EXTERIOR)	3,736 SQFT (1.5%)
	CORE ACADEMIC	59,135 SQFT (24.1%)
	CIRCULATION	42,468 SQFT (17.3%)
	ART & MUSIC	24,030 SQFT (9.8%)
	ADMINISTRATION & GUIDANCE	16,159 SQFT (6.6%)
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**03/ ARCHITECTURE: PROGRAM BREAKDOWN** 



## **04/ STRUCTURE**

**EXISTING CONDITIONS SUMMARY** 

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#### 04/ STRUCTURE: EXISTING CONDITIONS

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**TYPICAL ROOF:** Poured gypsum over form deck supported on steel bulb tees, steel joists and beams.

**TYPICAL FLOOR:** 2 1/2" thick concrete slab-on-form deck supported on steel bar joists and wide flange steel girders.

**FIRST FLOOR**: Mix of reinforced concrete structural slab and concrete slab-on-grade

UTILITY TUNNELS: Below first floor corridor

**FIELDHOUSE ROOF:** is typical rood construction supported on structural steel bents

**FOUNDATIONS:** Concrete filled steel piles and pile caps supporting the building columns, walls and first floor slab at the majority of the footprint

**LATERAL LOAD:** No explicit lateral load resisting system (shear walls, braced frames, etc.) for resisting seismic and wind loads

#### **04/ STRUCTURE: EXISTING CONDITIONS**

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## 04/ STRUCTURE: EXISTING CONDITIONS

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#### **EXISTING STRUCTURE**

The existing structure is performing well

Signs of past water leaks were observed

Minor cracks in the interior masonry walls and masonry facade were observed

No undue vibration from footfall was perceived at supported slabs

No signs of foundation settlement were observed



## 04/ STRUCTURE: FEASIBILITY OF RENOV. AND EXPANSION

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Compliance with International Existing Building Code

Compliance Method: Work Area Compliance Method

Work area will be greater than 50%; thus, Level 3 Alterations



#### 04/ STRUCTURE: FEASIBILITY OF RENOVATION AND EXPANSION

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**SEISMIC CLIPPING:** of all existing masonry walls will be required

**DEMISING WALLS:** Majority of walls do not appear to be structural in nature

**RENOVATIONS:** Proposed renovations will trigger an analysis of the existing building and will require the addition of shear walls or braced frames, which will probably require addition of piles within the building

**SLAB ON GRADE AREAS:** Addition of tie beams connecting pile caps at slab-on-grade areas.

#### GRADE BEAMS AND PILES: will be

required for phased and partial demolition to support the new exterior walls.

**RENOVATIONS:** will require trenching of existing slabs:

- Not easy to trench under supported structural slabs, will need to maintain continuity of reinforcement of the slab

- Have to be careful in trenching through Fieldhouse floor due to tension cables

## 04/ STRUCTURE: FEASIBILITY OF RENOV. AND EXPANSION

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Proposed additions should be horizontal additions, separated from the existing structure by expansion joints.

Vertical additions may not be feasible, due to limited capacity of foundations and columns. The existing roof structure will not have capacity to support floor loads.





# 05/ MECHANICAL + ELECTRICAL

## **EXISTING CONDITIONS SUMMARY**

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**LARGE SPACES LIGHTING:** Cafeteria lighting is typical for the library/Media Center as well as other large spaces throughout the building.

**ORIGINAL FIXTURES:** Similar to many spaces throughout the building, the fixtures are original to the building, utilizing fluorescent lamps and inefficient vs. higher efficient LED fixtures.

**CONTROLS:** local line voltage switches vs. low voltage employing dimming, vacancy sensors and day lighting controls.



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#### UTILITY TRANSFORMER AND BACKUP GENERATOR: Existing (see photo).

**TRANSFORMER**: With any projected upgrades/ additions or rebuild the transformer size and/location will need to be addressed.

**GENERATOR:** The generator size offers limited opportunity to add equipment. The existing distribution does not meet todays code required separation of systems.



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For new or renovated designs all electrical equipment would be in dedicated electric closets. No equipment in storage closets or other non dedicated areas.



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MAIN ELECTRIC ROOM: Space Limitations



 $\mathsf{P} \in \mathsf{R} \mathsf{K} \mathsf{I} \mathsf{N} \mathsf{S} + \mathsf{W} \mathsf{I} \mathsf{L} \mathsf{L}$ 

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#### **SCIENCE ROOMS**

**FLUORESCENT LIGHTING:** is typical for most of the classrooms throughout the building. The fixtures are original to the building with fluorescent lamps vs. todays LED fixtures offering higher efficiencies.

**CONTROLS**: are original to the building consisting of local line voltage switching vs. todays low voltage dimming, vacancy sensors and day lighting controls



 $\mathsf{P} \in \mathsf{R} \mathsf{K} \mathsf{I} \mathsf{N} \mathsf{S} + \mathsf{W} \mathsf{I} \mathsf{L} \mathsf{L}$ 

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STEAM BOILERS: 47+ year old steam boilers.
DUEL FUEL: burners can burn gas or fuel oil.
BOILERS: have been partially or completely re-tubed several times.

**STEAM SYSTEM:** requires maintenance of steam traps, condensate pumps, receiver tanks, control valves, anti-corrosion chemicals.



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#### **ROOF TOP UNITS**

Casings are in good condition. Corrosion around the unit base.

There are two vintages of units. Same manufacturer, but with differences in technology. Five units have web interfaces.

All have steam heating coils.

Some have DX cooling.





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#### **UNIT VENTILATORS**

Provides heating with hot water and outdoor air ventilation through an exterior louver.

Heavy gauge casings are in good condition, but some with dents and deformations. Chipped paint typical.

Pneumatically controlled dampers and valves require a high level of maintenance.

![](_page_36_Picture_6.jpeg)

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#### **PNEUMATIC TEMPERATURE CONTROLS**

Master control panel and pressure control actuators (see photo)

Original copper tubing with soldered fittings with some plastic tubing.

Repairing of leaks is difficult. Some tubing is covered with fire proofing.

Little to no monitoring capability.

Pneumatic technicians harder to find.

![](_page_37_Picture_8.jpeg)

## **06/ PLUMBING**

**EXISTING CONDITIONS SUMMARY** 

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#### **PLUMBING FIXTURES**

**MODELS:** Most are older models and not compliant with current codes.

**ADA:** Not all fixture configurations or mounting heights meet current ADA requirements.

**COLD WATER SYSTEM:** More than adequate to meet existing / future demands

**HOT WATER SYSTEM:** Combination of steam-fired and electric water heaters. A more centralized approach should produce energy savings in future.

![](_page_39_Picture_8.jpeg)

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**SANITARY SYSTEM**: Piping system is visibly in fair condition, but piping serving science lab is not acid-resistant per code.

**STORM SYSTEM:** Existing roof drains and visible piping systems appear in good condition.

**NATURAL GAS SYSTEM:** Existing gas service is mor than adequate to meet current needs of school and visible piping systems appear to be in good condition.

![](_page_40_Picture_6.jpeg)

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#### **KITCHEN**

Currently, all electric equipment/ no gas connections.

No dish washing on site at this time/ all disposable plates and utensils.

Three-compartment sink and associated grease trap not used.

No exterior grease trap on site.

![](_page_41_Picture_8.jpeg)

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#### **SCIENCE WING**

No gas connections to countertop turrets.

Main gas shut-off valve to wing is in ceiling and not code compliant.

Lab sink waste piping is on its own system, but does not have acid resistant piping and treated before connecting to the building's main waste system.

Water service to the lab is from the main domestic system.

Lab water should be its own protected system.

![](_page_42_Picture_9.jpeg)

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#### **POOL LOCKERS + SHOWERS**

Existing locker rooms and shower rooms in fair condition.

Single floor drain in shower areas.

Water from one shower should not drain into other shower areas.

![](_page_43_Picture_6.jpeg)

# **07/ FIRE PROTECTION**

**EXISTING CONDITIONS SUMMARY** 

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