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STUDIO PETRETTI
ARCHITECTURE

PPS

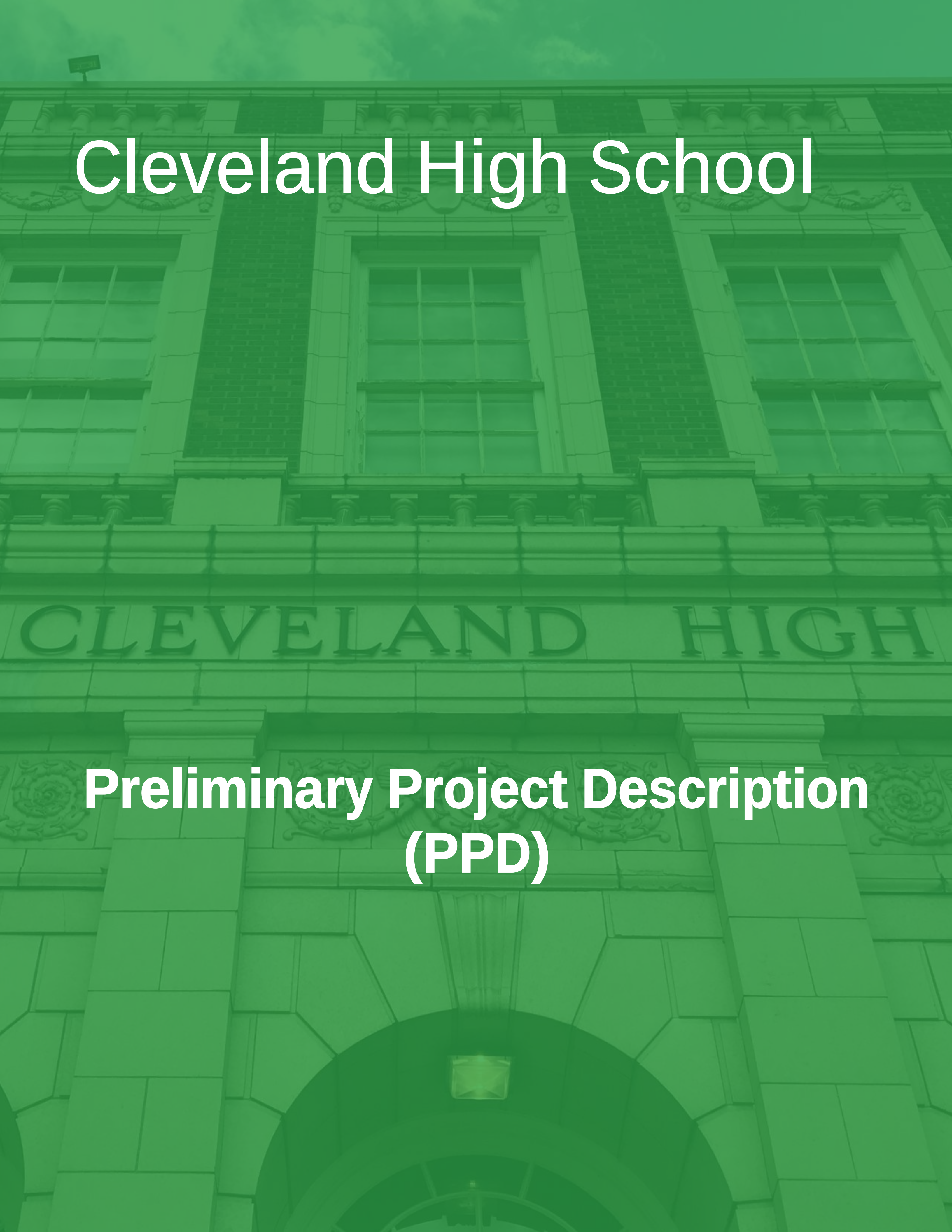
VOLUME 2

PROJECT INFORMATION

Cleveland High School

Contents

Cleveland High School



Preliminary Project Description (PPD)

Cleveland High School Modernization

Preliminary Project Description (PPD)

- INTRODUCTION

10 PROJECT DESCRIPTION

- Cleveland High School Modernization
- 3400 SE 26th Ave, Portland OR 97202
- Project Summary: Replacement of an existing high school with a new comprehensive high school with associated improvements to the nearby track and field and parking lot properties, including replacement of the existing field house with a new larger structure.
- Project Program: See attached CHS and CHS Field House programs for detailed information regarding building programs. Site program to include vehicular parking, bike parking, loading docks, landscaping, athletics improvements and other improvements as described in the civil and site narratives.
- Project Criteria:
    - Zoning: Current zoning designation of the main site is R2.5 with an Institutional Campus (IC) overlay. The City of Portland has identified the site to change to IR (Institutional Residential) zoning at an undetermined future date. The team currently plans to design to the IR zoning standards and to apply for variances where needed.
    - Building Code: If the building structure is to be a wood-hybrid structure as currently planned, we will likely select Type IV-B construction for the 5-story bar building on the north side of the site, with structurally independent and fire-separated structures for the gymnasium and auditorium buildings on the south side of the site, for which Type III-B construction would likely be selected. The structure for the type III-B buildings would largely not require fire rating, but in the Type IV-B building the primary structure and floor would need to be 2-hour rated. This could be achieved by enclosing the wood in 2 layers of gypsum board, by adding 2 ½ inches of wood thickness to each exposed face of each wood structure and floor, or by converting the topping slab over the CLT or DLT wood floor from gypcrete or concrete into a structural slab over the non-structural wood which would function as permanent formwork.
        - Alternate building code approach: An alternative plan locates an approximately 60,000 sf building to the west of 26th Ave on the current parking lot site, connected to the main north bar building by a skybridge. This allows both the north bar building and the building on the parking lot site to be 4 stories each, which would allow these buildings to be Type IV-HT (Heavy Timber). Fire-rating of the primary structure and floor would no longer be required, if the building code's prescriptive heavy timber sizing are met. Additional information is provided on this alternative in the structural narrative.
    - Sustainable Design Standards:
        - The building will be certified to a LEED Gold standard. It is currently assumed that we will be using the LEED v4.0 standard, which allows substitution of LEED v4.1 requirements on individual credits if desired. PPS's Design Standards and Guidelines provide information on which LEED credits are required or recommended for projects, and a preliminary projected LEED checklist is included as an appendix to this document.

        - The building will fulfill the requirements of the PPS Climate Crisis Response Policy. In addition to meeting the PPS Energy and Sustainability Standards, the design team has met with PPS to clarify how to interpret the Policy. Meeting minutes documenting what approaches the design team expects to use have been provided.
        - The project is subject to the State of Oregon requirements that 1.5% of the construction budget be spent on Green Energy Technology (GET). Assume solar arrays will fulfill a portion of this requirement, and the balance will go to envelope enhancements. Alternative strategies will be studied during the SD phase.
    - Historic Requirements: Removal of the existing 1929 CHS building will require that mitigation measures are taken in agreement with the State Historic Preservation Office. We expect that some of these measures will include salvage and reuse of elements such as terra cotta ornament, small amounts of brick cladding, doors, marble window sills, decorative wood or plaster elements.
- Existing Conditions: Extensive drawings of the existing site structures are available for review.
- Owner's Work: We expect that furnishings and some technology will be provided by the Owner outside of the contractor's scope. Most other equipment in the building will be contractor provided and installed.
- Use of site: We assume that all high school activity will be moved to an alternate site during the two-year construction period, and that the contractor will have full use of both the main and parking lot sites. PPS may elect to keep the majority of the track and field property open during at least some phases of construction, as we do not anticipate substantial improvements to be needed to the track and field itself or on most of the eastern portion of the track and field site.

20 OWNER DEVELOPMENT

- Permits (Zoning Permits, Building Permit)
    - In addition to the standard zoning, demolition and building permits required, the following items are being tracked as potential deferred submittals:
        - Metal Stairs (Back of house type)
        - Sprayed-on Fireproofing (if used)
        - Window and storefront system wind loads and attachments
        - Metal-framed skylights (if used)
        - Frameless glass relites (if used)
        - Gyp-board assemblies – interior non-structural wall framing, deflection heads and suspended gypsum ceilings including seismic bracing.
        - Suspended acoustical ceilings – support and seismic bracing
        - Intumescent Coating Systems (if used)
        - Flagpole foundation
        - Seismic anchorage of food service equipment
        - Seismic anchorage of freestanding lockers
        - Seismic anchorage of fume hoods
        - Seismic anchorage of basketball backstops
        - Telescoping bleachers – seismic and egress requirements
        - Seismic anchorage of MEPT systems
        - PPS Project Fire Safety Plan
        - PPS Project Fire Evacuation Plans
        - Backstop fencing and footings – chain-link backstop fencing
        - Athletics special construction – dugouts, press box, etc.

        - Auditorium Catwalks
        - Stage / Orchestra pit cover platform
        - Attachment of prefabricated ladders and ships ladders.
- Professional Services (Project Managers, Design Professionals, Other consultants, Testing Agency, Special Inspectors)
- Other Activities (Advertising, Relocations, Rezoning, Code Appeals and Variances)
- Budget Project Contingencies (Construction Contingencies, Unforeseen Subsurface Conditions)

30 PROCUREMENT REQUIREMENTS

- Project Delivery: The construction of the building and site improvements is expected to be delivered under a CMGC contract.
- Available Project Information: A site survey, arborist report, geotechnical report and hazardous material report are anticipated to be completed soon.
- Procurement Forms and Supplements (Bid forms) TBD
- Special Requirements (Bid Packages, Anticipated Bid date) Bid packages TBD, see proposed schedule provided separately.

40 CONTRACTING REQUIREMENTS

- Contracting Forms and Supplements
- Project Forms (Performance Bonds)
- Conditions of the Contract (General Conditions, Supplementary Conditions)

A SUBSTRUCTURE

- See Structural Narrative provided separately for more detailed structural information.

A10 FOUNDATIONS

A1010 STANDARD FOUNDATIONS

- Cast-In-Place Concrete Wall Continuous Footings
- Column Spread Footings
- Grade Beams
- Formwork
- Reinforcing
- Dampproofing or Waterproofing
- Thermal Insulation

A1020 SPECIAL FOUNDATIONS

- TBD

A20 SUBGRADE ENCLOSURES

A2010 WALLS FOR SUBGRADE ENCLOSURES

- Cast-In-Place Concrete Walls
- Formwork
- Reinforcing
- Waterproofing
- Thermal Insulation

A40 SLABS-ON-GRADE

A4010 STANDARD SLABS-ON-GRADE

- Cast-In-Place Concrete
- Reinforcing
- Vapor Barrier or Waterproofing
- Thermal Insulation
- Slab Depressions
- Slab Subbase

A60 WATER AND GAS MITIGATION

A6010 BUILDING SUBDRAINAGE

- Perimeter Foundation Drainage System

Radon Gas MitigationA90 SUBSTRUCTURE RELATED ACTIVITIES

- Dewatering – if needed
- Shoring

B SHELL

B10 SUPERSTRUCTURE

B1010 FLOOR CONSTRUCTION

- Laminated mass timber wood columns, girders, beams and purlins
- Floor:
    1. Dowel Laminated Timber, with integrated acoustic treatment (Base bid)
    2. Cross Laminated Timber, with separate acoustic treatment (alternate)
- Floor Sheathing – Plywood if required
- Topping slab
    1. Gypcrete topping slab over acoustic mat with linoleum floor finish (Base bid)
    2. Concrete topping slab over acoustic mat with exposed polished finish (alternate)
    3.
- Firestopping Systems
- Raised track floor at gymnasium: wood support structure with sports flooring system suspended from steel trusses above

B1020 ROOF CONSTRUCTION

- Gymnasium:
    1. Long-spanning steel trusses
    2. Acoustical Metal Deck
    3. Concrete topping slab at mechanical air handling units
- All other structures:
    1. Mass Timber Columns, Beams and Roof Members
    2. CLT or DLT structure, similar to floors
- Canopy Construction: Canopies may be provided over trash enclosure,bike parking structure and building entries
- Firestopping Systems

B1080 STAIR CONSTRUCTION

- Forum Seating/Stair: heavy timber construction, currently shown at (2) locations
- Feature Stair: Assume (2) feature stairs with structural steel frame and precast treads, wood treads or similar
- Egress Stairs: Assume wood framed or metal with concrete pan treads.
- Service Stairs: TBD if needed.
- Handrails & Guardrails: Assume lighted handrails at feature stairs. Other handrails to be stainless steel or wood with steel frame guardrail structure with infill tbd (potentially perforated metal, steel pickets or reclaimed wood)

B20 EXTERIOR VERTICAL ENCLOSURES

B2010 EXTERIOR WALLS

- Primary cladding material: Masonry Veneer
- Potential secondary cladding materials: composite cement panels, metal panels, stucco
- Wall Sheathing: exterior gypsum sheathing
- Wall Framing: Cold-formed metal framing
- Parapets: cement board or exterior gypsum sheathing

- Equipment Screens: where required by code to conceal rooftop equipment, assume steel frame with galvanized or painted finish with perforated metal screen
- Weather Barriers: Assume self-adhered air-barrier membrane and associated membrane flashings at all above grade walls. Air sealing: 0.20 cfm/sf of total envelope area (confirmed through whole building testing at 75 Pa)
- Insulation: R-15.25, mineral wool batt insulation inside framing + continuous mineral wool board insulation and fiberglass z-girts.

B2020 EXTERIOR WINDOWS

- Exterior Window: High Performance Fiberglass windows – Cascadia brand or equal
- Window Operability: Assume 50% of windows will be operable, including a majority of windows at typical classrooms.
- Window Screens: At all operable windows
- Glazing: High performance double-pane or triple-pane glazing
- Window overall R-value: U0.28 Max. SHGC: 0.27 Max.
- Acoustics: Design team to confirm if different glazing is recommended to mitigate acoustics, particularly for spaces adjacent to Powell Blvd

B2050 EXTERIOR DOORS

- Exterior Door Types:
    - At main public entries assume aluminum storefront doors and frames or aluminum clad wood doors and frames set into fiberglass window or storefront system, or
    - Service entries: Hollow metal doors and frames
- Coiling and Overhead Panel Doors: where needed at fire separations, loading areas, etc
- Exterior Grilles and Gates: Assume courtyards will be fenced with security gates to open at designated hours, potentially including rolling gates
- Door Glazing: similar to window glazing.

B2070 EXTERIOR LOUVERS & VENTS

- Exterior Louvers
- Exterior Vents

B2080 EXTERIOR OPENING PROTECTION DEVICES

- Horizontal sun shading devices will be considered on south facing windows to reduce HVAC loads and reduce glare
- Horizontal and/or vertical sun shading devices may also be considered on east and west facing windows where they can be deployed effectively

B30 EXTERIOR HORIZONTAL ENCLOSURES

B3010 ROOFING

- Typical Low-Slope Roofing: SBS Modified Bituminous Roofing, 2-ply minimum with granule-surfaced cap sheet
- Vegetated Protected Membrane Roofing: Green roofs will be considered at some locations during schematic design. On our constrained site we will be challenged to meet stormwater infiltration requirements, and green roofs could help mitigate what would otherwise be required. Assume an extensive (shallow depth) vegetated roof will be located over the 'bar' building that connects the buildings on the north and south sides of the site.

B3010.9 ROOFING SUPPLEMENTARY COMPONENTS

- Substrate Board
- Deck Insulation: R-31.25 minimum (5 inches thick with 6.5 R/inch board)
- Vapor Retarder / Temporary Roofing
- Air Barrier
- Sheet Metal Flashing and Trim
- Flexible Flashing
- Fluid Applied Flashing (PMMA)
- Copings
- Counterflashing Systems
- Gravel Stops and Fascias
- Expansion Joints
- Extensive green roof system at the connecting section of the building crossing the courtyard (library below).
- Photovoltaic panel system, see D5010

B3020 ROOFING APPURTENANCES

A. Roof Specialties (Roof Ladders, Roof Curbs, Roof vents)
B. Manufactured Gutters and Downspouts
C. Roof Mechanical Screens
D. Roof Walkway Mats

B3040 HORIZONTAL WATERPROOFING MEMBRANE

A. Sheet Waterproofing
B. Fluid-Applied Waterproofing
C. Bentonite Waterproofing
D. Traffic coatings

B3060 HORIZONTAL OPENINGS

A. Skylights: Assume use of unit or frame skylights distributed to maximize daylight benefit at gymnasium, main classroom building and arts classrooms near the theater.
B. Roof Hatches (3)
C. Smoke Vents: Provide at theater fly tower

B3080 OVERHEAD EXTERIOR ENCLOSURES

A. Canopy Walkways: TBD if included

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 INTERIOR PARTITIONS

- Standard steel framing
- Furring: steel furring where required for acoustics or at below grade concrete walls
- Gypsum types
    1. 5/8” type-x standard
    2. ½” at ceilings
    3. Use veneer plaster sheathing and finish at corridors and other high traffic areas
    4. Tile backer board
    5. Mold-resistant at wet areas
    6. Consider perforated gypsum ceilings for acoustics at limited locations
    7. Consider exterior gypsum soffit board at exterior locations, if needed
- Acoustical requirements
- Acoustical products: insulation, RSIC clips, etc.
- Fire rating requirements: TBD, assume rated walls at stairs and shafts.
- Firestopping
- Expansion control: at seismic /building separations
- Specialty partitions such as glazed or operable partitions and screenwalls: use to limited if any

C1020 INTERIOR WINDOWS

- Solid Wood Relite: typical, assume extensive use of relites between circulation spaces and classrooms and other spaces for visual transparency and security
- Transaction Windows: limited use
- Fire Rating and Sound Transmission Requirements: TBD. High STC windows at band, choir, practice rooms, weight room, woodshop.
- Glazing: 3/8” or ½" where needed for acoustics or large spans

C1030 INTERIOR DOORS

- Interior Steel Door Frames: use only at ‘back of house’ doors
- Interior Steel Doors: use only at ‘back of house’ doors
- Solid Wood Door Frames: typical at public use doors
- Solid Core Flush Wood Doors: typical at public use doors
- Specialty Interior Doors
    1. Sound rated door assemblies to be used at choir room, band room, theater and other loud or sound sensitive locations
    2. Overhead doors: limited use if needed (stage construction to stage, woodshop to exterior)

- Door Hardware
- Fire Rating, Sound Transmission and Security Requirements: TBD

C1070 SUSPENDED CEILING CONSTRUCTION

- Acoustical Suspended Ceiling and Grid: Limited use, typical ceilings will be Acoustic DLT or CLT with direct applied acoustic panels or suspended acoustic 'clouds'
- Suspended Gypsum Wallboard Ceilings: used at toilet rooms, other locations where needed
- Perforated Gypsum: potential limited use
- Wood Slat Ceilings: potential limited use
- Acoustic Requirements: TBD, high NRC at classrooms
- Acoustic Ceiling Insulation: TBD

C1090 INTERIOR SPECIALTIES

- Interior Railings and Handrails: Handrails to be stainless steel or wood with steel frame guardrail structure with infill tbd (potentially perforated metal, steel pickets or reclaimed wood)
- Visual Display Specialties: markerboards at all teaching stations, tackboard in classrooms and corridors
- Display Cases
- Interior Signage
- Toilet Partitions
- Corner Guards
- Toilet Accessories
- Lockers: 1700 half height metal lockers

C20 INTERIOR FINISHES

C2010 WALL FINISHES

- Ceramic Tile Wall Finish: At all restrooms
- Wall Paneling: limited use, stainless steel at kitchen
- Wall Painting and Finishing: Low VOC paint, typical
- Wall Acoustical Treatments

C2030 FLOORING

- Sealed Concrete: back of house ground floor spaces
- Polished Concrete: at ground floor slab on grade, at upper floors if concrete topping slab is used
- Ceramic Tile: at all restrooms
- Resilient Flooring: linoleum at all upper levels if gypcrete topping is used. Altro textured flooring at kitchen.
- Resilient Sports Flooring: at wrestling room, weight room
- Resilient Base: Typical
- Carpeting: Band room, media center
- Walk-Off Mats: At all entries

- Stage Wood Floor: Theater
- Athletic Wood Floor: Gymnasiums

C2050 CEILING FINISHES

- Ceiling Painting and Coating: Low VOC paint at gypsum, light treatment of exposed wood
- Finishing Acoustical Decking: Pre-painted
- Acoustical Ceiling Treatments: Sound diffusers at theater, band, choir, sound absorption where needed, direct applied to wood if CLT is used.

D SERVICES

D10 CONVEYING

D1010 VERTICAL CONVEYING SYSTEMS

- Hydraulic Elevator: Assume 3-4 elevators to accommodate use of gym and theater independently from the rest of the school

D20 PLUMBING

A. General – the plumbing for this project will consist of domestic water distribution, potable and non potable cold water, hot water, and recirculation systems. Waste, vent, specialty waste, i.e. grease from kitchen and acid waste/vent at science labs. Compressed air, and roof drains leading to storm water collection.

D2010 DOMESTIC WATER DISTRIBUTION

A. A 4 inch cold water main will be required, incoming water room to be located on the ground level, room with exterior facing wall to minimize pipe below the building. A water booster pump could likely be required based on other projects in the Portland area. This booster pump would also be in this room along with a water heating system.
B. Backflow assemblies are assumed to be outside in a vault by the civil engineer.
C. Domestic water pipe will be copper with copper fittings, Type K (below grade) or L (above grade). Piping will be insulated as required by the energy code. The use of PEX piping is allowed in concealed spaces and serving branch lines.
D. Cold water will be distributed to plumbing fixtures, major groups of plumbing fixtures will have isolation valves for shut down and maintenance purposes. This will also include each wing of a building, and each floor where possible.
E. All domestic water systems shall be lead free, valves to be full port only unless otherwise needed.
F. Provide water hammer arresters at flushometer valve, solenoid valve and other quick-closing valve locations.
G. Pipe hangers and supports shall be provided with stamped shop drawings from a licensed structural engineer showing seismic bracing.
H. Provide pipe and equipment labeling throughout in compliance with ANSI A13.1 and school district standards.
I. Air source heat pumps for larger volume hot water requirements will be provided, centrally located as much as possible however separated buildings or programming spaces that are far apart from each other that require hot water, satellite water heater rooms could be provided to minimize long runs of recirculation piping. Electric water heaters for smaller needs could also be considered. Hot water will be stored at a minimum of 140 deg and then mixed down to 105-120

depending on the end use. Kitchen water heater will deliver 140 deg. For heat pump water heaters, back up and auxiliary electric water heaters and storage tanks will be provided for high demand, and back up on colder days.

J. Hot water circulation systems will be provided to ensure hot water is delivered to each fixture quickly and per health department standards for hand washing.
K. The main kitchen will be piped up per rough in drawings provided by a kitchen consultant. Backflow for ice machine will be required, mop sink and emergency eyewash in addition to kitchen fixtures furnished by others, installed by Division 22 Plumbing Contractor.
L. There will be freezeproof hose bibbs around the building perimeter and at the roof as needed to service equipment and wash down solar panels, etc.
M. A separate irrigation line will tap off the main water header with its own backflow preventer and noted to see landscape architect's design for continuation.
N. Plumbing Fixtures shall be commercial quality, counts and locations to be determined by the architectural plans. Water closets to be floor mounted type, low water consumption to 1.28 gallons per flush, flush valves, sensor activated and hard wired. Wall hung lavatories to be hands free, vitreous china, with thermostatic mixing valves below each faucet.
O. Classroom sinks to be under-counter mounted, 18 gauge stainless steel, Type 304 with stain finish. Gooseneck faucets, 8: center set and swing spout, Chicago faucet or district approved. Science classrooms to be Tye 316 stainless steel with serrated nozzle spouts and vacuum breakers.
P. Emergency eyewash fixtures will be required at science classrooms, industrial arts and kitchens. Emergency showers will be required at chemistry classrooms.

D2020 SANITARY DRAINAGE

A. Sanitary Sewerage Piping will be provided throughout the building to serve toilet rooms and other spaces as required. Assume a minimum of one general floor drain per restroom group with two or more fixtures, and for larger restroom groups and locker rooms, at least two.
B. Sanitary pipes will be sloped at ¼" per foot (2%) as much as possible and connect to minimum 6" sewer mains shown by the civil engineer at 5'-0" outside of the building. Estimated invert depths to be 8-10' below finished grade depending on the location and number of sewer stub outs available to the building.
C. Pipes will be specified as cast iron, with no-hub fittings.
D. Cleanouts shall be provided under sinks and a minimum of every 100' of straight pipe and all 90 deg turns.
E. Kitchen will have sanitary sewer system serving fixtures as indicated by the kitchen consultant along with general floor drains.
F. A grease waste and vent system will be required to serve warewash area, three compartment sinks(s), dishwasher, and other potential grease receiving fixtures. A gravity type vault will be required, to be located outside the building and shown by the civil engineer, however, this is typically included in the Div 22 Plumbing Contractor work to purchase and install.
G. Sump pumps will be provided for elevator shafts and pump waste up to the gravity sanitary system inside the building. Hydraulic type elevators will need an oil/water separator in this waste line before connecting to the main building systems.
H. Chemical waste acid piping will be required at science classrooms with an acid neutralization tanks outside.

D2030 BUILDING SUPPORT PLUMBING SYSTEMS

A. Stormwater Drainage Piping will be provided to serve roof drains located by the architect. Each roof drain will be paired with an overflow roof drain and run in the interior and/or exterior.

B. Gray Water Systems are not anticipated to be included in this project due to budget constraints, but will be discussed in a further narrative as to their viability.

D30 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

D3020/3030 HEATING SYSTEMS / COOLING SYSTEMS

C. Base Option – Air to Water Heat Pumps (with back up electric boilers)
   a. (5x) 180-Ton air to water heat pumps will generate heating and chilled water for the building. Based on Trane ACX.
      i. The air to water heat pumps will inD30 clude integral circulation pumps for the "primary" heating and chilled water loops.
      ii. (2x) 2000-gal buffer tanks will be provided. One tank will serve the primary heating water loop and one will serve the primary chilled water loop.
   b. A modular heat recovery chiller with (3x) 25-Ton modules will provide simultaneous heating and cooling. Based on Trane TPWCC.
   c. (2x) 1320 kW electric boilers will provide back up heating. Based on Lochinvar BWX30-1320F.
   d. (3x) 50-hp base mounted chilled water pumps (sized at n+1) and (3x) 25-hp base mounted heating water pumps (sized at N+1) will distribute heating and chilled water to the building. Based on Bell and Gosset 1510.
   e. Miscellaneous pumps, tanks, appurtenances, and chemical treatment will also be provided.

D. Alternate Option – Ground Source Heat Pump (with supplemental cooling tower and boilers)
   a. (175x) 350-ft deep vertical bores will provide the source of heat addition and extraction for a water source heat pump system. The bore field is sized for 50% of the peak building cooling load.
      i. (3x) 50-hp condenser water pumps (sized at n+1) will circulate water through the ground loop. Based on Bell and Gosset 1510.
   b. (3x) 250-Ton heat recovery chillers (sized at n+1). Based on York YK.
      i. (3x) 20-hp base mounted chilled water pumps (sized at n+1) and (3x) 10-hp base mounted heating water pumps (sized at N+1) will circulate the primary heating and chilled water loops. Based on Bell and Gosset 1510.
      ii. (2x) 2000-gal buffer tanks will be provided. One tank will serve the primary heating water loop and one will serve the primary chilled water loop.
   c. A 300-Ton closed circuit cooling tower will provide supplemental heat rejection for peak times. Based on Evapco ESW4.
   d. (2x) 900 kW electric boilers will provide supplemental heat for peak times. Based on Lochinvar BWX30-1320F.
   e. (3x) 50-hp base mounted chilled water pumps (sized at n+1) and (3x) 25-hp base mounted heating water pumps (sized at N+1) will distribute heating and chilled water to the building. Based on Bell and Gosset 1510. Same as base design.
   f. Miscellaneous pumps, tanks, appurtenances, and chemical treatment will also be provided (similar to base design)

D3060 VENTILATION AND ZONE EQUIPMENT

A. Base Option
   a. Gym

i. A 20,000 CFM rooftop single zone custom air handler with air to air energy recovery, heating and chilled water coils, filters, and outside air mixing box will serve the gym. Based on Hunt Air.

b. Theater
   i. A 20,000 CFM rooftop single zone custom air handler with air to air energy recovery, heating and chilled water coils, filters and outside air mixing box will serve the theater. Based on Hunt Air.
c. Commons
   i. A 15,000 CFM rooftop single zone custom air handler with air to air energy recovery, heating and chilled water coils, filters and outside air mixing box will serve the Commons space. Based on Hunt Air.
d. Classrooms
   i. (4x) 40,000 CFM air handlers will serve other spaces in the building. The units will include heating and chilled water coils, filters and outside air mixing box.
   ii. (250x) variable air volume terminal units (average 1,000 CFM) with hot water reheat will serve induvial rooms/thermal zones throughout the building.
   iii. Science classrooms will be provided with constant volume exhaust fans for each fume hood and chemical storage area.
e. Administration (including Nurses Suite)
   i. (1x) 10,000 CFM custom dedicated outside air handling unit with air to air energy recovery, heating and chilled water coils, and filters.
   ii. (150x) 4-ft chilled beams for zone heating and cooling.
f. Kitchen
   i. Type 1 and Type 2 exhaust and makeup air will be provided for the kitchen. Exhaust and makeup will include demand control. Based on Greenheck.
g. Woodshop
   i. A centralized dust collection system will be provided for the wood shop. The dust collector will be located on grade near the woodshop.
h. IT and Electrical Rooms
   i. IT and electrical rooms will be served by both VAV terminal units (included in the count above) for air side economizer and either multi-zone cooling only multizone refrigerant systems or chilled water fan coils. (20x) 3-Ton Mitsubishi Citi-multi (Refrigerant) and associated outdoor units, or (20x) Multiaqua fan coils (chilled water).

B. Alternate Option – Mixed Mode Ventilation for the Gym and Commons
   a. This option only differs from the Base Option in the Gym and Commons spaces
      i. The single zone air handlers described for the Gym and Commons in the Baseline Design remain the same - to provide full conditioning in the event that outdoor conditions are not favorable – temperatures, smoke, acoustics etc.
      ii. Automatic operable openings for natural ventilation and passive cooling are provided in the gym and commons space. A total of (20x) automatic windows and (10x) rooftop turbine ventilators with automatic isolation dampers are included along with associated controls.

D3060 CONTROLS & INSTRUMENTATION

A. General
   a. A central DDC system using BACNet protocol will be provided for the building which will provide electronic control of all devices and equipment. The system graphics will be integrated into the district central building management software.

b. Sub metering will be provided for all electrical end uses (lighting/plug loads/mechanical) and well as heating and chilled water BTU meters, and domestic water sub meters for landscape domestic hot water and food service. Data will be collected, stored, and presented in custom graphics which easily allow non-technical users to evaluate building energy and water consumption.

D40 FIRE PROTECTION

D4010 FIRE SUPPRESSION

A. The building will be protected by a fire sprinkler system throughout.
B. A 100-hp fire pump and associated controls are assumed, pending flow test evaluation.
C. Conditioned areas will be protected by a wet system. Unconditioned areas will be protected by dry heads or a dry system where required.

D4030 FIRE PROTECTION SPECIALTIES

- Fire Protection Cabinets – for science program chemical storage
- Fire Extinguishers

D50 ELECTRICAL

D5010 FACILITY POWER GENERATION

- Emergency and Optional Standby power will be provided by a 750KW diesel fired generator. The generator will be exterior mounted with a weatherproof, sound attenuated housing and built in base fuel tank.
- A single feeder from the generator will be brought into the building to a generator power main distribution switchboard. Separate transfer switches will be provided for emergency loads and standby loads. Onsite fuel storage will provide for 24-hours power source operation at full load. A remote docking station will be provided for connection of a temporary generator during maintenance of the system.
- Emergency loads will be those designated as life safety (meeting the criteria of NEC 700) and will include egress lighting, fire pump and fire alarm systems. Optional Standby loads will include the network room loads, UPS systems, selected cooling, designated equipment loads, security systems and will meet the criteria of NEC 702.
- A renewable power source using PV (Photovoltaic) is proposed for the facility. The photovoltaic array will be located on the roof and will be sized to the largest KW that can be accommodated by the available roof area. Assume panels will be located on the roofs of the main building, gymnasium, and theater buildings. Panels will not be located at the green roof on the north/south connector bar, which will house a green roof. Solar panels will also be used to cover the covered bike parking structure. Power inverters will be located within the building and tied into the normal power source for the building. PV system panel technology to be used is Crystal silicon construction with a minimum efficiency rating of 18.8 percent. Provide system with remote monitoring system per PPS Standards.

D5020 ELECTRICAL SERVICE AND DISTRIBUTION

- The main site building will be served from (3) 4000A, 480/277V,3ph, 4W services.
- The track site will be served from (1) 800A, 208/120V, 3ph, 4W service.

- Each service will be fed from a pad vault mounted utility transformer.
- Secondary voltage of 208Y/120V will be derived using energy efficient dry type transformers providing a level of isolation from other loads and deriving a new grounded neutral point.
- Power distribution throughout the building will be accomplished with conduit and wire feeders to satellite electrical rooms at 480Y/277V. Satellite electrical rooms will contain step down transformers and 208Y/120V branch panels to serve equipment and receptacles in the adjacent areas. In the satellite electrical rooms, the 480/277V distribution will provide power for mechanical and lighting loads. The 208Y/120V panelboards will provide power to all receptacle and equipment loads.
- The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution panels. Electrical metering will provide information on system loading and power quality in accordance with the Oregon Energy Efficiency Specialty Code.
- Surge Protective Devices (SPD) will be provided at the service entrance electrical equipment for a first level of protection and at all branch panelboards for a second level of protection. A third level of SPD's could be utilized by the owner using portable plug strips with surge protection at equipment. Load types will be separated on panels to prevent large mechanical loads from affecting general-purpose branch circuitry.
- A grounded power system will be provided in compliance with the NEC. This ground system consists of the building service ground comprised of multiple ground rods, UFER ground, ground ring around the building perimeter and bonding to the water service and structure steel. The grounding system will be extended throughout all electrical systems in the facility. Grounding buses will be provided in the electrical and telecom network rooms. All metallic systems will be grounded to the building grid. An equipment grounding conductor will be provided in all feeder and branch wiring runs. Separate isolated ground conductors will be provided for branch circuits with sensitive loads.

D5030 GENERAL PURPOSE ELECTRICAL POWER

- Copper conductors routed in EMT raceway will be used throughout the building for branch circuit distribution. Aluminum feeders are prohibited per PPS standards.
- Flexible metal clad (MC) cabling will be used in specific applications for local distribution of branch circuits. The homeruns back to the panel will be EMT/copper conductors. Branch circuit neutrals will be dedicated. Ground fault circuit interrupter receptacles will be provided in toilet rooms at sinks, roof, outdoor and wet areas.
- Electrical power connections will be made to all mechanical equipment and include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFDs will be furnished under Division 23 and installed under Division 26.
- Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.
- Electric vehicle (EV) charging stations will be provided within the surface parking lots to accommodate electric vehicles. The requirements are to provide 6 parking spaces with electric vehicle charging stations to comply with LEED requirements. EV changing stations will be level 2 compliant and the basis of design will be SemaConnect Series 7.

D5040 LIGHTING

- LED interior and exterior lighting will be provided to meet PPS and code lighting levels and power density requirements.

D6010 DATA COMMUNICATIONS

A. Functional Requirements
  a. Performance Requirements
    i. Backbone and horizontal structured cabling system for voice and data communications and required equipment rooms.
    ii. Manufacturer's 20-year warranty.
    iii. Star topology.
  b. Design Requirements
    i. Stacked telecom rooms, lined with fire rated plywood.
    ii. Singlemode and (4) 4-pair copper fiber backbone to each Telecom Room.
    iii. Typical classroom: (4) locations of (2) Category 6, (1) wall phone.
    iv. Wireless each classroom and throughout: (2) Category 6A.
    v. Computer rooms: (1) Category 6 to each workstation.
    vi. 250-feet maximum cable length.
    vii. Vertical power strips on all equipment racks.

B. Components
  a. Category 6 for work area outlets.
  b. Category 6A for wireless and video surveillance outlets.
  c. 48-port patch panels.
  d. 24-strand singlemode fiber.
  e. LC connectors and adapter plates.
  f. 4-post equipment racks with 10-inch vertical wire managers.
  g. 8-feet high by 4-feet wide by 3/4-inch deep fire rated plywood.
  h. 12-inch wide ladder rack and accessories.
  i. Vertical power strips.

C. Substitutes
  a. None.

D6020 VOICE COMMUNICATIONS

A. See narrative and cost information provided by The Shalleck Collaborative

D6030 AUDIO-VIDEO COMMUNICATION

A. See narrative and cost information provided by The Shalleck Collaborative

D6060 DISTRIBUTED COMMUNICATIONS AND MONITORING

A. Functional Requirements
  a. Performance Requirements
    i. Building wide, IP paging and wireless clock system.
    ii. 2-year warranty for paging and clock systems.
    iii. 20-year manufacturer's warranty for structured cabling system.
    iv. IP paging system: Valcom.
    v. Wireless clock system: American Time and Signal.
  b. Design Requirements
    i. IP speakers are required in all classrooms, conference rooms, work rooms, offices, and other teaching spaces.
    ii. Analog speakers in hallways, commons spaces, exterior, support spaces connected to IP zone controllers.
    iii. IP paging system is Valcom with Informacast software.

iv. Category 6 structured cabling to each IP speaker and zone controller.
v. IP display speakers are required in noisy areas such as band room, shop areas, etc.
vi. Clocks are required in every classroom, office, commons, gymnasium, media center and other common spaces.

B. Components
   a. Informacast software (OFOI).
   b. IP speakers.
   c. IP display speakers.
   d. Analog speakers.
   e. Zone controllers.
   f. Power supplies.
   g. PoE switches (OFOI).
   h. Wireless clock system controller with rack mount kit.
   i. 12 and 15-inch wireless clocks.
   j. Wire guards.

C. Substitutes
   a. None.

D6060 DISTRIBUTED COMMUNICATIONS AND MONITORING

A. Functional Requirements
   a. Performance Requirements (what does the assembly DO)
      i. Building wide, distributed antenna system for emergency responder radio coverage.
   b. Design Requirements (factors affecting cost, particular to the overall assembly)
      i. Two-hour rated space for head end.
      ii. Two-hour rated shafts for riser cabling and internal antenna connections.
      iii. 24-hour battery backup or connection to generator if rated for 24-hours.

B. Components
   c. Wireless portal.
   d. Coaxial riser and internal antenna cable.
   e. 360-degree omnidirectional antennas
   f. Digital signal boater.
   g. 24-hour battery backup.
   h. Surge protection.
   i. Power tappers.

C. Substitutes
   a. Coaxial based system can be substituted with singlemode fiber system.

D6090 COMMUNICATIONS SUPPLEMENTARY COMPONENTS

A. Functional Requirements
   a. Performance Requirements
      i. Pathways for cabling infrastructure.
      ii. Cable trays for support of cabling infrastructure.
      iii. Grounding and bonding for communications systems.
      iv. 1-year warranty.
   b. Design Requirements
      i. Two 4-inch conduits to each of two service provider tie in points.
      ii. Wire basket tray for main runs.

iii. J-hooks for cabling support from outlet to wire basket tray.
iv. 1-inch conduit minimum for all outlet locations.
v. Three 4-inch conduits from the MDF to each IDF. Each conduit to have three 1-inch innerducts.
vi. Bonding bus bars in each telecom room connected to main distribution panel.

B. Components
a. 12-inch wide by 4-inch deep wire basket tray.
b. Category 6A rated j-hooks.
c. 4-inch square by 11/16-inch back boxes.
d. Site vaults.
e. 1-inch conduit.
f. 4-inch conduit.
g. Primary bonding bus bar.
h. Secondary bonding bus bar.

C. Substitutes
a. None.

D70 ELECTRONIC SAFETY AND SECURITY

D7010 ACCESS CONTROL AND INTRUSION DETECTION

A. Functional Requirements
b. Performance Requirements
i. Access control system to create a secure facility.
ii. Intrusion detection for alarm and monitoring.
iii. Access Control system: Kantech.
iv. Intrusion system: DSC Power Series Pro, 128 zone.
v. 1-year warranty.
c. Design Requirements
i. Card readers are required at main exterior entrances, security vestibules, telecom rooms, elevator landings, parking gates.
ii. Video intercoms are required at all main entrances and auxiliary buildings.
iii. Access control integrated with Informacast IP paging system software for door control with bell scheduling.
iv. Door schedule override button in main reception controls all access-controlled doors.
v. Access control system is integrated with the intrusion system.
vi. Door controllers are installed in the nearest telecom room and will be on a dedicated circuit connected to the emergency generator.
vii. Door contacts are required on all exterior doors and interior doors with access control.
viii. Dual technology motions sensors are required in computer labs, maker spaces, metal shops, wood shops, auto shops, photo labs, main office, principal office, vice principal office, and full coverage of all hallways on the lower levels.

B. Components
a. Security management software: Entrapass Global newest edition.
b. Door controller.
c. Network communication controller.
d. Card readers.

e. Relay to Informacast.
f. Power supplies.
g. Door contacts.
h. Door schedule override button.
i. Video intercom with camera license.
j. Intrusion control panel.
k. Cabinets with locks.
l. Zone expander module.
m. LCD keypad.
n. Motion sensors.

C. Substitutes
   a. None.

D7030 ELECTRONIC SURVEILLANCE

A. Functional Requirements
   a. Performance Requirements
      i. IP video surveillance system with network video recording.
   b. Design Requirements
      i. Cameras required at restroom entries, all main entries, stairways, exterior courtyards, gymnasium entries and bleachers, cafeterias, commons, large gathering areas, hallway intersections, inside elevators, bus loading zones, and all parking lots.
      ii. Cameras on light poles require curved lid j-box with power.
      iii. Category 6A infrastructure or singlemode fiber if over 300-feet.
      iv. 55-inch monitor in main office for viewing of cameras.
      v. Video management software and server: Exacq Vision based on 15 frames per second, 30-day storage, H-264 compression rate and 20-percent spare capacity.

B. Components
   a. 360-degree, multisensor cameras, 8-12 megapixel.
   b. 180-degree, multisensor cameras, 8-12 megapixel.
   c. Fixed cameras, 3-5 megapixel,
   d. Video management software and server.
   e. 55-inch viewing monitor.
   f. PoE switches (OFOI).
   g. Category 6A cabling.

C. Substitutes
   a. None

D7050 DETECTION AND ALARM

- Fire Alarm system will consist of a Potter AFC Series addressable fire alarm system with voice evacuation.
- Fire alarm wiring will be class B hard wired system and include an automatically actuated alarm.
- Fire alarm equipment will be housed with electrical or telecom equipment rooms or as required by PPS. Equipment located within the space will include:
   1. Fire Alarm System Control equipment
   2. Annunciator Panel
   3. NAC Panels
   4. Pull Station

5. Smoke Detector
6. Document Enclosure

- Fire alarm system equipment located remotely will include:
  1. Remote annunciator panel at the building entry point
  2. NAC panels
  3. Voice evac amplifiers
  4. Remote fire alarm panels, to be networked to the master fire alarm control panel.
  5. Additional fire alarm device requirements as required for the firefighter’s service elevator will be provided. Provide smoke detectors at the top of the hoist way to be accessed from the exterior of the shaft.

D7070 ELECTRONIC MONITORING AND CONTROL

E EQUIPMENT AND FURNISHINGS

E10 EQUIPMENT

E1030 COMMERCIAL EQUIPMENT

- Foodservice Equipment – Full kitchen to meet PPS standards. Additional equipment as needed for the CTE Culinary Arts program.
- Office Equipment

E1040 INSTITUTIONAL EQUIPMENT

- Library Equipment – Shelving, book drop, etc.
- Audio-Visual Equipment – See AV narrative provided by Shalleck Collaborative
- Laboratory Equipment – Assume (4) vent hoods, miscellaneous lab equipment
- Vocational Shop Equipment – Woodshop equipment
- Arts & Crafts Equipment - TBD

E1060 RESIDENTIAL REQUIPMENT

- Residential Equipment and appliances – Miscellaneous fridges, microwaves, washer/dryer sets, for specialty use (teacher offices, etc)

E1070 ENTERTAINMENT AND RECREATIONAL EQUIPMENT

- Theater and Stage Equipment – See Narrative from The Shalleck Collaborative
- Athletic Equipment – Standard equipment for gyms, etc.
- Recreational Equipment – Playground equipment for Teen Parent Center, see Landscape plan markups

E20 FURNISHINGS

E2010 FIXED FURNISHINGS

- Window Treatments
- Casework
- Countertops
- Fixed Seating

E2050 MOVABLE FURNISHINGS

- Furniture – currently assumed to be procured separately from the building.

F SPECIAL CONSTRUCTION AND DEMOLITION

F10 SPECIAL CONSTRUCTION

F1030 SPECIAL FUNCTION CONSTRUCTION

- Sound and Vibration Control – as required for mechanical units, generator, separation of sensitive or noisy spaces such as band room, theater, etc.

F20 FACILITY REMEDIATION

F2010 HAZARDOUS MATERIALS REMEDIATION

- As needed for building demolition:
    1. Asbestos Remediation
    2. Lead Remediation
    3. PCB Remediation

F30 DEMOLITION

F3010 STRUCTURE DEMOLITION

- Completely remove existing buildings and site elements as needed. Aggressive LEED targets for construction recycling and waste management will need to be met.

F3030 SELECTIVE DEMOLITION

- Assume that limited select items will need to be carefully removed, stored and prepped for re-installation in the new building. Such items might include exterior terra cotta ornament, brick, wood doors, marble sills, wood casework elements, plaster ornament, etc.
- Assume that the gymnasium wood floor and bleachers will be removed, sanded, coated and reinstalled in the new building.
- Assume that some items such as wood auditorium seats, wood casework, will be removed and salvaged for reuse by others. (Rebuilding Center donation, etc)

G SITEWORK

- See attached Civil Narrative and Civil and Landscape Plan Markups for site information

G10 SITE PREPARATION

G1010 SITE CLEARING

G1020 SITE ELEMENTS DEMOLITION

G1070 SITE EARTHWORK

G20 SITE IMPROVEMENTS

G1020 ROADWAYS

G2020 PARKING LOTS

G2030 PEDESTRIAN PLAZAS AND WALKWAYS

G2050 ATHLETIC, RECREATIONAL, AND PLAYFIELD AREAS

G2060 SITE DEVELOPMENT

G2080 LANDSCAPING

G30 LIQUID AND GAS SITE UTILITIES

G3010 WATER UTILITIES

G3020 SANITARY SEWERAGE UTILITIES

G3030 STORM DRAINAGE UTILITIES

G40 ELECTRICAL SITE IMPROVEMENTS

G4010 SITE ELECTRIC DISTRIBUTION SYSTEMS

G4050 SITE LIGHTING

G50 SITE COMMUNICATIONS

G5010 SITE COMMUNICATIONS SYSTEMS

G90 MISCELLANEOUS SITE CONSTRUCTION

Z GENERAL

Z10 GENERAL REQUIREMENTS

Z1010 PRICE AND PAYMENT PROCEDURES

A. Allowances
   - Cash Allowances
   - Construction Contingency Allowance
   - Inspection and Testing Allowances

B. Unit Prices
- Unit Price 1: Over-excavation of Unsuitable Soils
- Unit Price 2: Imported Structural Fill
- TBD

C. Alternates
- Bid Alternates

Z1020 ADMINSTRATIVE REQUIREMENTS

- General Administrative Requirements (RFIs, Requests for Substitution, Progress Schedule, Coordination Drawings, Closeout Submittals, Contractor’s Use of CAD/Revit Files, BIM Coordination)
- Submittals
- Electronic Document Submittal Service
- Preconstruction Meeting
- Site Mobilization Meeting
- Progress Meetings

Z1040 QUALITY REQUIREMENTS

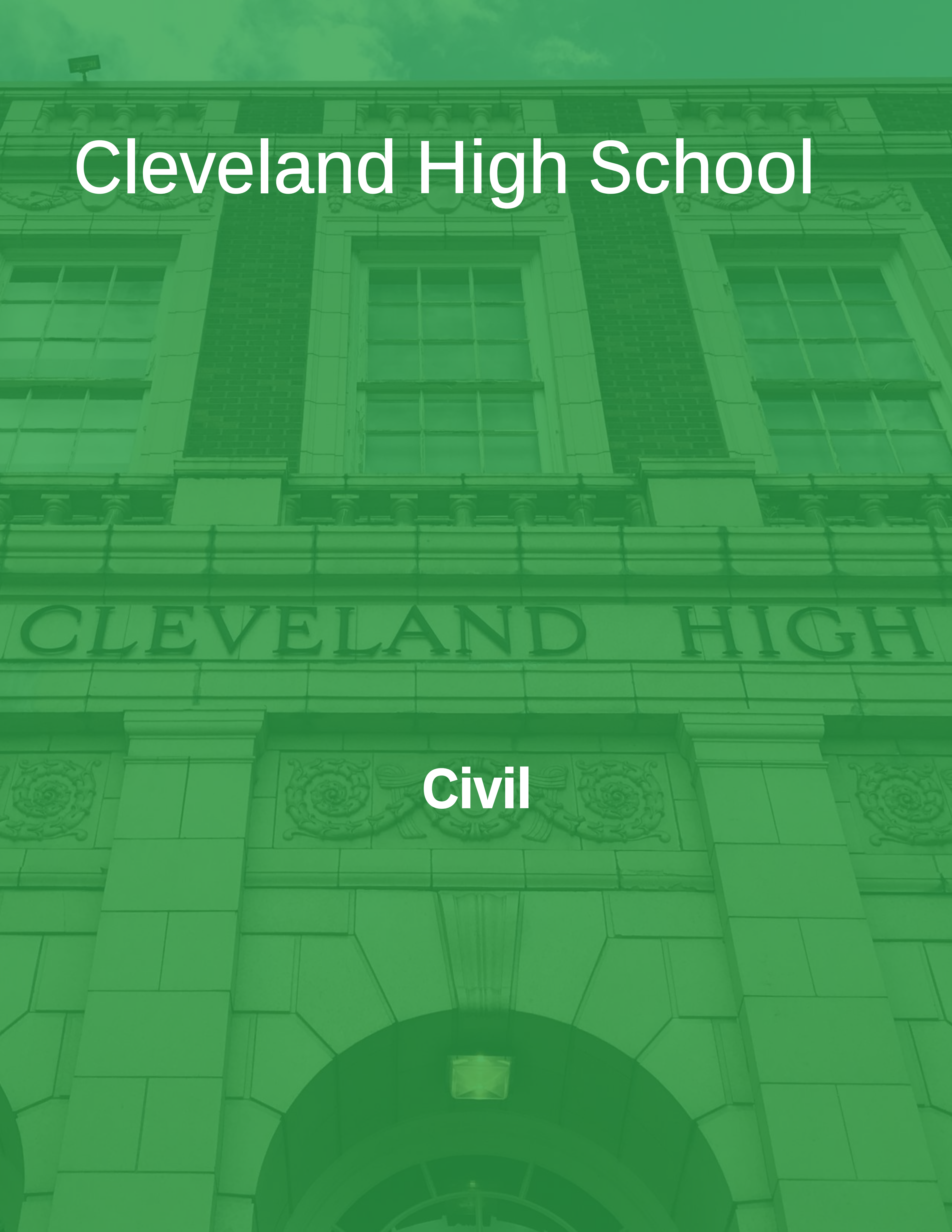
- Regulatory Requirements (Codes, Permits)
- Quality Assurance

Z1050 TEMPORARY FACILITIES AND CONTROLS

- Temporary Utilities
- Construction Facilities
- Temporary Construction
- Temporary Barriers and Enclosures
- Temporary Fencing
- Temporary Security
- Temporary Controls

Z1070 EXECUTION AND CLOSEOUT REQUIREMENTS

Cleveland High School



Civil

Cleveland High School – Civil Engineering Narrative - DRAFT
Date: March 15, 2024

Public Street Improvements

Portland Bureau of Transportation (PBOT) requires public frontage improvements when renovations to a property exceed 35% of its assessed value and/or the trips to the site are increased. If the trips to the site are not increased, no right of way dedications can be required. Public frontage improvements and street lighting improvements will be required for all right of way fronting the project properties. The properties are not located within a pedestrian district but a street lighting study may still be required. Placing cobra head streetlights on existing or new cobra head poles is expected. New street trees will be required to be added to all frontages where there is available space.

All New Construction on Single Site

SE 25th Ave – Local Street – 11' sidewalk corridor required. Existing corridor exceeds the requirement and PBOT will likely allow protection of this corridor. A right of way dedication will not be required. Existing ADA ramp crossing 25th at Franklin does not meet current ADA standards and must be replaced.

SE Franklin St – Local Street – 11' sidewalk corridor required. Existing corridor exceeds the requirement and PBOT will likely allow protection of this corridor. A right of way dedication will not be required. Existing ADA ramps crossing Franklin at 25th, 26th, and 28th may need to be replaced. Ramp inspection reports will confirm if ramps needs to be replaced. Drainage will be impacted so replacement of inlets at corners with associated piping and paving is expected. Curb and sidewalk between 26th and 28th will likely need to be replaced due to existing condition and proximity to new construction.

SE 26th Ave – Community Corridor – 12' sidewalk corridor required. Existing sidewalk corridor must be confirmed with a topographic survey. A small right of way dedication is expected to be required. The existing curb exposure on 26th is substandard and will likely need to be replaced along with the sidewalks. Existing ADA ramps crossing 26th at Powell and at Franklin may need to be replaced. Ramp inspection reports will confirm if ramps needs to be replaced. A curb extension at the southeast corner of the intersection of SE 26th & Franklin may be required to extend out into SE 26th if the lane configuration remains but if the bike lane shifts to the curb, no curb extension would be required. Enhanced crossings midblock and at the intersection with Franklin could include concrete island and/or additional striping. Drainage will be impacted so replacement of inlets at corners with associated piping and paving is expected.

SE Powell Blvd – Civic Corridor – 12' sidewalk corridor required. Existing sidewalk corridor must be confirmed with a topographic survey. A small right of way dedication is expected to be required. Existing ADA ramps crossing Powell at 26th, 28th, 31st, and 33rd may need to be replaced. Ramp inspection reports will confirm if ramps needs to be replaced. Inlet at 28th & Powell will need to be replaced with associate piping and paving on Powell.

SE 28th Ave – Local Street – 11' sidewalk corridor required. Existing sidewalk corridor must be confirmed with a topographic survey. A small right of way dedication is expected to be required. The existing curb is damaged in several areas and there are four existing driveways that will need to be removed which will necessitate the replacement of curb and sidewalk along 28th. Existing ADA ramps crossing 28th at Powell and at Franklin may need to be replaced. Ramp inspection reports will confirm if ramps needs to be replaced. Modifications to the traffic movements at the intersection of SE 28th and Powell are proposed and will likely include a curb extension into 28th at the northeast corner of the intersection to prohibit vehicles from turning north bound from Powell to 28th. Pedestrian signal modifications will be required for the curb extension. Inlet at 28th & Franklin will need to be replaced with associate piping and paving.

<u>SE Waverleigh Blvd</u> - Local Street – 11' sidewalk corridor. This roadway is not fronting school property and will not be required to be upgraded. Elective upgrades must meet current standards and may trigger additional upgrades. A right of way dedication will not be required. Three options, listed below, have been studied for elective improvements to Waverleigh. Pedestrian scale lighting will not be required but may be included. The intersections with 29th and 31st are concrete and any repaving here would need to be concrete.

> Option A – North Side - Replace corners with ADA compliant ramps along the north side of Waverleigh including two corners at 28th Pl, two corners at 29th, and one corner at 31st. Drainage will be impacted so replacement of inlets at corners with associated piping and paving is expected.
>
> Option B – South Side Light – Replace curb and sidewalk along south side of Waverleigh. Curb location between 28th and 29th does not change. Curb location between 29th and 31st shifts 10 feet north. Remove and replace all street trees. Replace corners with ADA compliant ramps along south side of Waverleigh including two corners at 29th and two corners at 31st. Two midblock ramps will be required at 28th Pl. Drainage will be impacted so replacement of inlets at corners with associated piping and paving is expected. Remove on street parking on south curb line between 29th and 31st.
>
> Option C – South Side with Roadway – Replace curb and sidewalk along south side of Waverleigh. Curb location between 28th and 29th shifts 10 feet north. Curb location between 29th and 31st shifts 20 feet north. Remove and replace all street trees. Remove concrete island in center of roadway between 29th and 31st. Repave 20 feet width of roadway between 29th and 31st. Greenstreet planters required for stormwater management at 29th (500 square feet) and at 31st (900 square feet). Drainage will be impacted so replacement of inlets at corners with associated piping and paving is expected. Restripe parking for all of Waverleigh.

<u>SE 31st Ave</u> – Local Street – 11' sidewalk corridor required. Existing sidewalk corridor must be confirmed with a topographic survey. A small right of way dedication is expected to be required. ADA ramp crossings at Waverleigh must be installed. ADA ramp crossing at Powell must be replaced. A portion of the sidewalk corridor is missing at the intersection with Waverleigh and it must be replaced. Drainage will be impacted so replacement of inlets with associated piping and paving is expected. 31st is a concrete roadway so any roadway improvements must be concrete.

SE 33rd Ave – Local Street – 11' sidewalk corridor required. Existing corridor exceeds the requirement and PBOT will likely allow protection of this corridor. A right of way dedication will not be required. ADA ramp crossings at Waverleigh must be installed. Two portions of the sidewalk corridor are missing at the intersection with Waverleigh and farther south. These areas of missing sidewalk corridor must be replaced. Drainage will be impacted so replacement of inlets along 33rd with associated piping and paving is expected. 33rd is a concrete roadway so any roadway improvements must be concrete.

Alternate Option – Building on parking lot site
A skybridge across 26th would require all overhead utilities to be located underground.

Stormwater Management

Stormwater runoff from the project site must be managed in accordance with the 2020 Portland Stormwater Management Manual. There are no public storm-only mains available to the site. Connection to the combined sewer is only allowed if on-site infiltration is not feasible. It is not expected that the native soils will infiltrate so connection to the combined sewer system for each property will likely be required. Vegetated flow through planters and ecoroof will be required to meet stormwater management requirements. The hydrologic soil group for the sites is B which results in larger facilities for stormwater management. Overflow from vegetated flow through planters and ecoroof must connect to the public combined sewer system.

All New Construction on Single Site & Alternate Option
Parking Lot Site – 2,150 square feet of vegetated flow through planters will meet stormwater management requirements.
Building Site – 8,400 square feet of vegetated flow through planters will meet stormwater management requirements. If 70,000 square feet of ecoroof was added, the area of vegetated planter could be reduced to 2,300 square feet.
Track Site – 4,200 square feet of vegetated flow through planters will meet stormwater management requirements. If 6,000 square feet of ecoroof was added, the area of vegetated planter could be reduced to 3,800 square feet.

Sanitary Sewer

There are public combined sewer mains available to serve each site. Existing laterals can be utilized if they are in good condition and meet demand.

All New Construction on Single Site
Parking Lot Site –Connection in the northwest corner of the site should be planned with a new 10-inch lateral to the existing 12-inch combined sewer pipe. A new manhole will be required at this connection. The depth of the public combined sewer pipe is 11 feet.
Building Site – Combined sewers are available on all frontages but Powell and 26th should be avoided due to street classification. Two new connections from this site should be planned which would include a 12-inch lateral midblock on Franklin with connection to an existing manhole and an 8-inch lateral to 28th with connection to an existing manhole. Both combined sewer systems are 9-feet deep.
Track Site – An 18-inch concrete combined sewer pipe runs through this site from West to East aligning with Waverleigh. It appears there is an existing easement for access to this main but this will need to be confirmed with a survey. There are several existing laterals from this 18-inch main but the size and condition are unknown. New connections to this main should be planned. The depth of this public main is 13 feet.

Alternate Option – Building on parking lot site
The proposed lateral from the parking lot site may need to be larger pending the size of the proposed building.

Domestic/Fire Water
There are public water mains available to all sites.

All New Construction on Single Site
Parking Lot Site – There is an existing 1-inch irrigation service to this site that should be adequate for the new parking lot. A new reduced pressure backflow preventor may be required and would need to be in an above grade enclosure, located on private property, at the right of way line.
Building Site – There is an existing 4-inch domestic and 6-inch fire line to this site. If these sizes are adequate for future building they can be protected but new reduced pressure backflow preventers may be required and would need to be in above grade enclosures located on private property, at the right of way line. There are existing public fire hydrants surrounding the building. The fire department connection for the sprinkler system will need to be within 250 feet of an existing fire hydrant.
Track Site – There appear to be two existing domestic services to this site. A 3-inch from 33rd and a 4-inch from Powell. The 4-inch domestic service from Powell could be protected and used for new buildings. A new fire service for the proposed buildings will be needed and could be provided from the public water main in 31st. Both services will need backflow prevention which may be reduced pressure backflow preventors that would need to be in an above grade enclosures, located on private property, at the right of way line. The fire department connection for the sprinkler system will need to be within 250 feet of an existing fire hydrant. There is an existing fire hydrant near the intersection of 31st and Powell.

Alternate Option – Building on parking lot site
A new domestic and fire water service with associated backflow preventers would be required. The fire department connection for the sprinkler system will need to be within 250 feet of an existing fire hydrant.

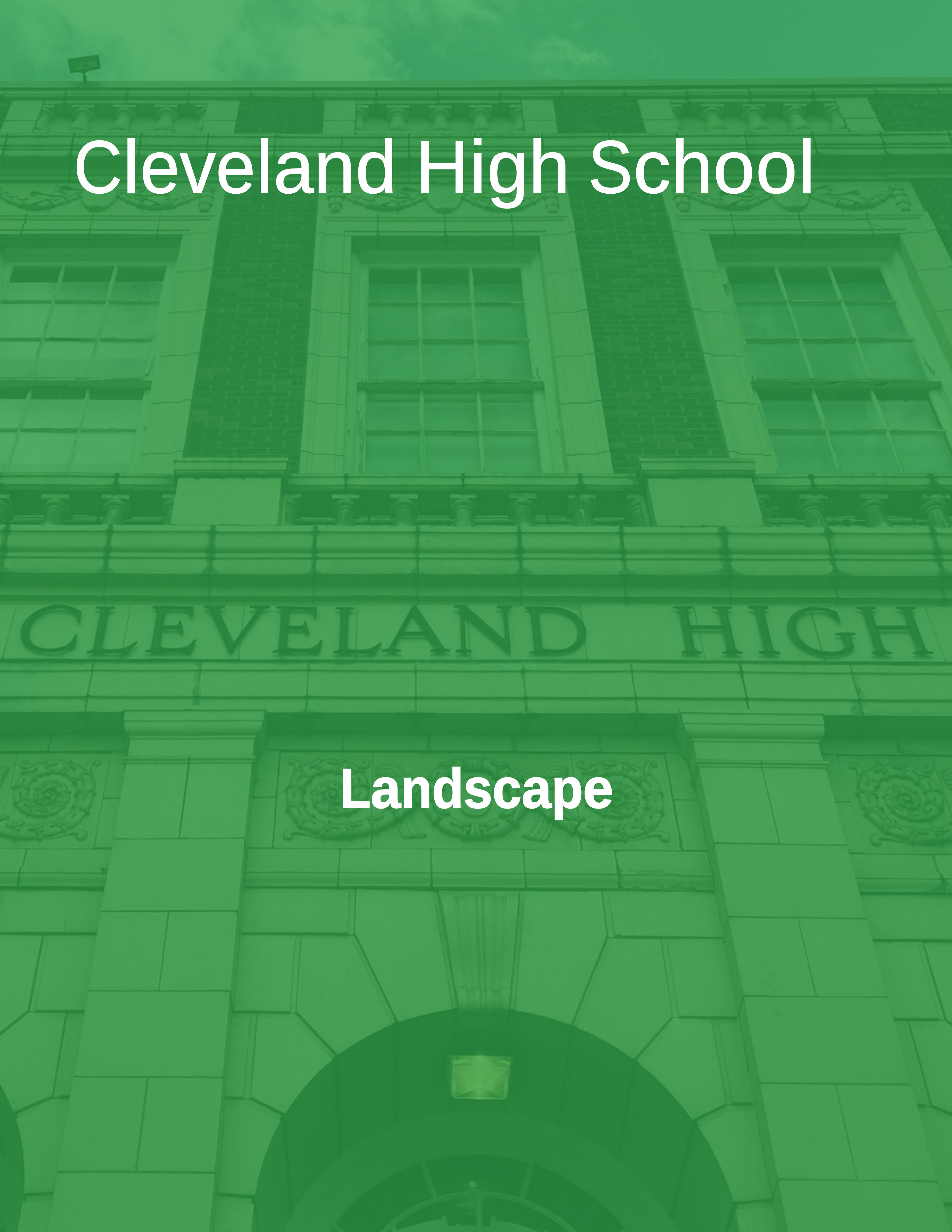
Power
There are overhead power lines able to serve the properties along 25th, 26th, Franklin, 29th, and 31st.

All New Construction on Single Site
The overhead power lines on 26th are on the East side of the street and may affect building layout in order to meet required permanent and temporary clearances. PGE is the private utility provider for power. Coordination with PGE throughout the design process is necessary. PBOT will no longer allow any transformer vaults in the public right of way. PGE will no longer allow below grade transformers so pad mounted transformer on site or in the building will be needed.

Alternate Option – Building on parking lot site
A skybridge across 26th would require all overhead utilities to be located underground.


SE 25th Ave
SE 26th Ave
SE 28th Ave
SE 29th Ave
SE 31st Ave
SE 33rd Ave
SE Franklin St
SE Waverleigh Blvd
SE Powell Blvd
New combined sewer connection to new public combined sewer manhole in Franklin
Rebuild corner with 2 ADA ramps
Rebuild corner with 2 ADA ramps
Concrete island and added striping for upgraded crossing
Rebuild corner with possible curb extension and 2 ADA ramps
New combined sewer connection to public combined sewer manhole in Franklin
Existing domestic water service to building. Add new backflow prevention
Rebuild corner with 2 ADA ramps
Upgraded Crossing
26th Ave and Franklin St
Flow-through vegetated stormwater planters
Upgraded Parking
108 stalls
Replace curb and sidewalk along 26th
Flow-through vegetated stormwater planters. See narrative for Eco-roof option
Replace curb and sidewalk along Franklin
Existing fire service to building. Add new backflow prevention
New Cleveland High School
Five stories and 320,000 square f
Existing irrigation service. Add new backflow prevention
New Crossing
26th Ave midblock
temporarily relocate overhead power lines for required clearance during construction
Replace curb and sidewalk along 28th
New combined sewer connection to public combined sewer manhole in 28th
Replace curb and sidewalk along 26th
Rebuild corner with curb extension and 2 ADA ramps
Upgraded Crossing
28th Ave and Powell Blvd
Upgraded Crossing
28th Pl and Waverleigh Blvd
Upgraded Crossing
29th Ave and Waverleigh Blvd
See narrative for Waverleigh options
New fire service with backflow prevention
New Field House
Two stories
New Shot Put
Rebuild curb and sidewalk with 2 midblock ADA ramps
Upgraded Crossing
31st Ave and Waverleigh Blvd
Additional Bleachers
1350 seats total
Rebuild curb and sidewalk with 2 midblock ADA ramps
Existing public combined sewer for new connections
Flow-through vegetated stormwater planters. See narrative for Eco-roof option
Additional Restrooms
Rebuild curb and sidewalk and driveway
Rebuild curb and sidewalk
Practice Field
Event Parking
6 stalls for officials
Existing domestic service to building. Add backflow prevention
Rebuild corner and ADA ramp
Sheet Legend
Public Street Improvements
Stormwater
Sanitary Sewer
Domestic/Fire Water
Power
CHS - Phase 1 - DRAFT
Civil Engineering Site Plan Markup
Vega Civil Engineering
3/15/2024

Cleveland High School



Landscape

Mayer/Reed
3.15.2024

Cleveland High School Modernization :: Comprehensive Planning

Legends for Cost Estimate

Materials and Grading Plan

Concrete paving: 4” depth concrete over 6” depth 3/4 minus aggregate base

Aggregate paving: 4” depth ¼” minus aggregate over 6” depth ¾ minus aggregate base

Asphalt paving: ref. civil

Synthetic turf: Forever Lawn Academy over 2” depth ¼” minus aggregate over 6” depth ¾” minus aggregate with perf. pipe to drain

Shrub planting: 1 and 5 gallon plants, spaced 36” O.C. in 18” depth planting soil

Stormwater facility: 1 gallon plants, spaced 12” O.C., soil per civil

1) Stadium seating, concrete, (2) @ 15” rise at stage, (3) @ 18” rise at ramps
2) Stage
3) Steps, concrete, 6” rise x 14” run, handrails both sides
4) Ramp, 4” thick concrete, handrails both sides
5) Raised planter, ref wall plan for walls
6) Wall, ref wall diagram
7) Outdoor dining, fixed picnic tables
8) Outdoor classroom
9) Loose seating: (10) boulders and (10) Twig concrete bench by Landscape Forms
10) Bike parking, ref. architect for bike canopy, staple racks
11) Childcare play area, play equipment OFCI
12) Generator
13) Transformers
14) Loading area
15) Waste enclosure, 1 ft ht dock for (3) waste bins, fully enclosed (side walls and roof) with opaque gates on north side.

Mayer/Reed
3.15.2024

<u>Fence and Railing Diagram</u>

Green = Fence, 8 ft ht, Ameristar anti-climb
Gates, 8 ft ht x 7 ft width, double swing, emergency egress (panic hardware), typ. of (6)

Red = Handrails, steel tubing, 36” ht x posts @ 4.5 ft o.c.

Blue = Guardrails, steel tubing, 42” ht, posts @ 4 ft o.c., infill at 4” o.c.

<u>Wall Diagram</u>

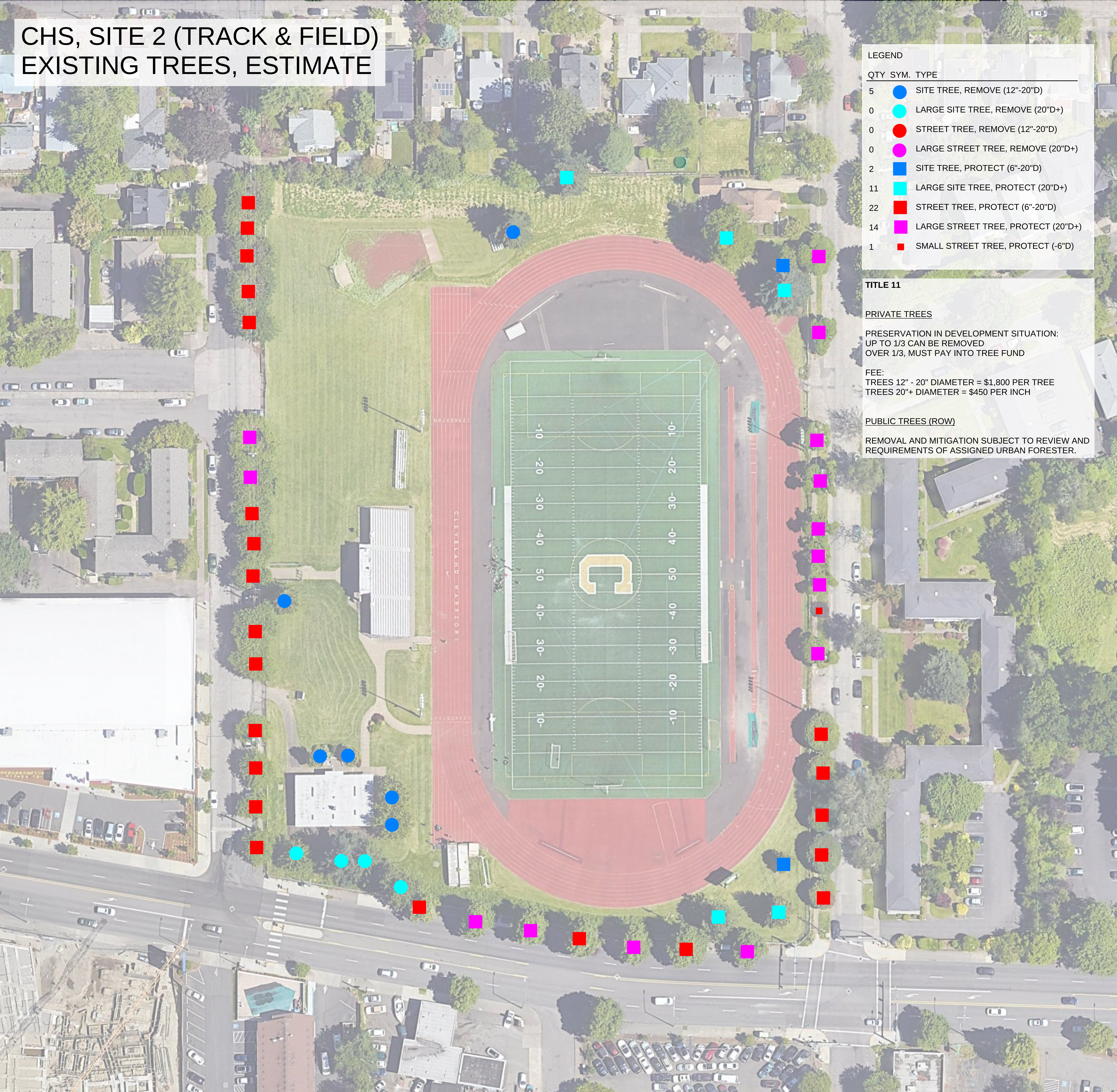
Red = Retaining wall, concrete, 8” width x ht as needed

Blue = Site wall, concrete, 24” width x 18” ht, wood seat topper

Orange = Stormwater curb, concrete, 8” width x 6” exposure at finished surface, depth as needed


CHS, SITE 1 (SCHOOL AND PARKING LOT)
EXISTING TREE ESTIMATES
LEGEND
QTY SYM. TYPE
22 SITE TREE, REMOVE (12"-20"D)
19 LARGE SITE TREE, REMOVE (20"D+)
0 STREET TREE, REMOVE (12"-20"D)
0 LARGE STREET TREE, REMOVE (20"D+)
0 SITE TREE, PROTECT (6"-20"D)
0 LARGE SITE TREE, PROTECT (20"D+)
24 STREET TREE, PROTECT (6"-20"D)
12 LARGE STREET TREE, PROTECT (20"D+)
10 SMALL STREET TREE, PROTECT (-6"D)
TITLE 11
PRIVATE TREES
PRESERVATION IN DEVELOPMENT SITUATION:
UP TO 1/3 CAN BE REMOVED
OVER 1/3, MUST PAY INTO TREE FUND
FEE:
TREES 12" - 20" DIAMETER = $1,800 PER TREE
TREES 20"+ DIAMETER = $450 PER INCH
PUBLIC TREES (ROW)
REMOVAL AND MITIGATION SUBJECT TO REVIEW AND
REQUIREMENTS OF ASSIGNED URBAN FORESTER.

CHS, SITE 2 (TRACK & FIELD)
EXISTING TREES, ESTIMATE



LEGEND

QTY	SYM.	TYPE
5	● (blue)	SITE TREE, REMOVE (12"-20"D)
0	● (cyan)	LARGE SITE TREE, REMOVE (20"D+)
0	● (red)	STREET TREE, REMOVE (12"-20"D)
0	● (magenta)	LARGE STREET TREE, REMOVE (20"D+)
2	■ (blue)	SITE TREE, PROTECT (6"-20"D)
11	■ (cyan)	LARGE SITE TREE, PROTECT (20"D+)
22	■ (red)	STREET TREE, PROTECT (6"-20"D)
14	■ (magenta)	LARGE STREET TREE, PROTECT (20"D+)
1	▪ (red)	SMALL STREET TREE, PROTECT (-6"D)

TITLE 11

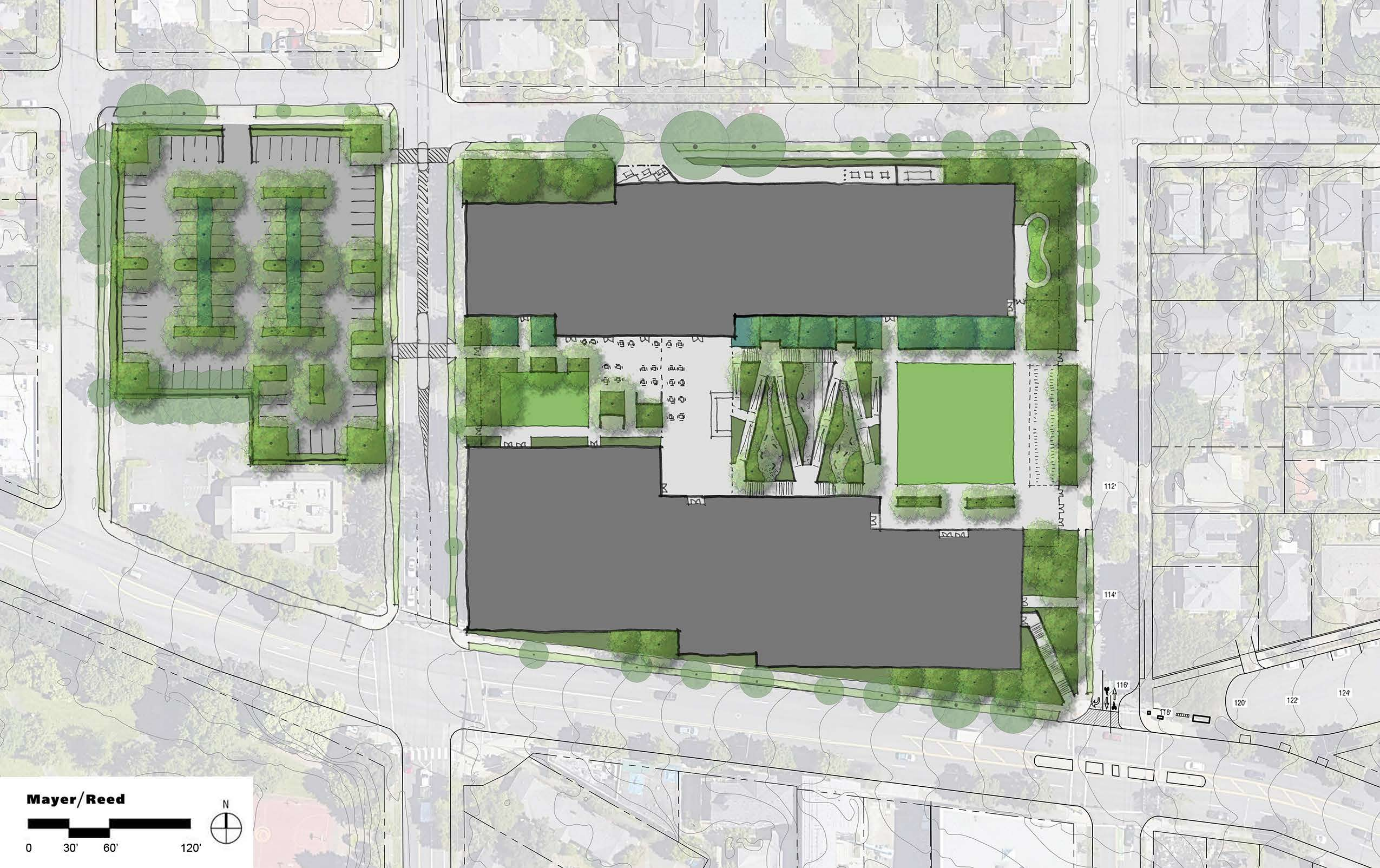
PRIVATE TREES

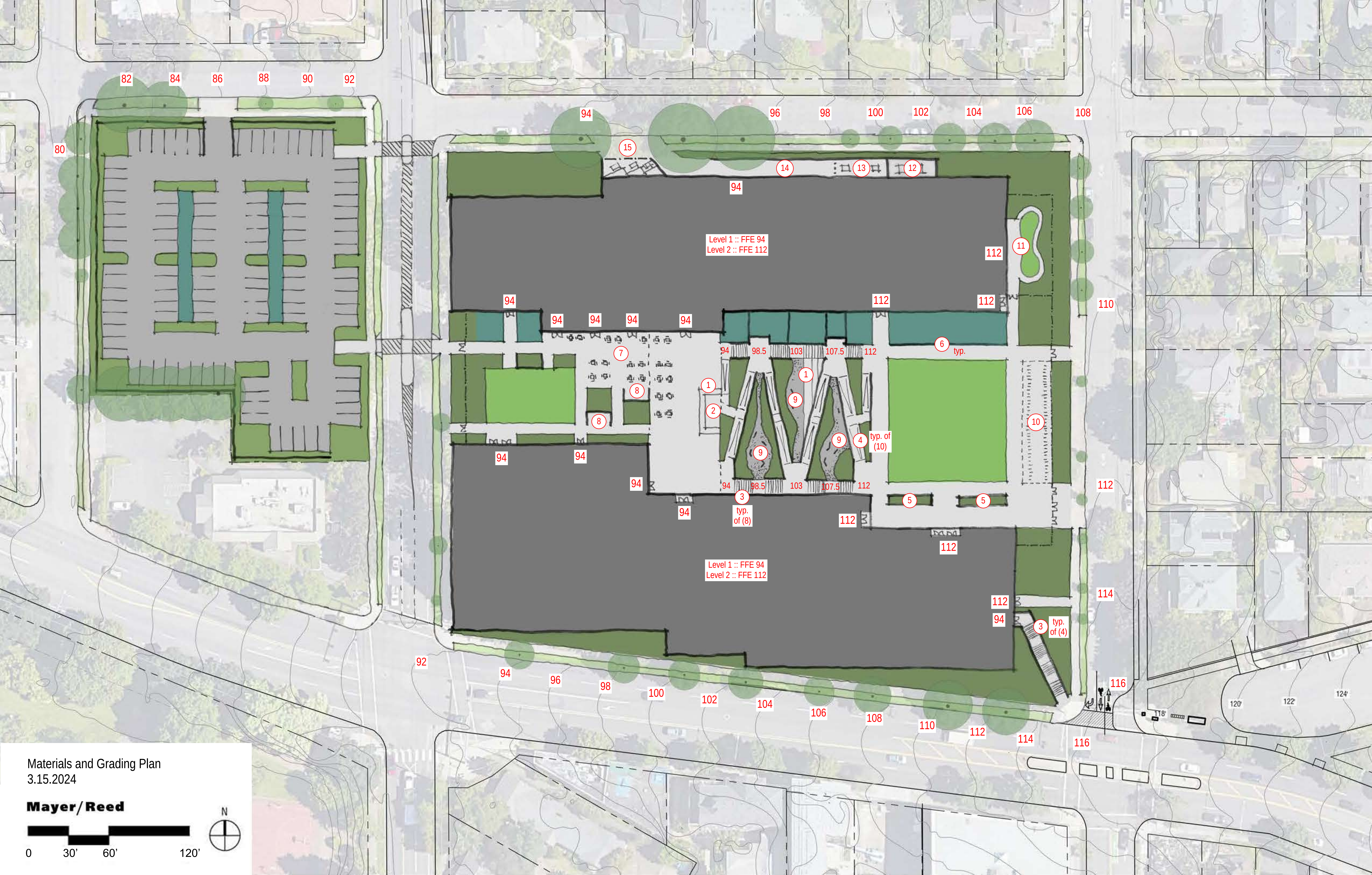
PRESERVATION IN DEVELOPMENT SITUATION:
UP TO 1/3 CAN BE REMOVED
OVER 1/3, MUST PAY INTO TREE FUND

FEE:
TREES 12" - 20" DIAMETER = $1,800 PER TREE
TREES 20"+ DIAMETER = $450 PER INCH

PUBLIC TREES (ROW)

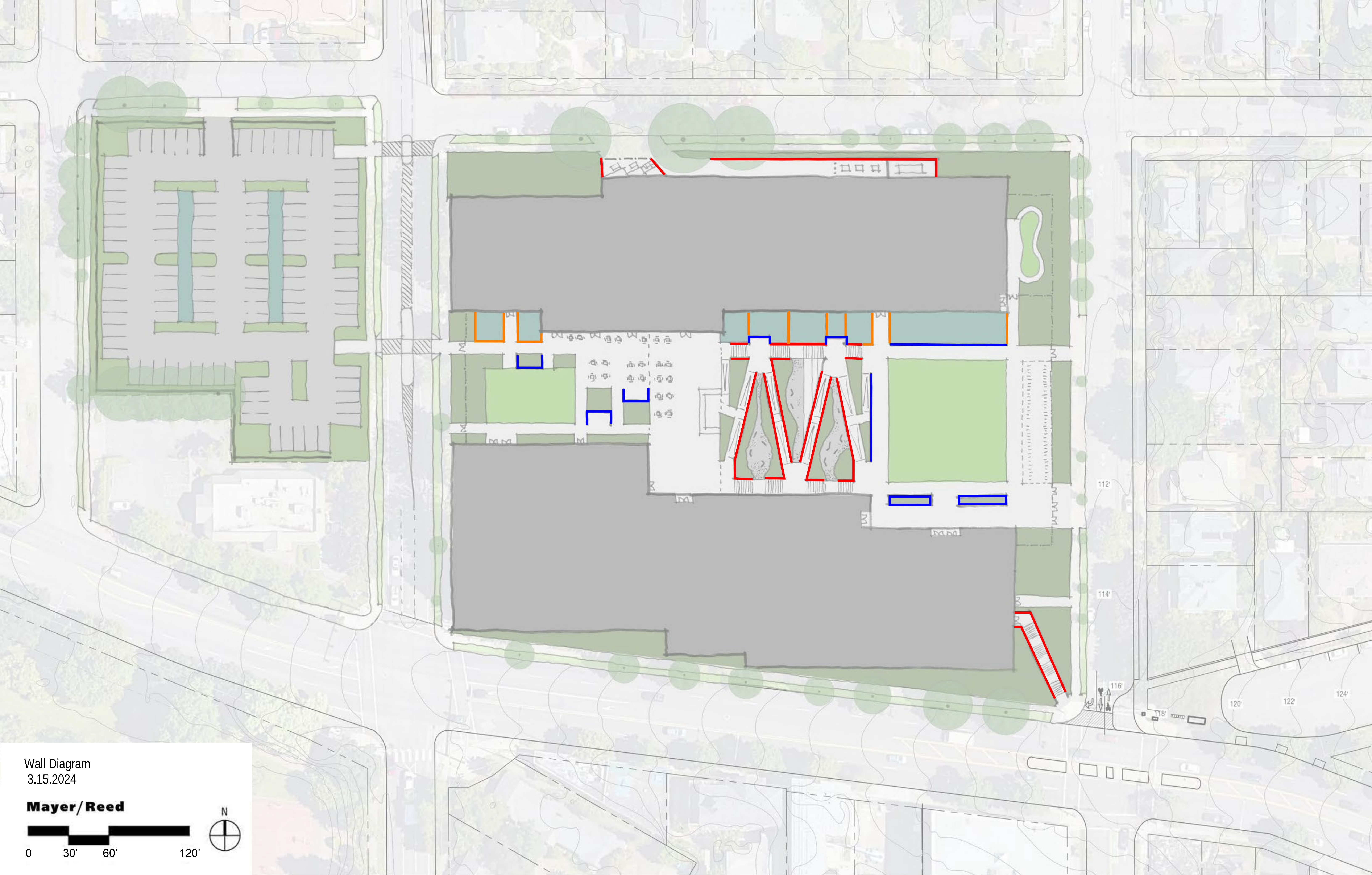
REMOVAL AND MITIGATION SUBJECT TO REVIEW AND REQUIREMENTS OF ASSIGNED URBAN FORESTER.


112'
114'
116'
118'
120'
122'
124'
Mayer/Reed
N
0
30'
60'
120'



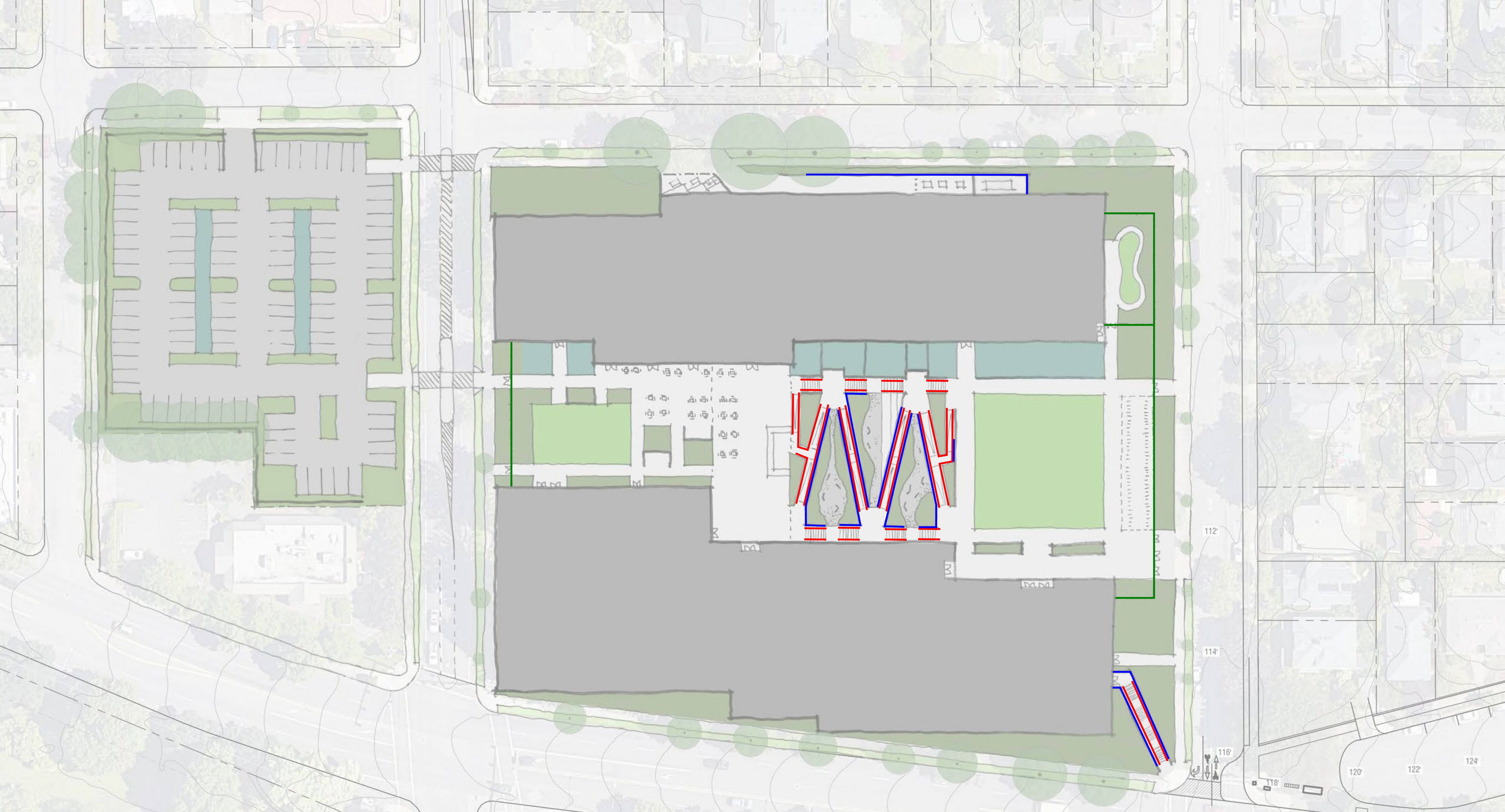
Materials and Grading Plan
3.15.2024

Mayer/Reed



Wall Diagram
3.15.2024

Mayer/Reed

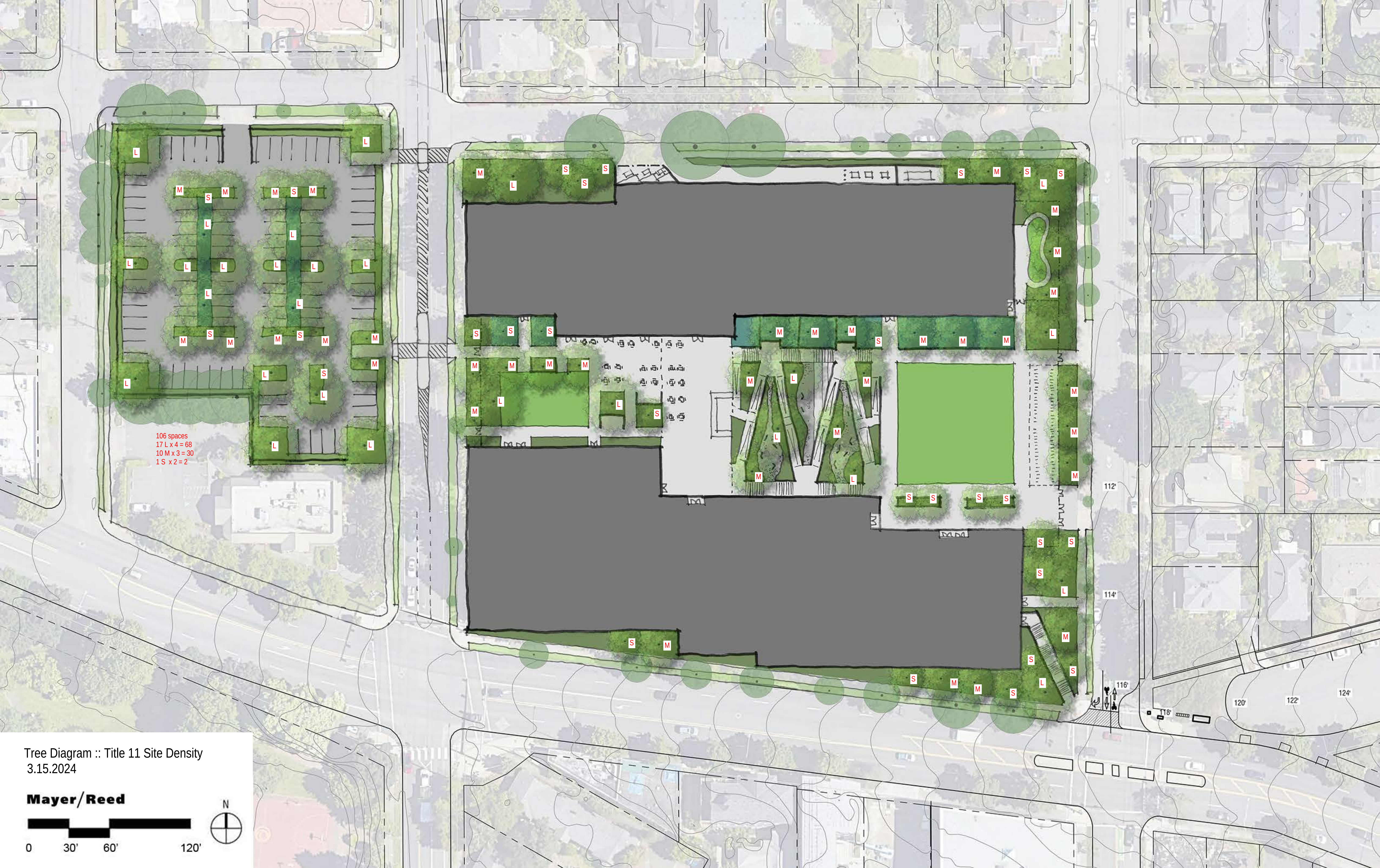


Fence and Railing Diagram
3.15.2024

Mayer/Reed

0 30' 60' 120'

N

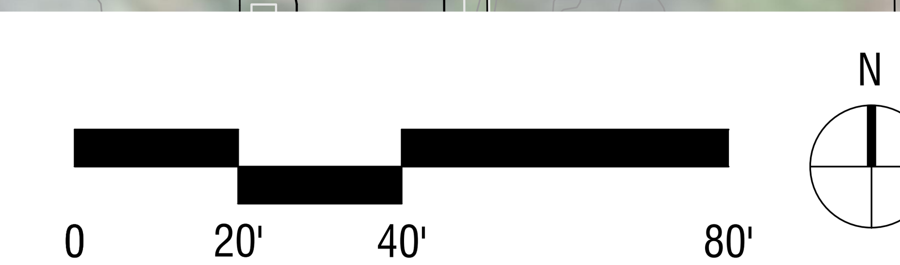


Tree Diagram :: Title 11 Site Density
3.15.2024

Mayer/Reed


CONCRETE RETAINING WALL
FIELD HOUSE
SHOT PUT (2)
concrete throwing pad with rings, cinder landing zone with concrete flush curb perimeter
PEDESTRIAN CONCRETE 4" THICK OVER 6" AGG
PEDESTRIAN GATE, 8FT WIDTH, DOUBLE SWING
VEHICULAR GATE, MANUAL, ROLLING, 15 FT WIDTH
VEHICULAR CONCRETE 6" THICK OVER 6" AGG
PEDESTRIAN GATE 8 FT WIDTH, DOUBLE SWING
RAISED PLANTER, TYP. WALLS: CIP CONCRETE, 18" HT X 24" WIDTH W/ WOOD SEAT TOPPERS
VEHICULAR GATE, MANUAL, ROLLING, 15 FT WIDTH
PEDESTRIAN GATE 4 FT WIDTH, SWINGLE SWING
STORMWATER FACILITY
PEDESTRIAN CONCRETE 4" THICK OVER 6" AGG
EXISTING TRACK AND FIELD to remain, protect
FENCE, 10 FT HT, CHAINLINK, BLACK
VEHICULAR GATE, MANUAL, ROLLING, 12 FT WIDTH
PEDESTRIAN GATE 4 FT WIDTH, SWINGLE SWING
asphalt paving, ref. civil
PRACTICE FIELD synthetic turf with Brock fall protection pad and infill
LAWN, TYP., SEEDED, NEW OR EXISTING
SHRUB PLANTING, TYP.
FENCE, AMERISTAR WIREWORKS PLUS, 6 FT HT
CONCRETE RETAINING WALL
Mayer/Reed 3.15.2024
0 20' 40' 80'
N

NOTE: LAYOUT IS APPROXIMATE. PARK SURVEY NEEDED TO DETERMINE ACTUAL FEASIBILITY OF IMPROVEMENTS.



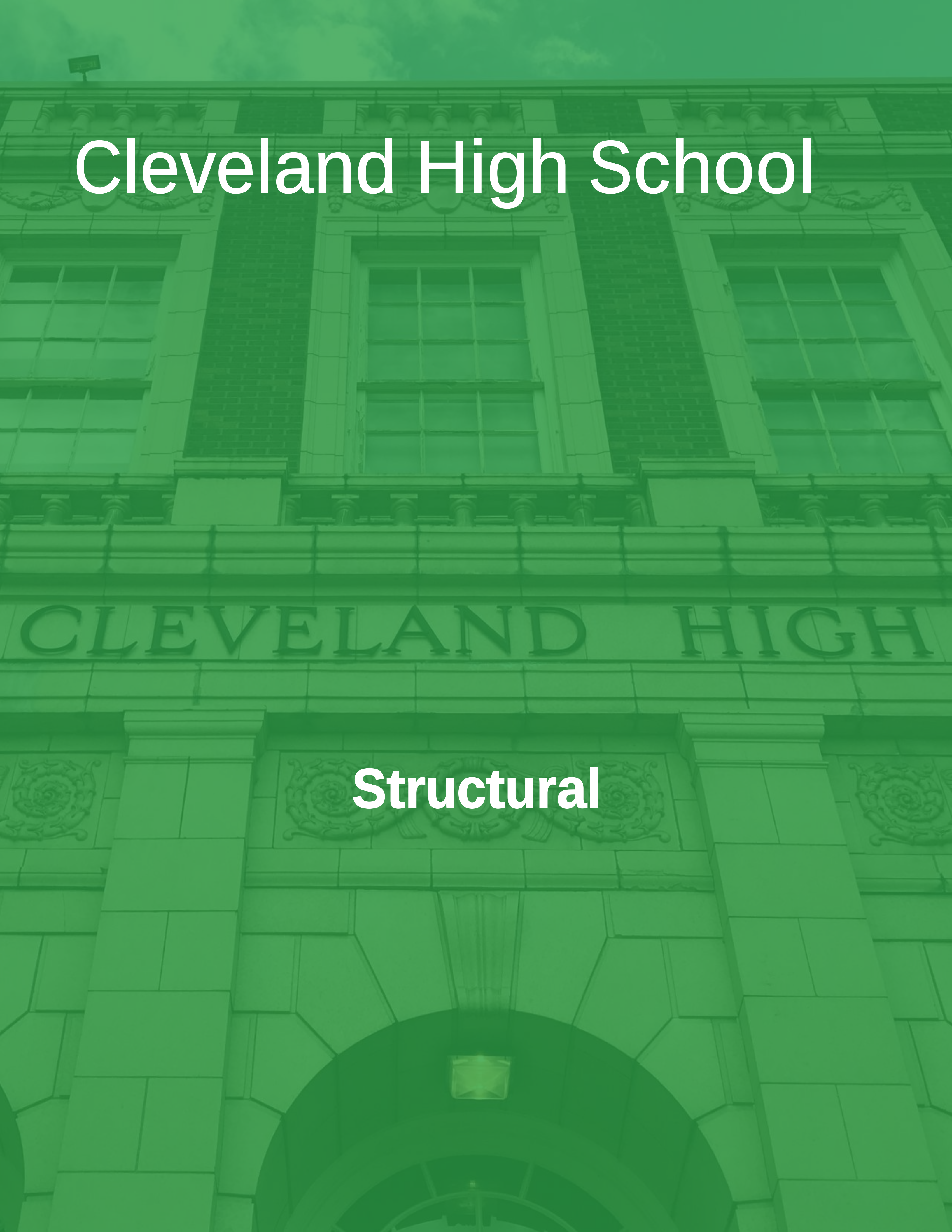
Cleveland High School Modernization Portland Public Schools	Title 11 Calculations	Mayer/Reed 3.15.2024

Sites	Area (sf)
School (site 1)	176,255
Parking Lot (site 1)	45,118
Site 1 total	221,373
25% canopy area required:	**55,343**
Athletics (site 2) total	282,636
% canopy area required	**70,659**

Tree Density calcs 2024-3-15	**SITE 1 (school/parking)**		**SITE 2 (athletics)**		
	Quantity	Area multiplier (sf)	Quantity	Area multiplier (sf)	
SM	24	300	29	300	
MED	37	500	22	500	
LG	27	1,000	18	1,000	
	Total	52,700	Total	37,700	
	Difference from code	(2,643)	Difference from code	(32,959)	
	Tree Fund trees	3	Tree Fund trees	33	assume large (1000 sf)
	Tree Fund payment	$2,025	Tree Fund payment	$22,275	assumer per tree

Fee in lieu (Portland Tree Fund)	
per on-site tree	$675
per caliper inch	$450

Cleveland High School



Structural

CLEVELAND HIGH SCHOOL MODERNIZATION
PORTLAND PUBLIC SCHOOLS

MASTER PLANNING STRUCTURAL SYSTEMS NARRATIVE

April 8th, 2024

INTRODUCTION

Cleveland High School is an existing campus bound by SE 26th Avenue, SE 28th Avenue, SE Franklin St, and SE Powell Boulevard. The modernization will consist of all new construction and have three seismically isolated structures on the main site with a field house building located at the track site.

EARTHQUAKE PERFORMANCE

PPS has elected to design all new schools such as Cleveland High School as a Risk Category IV structure per International Building Code (IBC). Risk Category IV classification is traditionally used for essential facilities; applying this as the design basis for CHS is above the minimum code standard for an educational facility. The lateral force resisting elements will be designed for forces larger than code minimum for increased performance.

The ground motion provided in the IBC will be amplified for the design of CHS such that the building is expected to be immediately occupied. Therefore, after a design level earthquake, CHS can likely function as a shelter space post-seismic event.

The risk category IV designation includes non-structural components, their bracing and equipment bracing. MEP systems such as air handling units and generators have typically not been designated as Risk Category IV to avoid the costs of testing requirements. We understand the seismic resiliency of MEP systems might need further discussion with PPS, Mahlum, and PAE.

MAIN SITE

The main site will consist of multiple buildings including a classroom building, gym building, and auditorium arts building. The two halves of the site will be connected by a library link with an open air first floor. This library link will likely be seismically separated from the main classroom building and attached to the auditorium building.

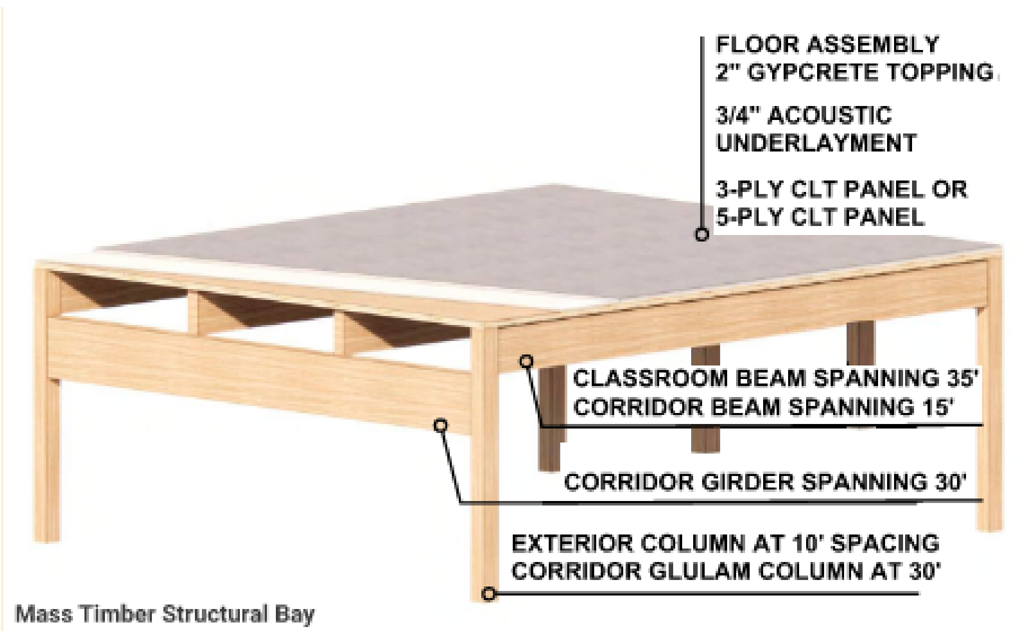
CLASSROOM BUILDING

The classroom building is anticipated to be a mass timber building approximately 85 feet wide and 420 feet long. The building will be four to five stories tall. This building will primarily be constructed with mass timber for the gravity system. Buckling restrained braced frames will be used for the lateral system. To allow for the use of a wood diaphragm and keep structural design flexibility, assume braced frames along the exterior of the building on all sides, and interior frames in the north/south direction with a maximum spacing of 90 feet.

The following table gives conceptual glulam beam sizes and floor framing for three different types of construction. Each system has different pros and cons.

- Type IV-B construction allows the current 5-story design to remain unchanged, but results in the most wood fiber. This construction type requires approximately one half of the CLT soffits to be wrapped in two layers of 5/8” gypsum board. The glulam beams are sized to remain exposed to view. The glulam columns will require a two-hour fire rating and can remain exposed in some locations or be wrapped in three layers of 5/8” gypsum board. Due to the high loads and high first story height, the columns at the base will likely need to be wrapped. Glulam columns at the upper stories where loads are less can remain exposed.
- Type IV-HT is limited to only a 4-story building for type E occupancy but results in the lightest structure. Note, this construction type requires all concealed spaces to be wrapped in one layer of 5/8” gypsum board. All areas with a dropped ceiling as well as mechanical plenums would require this gypsum board wrap.
- Type III-A is another construction type that allows a 4-story building of the proposed area and would allow all of the wood to remain exposed and avoid the gypsum board wrap at concealed spaces.

The summary table uses the floor assembly and framing layout shown in the graphic below:



Mass Timber Structural Bay

<u>Type of Construction</u>			
	Type III-A	Type IV-B	Type IV-HT
	1-hour primary frame 1-hour floor 1-hour roof	2-hour primary frame 2-hour floor 1-hour roof	0-hour primary frame 0-hour floor 0-hour roof
	4 Stories Maximum	6 Stories Maximum	4 Stories Maximum
Approximate Wood Fiber in Structural Frame			
	0.35 cf/sf	0.39 cf/sf	0.30 cf/sf
Glulam Framing Sizes			
Classroom Beam	GL10-3/4x27	GL12-1/4x27	GL8-3/4x27
Corridor Beam	GL8-3/4x14	GL10-3/4x14	GL6-3/4x14
Corridor Girder	GL12-1/4x36	GL12-1/4x36	GL12-1/4x36
First Floor Column	GL14-1/4x13-1/2	GL14-1/4x13-1/2	GL12-1/4x13.5
	All wood can be 100% exposed. Connections designed for 1-hour rating.	100% of lower level columns are wrapped in (3) layers of 5/8” gypsum board. Corridor CLT and 1/3 of classroom CLT will be wrapped with (2) layers of 5/8” gypsum board. Other areas are 100% exposed.	All concealed spaces; Corridor CLT and corridor glulam beams; and 1/3 of classroom CLT and vertical edges of adjacent glulam beams are wrapped in (1) layer of 5/8” gypsum board.

Floor Assembly		
3-ply CLT with 3.5” concrete topping with #4@12” o.c.	5-ply CLT with 2” gypcrete topping	3-ply CLT with 2” gypcrete topping
Exterior framing – Cold Formed Metal Framing (non-combustible) backing up brick veneer		

GYM BUILDING

The gym building consists of three structurally different areas – the main gym and auxiliary courts; the one-story area below the courts; and the three-story classroom wing adjacent to the gym building.

The perimeter of any below grade structure at the gym will require reinforced concrete basement walls. Assume the basement walls are 12” thick with 6 psf reinforcement.

The floor structure of the gym where not at grade will consist of steel framing with slab on metal deck. At the gym assume 12psf steel framing with a 3.5” concrete topping slab with 1.2psf reinforcement on a 3” 20-gauge W-Deck.

The perimeter walls of the auxiliary gym and main gym will be framed with either:

- Fully grouted and reinforced CMU walls. Assume 12in CMU with 3psf of reinforcement. Or;
- Concrete tilt up construction. Assume 11-1/4in thick with 6 psf of reinforcement.

These walls will be provided around the entire perimeter of the two gym areas. The roof structure above the gym will consist of 6 psf of bidder designed steel roof joists (Vulcraft or similar) spanning 110 feet with 20ga acoustic Toris roof deck.

The three-story classroom wing adjacent to the gym space will be unrated Type IIIB mass timber construction. For pricing assume 0.3 cf/sf of wood fiber for the wood beams, girders, and columns. The floor structure will be 3-ply CLT with a gypcrete topping. This wing of the gym will be similar to the Type IV-HT classroom wing, but with no requirements for gypsum board at concealed spaces. Reference the table below for a summary of structural requirements assuming the same 30’ x 35’ grid used in the five-story classroom building.

Additional steel braced frames will be required especially as the building extends further away from the CMU walls surrounding the gym. Assume additional BRB frames are located along the exterior of the building on all sides, and interior frames in the north/south direction with a maximum spacing of 90 feet.

Type of Construction	
Type III-B	
Unrated	
3 Stories Maximum	
Wood Fiber in Structural Frame	
0.30 cf/sf	
Glulam Framing Sizes (typical 30' x 35' bays)	
Classroom Purlin	GL8-3/4x27
Corridor Purlin	GL6-3/4x14
Corridor Girder	GL12-1/4x36
Exterior Girder	GL8-3/4x36
First Floor Column	GL12-1/4x13.5
All wood can be 100% exposed.	

AUDITORIUM/ARTS BUILDING

The auditorium/arts building consists of three structurally different areas – the auditorium; the three-story arts wing adjacent to the auditorium; and the library link extending into the courtyard.

The perimeter walls of the auditorium will be framed with either:

- Fully grouted and reinforced CMU walls. Assume 12in CMU with 3psf of reinforcement. Or;
- Concrete tilt up construction. Assume 11-1/4in thick with 6 psf of reinforcement.

These walls will be provided around the entire perimeter of the auditorium. The roof structure above the auditorium will consist of 12-1/4"x66" glulam beams spanning 85 feet at 12 foot spacing with 3-ply CLT deck.

The three-story classroom wing adjacent to the auditorium space will be unrated Type III-B mass timber construction. For pricing assume 0.3 cf/sf of wood fiber for the wood beams, girders, and columns. The floor structure will be 3-ply CLT with a gypcrete topping. This wing of the auditorium/arts building will be similar to the Type IV-HT classroom wing, but with no requirements for gypsum board at concealed spaces.

Additional steel braced frames will be required in the auditorium/arts building especially as the building extends further away from the CMU walls surrounding the main auditorium space. Assume additional BRB frames are located along the exterior of the building on all sides, and interior frames in the north/south direction with a maximum spacing of 90 feet.

The library link that connects the 5-story classroom wing with the auditorium will likely require large column free spacing. This area will likely work well with steel framed construction to support the large spans and multi-floor construction. At these areas assume 12psf steel framing with a 3.5" concrete topping slab with 1.2psf reinforcement on a 3" 20-gauge W-Deck. The roof of this wing will be supported by timber trusses consisting of a steel tension rod bottom chord and a double glulam beam top chord. Acoustic dowel laminated timber or acoustic metal deck will span between the trusses.

Reference the table below for a summary of structural requirements assuming the same 30' x 35' grid used in the five-story classroom building.

Type of Construction	
Type III-B	
Unrated	
3 Stories Maximum	
Wood Fiber in Structural Frame	
0.30 cf/sf	
Glulam Framing Sizes (typical 30’ x 35’ bays)	
Classroom Purlin	GL8-3/4x27
Corridor Purlin	GL6-3/4x14
Corridor Girder	GL12-1/4x36
Exterior Girder	GL8-3/4x36
First Floor Column	GL12-1/4x13.5
All wood can be 100% exposed.	

EXTERIOR FAÇADE

To accommodate brick veneer, the spacing of glulam columns along the exterior faces will need to adjust from 30 feet to 10 or 15 feet. The brick veneer will be supported by cold-formed metal framing. The backup system for the skin will be light gage metal stud framing that is supported on the ground floor and at each floor above. Stud framing will then run past the roof to act as a parapet. Deflection heads and drift joints will be required at each floor line.

Additionally, a steel shelf angle will be necessary at each floor throughout the entire perimeter to support and relieve the brick veneer. It is assumed that 25 plf of steel will be required along the perimeter of each floor to adequately support the brick veneer.

Additional miscellaneous steel will be required to support glazing systems at large open areas where there is not a floor provided for support, such as stairs. Assume an additional 50plf of steel at these locations.

Track Site

The track building is proposed as 12,000 square foot building on 1-2 stories. Structural options for this building are ongoing.

Foundation System

The current building is supported on spread footings and other similar buildings in this area of Portland are supported on spread footings. Assume columns and braced frames will be supported on spread footings.

We cannot rule out liquefaction without a geotechnical report so an allowance of soil improvement for the site might be warranted at this stage. Soil improvement would likely consist of rammed aggregate piers.

Alternate Options – Parking Lot Site and Skybridge

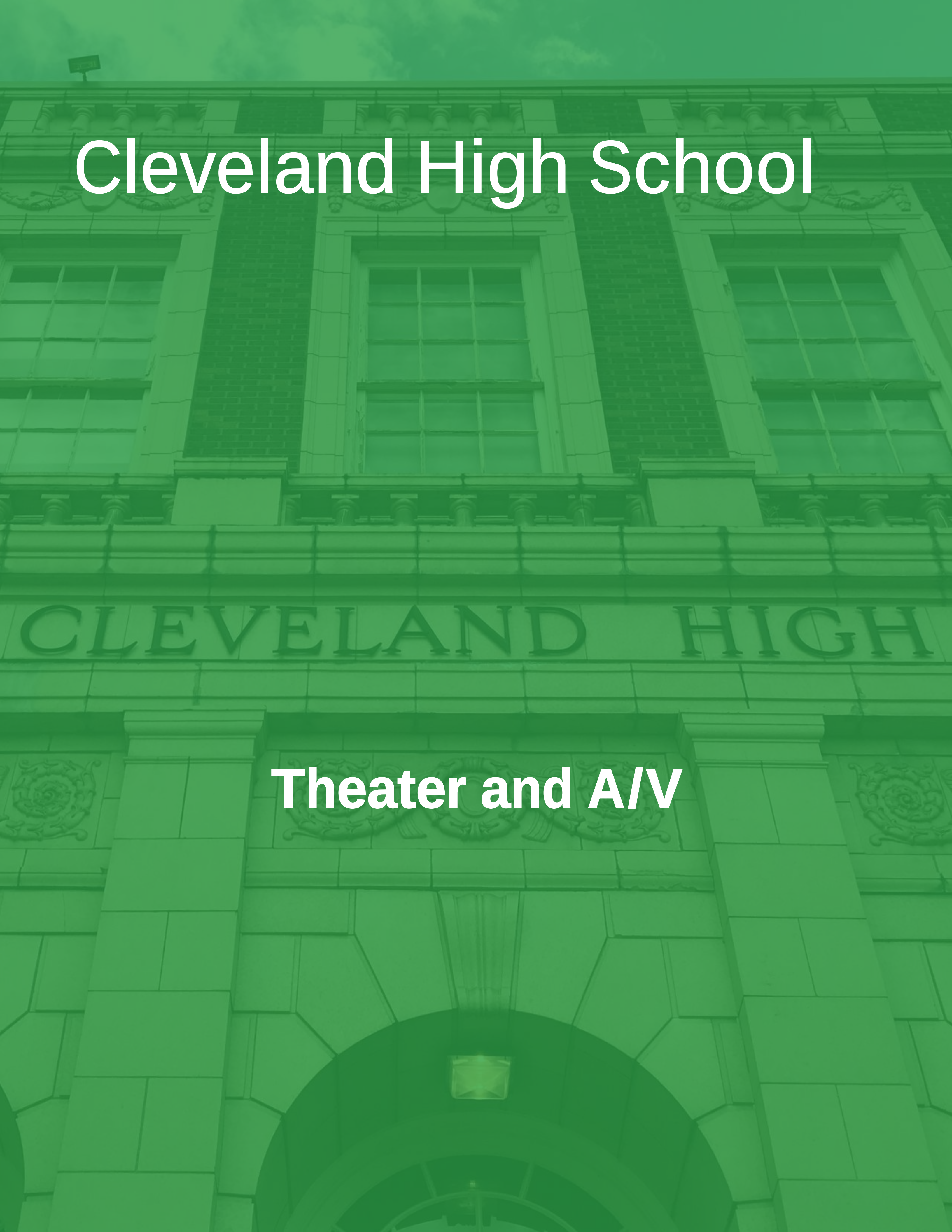
The skybridge is proposed as an alternative to connect the main classroom site with the existing parking lot to its east. We're assuming the skybridge will have a span of 60 feet supported by columns at each sidewalk and potentially 90 feet if supported by buildings with a 15' setback on each side of the street. The skybridge is potentially 20 feet to 25 feet wide and would be fully enclosed and conditioned space.

The floor would be conventional composite steel beams (assume 4psf in addition to the truss members) with slab on metal deck. The roof would be steel beams (~4psf) and metal roof deck.

We are assuming the truss is 15 feet tall with HSS12x6x3/8 top and bottom chords with HSS 6x6x3/8 vertical and diagonal members at a 10' cadence.

Cleveland High School

Theater and A/V



TRANSMITTAL / MEMO

Project:	PPS Cleveland High School		
Date:	March 15, 2024	*Via:*	e-mail
To:	Chris Brown, Abby Dacey Mahlum Architects		
From:	Adam Shalleck, Jill Collins, Ben Strange		
Re:	Production Systems Budgets Concept Design	*# of pgs. including cover:*	7

Below are listed the budget recommendations for **Base Building** production systems within the PPS Cleveland High School project. FF&E and equipment listed in the education specifications as "OFOI" are *not* included in these budgets, and are listed in a separate set of line items at the bottom of the list.

Please forward this to the Cost Estimator for the project for inclusion in the total estimate. It is important to note that not all sections represent a complete and installed cost. In particular, the Cost Estimator(s) who is/are responsible for structural and electrical costs will need to include production systems infrastructure and installation (in the case of electrical) that normally falls under Divisions 5 and 26. Those major needs are described below and in our forthcoming "Production Engineering Report."

The recommendations below are listed in 2024 dollars and <u>do not include</u> General Contractors mark-up and general conditions or overall contingencies.

<u>BASE SYSTEMS – to be included in base building construction</u>

1. Theater

Variable Acoustics – Section 11 61 33 **$50,000**
Budget includes (5) manually operated variable acoustics draperies and tracks as required by the project acoustician, installed. Up to 150lf of straight track with 1400sf of drapery; construction of 32 oz. IFR velour sewn with 100% fullness and backed with a 16-oz. liner sewn flat.
Related Exclusions: Structural Support, drapery pockets, track hanger backing.

Rigging System - Section 11 61 33 **$675,000**
Counterweight system to include (40) battens, lift lines, loft/head blocks, arbors, operating lines, lockout devices, and associated items, (8) counterweight assist motors for stage electrics battens, locking rail at stage and at gallery level, installed.
Related Exclusions: Structural accommodations as needed for rigging system, Electrical accommodations including motorized fire curtain, motorized rigging, and motorized fire/smoke roof vents equal to 5% of stage area.

Stage Draperies – Section 11 61 33 **$90,000**
Main curtain, (5) sets legs/borders, (2) stage travelers, scrim and cyclorama, delivered and mounted.

Orchestra Shell – Section 11 61 43 **$450,000**
Allowance includes up to (10) rolling shell towers with integral wheeled bases and (3) ceiling panels with integrated performance lighting. Based upon "Maestro" ceilings and "Diva" towers by Wenger Corp.

Orchestra Pit Filler/Stage Extension Platforms– Section 11 61 23 **$90,000**
Budget includes a system of platforms and understructures to fill the orchestra pit area, adjustable to three levels and orchestra pit safety net.
Related Exclusions: Structural accommodations in floor slab for edge ledger.

Production Lighting Control – Section 11 61 83 **$240,000**
Budget includes (96) 20A, DMX controlled, thru-power dimmers and (48) relay circuits for production lighting circuits and (24) 20A, DMX controlled, Non-Dim relays for architectural lighting circuits. Moving light capable control console w/ RFU (ETC Element 2), architectural button stations, architectural control processor and network components, control and circuit wiring devices, batten cable extensions, equipment only.
Related Exclusions: Electrical work including constant power receptacles, distribution and control wire, conduit, and complete installation. See electrical report for further information. Requires use of LED lighting fixtures for house light.

Production Lighting Fixtures – Section 11 61 83 **$350,000**
(150) Incandescent and LED stage lighting fixtures, (2) follow spots, cable and accessories, delivered to the site ready to hang, only. Installed by school staff.
Related Exclusions: Theatrical lighting design (fixture placement, color and focus) and installation.

Fixed Theatre Seating – Section 12 61 00 **$650/seat**
Budget allowance of $650/seat x 500 seats: includes fixed, upholstered theatre chairs, installed.
Related Exclusions: Electrical connection for aisle lighting.

Production AV Systems – Section 27 41 16 **$550,000**
Comprehensive system to include wiring infrastructure, motorized roll-down projection screen, video projector, presentation and production AV routing, digital audio mixing console with digital stage boxes, wireless mics, sound system, touchpanel control, production intercom, AV monitoring and paging to all technical areas, mixing in booth and in-house, computer-based multi-track sound effects & video playback, FM assistive listening. Wire, pull, and complete system integration and installation. Loose AV equipment in FFE.
Related Exclusions: Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system, as well as specialty electrical systems noted in the engineering report.

2. Drama Classroom/Black Box Theatre

Stage Rigging – Section 11 61 33 **$115,000**
Budget includes allowance for 1,600sf lighting/rigging grid (pipe grid) made from 1-1/2" schedule 40 pipe and 100lf of curved perimeter drape track, installed.
Related Exclusions: Structural accommodations as needed for pipe grid system.

Stage Draperies - Section 11 61 33 **$20,000**
(4) pairs of legs, (4) borders, (1) stage traveler, scrim and cyclorama, delivered and mounted.

Production & Architectural Lighting Control – Section 11 61 83 $90,000
Budget includes (48) relay circuits for LED stage lighting, control console w/ RFU, (24) relay circuits for work and house light, architectural button stations, architectural control processor, network components, control and circuit wiring devices, equipment only.
Related Exclusions: Electrical work including constant power receptacles, distribution and control wire, conduit, and complete installation. See electrical report for further information. Requires use of LED lighting fixtures for house light.

Production AV Systems – Section 27 41 16 $125,000
Classroom AV systems including AV routing and video projection. Portable audio mixing and playback system, as well as portable video projection system for production purposes. FM assistive listening. Installed cabling infrastructure. Loose equipment in FFE (shared inventory with theatre) *Related Exclusions: Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system, as well as specialty electrical systems noted in the engineering report.*

3. Band and Choir Classrooms (Qty: 2)

Variable Acoustics – Section 11 61 33 $15,000
Budget includes (1) manually operated variable acoustics draperies and tracks as required by the project acoustician, installed. Includes 825 sf of drapery; construction of 32 oz. IFR velour sewn with 100% fullness and backed with a 16-oz. liner sewn flat.
Related Exclusions: Structural Support, drapery pockets, track hanger backing.

AV Systems – Section 27 41 16 $55,000/each
Classroom system with HDMI connections at front of room OFCI video projector and screem, simple control system, enhanced audio reinforcement & playback, basic audio recording system, and equipment rack. Installed cabling infrastructure. Wire, pull and system integration and installation.
Related Exclusions: Video projector and screens, wireless presentation system. Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

4. Standard Classrooms:

(Quantity: ?)

AV Systems - Section 27 41 16 $6,000/each
Standard classroom system with laptop and video connections at front of room, OFCI short throw projector, OFCI manual pull-down projection screen, teacher voice reinforcement with loudspeakers for playback, IP-based simple control system. Wire, pull and system integration and installation.
Related Exclusions: Video projector and screens, wireless presentation system. Elec work including all line voltage connections (complete) and providing and installing all low-voltage conduit and backboxes required by the AV system.

5. Computer Lab – Computer Science

(Quantity: ?)

AV Systems - Section 27 41 16 $30,000
Standard classroom system with laptop and video connections at front of room, OFCI short throw projector, OFE manual pull-down projection screen, teacher voice reinforcement with loudspeakers for playback, Extron IP-based simple control system, multiple OFCI flat panels displays at student stations,

ceiling equipment enclosure, HDMI matrix switcher, Wire, pull and system integration and installation.
Related Exclusions: Video projector and screens, wireless presentation system. Elec work including all line voltage connections (complete) and providing and installing all low-voltage conduit and backboxes required by the AV system.

6. Lab Classrooms:

Science Classrooms (Quantity: ?)
Team Rooms (Quantity: TBD)

AV Systems - Section 27 41 16 — $6,000/each
Lab classroom system with laptop and video connections at front of room, OFCI short throw projector, teacher voice reinforcement with loudspeakers for playback, Extron IP-based simple control system. Wire, pull and system integration and installation.
Related Exclusions: Video projector and screens, wireless presentation system. Matte finish whiteboard. Elec work including all line voltage connections (complete) and providing and installing all low-voltage conduit and backboxes required by the AV system.

7. Standard Conference Rooms

(Quantity: TBD)

AV Systems - Section 27 41 16 — $5,000/each
Standard conference system with laptop and video connections at wall or floor box, Extron IP-based simple control system, OFCI flat panel display, soundbar audio playback. Wire, pull and system integration and installation.
Related Exclusions: Video display, wireless presentation system. Elec work including all line voltage connections (complete) and providing and installing all low-voltage conduit and backboxes required by the AV system.

8. Video Conference Rooms

(Quantity: TBD)

AV Systems - Section 27 41 16 — $6,500 /each
Standard conference system with laptop and video connections at wall or in floor box, OFCI flat panel display, soundbar with integrated camera/microphones/speakers, simple control system, audio playback. Wire, pull and system integration and installation.
Related Exclusions: Wireless presentation system. Elec work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

9. Lobby / Digital Signage

(Quantity: TBD)

AV Systems – Section 27 41 16 — $1,000/each
Infrastructure only to support OFOI flat panel monitors.
Related Exclusions: Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

10. Student Center/Commons

AV Systems – Section 27 41 16 **$115,000**

System to include audio playback and reinforcement system, video projector and screen, presentation AV routing, digital signage, wireless microphones, simple control system, assistive listening. Wire, pull and system integration and installation.
Related Exclusions: Wireless presentation system. Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

11. Main Gymnasium

AV Systems - Section 27 41 16 **$250,000**

Comprehensive system to include wiring infrastructure for dual (2) video projectors and projection screens, AV switching & video sources. Allowance for voice reinforcement/amplification with automatic microphone mixer, rolling rack with audio playback & mixing console, zoning to activate/deactivate desired areas, wireless microphones, FM assistive listening. Wire, pull and system integration and installation. No accommodation for broadcast functions.
Related Exclusions: Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

12. Auxiliary Gymnasium

AV Systems – Section 27 41 16 **$45,000**

Audio system with voice reinforcement/amplification with automatic microphone mixer, simple control, wireless microphones, FM assistive listening, rolling cart with audio playback. Wire, pull and system integration and installation.
Related Exclusions: Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

13. Mat/Wrestling & Weight/Aerobics/Spinning

AV Systems - Section 27 41 16 **$35,000/each**

Standard classroom system with laptop and video connections at front of room, short throw projector, manual pull-down projection screen, enhanced playback and voice amplification audio system with wireless mics, Extron IP-based simple control system. Wire, pull and system integration and installation.
Related Exclusions: Wireless connection to presentation system by owner. Elec work including all line voltage connections (complete) and providing and installing all low-voltage conduit and backboxes required by the AV system.

14. Stadium

AV Systems – Section 27 41 16 **$75,000**

Comprehensive system to include wiring infrastructure for voice reinforcement/amplification with automatic microphone mixer, AV rack with playback & mixing console, playback, microphones, FM assistive listening, score board, signage, wire, pull and system integration and installation.
Related Exclusions: Electrical work including all line voltage connections (complete), and providing and installing all low-voltage conduit and backboxes required by the AV system.

15. Performing Arts FF&E (All OFOI)

Production AV Systems **$85,000**
16-channel wireless microphone system mounted in road case, wireless headset communications, microphones, cables, stands, accessories, monitor and effects speakers and backstage and lobby video monitors.

Library – Portable AV Systems **$30,000**
(3) portable projectors & screens, w/ cases.

Classroom Choir Risers **$40,000**
Allowance for 36" seated choir risers for use in the choir classroom or for seated performances.

Black Box Portable Seating Risers **$60,000**
Allowance for seated audience risers, storage carts and accessories.

Black Box Portable Seating **$30,000**
Allowance for theatre-style loose chairs, storage carts and accessories.

Performance Risers **$60,000**
18" standing choir risers and 4' seated band risers for brass and percussion sections, carts and accessories. StageRight MR-4, Chairs not included.

NON-THEATRE TRADES

Miscellaneous Aspects To Be Included In Other Base Bldg. Sections

Electrical & Mechanical Accommodations
K-13 transformers for Production lighting systems
K13 rated transformers for AV systems
Isolated ground
Company switches: (1) 400a & (1) 200a specialty AV in Main Stage; (1) 100a miscellaneous in Drama classroom
Conduit and other power as indicated in the engineering report

Specialty Architectural Lighting
As indicated by the project architectural lighting designer
LED fixture with DMX dimming capability required for theatre house lighting (assume $1,500/ fixture)
Specialty gallery lighting in the Lobby

Structural:
Railings – See drawings coming in subsequent phases
Catwalks – See drawings coming in subsequent phases
Stairs- See Architectural Drawings
Stage Galleries and Rigging Steel - heavily loaded structural beams at roof steel over the stage and rigging head block steel. See forthcoming drawings.

Specialty Windows:
Projector portal – 1 each theatre
Follow spot booth window – water white high transparency glass by PPG

Control booth operable windows – tilt angle by acoustician.

Millwork: allowance for cabinets
Dressing Rooms - counters, mirrors, shelves, laundry
Scene Shop
Control Booth

Specialty Floors:
Theatre and Drama Classroom/Black Box – "resilient" floor assembly of:
¼" double tempered, painted Masonite hardboard screwed over
2 layers ¾" A/C plywood over
2x4 treated sleepers at 16" o.c. over
4" square x ¾" thick Mason Industries "Super W" resilient pads and shims over concrete
4.5" depression depth required
Dance Studio – within P.E.
Specialty dance floor base: "Activity" or "Liberty"
Hardwood top surface

Portable/Temporary Cable Paths:
8" pipe within slab, connecting the loading dock, backstage AV rack, orchestra pit, AV mix location, control booth and follow spot booth.

END OF REPORT

Portland Public Schools
Cleveland High School
Performing Arts Education Technology
Theatre Systems Narrative

The following narrative describes our recommended approach for the technical systems related to the education facilities for the performing arts at Ida B Wells High School. With the emergence of broadly accessible media creation, and its inherent nature of merging the arts, it becomes more necessary than ever to provide students with the resources to experiment with the tangible and live arts foundations. The dramatist, musician and their audiences are aided and supported by the facilities in which they work. The performers are always accompanied by allied design and technical functions that are fields unto their own. The ultimate goal is to focus on the architectural design, technical operation and what it takes for audiences to have rich and captivating experiences, what it takes to inspire and support artists and theatre makers, what it takes to maintain financial viability for the project and the working facility, and what it takes to design and build a successful arts education and performance venue.

These recommendations are based on the PPS Education Specification (Comprehensive High Schools, revised September 2017), conversations with the architect and assumptions made from experience on similar projects of this type, and incorporation of new directions in theatre technology.

Theater

The 500-seat theatre will be used for both educational and school functions. The proscenium theatre form is most suited for a multi-use theatre because it can provide an appropriate place for the various forms of use without significant reconfiguration. The theatre will be suitable for plays, musical theatre, lectures, general presentations, video viewing, ceremonies, dance and amplified and unamplified music. Since audience sizes will vary, since the available footprint area is limited, and to provide the most engaging setting for a performance, the auditorium may be configured with a lower "orchestra" level of approximately 350 seats subdivided front and rear, and a balcony with approximately 150 seats.

Fixed Theatre Seating

The seating area in this space is required to have 6 spaces for wheelchairs, each with a companion seat and dispersed in various locations. Loose or "readily removable" chairs can be placed in the wheelchair positions and used if the wheelchairs are not present. 1% of the seating must be equipped with lift-up or swing-out armrests to provide "transfer" seating. The student/audience base should be considered and if there is a higher-than-average constituency of mobility-impaired members, further accommodations beyond code should be considered.

Control Booth

The ADA accessible control booth will be designed with a long central counter designed to match the equipment requirements of the different production disciplines. The booth will maintain an open plan and not isolate the individual operators.

Operable windows will allow direct communication and monitoring of the on stage acoustical environment. Overhead dimmable task lighting will be provided to adequately light each operator's work area without glare into the theatre or casting shadow onto the work area.

Catwalks

A system of catwalks and side galleries will be used in the audience chamber and along the sides of the stage to safely access lighting and rigging equipment.

Stage Overhead Support

A stage is not only clear volume but a carefully integrated three-dimensional system that safely and effectively organizes the various elements it contains. Its contents include building and system-supporting steel, rigging, access ways, mechanical, electrical, fire protection and smoke exhaust. To provide for the most utility and safety, all these elements are carefully coordinated to prevent obstacles to theatre operation and production design.

The stage will be sized appropriately for a theatre of this size and its anticipated use. The accommodations over the stage are critical to the adaptability of the theatre, the technical and artistic support capabilities and to its efficiency of use so that the theatre can accommodate many different uses with minimal changeover time. The full extent of a theatrical stage is only partially seen by the audience. In order to allow for the circulation of actors out of view, the positioning of potentially hundreds of stage lights and the mounting and manipulating of scenic elements and stage draperies, a combination of backstage space, overhead access and rigging systems are employed. The stage has a significant amount of height, access and systems to move full proscenium height scenery out of view.

Because much of the scenery, stage draperies and lighting are suspended overhead, they will be lifted or “flown”. To provide for a stage where full height elements can be flown completely out of audience view, a clear volume approximately two and a half times the proscenium opening height and identical in width to the entire stage area is required. A fly tower is not only a large volume, but a carefully integrated system that safely and effectively organizes the various elements it contains. Its contents include building and system-supporting steel, rigging, access provisions, mechanical, electrical and fire protection. To provide for the most utility and safety, all of these elements are carefully coordinated to prevent obstacles to theatre operation and production design. A fly tower would be approximately 50’ tall to the roof parapet and include steel rigging beams with the underside of steel at approximately +46’-10” above the stage floor to allow annual maintenance and inspections via personnel lift from the stage floor. An arbor pit may be needed to allow full usable travel of the counterweight battens, described below.

Counterweight Rigging System

The single most physically complicated and expansive production system in the theatre is the counterweight rigging system which involves a series of pipe trusses (“battens”) running across the stage that are suspended with aircraft cable (a “line set”) and rigged over pulleys (“blocks”) to a mass of counterweight (“arbors”) guided on tracks ("T-Bar") at one side of the stage. As a pipe batten is loaded with scenery, an equivalent quantity of counterweight in the form of steel bricks is added to its arbor, thus balancing the lineset and making the heavy loads easily manipulated by a manual “operating line”.

The system will include approximately (40) operable linesets on 8” centers. Of these linesets, at least (5) will be dedicated for fixed electric battens driven by fixed speed power assist motors, and (3) will be dedicated to onstage orchestra shell ceiling units. The counterweight-assist approach allows for 500# of imbalance. These motors are operated on one side of the stage at the floor level. For the manually-operated linesets, loading and removing counterweight is necessary for operation. When the pipes are being loaded at the floor level, the arbors are at the top of the fly tower, and so loading the counterweight bricks occurs at a “loading gallery” catwalk. The basis of design for the arbors will be enclosed stack with counterweight shelves such as “Brickhouse” by Thern or equal. “Lock rails”, where the operating lines are released or locked, will be provided at stage level and at the “fly gallery” on the rigging side.

Each individual line set “truss batten” will have a live load capacity of 30#/linear foot, or approximately 1,700# capacity. Diversity is taken for overall structural loading on the building to not exceed 70% of the total system capacity. The building steel, T-bar guides and arbor heights will allow the battens to travel from a low trim of 4’-0” above the stage to a high trim approximately 3’-0” below the underside of the steel rigging beams where the rigging blocks are mounted..

Orchestra Shell Towers (FF&E)

A system of orchestra shell towers, and pivoting flown ceiling units would be provided for use when un-amplified music is presented. The towers would nest together for storage in an area off stage, and would require two people to setup and store, taking not more than one hour. These would be similar to the Wenger “Diva” or “Legacy” product. The ceiling units would be rigged to designated high-capacity counterweight linesets as described above.

Stage Draperies (FF&E)

An inventory of stage draperies will be included. These would typically include a main drape, 5-6 pairs of black masking legs and borders, 2 mid-stage travellers, a cyc, and a black upstage traveller. All draperies would be certified inherently flame retardant. Draperies would be attached to drapery track or tied off to dead-hung pipes. The main drape, mid-stage and travellers would be manually operated with a handline off-stage.

Variable Acoustics Systems

The theatre will be provided with manually-operated variable acoustics draperies and tracks for the adjustment of the reverberation for different kinds of uses within the theatre. The locations and extent of these draperies will be determined based on criteria established by the Acoustics Consultant.

Orchestra Pit

The area of the orchestra pit represents an important area of variable function. A means to vary the floor level directly in front of the stage area allows it to be used either as a musicians’ orchestra pit (-8’ below stage level) and as a stage extension when the floor is set to stage level. The orchestra pit mode is primarily used for musical theatre, which represents a limited time in a year however the musicals are a big draw for participation and audiences.

At stage level the stage is increased in size for larger music ensembles to fit and be better coupled with the audience acoustical environment. It also provides an area beyond the proscenium for plays, and an area for basic events to occur in front of the main curtain with the stage set for another use.

The orchestra pit floor level would be changed through a system of platforms and legs, properly designed so as to be safe and repeatably moved by four trained adults in approximately two hours. It is expected that the platforms would be set at the stage level most of the year. Each approximately 4’ x 8’ platform section will weigh up to 200 pounds; the weight can be reduced by splitting the system into smaller pieces, though that will increase the required amount of time to change the system between vertical positions.

A recessed orchestra pit is required to have wheelchair accessibility and means of egress.

Production Lighting Control

The understanding of the manipulation of light is key to understanding the manipulation of a mood of a scene. To provide for a system that will allow student experimentation, a complete control system consists of a control console, control electronics, dimmers and circuit outlet boxes ("distribution").

The computer control console is the user interface for programming cues. These consoles allow for channel patching, programmable cues and advanced control for lighting effects such as color changers and moving lights, it would interface with the sound system, and would include peripherals such as a video monitor, handheld focus remote, and output via Ethernet and/or DMX protocol.

A data network would provide the means to run fixtures and effects, as well as providing control integration of the house lights. House light control would be both at the console and with simple wall stations. Simple presentations could be run though use of presets controlled at the wall stations without the use of the console.

The system would include all of the control elements described above and 20A, 2.4kw dimmers and/or relays for production and additional dimmers and/or relays dedicated for house and work lighting. Circuit distribution would entail wiring in conduit from the dimmers or relay panels to dedicated receptacles strategically placed at the lighting positions, and into which the portable stage lighting fixtures are plugged.

Production Lighting Fixtures and Cable (FF&E)
An inventory of approximately 150 theatrical lighting fixtures (typically ellipsoidals, Fresnels, pars and cyc lights) plus stage extension cable, power distribution breakouts, and accessories would be provided to be used in both the main theater and the black box theater. We would recommend using industry standard 2-pin + ground ("theatrical stage pin") plugs throughout.

Two portable followspots would be provided.

Accommodation for advanced devices such as moving yokes may also be included to allow students' access to the most common fixtures used in the profession.

Production Power
One 400A, 3-phase, 120/208VAC "company switch" power outlet on stage will provide generic power to miscellaneous temporary systems. A "pin and sleeve" connector will mate with that of a portable distribution panel that will provide breakered power outlets of the various kinds typically used in theatre.

In addition, one 200A, 3-phase, 120/208VAC "isolated ground company switch" power outlet of similar configuration will provide a generic power source for temporary AV systems on stage. Additional smaller capacity dedicated isolated ground outlets will be included around the theater.

AV Systems

Audio System

A well-designed audio reinforcement system is key to the enjoyment of theatrical events, and will allow students the opportunity to learn fundamental audio principals on a professional-grade system. A sound reinforcement system consists of loudspeakers, amplifiers, signal processing, a mixing console, and source equipment, such as microphones, CD players, computers, etc. For theatrical flexibility, a left/ right loudspeaker system with subwoofers and fills will be provided.

The mixing console will have 32+ faders and the ability to deal with 80 inputs, min. A computer-based sound effects playback system will be provided to allow students to learn how to create multi-channel sound effects on a simple and widely-used platform.

For simple events not requiring an operator, an automixing system will be provided. This will allow a user to plug in a microphone and have a working system without assistance from an AV technician. Two channels of wireless microphones will be provided, and will include both handheld and lavalier-style transmitters.

A separate cinema loudspeaker system will *not* be provided. Cinematic presentations will utilize the loudspeaker system described above.

Additionally, mic/line/speaker and network tie lines and integrated patchbays will be provided.

Production and Presentation Video

A video system consists of a video projector, video switcher and source equipment. Video projection will be from the Control Booth with a single laser-source video projector. The video switcher will be located in the control booth, and will accept any video signal. The projection screen will be a fixed truss-frame style and will be attached to a batten on the rigging system. The screen will be sized appropriately to allow audience members or students at the back of the theatre to read text and spreadsheet content.

Computer video inputs will be provided on stage to allow for PowerPoint-style presentations from portable laptops.

A production video monitoring system will be provided, allowing for distribution of on-stage video to backstage and support spaces, such as dressing rooms, offices and shop areas.

Additionally, a network of video lines and an integrated patchbay will be provided.

Intercom

A two-channel analog wired production intercom system will be provided for technical communications between the control room, AV rack rooms, other production spaces, and the backstage areas.

Program Audio & Paging

Audio program from the theatre will be distributed to backstage support spaces, such as dressing rooms, offices and shop areas, as well as areas that may be used for overflow dressing rooms, such as the band and/or choral room.

A paging system will be included to allow stage manager communications to backstage areas.

Assistive Listening System

As required by the building code and the ADA (Americans with Disabilities Act), compliant assistive listening systems will be provided for 4% of audience seating capacity. Receivers would be checked out in the lobby, and signage provided. Use of this system will require little or no input from the patron.

Portable AV Equipment (FF&E)

A complement of portable equipment, including cables, microphones, stands, portable loudspeakers, and other related items will be provided.

Drama Classroom/Black Box

The Drama Classroom/Black Box will be primarily used for teaching, rehearsals and small dramatic performances.

Overhead Support Pipe Grid

A lighting pipe grid will be provided for flexibility in lighting and other staging requirements. The pipe grid should be 1-1/2" nominal diameter (1.9" o.d.) schedule 40 pipe, clear of all conduit and other obstructions. Pipes should have a live load capacity of 25#/lin. ft., be laterally braced per seismic requirements, and braced for the support of maintenance ladders. The pipe grid will cover the entirety of the ceiling, allowing for maximum flexibility.

Access to all lighting & suspended staging items (i.e.: scenic drops) for maintenance and adjustment would be provided from ladders or personnel lifts from below.

Drapes & Drapery Tracks

This space will be provided with a full-perimeter manually operated drapery and track to allow for reconfiguration of the room as needed.

Production Lighting

A small production lighting control system for this space will provided including constant power relay-controlled outlets for LED sources, distributed throughout the pipe grid. These devices will be controlled via small DMX network, which will connect to a small console.

Audience Seating & Platforms (FF&E)

All seating in the Drama Classroom/Black Box will use loose chairs and portable tiered platforms accommodating audiences of 100-150.

AV Systems

Audio System

The Drama Classroom will have an audio playback system with digital console, playback computer and portable powered speakers.

Video System

For classroom purposes, a single laser-source video projector will be provided. An AV routing system shall be provided to direct sources to the projector and AV systems. The projection screen will be a motorized roll-down style. The screen will be sized appropriately to allow audience members or students at the back of the theatre to read text and spreadsheet content.

Computer video inputs will be provided on stage to allow for PowerPoint-style presentations from portable laptops.

Accommodations for portable production video projection and routing shall be provided.

A production video monitoring system will be provided, allowing for distribution of on-stage video to backstage and support spaces, such as dressing rooms, offices and shop areas.

Additionally, a network of video lines and integrated patchbay will be provided.

Intercom

A two-channel analog wired production intercom system will be provided for technical communications between the control room, AV rack rooms, other production spaces, and the backstage areas.

Program Audio & Paging

Audio program from the theatre will be distributed to backstage support spaces, such as dressing rooms, offices and shop areas, as well as areas that may be used for overflow dressing rooms, such as the band and/or choral room.

A paging system will be included to allow stage manager communications to backstage areas.

Assistive Listening System

As required by the building code and the ADA (Americans with Disabilities Act), compliant assistive listening systems will be provided for 4% of audience seating capacity. Receivers would be checked out in the lobby, and signage provided. Use of this system will require little or no input from the patron.

Portable AV Equipment (FF&E)

A complement of portable equipment, including cables, microphones, stands, portable loudspeakers, and other related items will be provided.

Production Power

One 100A, 3-phase, 120/208VAC "company switch" power outlet will provide a generic power source to miscellaneous temporary systems. A "pin and sleeve" connector will mate with that of a portable distribution panel that will provide breakered power outlets of the various kinds typically used in theatre. Additional smaller capacity dedicated isolated ground outlets will be placed at strategic locations throughout the lab.

Additional smaller capacity dedicated isolated ground outlets will be placed at strategic locations throughout the Drama Classroom.

Band Room

Variable Acoustic Drapes
The Band Room will be provided with manually operated variable acoustics draperies and tracks for the adjustment of the reverberation characteristics of the room. The locations and extent of these draperies will be determined based on criteria established by the Acoustics Consultant.

AV Systems

Audio System

The Band Room will be designed for AV playback only and will feature simple controls. The audio system will not be capable of handling high-level audio program, such as a jazz band or other type of concert. It is anticipated that any event requiring high-level audio will use portable equipment.

Recording

A system for making simple digital recordings of live audio performances for archival purposes will be provided.

Intercom

Intercom connections will be available for communications to other production spaces, so this room can be used for overflow performer holding for large performances in the Theatre.

Program Audio

Audio program from each of the production spaces will be distributed to backstage support spaces, such as dressing rooms, offices and shop areas.

Presentation Video

A presentation video system consists of an video projector, video switcher and source equipment. Video projection will be ceiling mounted with a single high output video projector.

Computer video inputs will be provided to allow for PowerPoint-style presentations from portable laptops.

Projection Screen

The projection screen will be a motorized roll-down type and will be suspended from an appropriate location in the ceiling. The screen will be sized appropriately to allow audience members at the back of the hall to read text and spreadsheet content.

Assistive Listening System

As required by the building code and the ADA (Americans with Disabilities Act), compliant assistive listening systems will be provided for 4% of audience seating capacity. Receivers would be checked out in the lobby, and signage provided. Use of this system will require little or no input from the patron.

Portable Equipment (FF&E)

A complement of portable equipment, including risers, cables, microphones, stands, portable loudspeakers, and other related items will be provided.

Choir Room (if separate from Band Room)

Variable Acoustic Drapes
The Choir Room will be provided with manually operated variable acoustics draperies and tracks for the adjustment of the reverberation characteristics of the room. The locations and extent of these draperies will be determined based on criteria established by the Acoustics Consultant.

AV Systems

Audio System

The Choir Room will be designed for AV playback only and will feature simple controls. The audio system will not be capable of handling high-level audio program, such as a jazz band or other type of concert. It is anticipated that any event requiring high-level audio will use portable equipment.

Recording

A system for making simple digital recordings of live audio performances for archival purposes will be provided.

Intercom

Intercom connections will be available for communications to other production spaces, so this room can be used for overflow performer holding for large performances in the Theatre.

Program Audio

Audio program from the theatre will be available in the Choir room.

Presentation Video

A presentation video system consists of a video projector, a video switcher and source equipment. Video projection will be ceiling mounted with a single high output video projector.

Computer video inputs will be provided to allow for PowerPoint-style presentations from portable laptops.

Projection Screen

The projection screen will be a motorized roll-down type and will be suspended from an appropriate location in the ceiling. The screen will be sized appropriately to allow audience members at the back of the hall to read text and spreadsheet content.

Assistive Listening System

As required by the building code and the ADA (Americans with Disabilities Act), compliant assistive listening systems will be provided for 4% of audience seating capacity. Receivers would be checked out in the lobby, and signage provided. Use of this system will require little or no input from the patron.

Portable Equipment (FF&E)

A complement of portable equipment, including risers, cables, microphones, stands, portable loudspeakers, and other related items will be provided.

Dance Studios (Accommodated in Mat/Wrestling/Dance Room)

AV Systems

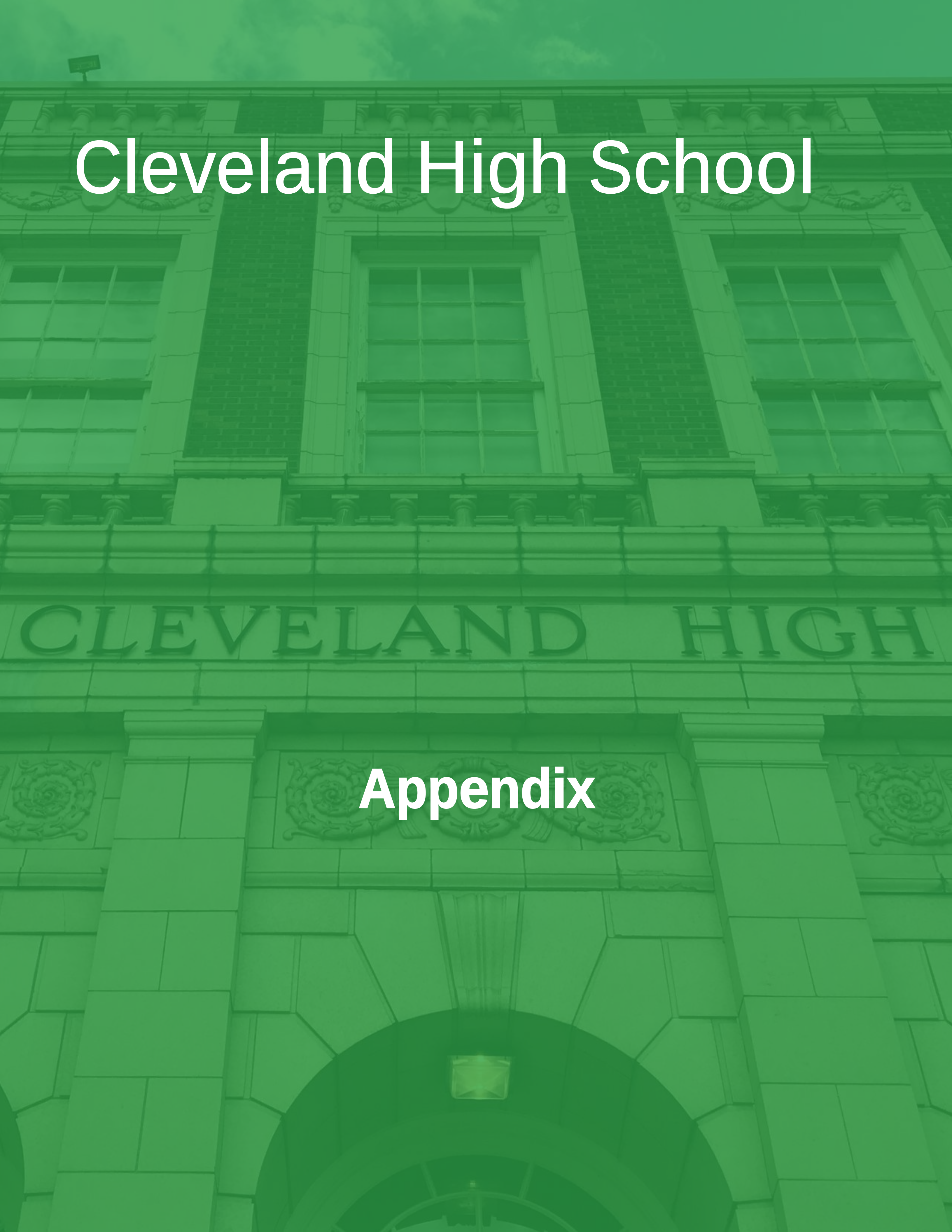
A district-standard classroom AV system, including projector/screen will be provided. In addition, the system will include an enhanced audio playback and reinforcement system to accommodate portable digital audio players and wireless mics for instructor use. As required by the building code and the ADA (Americans with Disabilities Act), a compliant assistive listening system will be provided for 4% of audience seating capacity. Receivers would be checked out in the lobby, and signage provided. Use of this system will require little or no input from the patron.

OTHER CAMPUS-WIDE SPACES

AV Systems throughout the campus will be provided as listed in the Education Specifications.

END OF REPORT

Cleveland High School



Appendix

LEED v4.1 BD+C: Schools

Project Checklist

Cleveland High School Modernization
20 February 2024

Y	?	N			
1			Credit	Integrative Process	**1**

1	11	0		**Location and Transportation**	**15**
			Credit	LEED for Neighborhood Development Location	15
1			Credit	Sensitive Land Protection	1
	1		Credit	High Priority Site and Equitable Development	2
	5		Credit	Surrounding Density and Diverse Uses	5
	4		Credit	Access to Quality Transit	4
	1		Credit	Bicycle Facilities	1
			Credit	Reduced Parking Footprint	1
			Credit	Electric Vehicles	1

7	2	0		**Sustainable Sites**	**12**
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	Environmental Site Assessment	Required
1			Credit	Site Assessment	1
			Credit	Protect or Restore Habitat	2
			Credit	Open Space	1
2	1		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
	1		Credit	Site Master Plan	1
1			Credit	Joint Use of Facilities	1

4	2	0		**Water Efficiency**	**12**
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1			Credit	Outdoor Water Use Reduction	2
2	2		Credit	Indoor Water Use Reduction	7
			Credit	Optimize Process Water Use	2
1			Credit	Water Metering	1

14	12	0		**Energy and Atmosphere**	**31**
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
4	2		Credit	Enhanced Commissioning	6
9	7		Credit	Optimize Energy Performance	16
			Credit	Advanced Energy Metering	1
			Credit	Grid Harmonization	2
1	2		Credit	Renewable Energy	5
	1		Credit	Enhanced Refrigerant Management	1

4	6	0		**Materials and Resources**	**13**
Y			Prereq	Storage and Collection of Recyclables	Required
	5		Credit	Building Life-Cycle Impact Reduction	5
1			Credit	Environmental ProductDeclarations	2
	1		Credit	Sourcing of Raw Materials	2
1			Credit	Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

9	6	0		**Indoor Environmental Quality**	**16**
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
Y			Prereq	Minimum Acoustic Performance	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
1	2		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1			Credit	Indoor Air Quality Assessment	2
	1		Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
1	2		Credit	Daylight	3
1			Credit	Quality Views	1
	1		Credit	Acoustic Performance	1

4	2	0		**Innovation**	**6**
3	2		Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

1	3	0		**Regional Priority**	**4**
1	2		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1

45	44	0	**TOTALS**	Possible Points:	**110**

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110 mahlum STUDIO PETRETTI ARCHITECTURE

MEETING MINUTES

PROJECT:	PPS: CHS, IBWHS and JHS High School Modernizations	**PROJECT NO:**	2023912.00
DATE:	12 March 2024	**FILE NAME:**	240229_PPS HS Climate Response Meeting Minutes
SUBJECT:	PPS Climate Response Policy		
MEETING DATE:	29 February, 2024	**TIME:**	2:30 – 4:00 PM
LOCATION:	Mahlum Architects		

ATTENDEES:	Aaron Presberg	PPS	apresberg@pps.net
	Johnny Lewis	PPS	jolewis@pps.net
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The following represents the architect's understanding of discussions held and decisions reached in the meeting. Anyone with amendments to these minutes should notify the author within five (5) days of the minutes date in order to amend as appropriate.

ITEM	DISCUSSION
1.0	**General Note:** Text in bold below is from the PPS Climate Response Policy. **Purpose:** This meeting is to discuss climate response and resiliency strategies that can be used to meet the goals of the PPS Climate Crisis Response, Climate Justice, and Sustainable Practices Policy. **Desired Outcome:** To come to a common understanding of what strategies the design teams should target for use for the purposes of Conceptual Master Plan phase cost estimating and moving into project design phases. **General Comment:** These minutes reflect our current collective understanding of proposed strategies to meet PPS's climate response goals. As discussed, deviations from the direction provided here needs to be confirmed by PPS.
1.1	**Pillar 1, Goal 1.1** - **PPS will design and construct new low-carbon schools and renovations that are energy-efficient, resilient, and adaptable.**
1.1.1	**Use appropriate industry standards when designing new and modernized buildings.** ○ Projects will be certified LEED Gold, with an aspirational target of LEED Platinum. ○ Projects will leverage Energy Trust of Oregon programs, with an aspirational target of Path to Net Zero energy.
1.1.2	**Prohibit the installation of fossil fuel infrastructure in all new buildings.** ○ Heating and domestic hot water systems will be all-electric. ○ Smaller scale systems, such as food preparation, science, and CTE programs will also be all-electric. ○ It may be necessary to have emergency backup power systems be run on fossil fuel at the current time, as noted in PAE's memo on batteries and generator backup systems for Jefferson HS. Teams should investigate and analyze options for battery backup systems. If battery backups are not provided, design teams should document the reasons why that decision was made and design to 'battery ready' by considering space and infrastructure needs for future battery backup systems that could replace fossil-fuel based backup generators in the future. ○ It has not been determined yet if electric vehicle charging stations should be installed in parking areas, but at a minimum pathways for routing to future stations should be considered.
1.1.3	**Phase out fossil fuel infrastructure in all existing buildings by 2050.** o Same as item 1.1.2 for major renovations.
1.1.4	**Increase energy efficiency and maximize the use of renewable energy sources.** o Achieve PPS goal EUI of 30 kBtu/sf/yr. o Apply prescriptive enclosure values per PPS sustainability standards: ▪ Wall: R-15.625 Minimum

        - Roof: R-31.25 Minimum
        - Windows: U 0.28 Maximum (assembly u-value) / SHGC TBD (Propose 0.27 Max)
        - Air Sealing: 0.20 cfm/sf of total envelope area (confirmed through whole building testing at 75 Pa).
    - Reserve 1.5% of project cost for solar, passive strategies and/or battery storage per ODOE Green Energy Technology (GET) requirements. If the project runs out of roof space for PV or other compliant measures, the rest of the Green Energy Technology budget should be dedicated to other energy conservation systems, as allowed by ODOE.
    - Lighting efficiency - Max LPD is 0.72 W/sf per ASHRAE 90.1.
    - Apply the following strategies to minimize plug loads:
        - Energy Star office equipment/appliances.
        - Energy Star kitchen equipment.
        - All-electric Energy Star kitchen equipment package.
        - Occupancy controlled outlets for admin workstations.
    - Apply the following HVAC strategies:
        - Granular zoning and active control of the distribution systems to ensure systems are not run more than necessary (when spaces are unoccupied).
        - Implement unoccupied setbacks.
    - Implement demand control ventilation, using 100% outside air DOAS systems, use 700 ppm maximum threshold.
        - Consider use of night flush cooling for its energy conservation potential.
        - Consider passive heating and cooling strategies for select building areas.
    - Decouple ventilation from space conditioning.
    - Use heat/enthalpy recovery ventilation.
    - Consider use of expanded temperature ranges and/or passive ventilation approaches at some types of spaces, but not in classroom spaces. PPS to confirm what types of spaces and what temperature ranges may be acceptable.
    - Consider use of ground source heat pumps. Investigate use of federal tax credits for renewable energy, which may be able to cover 30% of the cost. PPS to confirm if use of tax credits is feasible.

1.1.5 **Limit the amount of refrigerant used.**

- Use centralized packaged electric heat pumps and hydronic distribution for space conditioning.
- Use centralized heat pumps for domestic hot water.
- Consider future phase out and life cycle impacts of refrigerant when selecting refrigerant type.
- Consider use of CO2 heat pump water heaters.

1.1.6 **Transition to building materials produced with less carbon and that are more sustainable.**

- Use mass timber construction for classrooms and other parts of the building where wood can serve as an effective structural system.
- Consider use of DLT, gypsum topping slabs, and other strategies and systems that allow one system to provide multiple functions and reduce overall material use.
- Use responsibly sourced wood products.
- Minimize concrete on the building and on site and study low carbon concrete options. Establish an appropriate benchmark for each type of concrete use.
- Study major non-structural systems for carbon intensity including:
  - Exterior cladding
  - Insulation
  - Interior finishes
  - Artificial turf
  - Flooring
  - Site hardscape
  - Etc.

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1.1.7 **Design, renovate, and construct new facilities to improve resilience to climate-related emergencies.**

- PPS is in the process of developing a resiliency plan for the district. Discussion includes seismic standards, MEP backup systems, and resilient infrastructure connections. It is an opportune time to settle on these standards, with three high schools in design. PAE offered help offer their experience from other projects on strategies under consideration. There are many factors to consider, with different potential needs for different emergency types, different desires for duration and type of use, different MEPT systems, etc. The teams will need clear direction on how to approach this scope early in the design process.
- Pending finalization of PPS resiliency standards, assume Category IV seismic design standard for all spaces.
- Also pending finalization of PPS resiliency standards assume some form of MEP backup systems for immediate emergency use at a minimum at gymnasium, commons and potentially other spaces. Determine which other systems will be connected.
- Provide operable windows in classrooms and other daylit spaces.
- Provide effective daylighting in all daylit spaces.
- Provide a robust building enclosure (see item 4) to maintain safe thermal conditions during power outages.
- Study building performance against the 2021 heat wave and 2050 climate projections to ensure that the building can meet future challenges.

- Provide high quality indoor air per PPS designs standards.
  - Max 700 ppm of CO_2 in regularly occupied spaces.
  - MERV 14 Minimum filtration of incoming outdoor air.
  - The ability to deliver 5ACH minim to learning environments.
- Provide flexibility to add improved filtration in air handling systems in case of wildfire smoke or other air quality issues.
- Consider outdoor spaces where people can gather for their possible uses in emergency situations.

1.5 **Pillar 1, Goal 1.5:**
PPS will reduce the demand for new materials and resources, and procure materials, products, and services in a manner that integrates climate considerations, fiscal responsibility, and equity priorities.

- Reduce material use and track, reduce, recycle and reuse material waste to the greatest extent possible.
- In selecting materials prioritize the following considerations:
  - Durability, maintenance and Life-Cycle Impacts
  - Cost
  - Embodied carbon
  - Material health impacts
  - Social equity considerations
  - Avoid custom items where possible for ease of future maintenance.
  - Consider where materials are sourced from and the impacts of transport.

MEMORANDUM

To: Abby Dacey, Alyssa Leeviraphan, Mahlum Architects
Amanda Petretti, Studio Petretti

From: Ben Schonberger, AICP

Date: March 27, 2023

Re: Cleveland High School land use considerations

Scope

This memo assesses zoning opportunities and constraints at Portland Public Schools' Cleveland High School property located at 3400 SE 26th Avenue in Portland. This memo addresses land use regulations that affect redevelopment of the school. Questions our research seeks to answer are:

- What development is possible on this property under the existing regulations?
- What are the permitting requirements for a modernized school?
- What are the options for a pedestrian crossing of SE 26th Avenue, and a connection along SE Waverleigh Boulevard to the athletic fields?
- Will Portland require street dedication or improvements to the surrounding rights-of-way, and under what circumstances?
- What are opportunities for changing zoning, or for developing on nearby property?

The information here is the result of independent research from publicly available sources, including Portland planning documents, City of Portland zoning code (PZC), online mapping, tax maps, and other background information. Winterbrook also had informal discussions with sources at the Portland Bureaus of Transportation (PBOT) and Development Services (BDS) which have contributed to findings in this memo. Finally, the project team held an Early Assistance meeting with BDS staff on February 21, 2024. This document is not legal advice. Final determination for any development depends on project design and rests with the City of Portland, the controlling jurisdiction for land use.

Site Conditions

The property is on 11.5 acres on three tax lots in southeast Portland. The three lots are state IDs: 1S1E12BC-09100 (main school lot), 1S1E12BC-17700 (parking lot), and 1S1E12BD-04000 (athletic fields). Unlike other high schools in the district, Cleveland is tightly physically constrained by the urban street grid, separated from its athletic fields and parking areas by public rights of way or intervening development.

Figure 1. Cleveland High School site.

<u>Main School Building</u>: The main school building occupies nearly the entire block bounded by SE Powell Boulevard, SE Franklin Street, SE 26th Avenue, and SE 28th Avenue. This lot is 4.03 acres. It has sidewalks and entry/exit doors for pedestrian access on all four sides, and vehicular access for service vehicles on the SE Franklin and SE 28th sides of the lot. There is a small parking area and portable classroom building at the southeast corner of the block.

<u>Parking Lot</u>: The parking lot west of the school is bounded by SE 26th Avenue to the east, SE Franklin Street to the north, and SE 25th Avenue to the west. This site is 1.03 acres. To the south, the property abuts a Burgerville restaurant, which has frontage on SE Powell. The

school parking lot has three vehicular access points, two on SE 26th Avenue and one on SE Franklin Street.

Athletic Fields: The athletic fields are three blocks east, and not contiguous to the main school building or parking lot. This lot is bounded by SE Powell Boulevard to the south, SE 31st Avenue to the west, and SE 33rd Avenue to the east. The lot is 6.49 acres. The fields property abuts numerous residential lots to the north, nearly all of which front SE Franklin Street.

BDS views all three of these lots as a single site for the purposes of a land use application. This is the case even though the athletic fields lot is not contiguous, which would usually establish it as a separate site. In communications with BDS and in notes from the EA meeting, they identify the Cleveland High School campus as a unique condition—a unified campus with a noncontiguous lot— but they point to a permit history where all three lots are treated as one site. That history includes previous city land use approvals for a baseball hitting facility (Portland land use case file 18-119590) and field lighting (03-145023). One basis for the BDS interpretation is a footnote to PZC Table 110-9 that says, "for campus-type developments, the entire campus is treated as one site" ("campus" is not defined). This unified description of the school site allows proposed development to proceed as a single land use action. Combining the lots as a single campus favorably affects calculations for several development standards applicable to the site, such as minimum landscaped area, maximum floor area ratio, maximum building coverage, and minimum building setbacks.

Zoning

The dominant zoning category on all three blocks where the school site is located is "Residential 2,500" (R2.5). The lone exception is a 5,000 square foot portion of the parking lot on SE 26th Avenue, at its southernmost corner, which is zoned CM2, a commercial/mixed use zone.

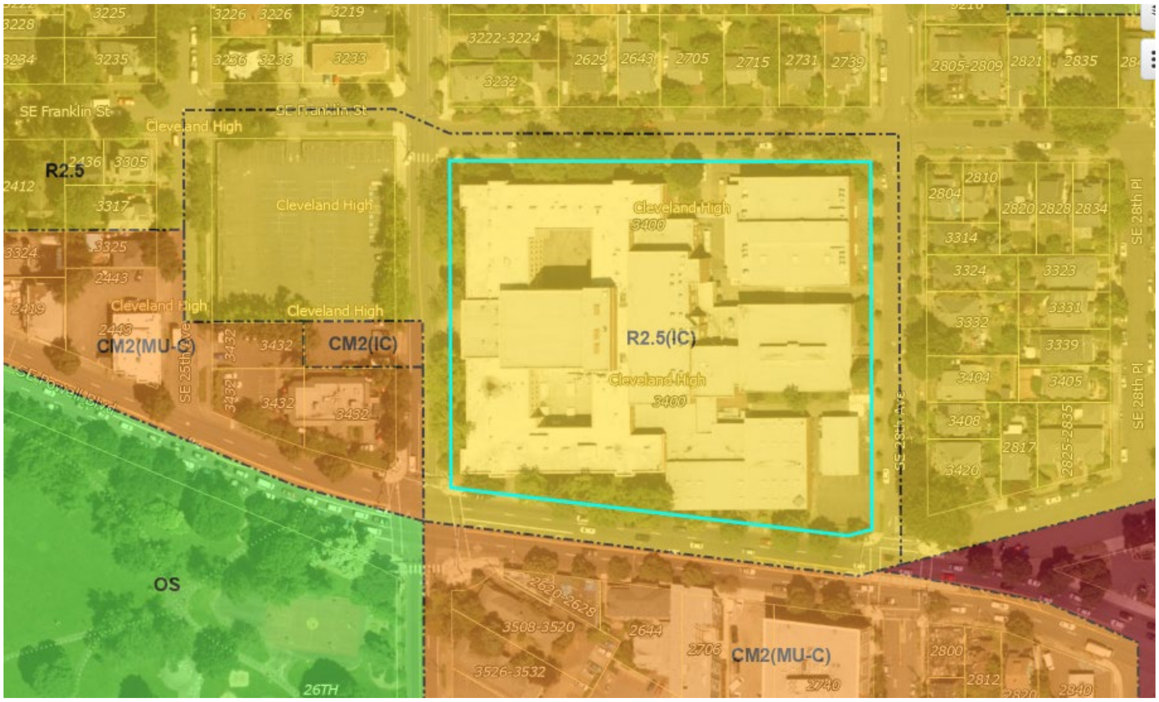


Figure 2. Site zoning for school and parking lot

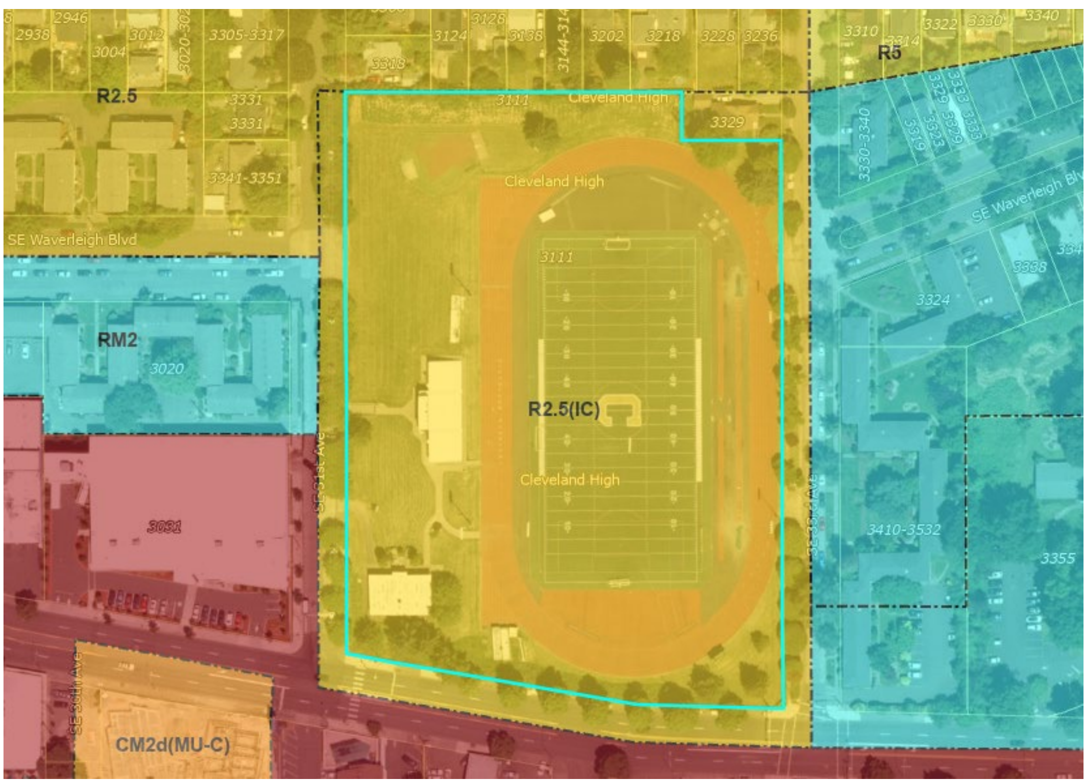


Figure 3. Site zoning for athletic fields

The R2.5 zoning designation is one of the City's single-dwelling residential zones, which are intended to "preserve land for housing and to promote housing opportunities for individual households." Standards imposed by this zoning category are intended, according to the purpose statement, "to promote desirable residential areas by addressing aesthetically pleasing environments, safety, privacy, energy conservation, and recreational opportunities" (PZC 33.110.010.B).

None of the three lots that make up the campus have overlay zones, no design overlays apply, and no inventoried environmental resources are present on any of the properties. The 1929 school building itself is a designated "significant historic resource," which is listed on a city inventory. Redevelopment or demolition of the building is therefore subject to zoning rules for protection of historic resources, which are quite limited in this circumstance and discussed later in this memo.

Conditional Use

New or redeveloped schools are allowed conditionally in the R2.5 zone (Table 110-1). The school has conditional use status based on previous modifications of that use, most recently in 2018. Redevelopment at the scale of this project is a "major alteration," of the conditional use, and therefore this becomes the core review for the project. Major alterations are subject to a Type III conditional use review (PZC 33.815.040[B][2][b]). That process culminates in a public hearing and decision by a land use hearings officer. Obtaining approval requires compliance with numerous approval criteria.

For the 5,000 square foot segment of the parking lot zoned CM2, school uses are allowed outright. No special review process is needed if development touches this part of the site, whether it remains parking or is occupied by a building.

The athletic fields lot qualifies as a "recreational field for organized sports" (PZC 33.279). Consequently, new development on such a site, which is anticipated in conceptual designs for the project, would trigger a Type III conditional use review independent of other school construction. The conditional use criteria and review process is the same for recreational field development, though some standards unique to recreational fields apply to new fields and buildings on that lot.

Approval Criteria

The redeveloped site must satisfy all relevant approval criteria for conditional uses in the residential zone (PZC 33.815.105). As with all development, the proposed building must also meet objective development standards, for things such as building setbacks and height, and site landscaping.

Key approval criteria (PZC 33.815.100) that must be met to allow new school development are:

- is physically compatible with adjacent residential development,
- does not impact livability in certain ways,
- has adequate public services, and
- is consistent with city-adopted area plans.

Responding to the requirement about compatibility with surrounding residential uses becomes easier with some historical context. Specifically, the school was constructed in 1929 and has operated since then, adjacent to residential development, for almost a century. Another important element of the review is to establish that the transportation system is "capable of supporting the proposed use in addition to existing uses in the area." Among the transportation factors to be considered are street capacity, pedestrian access, and parking availability. A detailed transportation analysis from the applicant will be needed to address transportation and parking issues. A PPS transportation consultant has already begun to explore and gather information related to this analysis. The transportation study typically concludes that the existing public system can support the proposed use and its specific design.

The final approval criterion is consistency with any adopted neighborhood plans. The school and parking lot on either side of SE 26th Avenue are within the boundaries of the Hosford-Abernethy Neighborhood Plan (1988). The athletic fields to the east are within the boundaries of the Richmond Neighborhood Plan (1994). Reviewing these plans and making sure the project is consistent with their goals and objectives is part of the land use review.

Development Standards

Because the school is in the Institutional Use category (PZC 33.920), and the site is in a residential zone, "Institutional Development Standards" apply to the site (PZC 33.110.270.B and Table 110-9). A simplified overview of the standards is listed below.

Table 1. Development Standards for Institutional Uses on R-zoned Sites

Maximum Floor Area Ratio	0.5 to 1
Maximum Height	50 ft.
Minimum Building Setbacks	1 ft. back for every 2 ft. of bldg. height
Maximum Building Setback Transit Street or Pedestrian District	20 ft. or per CU review
Maximum Building Coverage	50% of site area
Minimum Landscaped Area	25% of site area to the L1 standard
Buffering from Abutting Residential Zone	15 ft. to L3 standard
Buffering Across a Street from a Residential Zone	15 ft. to L1 standard
Setbacks for All Detached Accessory Structures Except Fences	10 ft.
Setbacks for Recreational Fields and Their Accessory Structures	Rec. fields: 50 ft. from R-zoned sites Spectator seating: 30 ft. from R-zoned sites Dugouts/concession stands/restrooms: 15 ft.
Motor Vehicle Parking	"per CU review"
Signs	See Title 32, Signs and Related Regulations

Of the standards above, building coverage, floor area ratio, minimum and maximum setbacks, and landscaped area all use the entire Cleveland High School campus as the baseline. That is, all 11.5 acres on the combined three lots are part of the site.

The maximum building setback from a transit street is applicable to SE Powell Boulevard and SE 26th Street. Absent other considerations, a new building should be placed close to the transit street. The maximum transit setback supersedes the minimum setback (33.110.270.C.2.c[1]), which creates a situation where the minimum and maximum are both exactly 20 feet. The setback standards can be adjusted as described below. Landscape buffering standards apply since all three lots either abut or are across the street from residential zones.

Adjustments

As part of the application, the school can ask for adjustments, to build something that differs from the baseline standards. Adjustments would be processed concurrently with the rest of the conditional use application. Preliminary design drawings for site development do not meet several of the standards. Potential adjustments that may be needed, based on schematic designs are:

- Maximum height
- Maximum building setback on transit street
- Minimum building setbacks

- Buffering across a street from residential zoning

The actual count and nature of adjustments depends on the final design. Adjustments are a separate land use action that would be consolidated with the main conditional use review. Approval of the conditional use, the existence of the school, does not guarantee approval of all the adjustments. The key criterion for an adjustment is that project must “equally or better meet the purpose” of the regulation being modified and that it is “consistent with the desired character of the area” (PZC 33.805.040). How to interpret “better meets” and “desired character” are, of course, highly discretionary judgements and would require that PPS provide careful findings to explain the basis for making the change.

In the Early Assistance meeting in February and in response to a specific question, staff offered suggestions for supporting adjustment requests. With building height, the applicant could bolster the adjustment by designing taller parts of the main school building farther away from the residential areas which have lower height limits. Abutting zones closer to SE Powell and SE 26th have taller by-right allowances. Also, using the historical context of an existing building that currently exceeds the height limit may be useful. With other adjustments, acknowledgement of the existing condition, landscape edges, and preservation of some building elements could help make the case.

A review of other PPS high school renovation projects shows that numerous adjustments were requested and approved for all of these large-scale projects. McDaniel received 10 adjustments, including one for maximum height for its auditorium. Grant received 5 adjustments, including one for maximum height for an existing chimney stack and its auditorium. Franklin received 7 adjustments. Roosevelt received 2 adjustments. The Cleveland project can presume multiple adjustments will be needed, and likely would be approved, if both the site and building are well-designed and a strong case is made.

Nonconforming Upgrades

Where proposed changes to a site are more than $356,000, existing development that does not comply with certain standards must be brought into conformance with current rules (PZC 33.258.065.D.2.b). The cost of nonconforming upgrades is capped at 10 percent of project costs (rules (PZC 33.258.065.D.2.d). The approximate cost of this modernization project is $320 million. Because the site is being defined as a campus, all three school-owned lots are subject to upgrades. The conditions that must be corrected where they are nonconforming are standards relating to:

1. Landscaping and trees
2. Pedestrian Circulation
3. Bicycle parking
4. Screening, and
5. Paving of parking and storage areas

The most apparent nonconforming existing condition on the campus is the lack of interior and perimeter parking lot landscaping across from the school's main entrance. Bicycle parking is also nonconforming and can be addressed as part of the review. A comprehensive analysis of existing conditions and whether they meet current rules would enable an assessment of what additional nonconforming upgrades may be required.

Historic Resource

The Cleveland High School building is a city-designated significant historic resource, as indicated in the city's Historic Resource Inventory. The resource includes the 1929 original building, described in detail in the city inventory, but not the additions from the 1950s on the east side of the block. "Significant resource" is the lowest level of Portland's hierarchy system for historic resources. The only review required is a "120-Day Demolition Delay," if the proposal is for full or partial demolition of the historic structure. This delay requires posting and mailed public notice, but it is a non-discretionary, Type I review. After the delay expires, the applicant reports to the city any offers to purchase or relocate the resource, or salvage elements during demolition, and the how the applicant has responded to these offers.

Streets and Parking

Streets that abut the school properties have three different street classifications. The existing classification of streets around the school property is relevant to potential upgrades to those frontages and opportunities for street crossings. These classifications are described in the Portland Comprehensive Plan's Transportation System Plan (TSP).

Table 2. Street Classifications Adjacent to Cleveland H.S. Property

Street Name	Classification
SE Powell Boulevard	Major City Traffic Street Major Emergency Response Major Truck Street Major Transit Priority Street City Bikeway Major City Walkway Civic Corridor – design classification
SE 26th Avenue	Neighborhood Collector Street Major Emergency Response Local Service Truck Street Transit Access Street City Bikeway City Walkway Community Corridor - design classification
SE Franklin Street, SE 25th/26th/28th/31st /33rd Avenues	Local Service Traffic Street Minor Emergency Response Local Service Truck Street Local Service Transit Street City Bikeway Neighborhood Walkway or Local Street

Street Improvements

Cleveland High School is in a long-developed area of the city and the streets abutting school property are fully built out. Abutting streets have motor vehicle travel lanes, sidewalks, bike lanes, and landscape buffers. Specific configurations depend on the frontage.

SE Powell Boulevard, is the largest street adjacent to school property abutting the school and the athletic fields. This right of way is controlled by the Oregon Department of Transportation as U.S. 26, a state highway within Portland city limits. Within an 80 foot right of way are four vehicle travel lanes plus a center turn lane, sidewalks on both sides, and no planting strip. According to ODOT, this section of Powell serves 35,000 to 38,000 cars and trucks per day. Changes to this corridor were completed in 2019 as part of a "Making Powell Boulevard Safer for All" project. Additional work is ongoing or being considered.

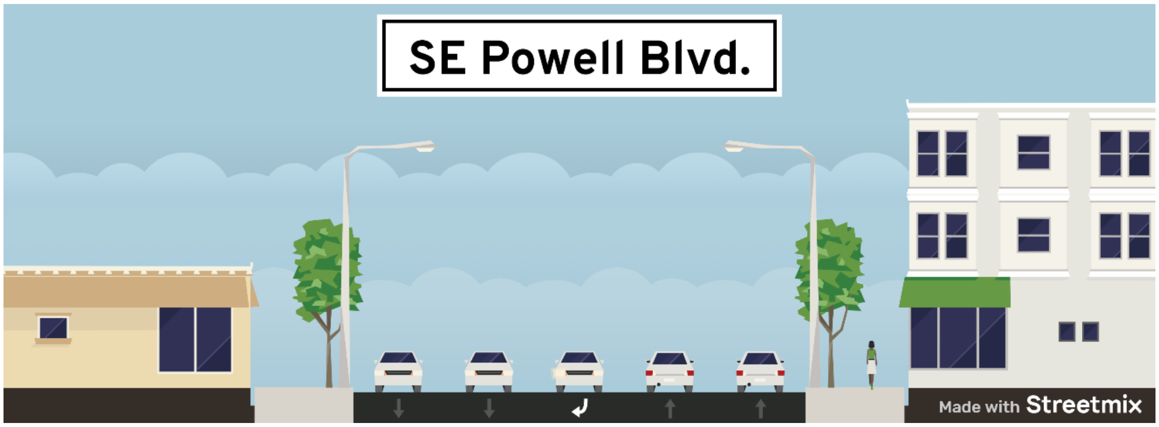


Figure 4. SE Powell Blvd. at SE 26th Avenue, adjacent to Cleveland High School

SE 26th Avenue, which separates the front of the historic school building from the parking lot, is a City of Portland street, and has two motor vehicle travel lanes, a bike lane on each side, sidewalks, and no planting strip on either side.

Figure 5. SE 26th Avenue, at main entrance to Cleveland H.S.

The other public streets that abut school property are SE Franklin Street, and SE 25th, SE 28th, SE 31st, and SE 33rd Avenues. These are all local streets with 60-foot rights of way. They are very similar in section, with a single travel lane in each direction and on-street parking on both sides, although on-street parking is restricted on school building street frontages.

Figure 6. Local streets, adjacent to school property

Frontage Improvements

Whether frontage improvements and property dedication is required for new development abutting school property depends on numerous factors. The method for deciding on the need and requirements for frontage improvements was discussed in an informal meeting on October 9, 2023 with PBOT staff, and was reviewed by the design team's engineering consultant. The final determination would come from a detailed analysis of surrounding conditions. First, each street classification described in Table 1 above has a corresponding typical or desired street section. Second, the existing improvement on that street frontage either meets the minimum standards or falls short. Third, if it falls short, the city would have to determine that the development proposed by PPS justifies requiring additional land or infrastructure improvements, *i.e.*, "rough proportionality" between transportation impacts and public improvements. According to city documents the minimum sidewalk corridor widths on SE Powell Boulevard and SE 26th Avenue would be 12 feet, which includes a six-foot sidewalk, four-foot furnishing zone, and 1.5-foot frontage zone. The local street frontages that abut school property require an 11 foot sidewalk corridor.

If required at all, improvements would be incremental because existing streets and sidewalks are fully built-out. A preliminary analysis shows that several existing corridors meet or exceed the minimum requirements (SE 25th, SE Franklin). Others may meet minimum requirements, but need additional topographic survey to confirm (SE 28th, SE 31st). SE Powell and SE 26th do not meet minimum widths and a small right of way dedication is expected to be required on these two frontages.

The pedestrian connection on SE Waverleigh Boulevard between the main school building and the athletic fields was also discussed with PBOT staff. While this does not abut any school property, it is a popular and regular path for school users. PBOT was very receptive to the idea of pedestrian improvements along this corridor and noted the extremely wide (90 feet) right of way as supporting a wide range of options. Since that discussion, the design team has designed concepts for changes to the right of way that would improve the pedestrian experience for school users. Maintenance and management for a new facility could be challenging, given existing conditions. Also, PBOT staff noted they are very financially constrained, and would likely be unable to contribute heavily to this effort. They did point to the potential of federal "Safe Routes to School" dollars as a potential funding source.

Crossing SE 26th Avenue

An alternative plan for campus development shows a major new building occupying the current parking lot site. If this occurs, it would drive significant, frequent, and new pedestrian traffic across SE 26th Avenue during the school day. Under existing conditions, two crosswalks are on this block, at the corners of SE Powell and SE Franklin. The SE Powell crosswalk is signalized, while the SE Franklin crosswalk is striped, but unsignalized. People leaving the building trying to get to the parking lot must currently travel out of direction to the nearest corner to reach a crosswalk. A strong temptation for school users moving between buildings would be to cross mid-block, which creates a potential safety hazard.

To accommodate the alternative with buildings on both sides of SE 26th Avenue, the project team (Mahlum, Studio Petretti, Winterbrook) generated ideas that were discussed informally with PBOT staff. The table below lists those ideas and PBOT's corresponding, preliminary response.

Table 3. SE 26th Ave. Crossing Ideas and PBOT Responses

Idea	PBOT Response
Create mid-block crosswalk. Could include a speed table, center median, or HAWK beacon.	*Neutral/favorable* Would require engineering study and evaluation of allocation of ROW space.
Install traffic signal at SE Franklin intersection. Include other traffic calming measures like speed bumps or chicanes.	*Neutral/skeptical* SE Franklin and SE Powell signals would be closer together than recommended. Calming measures without signal more likely.
Close to motor vehicles at certain times of day. Re-route traffic to neighboring streets.	*Opposed* Full closure, even for short periods, disrupts transit service, emergency service access, bicycle traffic.
Vacate or pedestrianize SE 26th between SE Franklin and SE Powell. Re-route traffic.	*Opposed* Closure disrupts transit, emergency services, and general traffic. Street grid does not have good north/south alternatives.
Tunnel under or skybridge over existing SE 26th Ave. right of way	*Favorable* Very open. Would require management of facility under or over public ROW.

In discussions with PBOT staff, each of these ideas was found to have benefits and challenges. A mid-block crossing is already on a list of mid-term projects proposed by the city and is likely to happen regardless of Cleveland modernization, or if a new building is constructed on the parking lot property. PBOT was receptive to the idea of a skybridge and pointed to other examples around the city. They noted that the SE Franklin Street intersection at SE 26th Avenue is offset, so any signalization effort there would require more infrastructure than a standard four-way intersection and would therefore be more expensive.

PBOT was very skeptical of closing SE 26th, either time-of-day or permanently, because of its street classification. Despite its narrow width, this section of street is classified as a "major emergency response street" for emergency vehicles, and a "transit access street" due to the #10 bus line. Closing the street, even temporarily, would require re-routing traffic. The existing street grid does not offer many other viable north-south alternatives.

Regarding possible skybridge construction, the design team explored the regulations applicable to a structure that connects buildings across SE 26th Avenue. A skybridge is possible, but the process for design and approval is complex. As the owner of the public right of way, PBOT is the city entity that controls the decision-making on a skybridge. The primary regulations that apply are in an engineering standards document, TRN-8.01, which regulates "major encroachments in the public right of way." The skybridge would be a "Type III skystructure," which is the most-restricted and regulated kind of encroachment. Procedurally, PBOT staff would need to sign off on the location and design of the skybridge, and City Council approval is needed for the final permit. The focus of the city's rules is maintaining light, air, and views, and preserving freedom of movement for pedestrians and vehicles along the right of way. Encroachments are only approved for a "public benefit which cannot be achieved without the encroachment." An alternatives analysis to the encroachment is required, and the proposal must show clear public benefits to the city and consistency with neighborhood and city plans.

Minimum clearance above the street for a skybridge is 17 feet, 8 inches. The bridge must be as small and transparent as possible, with exterior walls that are 70 percent windows, a maximum width of 14 feet and height of 12 feet. In short, a skybridge is possible, but it requires an extensive, careful, and discretionary approval process. The at-grade crossing improvements at the same location will likely proceed regardless of school development on either side of SE 26th Avenue.

Parking Requirements

Off-street parking is no longer required by zoning, as of June 30, 2023 (PZC 33.266.110[B]). A transportation study from PPS is required and will be reviewed as part of the application and approved by the Portland Bureau of Transportation. This will include analysis of parking demand from the school use. As part of the conditional use process, parking impacts are considered indirectly. Under the transportation element of the "adequate public services" criterion, the applicant is asked to consider numerous factors, one of which is parking availability. In theory, this allows the city to require additional parking. In practice, the city rarely uses this tool to change the amount of parking proposed by applicants.

Moreover, the city's planning commission is currently considering a revision to the code that would eliminate on-street parking impacts as an evaluation factor under this criterion. This is consistent with the elimination of direct minimum parking requirements that occurred in June, consistent with state mandates. If adopted, the code modification would take effect in October 2024. In short, the school may provide whatever amount of off-street parking it finds appropriate and can justify in a transportation study.

Public Services

All three lots are well-served by public utilities. Full city services for water, sanitary sewer, and stormwater exist to serve existing development and would be available for future development. Coordination with service bureaus on the sufficiency of existing infrastructure is part of the development application process. A report from the applicant's civil engineer will verify adequacy of public services. This report is a requirement of the land use application, and the basis for satisfying the related conditional use criterion.

Zone Change

Although the Cleveland High School site has residential zoning, R2.5, the underlying comprehensive plan designation on the site is "Institutional Campus." This indicates the city eventually anticipates a future change to the corresponding Institutional Residential (IR) zone. PPS could initiate the change by requesting a re-zone.

The advantage of changing zoning on the site is that, generally, development standards in the IR zone are more permissive than the Institutional Development Standards. A change in zoning to IR also comes with an automatic application of the "d" overlay. In other words, if zoning is changed to IR, future projects must also go through the design review process to receive approval. This would be a separate review and require approval from the Portland Design Commission.

The option of a zone change was one of the main topics of discussion in the Early Assistance meeting held in February. Ultimately, both PPS and BDS concluded that a zone change on the property does not confer enough benefits to make it worth the procedural effort. As the city's EA notes state, "While you get to choose between these land use options…, it is recommended to proceed with the proposal with the site zoned R2.5."

Alternative Sites

As part of a concept planning process, stakeholders looked at a wide range of possibilities for school redevelopment. Included in these hypotheticals were the acquisition and development of several nearby properties that are not owned by PPS. None of the possible alternatives are currently being pursued for a variety of different reasons. A brief overview of these considerations is below.

Burgerville

The property immediately abutting the school parking lot is a Burgerville restaurant. This property is 0.49 acres, and its acquisition would assemble a 1.5 acre, full-block parcel for future development. The consolidated property would have frontage on SE Powell.

This property is zoned CM2, a Commercial/Mixed Use zone. This zone allows schools to develop by-right, without need for a conditional use review (Table 130-1), and has development standards in this zone are generally comparable to those in the R2.5 zone. The site has no access directly from SE Powell and is unlikely to obtain one, because ODOT controls access management and seeks to reduce entries on the street.

This additional site area would not change many critical constraints on school land. Specifically, site area is still limited, pedestrian access to the historic building site across SE

26th Avenue is still hazardous, new development standards apply, and land use permitting is still required.

Powell Park

Diagonally across SE Powell from the school building is a city park, Powell Park. This site is 8.09 acres, was acquired by the city in 1921, and occupies the north side of the superblock between SE 22nd Avenue and SE 26th Avenue. It has a long frontage on SE Powell but no vehicular access. There is no parking on the site.

The park is zoned Open Space (OS), common for most parks in the city. Schools are a conditional use in the OS zone (Table 100-1), with different criteria for school uses than when they are in residential zones (PZC 33.815.100). Two critical and potentially difficult-to-meet criteria are: "adequate open space is being maintained so that the purpose of the OS zone in that area and the open or natural character of the area is retained," and "impacts on mature trees and tree groves are minimized" (PZC 33.815.100[A][2] and [3]). Having the school on multiple city blocks still creates pedestrian circulation and safety challenges. Students would still need to cross both SE Powell and SE 26th to get from the historic school building to the new site.

On the plus side, this site is larger than the existing school building site. However, site area is still limited, pedestrian access is still difficult, and different and more restrictive approval standards apply.

Fred Meyer

Abutting Powell Park to the south is a 22-acre site occupied by the local corporate headquarters of Fred Meyer. This site has several office buildings occupying hundreds of thousands of square feet of floor area, and hundreds of surface parking spaces for employees.

Zoning on the Fred Meyer site is General Employment 2 (EG2). This zone allows schools to develop by-right, without a conditional use review (Table 140-1). Development standards are significantly more permissive in this zone than in any other zone considered in this memo, although it does have a "d" overlay, where new buildings are subject to design review.

Because it has more land area than all three of the existing school properties combined (22 acres vs. 11.5 acres) the entire Cleveland campus could be relocated to this site. However, a practical, and effectively insurmountable, barrier is the property owner's public position that it is not for sale.

Land Use Review Process

Procedures and Timeline

As a major alteration of an existing conditional use, school redevelopment is subject to a Type III land use review (PZC 33.815.040[B][2][b]). A pre-application meeting is required as part of this process. The Early Assistance meeting held on February 21 is different from a pre-application meeting, and would not substitute for the required pre-app. Procedurally, the application process includes: pre-app, submittal of a detailed application, a written recommendation from BDS planning staff, a public hearing on the case before a land use hearings officer, and issuance of a final decision. The review includes public notice to neighbors and the opportunity to appeal. An appeal of the hearings officer's decision, if there is one, would be before the Portland City Council.

Adjustments are incorporated into the application, on the same timeline and under the same process as the conditional use review. Adjustments are a separate section of the application and have their own set of criteria, but they are folded into the conditional use review.

Because it is a "significant historic resource," demolition of the 1929 structure would require a 120-day demolition delay. This process is a non-discretionary permit request requiring only public notice and a letter from the applicant describing the response. This can occur prior to submittal of the main application since it does not need accompanying land use drawings.

The development application for the school project is subject to state-mandated timelines. State law requires that a complete application reach a final local decision within 120 days. Determination of completeness, a separate timeline at the front end of the application, may take no longer than 30 days. Portland has a more aggressive internal timeline for their Type III reviews—21 days for completeness, and 81 days to a final decision--but this is not legally binding, nor is it commonplace for complex projects. Winterbrook has received requests from Portland BDS on numerous occasions at the beginning of an application process to waive or extend the 120 day timeline. This request is based on the BDS assessment that complex projects cannot be finished within this timeframe.

A reasonable estimate for the entire city review process, from submittal to approval, is six to nine months. Ultimately, the review timeline depends on how complex the application is, how many adjustments are included, and whether there is organized opposition. How extensive the city's requirements for completeness are, and the applicant's ability to respond, also affects the overall permitting schedule.

Conclusion

The Cleveland High School site comprises 11.5 acres on three tax lots that are separated from each other by public streets. This creates unique challenges for redevelopment of the property. In the first case, the school use is allowed conditionally under its existing residential zoning. Anticipated development would trigger a Type III conditional use review with a public hearing. Key criteria for the city's review require analysis of the compatibility of new development with the surrounding area, and proof that public services are adequate to serve new development. Additionally, the land use application may request adjustments from development standards for things like height, building coverage, and setbacks, depending on final project design. These reviews are discretionary and require careful findings.

Regarding transportation, no parking is required by zoning rules, but may be provided by the applicant. Potential hazards from more frequent pedestrian crossings of SE 26th Avenue could be mitigated by ground-level changes in this block or installation of a skybridge. PBOT has said it would support some of these changes and oppose others. More analysis is needed to see if frontage improvements would be required on abutting streets, but changes are likely to be minor and incremental. An improved connection along SE Waverleigh Boulevard is likewise supported by PBOT, but PPS would have to take the lead both in design and financing.

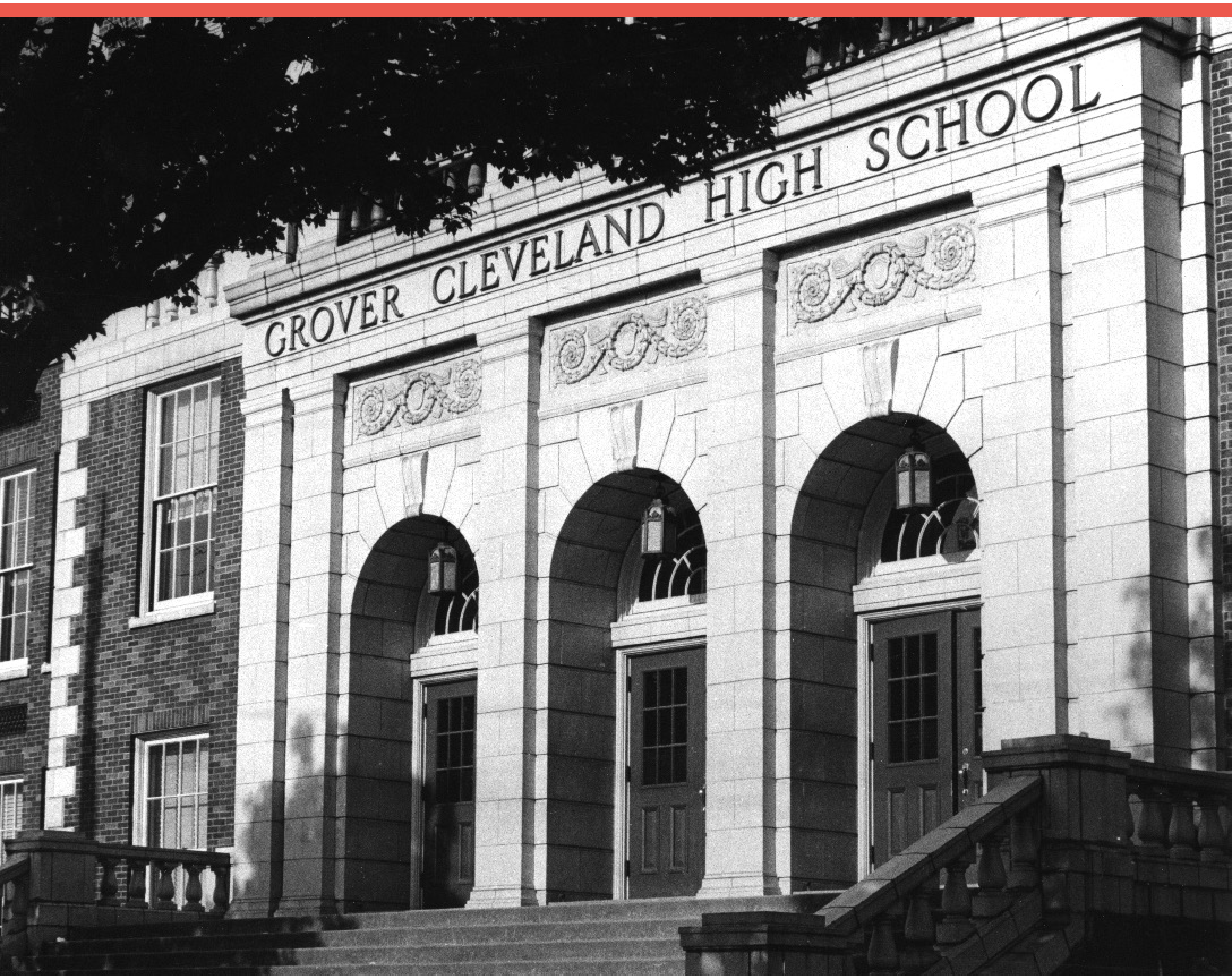
The entire city land use review process, from submittal to approval, is estimated to take six to nine months. The timeline depends on how complex the application is. The complexity is based on how many adjustments are needed and how extensive they are, and whether any other concurrent reviews are requested as part of the application.

HISTORIC CONTEXT AND CONDITIONS REPORT

Cleveland High School Modernization

Architecture
Planning
Conservation

Portland Public Schools | January, 2024



Source: Portland Public Schools, Facilities and Asset Management

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1. Introduction

At the request of Mahlum Architects, Architectural Resources Group (ARG) has prepared this Historic Resource Assessment (HRA) for Cleveland High School (CHS) in Portland, Oregon. The HRA is intended to serve as a baseline reference regarding the significance and condition of Cleveland High School's historic features, as well as a preview of the anticipated historic review process.

Part 1 of the HRA includes: (1) a summary of the school's historic significance; (2) a summary of alterations made to the school; (3) a description of the school's character-defining features; and (4) a description of the anticipated historic review processes with the City of Portland and the State Historic Preservation Office (SHPO).

Part 2 of the HRA consists of a conditions assessment of the school's historic features. This assessment includes descriptions and photos of typical deteriorated conditions, and repair and maintenance recommendations, which can be used to understand the scope of skilled labor needed to address identified deficiencies. If the building is demolished, this report could serve as a resource for identifying mitigation measures.

To complete this report, ARG conducted (2) two site visits of CHS in November 2023 to note and photograph interior and exterior architectural features, site features and visible alterations. ARG also reviewed existing information regarding the historic significance and condition of the school.

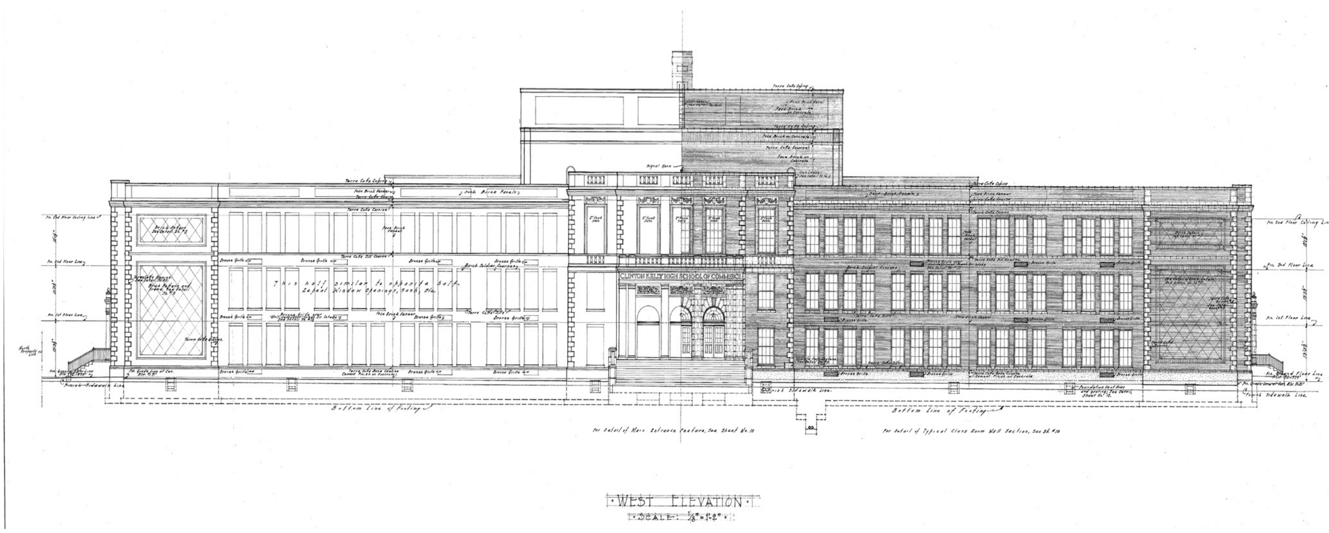

Figure 1.1.1 - 1928 Drawing, West Elevation (Source: Portland Public Schools)

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2. Historic Background and Project Review Information

SUMMARY OF SIGNIFICANCE

Grover Cleveland High School, originally known as the Clinton Kelly High School of Commerce and frequently shortened to Cleveland High School, comprises two discontiguous properties in southeast Portland. The school's three-story primary building is located at 3400 SE 26th Avenue in the Hosford-Abernethy neighborhood. Cleveland Field, a recreational facility that supports Cleveland High School's operations, is located at 3100 SE Powell Boulevard two city blocks to the east. The original volume of the main school building occupies the western portion of its site and was completed in 1929; its Classical Revival-style design was developed by George Jones, the school district's architect. The original building features brick exterior cladding and various forms of glazed terra cotta ornamentation that emphasize entrances, windows, corners, and rooflines. Classrooms and other interior spaces within the original building are arranged according to a square plan of double-loaded corridors. An auditorium is located at the center of the original building.

Portland Public Schools (PPS) first established a school of commerce in the 1910s, which occupied available space in the Shattuck School south of downtown. Those facilities, however, soon proved inadequate. The effort to design and construct a new building for the school of commerce in the 1920s advanced PPS's vision of better educating students in business-related fields. PPS chose to construct the new school of commerce on a site in southeast Portland that contained the Clinton Kelly Elementary School. Its name commemorated Clinton Kelly, an early Portland landowner who had donated the property for public educational uses in 1860. PPS demolished the existing elementary school to build the high school of commerce but retained Kelly's name. The current school building first opened its doors to students in 1930 and contributed to the school district's ambitious early-twentieth-century construction program. The school was renamed Grover Cleveland High School in 1948. Numerous additions have been constructed to the rear (east) of the original volume, including a gymnasium (1957), shop addition (1958), and classroom addition (1968). Most windows on the original building were replaced in 1988, with the exception of some windows located near entrances.

In 1939, federal funding from the Works Progress Administration allowed PPS to improve Cleveland Field, which lay on a site a couple blocks east of the existing school building; it remains unclear if the school had previously used this site for recreation, or if the federal funding led to the first school

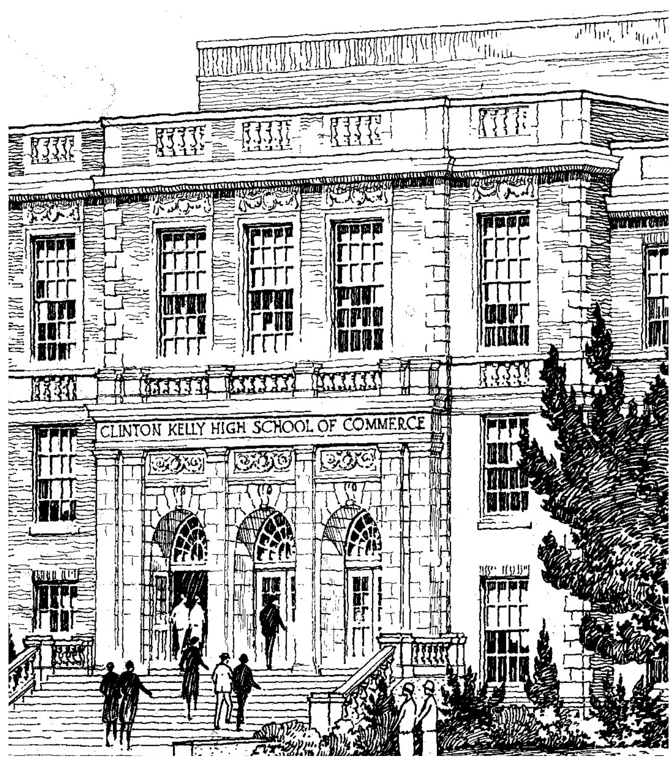


Figure 2.1.1 - 1928 Rendering, Main Entrance (Source: Portland Public Schools, Facilities and Asset Management)

facilities there. The facilities ultimately constructed on Cleveland Field include a restroom building (1949), a track, an athletic field, and grandstands.

Entrix completed an Oregon Historic Site Form for Cleveland High School in 2009, as part of a district-wide historic building assessment completed for PPS. This form concluded that the school appears eligible for listing in the National Register of Historic Places (NRHP) under Criterion A (Events/Pattern of Events) for its association with PPS's expansion and diversification of high school educational options during the early decades of the twentieth century. The school also appears eligible for listing under NRHP Criterion C (Architecture/Design) for its association with noted school architect George Jones and its successful application of the Classical Revival architectural style for a large public educational facility. The 2009 evaluation found the building predominantly retains its physical integrity, despite the construction of several additions at its rear and the replacement of its original windows. ARG concurs that Cleveland High School appears NRHP-eligible under Criteria A and C.

The Oregon Historic Site Form that Entrix completed for Benson in 2009 does not identify a period of significance for Cleveland High School. Based on the school's significance (summarized above), however, ARG has concluded that Benson's period of significance is 1929-1930, corresponding to the years during which the school was completed and opened. The construction of Cleveland Field, as well as later rear additions to the main school building, were not included in Jones's original designs and do not adhere to its original Classical Revival architectural style.

Entrix divided the components of Cleveland High School into three categories based on significance:

Contributing High Significance

- Main School Building (1929)

Contributing Moderate Significance

- Rear of Main School Building (1929)

Non-Contributing

- Gym Addition (1957)
- Shop Addition (1958)
- Classroom Addition (1968)
- Cleveland Field Restrooms (1949)
- Cleveland Field Grandstands (no date)

Entrix did not provide a justification for the "moderate significance" status of the rear portion of the original school building. However, it appears this classification is due to an interior modification that subdivided and reconfigured the original gymnasium and locker rooms, which converted them into library at the first floor and classrooms at the second floor. Furthermore, Entrix did not assign the Cleveland Field track and athletic field to any significance category. However, ARG assumes them to have the same non-contributing status as the other features at Cleveland Field.

SUMMARY OF MAJOR ALTERATIONS

Timeline of Major Building Construction

1929	Main school building constructed
1939	Cleveland Field improved
1949	Cleveland Field restrooms constructed
1957	Gymnasium addition constructed
1958	Shop addition constructed
1958	Original gymnasium subdivided and renovated into a library and classrooms
1968	Classroom addition constructed
1977	Second- and third-floor corridors altered for classrooms
1988	Majority of windows in the original building volume replaced
1989	Second- and third-floor corridors altered for offices

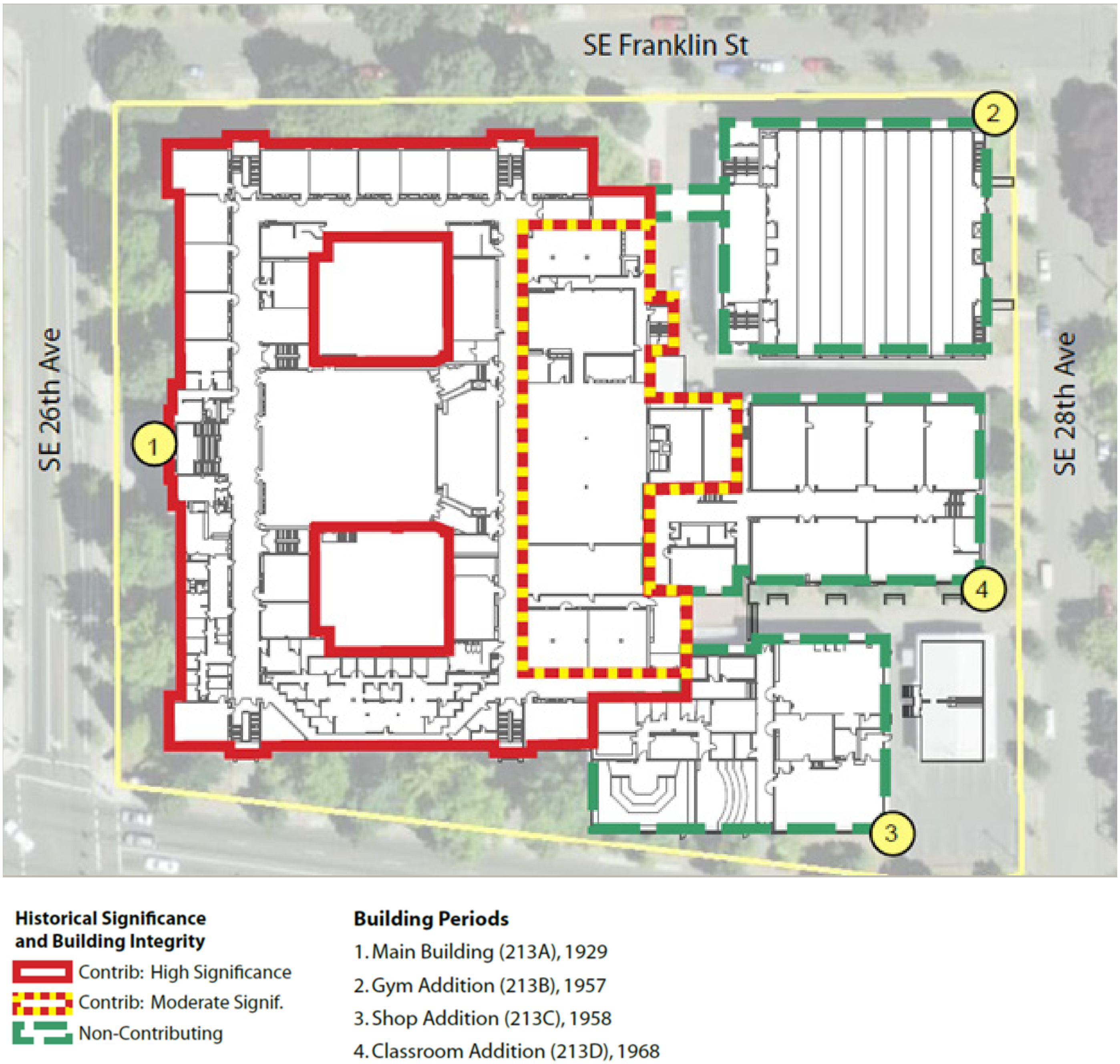


Figure 2.3.1 - Cleveland ILS Survey Form, 2009 (Source: Entrix)

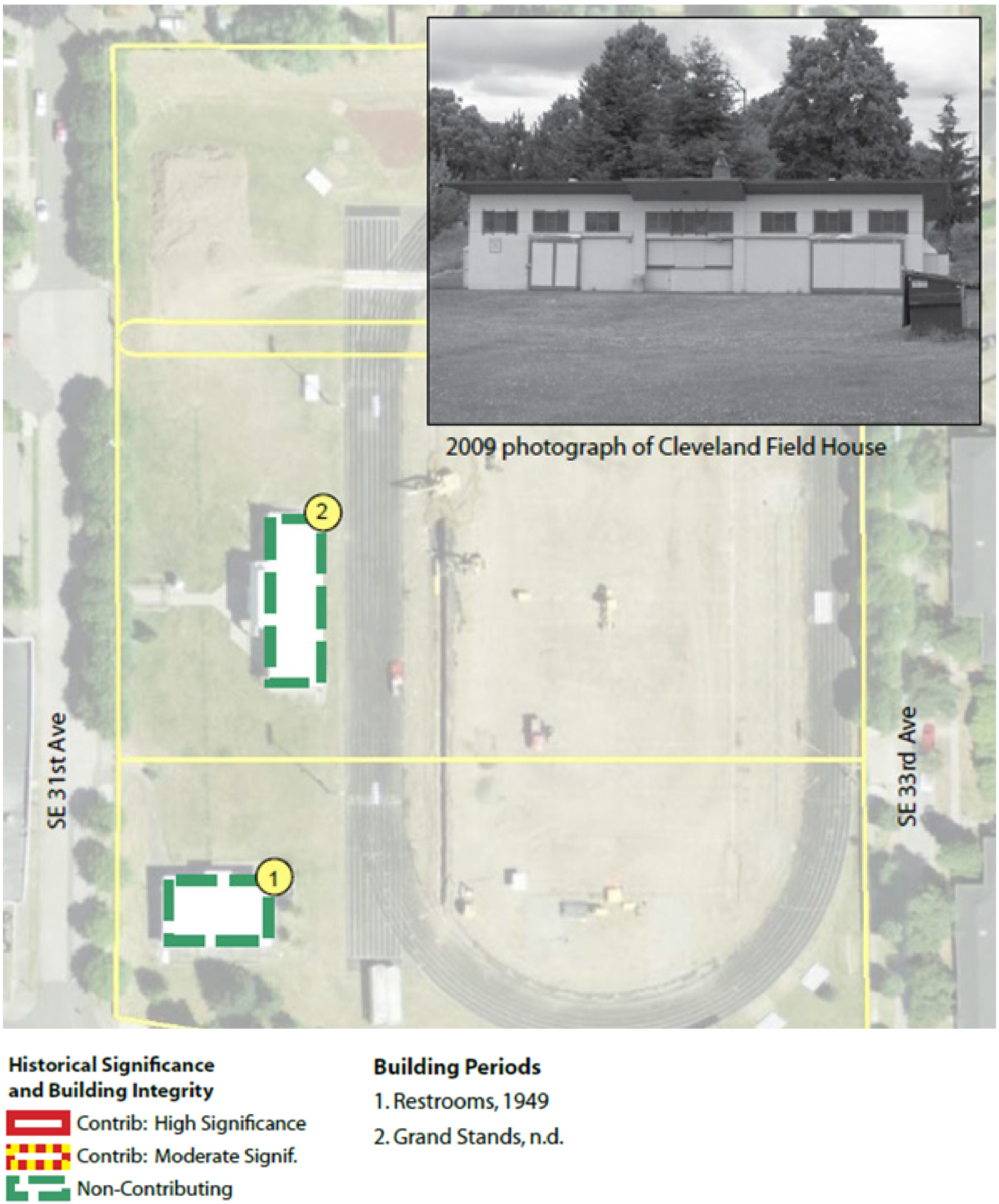


Figure 2.4.1 - Cleveland ILS Survey Form, 2009 (Entrix)

CHARACTER-DEFINING FEATURES

A character-defining feature is an aspect of a building's design, construction, or detail that is representative of the building's function, type, or architectural style. Generally, character-defining features include specific building systems, architectural ornament, construction details, massing, materials, craftsmanship, site characteristics and landscaping within the period of significance. An understanding of a building's character-defining features is a crucial step in developing a rehabilitation plan that is consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties by incorporating an appropriate level of restoration, rehabilitation, maintenance, and protection. To meet the Secretary's Standards, care need be taken to, wherever possible, preserve character-defining features, to repair instead of replace deteriorated features, and to replace-in-kind features that are too severely deteriorated to repair.

Based on its 1929-1930 period of significance, Cleveland High School possesses the following character-defining features. These features are based on past evaluations of the building, as well as ARG site reconnaissance.

Exterior

- Classical Revival style
- Wire brushed brick veneer
- Terra cotta elements at the entrances, water tables, windows, corners, cornice, and parapet
- Slightly projecting main entrance with staggered quoins and grand stair
- Main entrance consisting of three pairs of double doors with glazed semicircular fanlights, one-story pilasters, and voussoirs with a console keystone
- Secondary north and south entries with similar details
- Select original windows near entries

Interior

- Square corridor plan
- Split-level entryway with bronze handrails, marble baseboard, terrazzo stair treads & risers, and tile walls
- Main corridor with corner pilasters, boxed beam ceiling and original light fixtures
- Auditorium with stage, surround, flanking metal grilles, original seating, and Art-Deco chandeliers

Figure 2.5.1 - Clinton Kelly High School of Commerce (SOurce: 1931 yearbook)

HISTORIC REVIEW PROCESS

City of Portland

Cleveland High School is classified as a “Significant Resource” by the City of Portland. Significant Resources are subject to a 120-day demolition delay process but are exempt from historic resource review regarding proposed alteration, addition, or new construction. The 120-day demolition delay process is non-discretionary and is defined in Section 33.445.340 of the Portland Zoning Code. Demolition, which generally includes any project that removes 50 percent or more of a building’s roof area or wall surface, is defined in detail in Section 33.445.330.

State Historic Preservation Office

Because Cleveland High School is a publicly-owned building that has been determined eligible for the National Register, proposed changes to the property are subject to review by the State Historic Preservation Office (SHPO). Specifically, in future phases of the project, the SHPO will review modifications to the exterior and interior of the building pursuant to ORS 358.653, to determine whether the proposed project entails any impacts to the historic property.

Consultation with the SHPO pursuant to ORS 358.653 typically occurs during the Design Development phase, when the agency that owns the building submits a compliance form. The consultation process with the SHPO does not “approve” or “deny” proposed work. However, should the proposed new work cause potential loss of historic components or elements, stipulations for mitigation may be placed on the project. If mitigation is necessary, the SHPO typically requires the owning agency to enter into a Memorandum of Agreement (MOA) with the SHPO, which identifies the scope of the required mitigation measures and the schedule according to which the mitigation measures need to be completed.

In coming to conclusions regarding necessary mitigation, the SHPO looks at the project as a whole to assess the overall level of change posed by the project. The SHPO typically does not assign specific mitigation measures to specific project components. The Oregon SHPO website describes types of mitigation that are often used to offset impacts to historic resources. The extent and nature of necessary mitigation will ultimately depend on the level of impact, with a more impactful project requiring a greater level of mitigation.

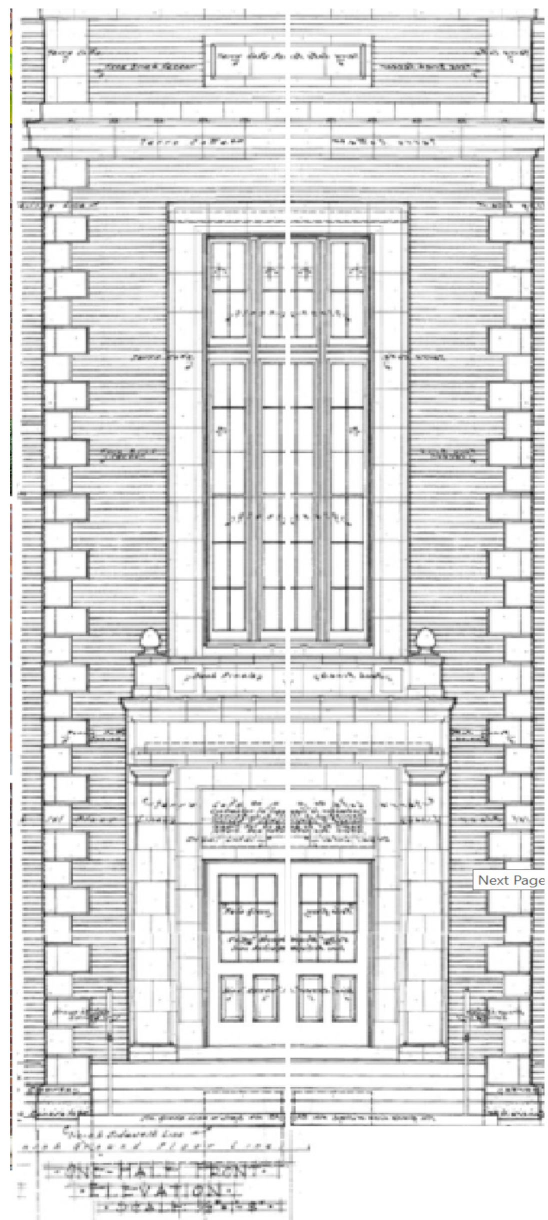


Figure 2.6.1 - 1928 Detail of Main Entrance (Source: Portland Public Schools)

3. Conditions Assessment and Repair Recommendations

SUMMARY OF FINDINGS

The purpose of this report is to summarize ARG's findings from the preliminary historic materials condition survey at Cleveland High School (CHS).

The objective of the exterior survey was to understand the general nature and condition of architectural elements, and to develop preliminary repair and maintenance recommendations. The objective of the partial interior survey was to understand the general condition of architectural elements and provide general preservation guidance. A more detailed condition assessment will be conducted in future design phases that will capture actual conditions and quantities for accurate pricing.

The principal façades of CHS are brick masonry with terra cotta ornament and a concrete foundation finished with a concrete parge coat. The exterior materials are generally in good condition with minimal localized damage. At the southwest corner of the building, a vertical crack was visible running the height of the terra cotta quoins; and several terra cotta window sills at all elevations exhibited minor cracking and spalling, along with open joints and biogrowth at the joints. The most significant deterioration was observed at the main entrance, where the balustrade exhibited significant cracking, and several of the balusters are missing or heavily damaged. The brick exhibited little to no visible mortar deterioration, and no cracks were identified.

In general, the building should be cleaned of general soiling and biological growth, which is most prominent at the concrete base, and the terra cotta cornice and window sills. The building should be repointed as required and all cracks and spalls at masonry elements repaired.

At the main entrance and stairwell façades the original wood windows are in good condition, and remain operable. The original wood window sash

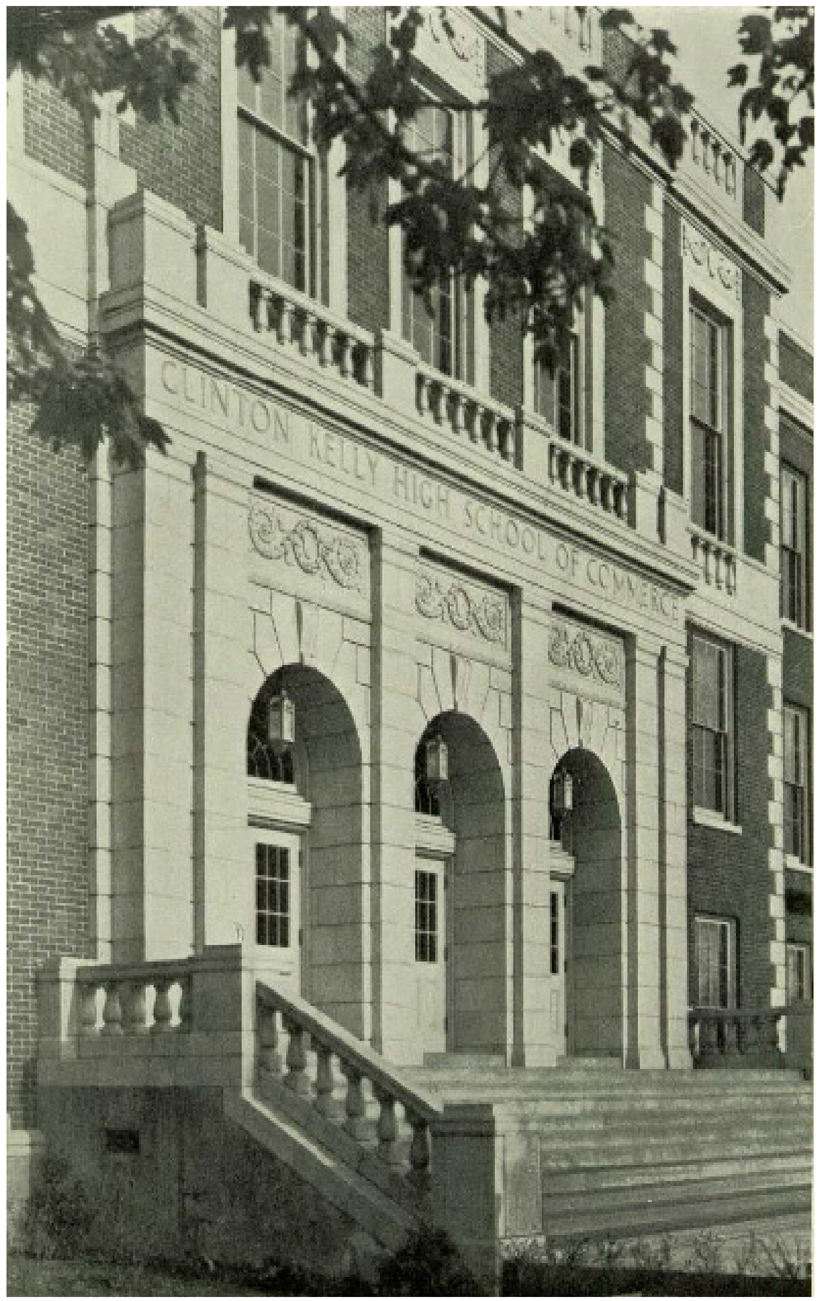


Figure 3.1.1 - Main Entry of Cleveland High School, formerly Clinton Kelly School of Commerce, circa 1932

Source: 1932 yearbook, Clinton Kelly High School of Commerce have been removed at all other facades, but the frame, trim and brick mold remain and are in fair to good condition, depending on their location. The original steel windows at the Auditorium were replaced with wood windows, which are in fair to good condition.

There is one historic skylight in the second floor corridor. The skylight was not observed from the roof, but the laylight was in good condition. The original glass appears to have been replaced with a textured plexiglas material.

The interior layout, finishes and millwork at the 1929 building are largely intact, with major modifications limited to the original gym at the east side of the building, and the south corridor. Original doors are present at classrooms and offices in the north and west corridors and stairwells, though the original hardware has been replaced. Original light fixtures are present in the Auditorium and main entry, but have been replaced in the corridors, classrooms and support spaces. Interior condition issues are mostly due to general day-to-day wear. While it is understood that these interior spaces are likely to undergo significant modification to accommodate necessary structural and MEP improvements, effort should be made to retain interior historic features where feasible.

Figure 3.2.1 - Stairwell (Source: 1932 yearbook, Clinton Kelly High School of Commerce)

Figure 3.2.2 - Project team members in first floor corridor.

METHODOLOGY

On November 9th and 10th, 2023, Architectural Resources Group conducted an exterior and partial interior survey of the historic main building at Cleveland High School. The survey was limited to the 1929 Main Building, originally built as the Clinton Kelly School of Commerce.

The survey was conducted from the exterior on the ground level, and from the interior on the ground, first and second floors. Not all rooms were accessed during the survey, so assumptions have been made based on the representative survey areas, including window conditions, interior casework and trim, ceilings, and flooring.

On the days of the survey the weather was overcast, with a temperatures in the low 50 degrees Fahrenheit. Conditions were notated by hand on printed copies of original construction drawings and recorded with digital photographs. Notes were then transferred onto pdfs of the drawings, using Bluebeam. See *Appendix A* for complete drawings illustrating the findings of the visual survey. Specific areas of the survey will be highlighted in the body of the report.

This report includes photos that illustrate typical deterioration conditions, and repair recommendations.

Recommendations for further review

Exterior

- Perform detailed, up-close conditions assessment of the brick, terra cotta, concrete and remaining wood windows and trim.
- Perform an up-close survey of selected areas of the terra cotta masonry to further identify areas requiring repair. Use manual sounding techniques to detect loose or unstable units. At a minimum, survey the west elevation at the Main Entrance.
- Perform mortar analysis to determine color/composition/ materials. Collect samples of presumed original mortar materials for laboratory testing. Perform gravimetric acid digestion of mortar samples to determine original mortar constituents and proportions for matching purposes.
- Investigate vertical crack at southwest corner (through multiple terra cotta quoins).
- Structural engineer should investigate if non-historic steel lintel at front entry window may have additional underlying structural implications.
- Perform parapet investigation to evaluate condition of underlying materials.
- Structural engineer should investigate if foundation cracking at several locations is due to settling or other structural deficiency.
- At terra cotta, selectively remove damaged materials or make small openings at select locations in order to inspect concealed areas and gather more detailed information relative to the construction and material conditions, in particular concealed metal anchors.
- Confirm decorative metal material(s).
- Confirm proper drainage at south window well.

General Interior

- Perform detailed interior door, window and trim conditions assessment
- Verify original paint colors with paint analysis
- Test acoustic ceiling panels for asbestos
- Inventory original casework

Auditorium

- Structural engineer should perform structural assessment of concrete floor and monitor cracking
- Perform exploratory removal of acoustical tiles at balcony to determine condition of original plaster finish.
- Verify original paint colors with paint analysis

Main Entry

- Test Zenitherm for asbestos and determine if it can be encapsulated in a manner that is acceptable to PPS, while maintaining the visual appearance.

Figure 3.3.1 - 1929 building, West elevation

HISTORIC EXTERIOR

Description of Materials

The principal facades of the 1929 building are brick masonry with terra cotta ornament. Terra cotta is used throughout for ornamental details including parapet copings, projecting cornices, pilaster capitals, keystones and window sills. It is used to clad and highlight the prominent main entrance on the west elevation, and the stairwells at the north and south elevations. The base of the building is concrete finished with a concrete parge coat.

Brick & Mortar

The exterior walls are concrete back-up with brick face veneer. The bricks are rough-textured with limited aggregate inclusions. Pointing mortar is consistent in color and finish, exhibiting little to no deterioration, though discoloring is visible due to atmospheric soiling. Joints are wide, about finger-width, and slightly recessed *(Fig 3.4.1)*. The original troweling profile appears intact, with minimal visible re-pointing.

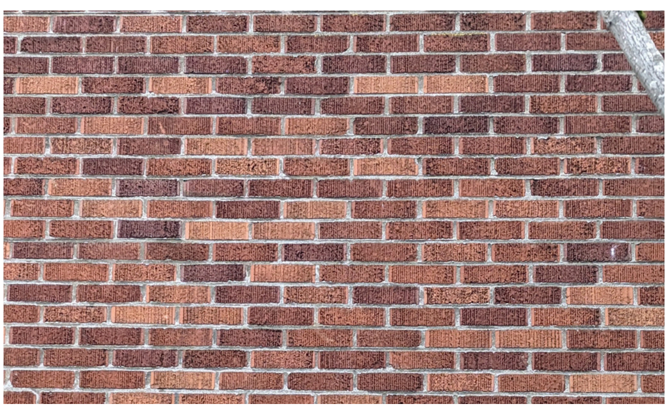


Figure 3.4.1 - Typical observed condition of brick and mortar

The same brick type and color range is used at all elevations, with some variation in bond and color at either end of the west elevation, where a diamond brick pattern is expressed using a darker, wine colored brick *(Fig 3.4.2)*.

Figure 3.4.2 - Diamond brick pattern at north end of West Elevation

The masonry above windows and doors is carried by steel lintels. The condition of all concealed fasteners and anchors is unknown at this time.

In general the historic brick and mortar at CHS is in good condition. Soiling is ubiquitous and imparts a darker, grayer tone, particularly to the mortar joints. Biological growth is commonly seen along sills, the bottom edge above the terra cotta base course, in corners, and in larger surface areas where water is directed onto the face of the building from roof overflow outlets. Joint cracking was not observed, but may be identified in future investigations. No graffiti was observed during the survey. A chalky white film was noted at two locations on the north elevation, which is most likely residue from chalkboard erasers being cleaned by banging them against the building. Efflorescence is a common condition issue with brick construction but at CHS it was only observed below the roof overflow outlets *(Fig 3.5.1)*.

Figure 3.5.1 - Efflorescence at roof overflow outlet (cows tongue).

Mortar joints are generally in good condition with isolated areas of loss, most commonly seen at locations of projecting sills.

Concrete

All exterior stairs and walkways in the study area are poured-in-place concrete. Most staircases appear to be original. Many cracks at concrete steps and pavers were noted, which is unsurprising given the age of the material and site location in an area of high rainfall and heavy foot traffic. A number of concrete spalls were also noted, with the highest occurrences at stair tread edges *(Fig 3.5.2)*. Exposed concrete displays a moderate to high level of atmospheric soiling; moss, lichens, and other biological growth which are present at interfaces where concrete intersects with brick walls, at cracks, and at stair risers.

Figure 3.5.2 - Typical observed condition of exterior stairs.

Parge Coat

A smooth gray parge coat, referred to in the original drawings as “cement finish”, is applied over exterior concrete wall base, which extends from grade to the underside of the terra cotta base course below the ground floor window sills. The parge coat displays a significant level of atmospheric soiling; moss, lichens, and other biological growth are present at interfaces where it intersects with adjacent materials, in corners, at cracks, and at grade *(Fig 3.5.3)*.

Figure 3.5.3 - Typical observed condition of parge coat at the base of the building.

Cracks in the parge coat at the building foundations could indicate additional cracking at the concrete below. The full extent is not known. At building foundations and sills where a parge coat is present it is generally in fair condition, exhibiting networks of cracks and spalls that is likely caused by a weakening of the bond between the parge and concrete substrate through building movement and moisture intrusion. Efflorescence is present at some crack locations; since crack repair should take place prior to exterior pressurized water cleaning, efflorescence should be rinsed away prior to crack repair. Cracks in the parge coat that are more substantial may be mirroring cracks in the concrete foundation which may be indicative of a larger structural issue, and should be reviewed by the structural engineer.

Terra Cotta

The terra cotta ornament is similar to that found at other PPS school buildings with contemporary dates of construction. The terra cotta glaze is off-white or cream in color, similar to limestone interspersed with darker specks through *(Fig 3.6.2)*.

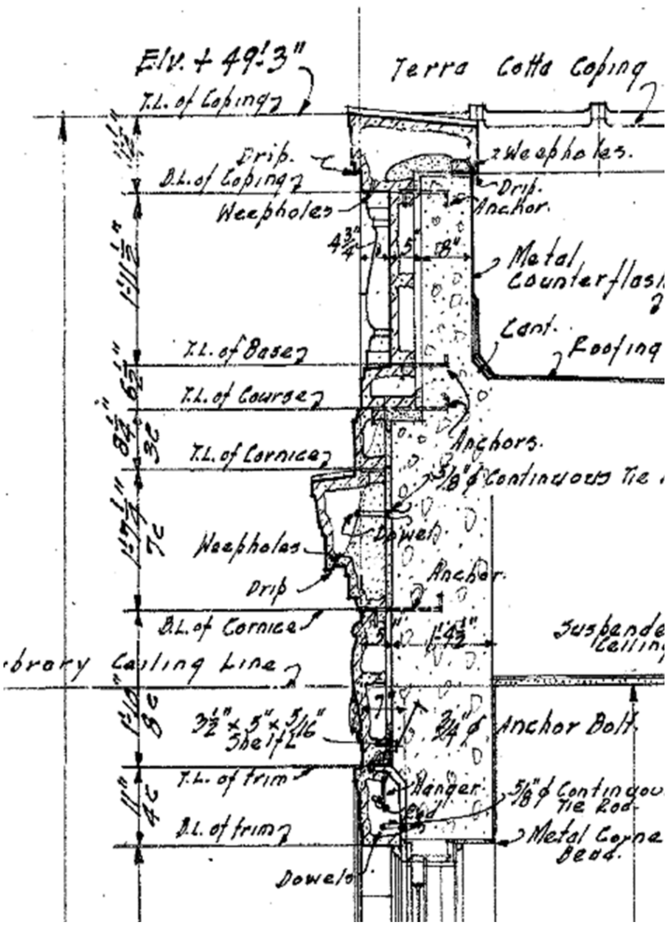


Figure 3.6.1 - Partial wall section detail from original 1929 drawings, showing terra cotta units and anchoring system at main entrance

The terra cotta units are installed over concrete back-up. They are laid up with mortar. The original drawings *(Fig 3.6.2)* show metal anchors at the top and bottom of the units in order to tie them to the backup wall (a standard terra cotta construction method). Cornices are comprised of two separate units, including the upper smaller unit, which projects slightly from the face of brick veneer; and a larger lower unit which has a sloped top surface and projects approximately eight inches out from the face of the wall. The larger projecting units are fastened back to the wall using a continuous tie rod. The terra cotta coping cap is approximately eight inches tall at the front face, sloping back towards the inside face of the parapet. The coping has been covered with sheet metal flashing, similar in color to the terra cotta glaze *(Fig 3.6.2)*.

Figure 3.6.2 - Terra cotta cornice and parapet cap with metal cap flashing.

At the main entry the stairs are flanked on either side by a terracotta balustrade. The door bays are framed by terra cotta pilasters with capitals, and ornamental terra cotta units are installed over the main entry roofs and second floor windows. A balustrade frieze is present at the parapet and below the second floor windows *(Fig 3.6.3)*.

Figure 3.6.3- Terra cotta at main entry.

In general, terra cotta surfaces are soiled throughout; this has resulted in an overall dulling of the color and gloss. Cornice units, and other specific areas such as the main entrance ballustrade, typically have much heavier accumulations of soiling, as well as stains and biological growth. Crazing of the glaze was observed at many terra cotta units *(Fig 3.7.1)*. This was noted throughout the building, but appears to be more predominant at the first floor level, in particular the window sill and quoin units.

Figure 3.7.1 - Typical observed condition of terra cotta at quoin units, showing crazing at glaze.

Mortar joints are in fair to good condition overall. The mortar is relatively hard, cohesive, and most likely portland cement-based. It is typically more deteriorated and eroded at upward-facing joints, such as at copings, cornices and window sills. Mortar joints at the vertical face and underside of the cornice units are also eroded, most often with staining and glaze spalls at the unit faces to either side of the joints *(Fig 3.7.2)*. At areas

Figure 3.7.2- Mortar joints at main entry cornice displaying typical staining.

where water has migrated through deteriorated joints and infiltrated cornice units, there is typically an area of staining, glaze spalls and surface deterioration at the face of the terra cotta below.

Several cracked terra cotta units were observed in localized areas. At the southwest corner on of the building several quoin units are cracked vertically *(Fig 3.7.3)*. Additional cracked units were observed at main entrance, and notably, a steel lintel appears to have been installed below a decorative frieze above a second floor window.

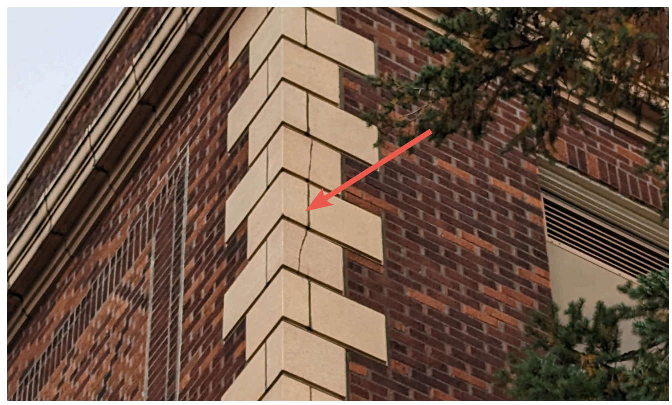


Figure 3.7.3 - Cracked terra cotta units at southwest building corner.

Glaze spalls, chips and unit spalls were observed in several locations. These range from small nicked and chipped edges, to small losses of the glaze layer at the face, to larger losses some several inches deep into the terra cotta bisque. Much of this damage is located at the main entrance, and are often associated with damage from vandalism, use or modifications over time. In other cases, it is associated with water infiltration and thermal stresses. Graffiti stains were not observed.

The terra cotta damage is much more pronounced at the main entrance at the west elevation *(Fig 3.6.3)*. Many balustrade and wall units are cracked or broken, and several balusters are missing. There are chips and glaze spalls throughout, and some larger spalls at railing units. Soiling and biological growth is heavier here than in other areas. And the lower terra cotta wall units near the concrete base are crazed.

Exterior Materials and Conditions

The following pages describe the material conditions and repair recommendations identified during the survey. The tags identify location of the photos, but are not representative of all locations. Refer to *Appendix A* for complete survey drawings.

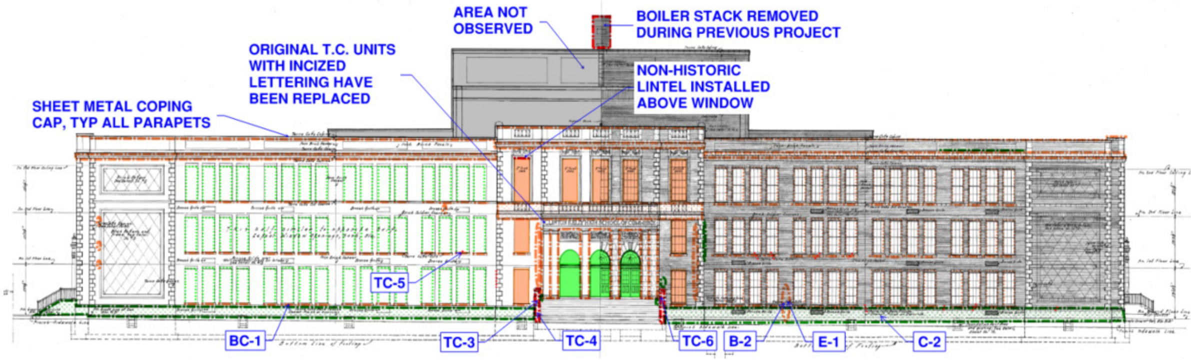


Figure 3.8.1 - West Elevation

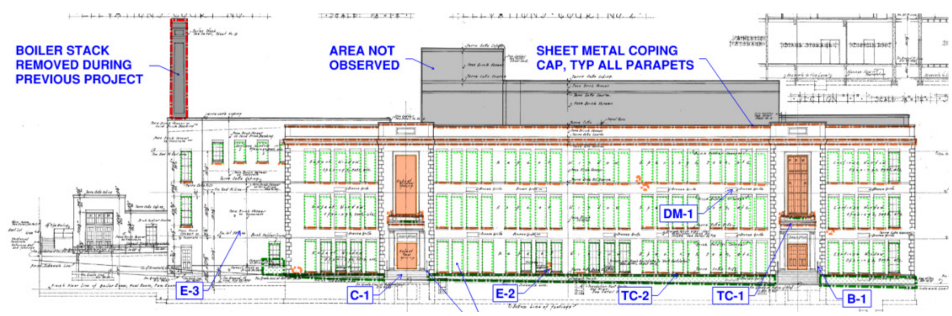


Figure 3.8.2 - North Elevation

Condition & Repair Types

- BC-1 Brick/Concrete Cleaning
- B-1 Localized Brick Repair
- B-2 Localized Mortar Joint Repair
- C-1 Localized Concrete Repair
- C-2 Localized Parge Coat Repair
- E-1 Efflorescence
- E-2 Chalk Residue
- E-3 Graffiti/Graffiti Overpaint
- E-4 Localized Cleaning
- TC-1 Terra Cotta Cleaning
- TC-2 Terra Cotta Cracks
- TC-3 Terra Cotta Stabilization
- TC-4 Glaze Repair
- TC-5 Spalls
- TC-6 Terra Cotta Unit Replacement
- DM-1 Metal Cleaning & Refinishing

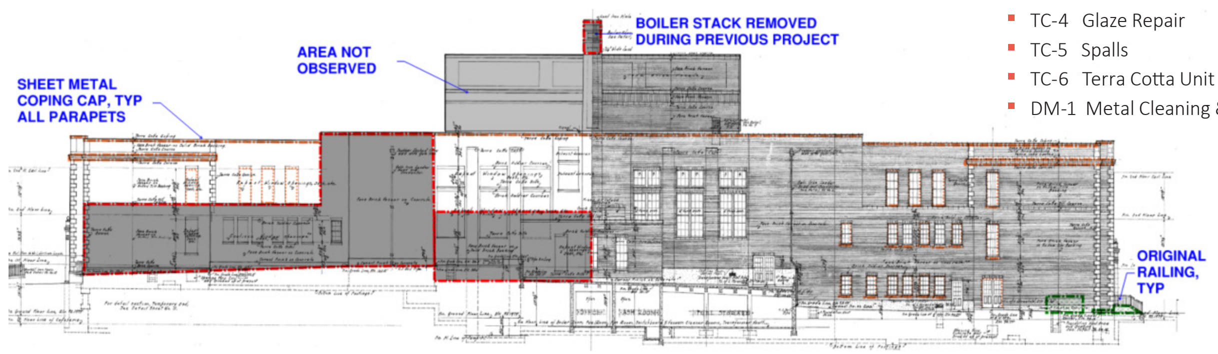
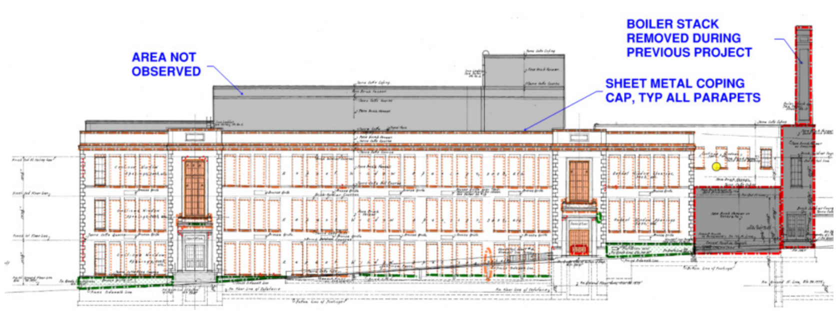


Figure 3.8.3 - East Elevation



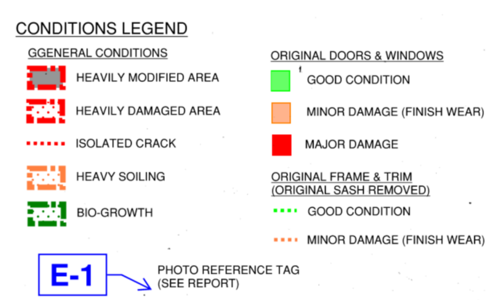


Figure 3.8.4 - South Elevation

Repair Conditions and Recommendations

The recommendations outlined in this section are intended to provide enough detail for a comprehensive understanding of repair scope. For actual work implementation, a detailed survey identifying repair quantities, and formal project specification documents should be developed and submitted with approved construction design packages.

Brick and Concrete Repairs

Cleaning (BC-1)

Pressurized Water

The buildup of atmospheric soiling on exterior architectural features suggests that CHS does not appear to have been cleaned for some time. It is therefore recommended that a comprehensive exterior cleaning take place as part of the proposed construction project. The reasons for this go beyond aesthetic improvements: soiling and other accumulations can conceal and even exacerbate material deterioration. By removing these buildups, the true condition of underlying building materials can be properly assessed. Hot pressurized water will have more cleaning impact than cold water, but is not necessary. Historic buildings must be cleaned with great care and lower water pressure, as their materials tend to be softer and more vulnerable.

Recommendations:

1. Select an area(s) for mock-up and execute treatment for project team review following recommendations outlined in steps 2-4.
2. Set up drainage capture for water runoff.
3. Install temporary protections to protect landscaping and fragile materials.
4. Exterior Masonry (all levels/elevations): Hot or cold pressurized water wash at no more than 600 psi. Note: Open mortar and sealant joints should be repaired prior to cleaning to avoid driving pressurized water into wall cavities. Pressure should be lowered or cleaning avoided altogether if masonry surface is heavily deteriorated, cracked, or fragile and water pressure may exacerbate the condition. Prior to cleaning, perform a visual survey of exterior elevations to identify these areas ahead of time, and protect them as appropriate.
5. Concrete Stairs and walkways: Hot or cold pressurized water wash at no more than 600 psi. Note: Open mortar and sealant joints should be repaired prior to cleaning to avoid driving pressurized water into pavers and stair assemblies.

Architectural Biocide

In wet climates such as the Pacific Northwest, it is common for accumulations of moss, lichens, and other biological growths to colonize architectural elements and proliferate through the wet winter months. In addition to altering the appearance of a building, these growths can have a deleterious effect on building materials by slowly eroding the surface grains of stone, brick, concrete, and mortar. Spongier growths will saturate and hold moisture for long periods of time, and larger plant growths with strong root systems can lead to cracking and displacement of building materials. Therefore, it is important to eradicate these colonizations as much as possible, and there are a number of products on the market designed for use on older buildings that are sensitive to historic materials. While an exterior cleaning with hot pressurized water will be effective at removing much of the biological plant matter, application of post-cleaning topical biocides will ensure that bacterial residue is effectively culled. Recolonization is inevitable, so a regular schedule of inspection and maintenance should be established.

BC-1 - Cleaning at brick, terra cotta, and concrete to remove atmospheric soiling and bio-growth.

Recommendations:

1. Select an area(s) for mock-up and execute treatment for project team review following recommendations outlined in steps 2-3.
2. At surfaces where bio-growth is thinner: Cleaning with overall biocide treatment followed by low-pressure cold water rinse.
3. At surfaces where bio-growth tends to be spongier and thick or is actively growing out of cracks in concrete: Remove plant material with nylon brushes and/or plastic scrapers before hot pressurized water cleaning treatment is carried out. Water and/or biocide may aid in bio-growth removal.

Localized Brick Repair (B-1)

Though limited, the most common deterioration type for brick at CHS is surface weathering. Fortunately this is a natural condition that does not generally impact the material performance. Isolated locations of brick cracking, spalls, and incorrect reinstallation were noted and should be repaired. Areas where brick is cracking should be inspected for structural soundness; this is because general settling tension is typically absorbed by the mortar joint. If a crack extends through multiple courses of brick, there could be an underlying structural problem that should be addressed holistically. It is important to repair brick spalls because the fireskin (outer layer of brick) is a protective membrane. If exposed, the substrate material is more susceptible to weathering and erosion. If bricks remain on site from prior demolitions and they match existing brick units, these should be used for any replacement work. In some cases, the replacement work will comprise removing and reinstalling the same brick, as the work will focus on installing a more compatible pointing mortar.

Recommendations:

1. Cracks: For a crack extending through multiple courses of brick, consult structural engineer. If no structural repairs are deemed necessary, repair in conjunction with mortar crack repair at same location. Inject appropriate flowable injection grout into crack. Color should match brick as much as possible. Fill to surface, ensuring material does not drip across masonry face.
2. Spalls: If more than 40% of brick is missing, consider replacing in kind. Spalls smaller than ½-inch square should be le alone. For spalls larger than ½-inch square, brush out loose material, or apply compressed air. If spall is at edge of a brick unit, install a wood screed in the mortar joint. Provide a mechanical key for patching materials by drilling ½-inch diameter holes spaced two inches apart and minimum 1-inch deep. Wet area to be patched. Patch with an appropriate patching material, and apply according to manufacturer's specifications. Remove wood screed after patch is firm.
3. Replacement: At locations where bricks have been removed and reset with inappropriate/sloppy pointing mortar, carefully remove unit by hand using chisel and mallet. Support and protect masonry surrounding removal area. Clean area to be repointed, removing traces of incompatible mortar. If possible, remove incompatible mortar from face of brick to be reinstalled. Alternatively, use a compatible replacement unit or turn the existing brick around so that the opposite face is presented. Lay brick into filled bed, buttering ends with sufficient mortar to fill head joints and shove into place. Maintain joint width to match existing. Repoint new joints in repaired area to comply with requirements for repointing existing masonry.

B-1 - Original railing connection at Brick. Brick replacement will be required if railings are removed.

Localized Mortar Joint Repair (B-2)

It is important to maintain masonry joints in order to keep the building envelope free from moisture intrusion beyond the intended water vapor transmission performance. The mortar joints surveyed at CHS are generally in very good condition, but some isolated areas of cracking and deterioration may be present. Cracks should be filled with a flowable cementitious grout that is compatible with existing mortar. Broken and open mortar joints should be cleaned out and repointed with a compatible mortar mix that is pigmented to match existing historic joints and executed with the same joint profile. The repointing mortar should be appropriate for use with historic masonry; too often, masonry joints are repointed with hard mortars with high Portland cement content. Over time, this will lead to deterioration of the brick because moisture is not able to move through the cementitious joints and instead works its way out through the softer and more vulnerable brick. Type N mortar is recommended. Select color and sand to match historic mortar, based on mortar analysis.

Note: Because the survey was conducted from ground level, the parapet masonry was not visible due to the projecting terra cotta cornice.

Recommendations:

1. Broken and open mortar joints at vertical surfaces: Remove loose material and clean recess with compressed air and water. Repoint mortar joints with custom-mixed mortar, match color and profile to historic appearance.
2. Cracked mortar joints at vertical and horizontal surfaces: Inject flowable cementitious grout into crack. Color should match cleaned mortar as much as possible. Fill to surface, ensuring material does not drip across masonry face. For mortar cracks larger than hairline in width, joint should be repointed.
3. Broken and open mortar joints at horizontal surfaces (such as concrete stairs and pavers): Repointing of mortar joints with custom-mixed Type N mortar, match color to adjacent concrete.
4. Sealant repair: Replace sealant joints at all areas of failure, except at locations where joints should be repointed with mortar.

B-2 - Deteriorated mortar joints at roof overflow outlet.

Localized Concrete Repair (C-1)

Stairs and Walkways

Pedestrian pathways and stairs can present trip/fall hazards if not properly maintained. Cracks and spalls should be filled and patched, and plants and other types of biological growth should be removed. If more than 25% of the unit is broken or missing, consider replacing in kind. All repairs should be monitored and maintained.

Recommendations:

1. Cracks: Cracks narrower than ¼-inch wide should be carefully cut to a depth of ¾-inch and a width of ¼-inch using a hand-held grinder. Clean crack with compressed air and wet with water. Mix patching mortar according to manufacturer's specifications. Color should match cleaned concrete as much as possible. Fill crack with mortar; if crack is deeper than ¾-inch, build up mortar in layers. The repaired crack should be flush with face of adjacent concrete.
2. Spalls: Remove loose concrete. If more than 40% of paver is missing or if paver is severely cracked and out of the plane, consider replacing in kind. Concrete spalls should be patched with a compatible cementitious mortar. To prepare for patch, cut back spall to create square edges with a slight undercut. Roughen surface of patch area for a better bond. Remove loose material and wet surface. Mix and apply patching mortar according to manufacturer's specifications. If patch

is larger than 24 square inches, install stainless steel anchors into concrete and set with epoxy before filling with patching mortar. Patch should be flush with face of adjacent concrete.

3. Bio-growth: If surface of concrete exhibits moss or other bio-growth, or if bio-growth has colonized in cracks and spalls, remove using an architectural biocide before repairing concrete. Refer to the Architectural Biocide information in the Cleaning section, above, for further information.

C-1 - Cracks and spalls at concrete treads.

Foundation Walls

Cracks in foundation walls that extend deeper than the parge coat should be reviewed by a structural engineer. For parge coat cracks, refer to the parge coat repair section, below.

Localized Parge Coat Repair (C-2)

All parge coat locations should be inspected prior to exterior cleaning so that loose material and cracks can be repaired. Inspection should include sounding the surface of the coating to identify loose and debonded areas. For cracks that may be telegraphing through the parge coat from the concrete foundation wall, it will be important to inspect the condition of the concrete once the parge crack has been widened in preparation for repair. Many existing patches have failed and should be removed and replaced.

C-2 - Bio-growth and cracking at parge coat

Recommendations:

1. Hairline cracks: If parge coat is cracked but still securely in place, cracks should be filled with grout. Inject flowable cementitious grout into crack. Color should match cleaned parge coat as much as possible. Fill to surface, ensuring material does not drip across masonry face. At areas where cracking aligns with former window outlines, inspect infill material to ensure it is securely in place before proceeding. If parge coat is cracked and coating is debonded from surface of substrate, carefully remove loose section and patch as appropriate per recommendations below.

2. Larger cracks: Cracks narrower than ¼-inch wide should be carefully cut to a width of ¼-inch using a hand-held grinder, down to the concrete substrate. Inspect concrete foundation substrate; if crack extends into concrete, consult a structural engineer before proceeding. If crack is limited to parge coat only, clean crack with compressed air and wet with water. Mix patching mortar according to manufacturer's specifications. Color should match cleaned parge coat as much as possible. Fill crack with mortar; if crack is deeper than ¾-inch, build up mortar in layers. The repaired crack should be flush with face of adjacent surface.

3. Spalls: Parge coat spalls should be patched with a compatible cementitious mortar. To prepare for patch, remove loose parge material un l edges of sound material are reached. Cut edges of existing material so they are perpendicular to the vertical substrate surface. Roughen surface of patch area for a better bond. Remove loose material and wet surface. Mix and apply patching mortar according to manufacturer's specifications. If patch is larger than 24 square inches, install stainless steel anchors into concrete and set with epoxy before filling with patching mortar. Patch should be flush with face of adjacent concrete and textured to match.
4. Incipient spall repair: It may be possible to rea ach loose and debonded sections of parge coat using pins or countersunk fasteners. If identified, these sections should be inspected by an architectural conservator to determine the most appropriate repair for individual conditions.
5. Patch repair: Carefully remove failed patch so as to not damage or detach surrounding parge coat plaster. Inspect concrete foundation substrate and consult a structural engineer if deficiencies are noted. To patch, follow procedure in Item 3, above.

Localized Cleaning Treatments (for all exterior brick, concrete, and terra cotta materials)

Ferrous Staining (No Repair)

Ferrous stains noted during the exterior survey of CHS appear to be limited. Pressurized water cleaning may eradicate some of the iron, but a poultice or oxalic acid treatment may be needed to effectively remove the staining. The iron won't harm the facade and runoff is unlikely to negatively impact adjacent vegetation, so the goal for cleaning would be for aesthetic reasons only; cleaning may require the use of toxic substances, removing the ferrous staining is a low-priority item.

Recommendations:

1. Shut off any valves with active drips.
2. Cleaning is not recommended except as part of overall exterior treatment.

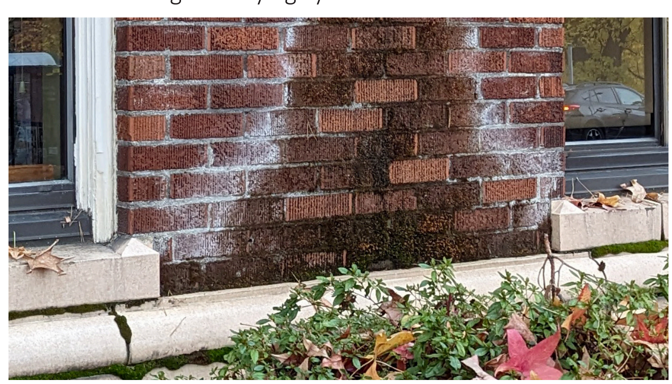
Efflorescence (E-1)

Efflorescence comprises residue from soluble salt migration through water vapor transmission activity that deposits salts on masonry surfaces as water evaporates. Efflorescence at the surface is not inherently harmful, but repeated wetting and drying cycles reintroduce the salts to the masonry body, which can be harmful over time by eroding masonry and mortar materials. In climates where freeze-thaw cycles occur, these salt accumulations can cause significant damage to masonry materials through crystalline expansion, which may cause material displacement through cracking and breakage. Efflorescence was noted in only a few locations at CHS.

Efflorescence can typically be rinsed away with water and gentle scrubbing, but it may reappear because a water rinse will not typically address the source of the problem. A poultice may be applied to the masonry surface to pull soluble salts out of the mortar body, but this should be tested in a small location before undertaking over a larger area.

Recommendations:

1. Ensure joints are in good condition. If not, repair as needed before proceeding.
2. Rinse surface of masonry with clean potable water. No pressure is needed. Scrub effloresced joints with a natural bristle brush (do NOT use metal or plastic bristles) and rinse.
3. Monitor for efflorescence on a regular maintenance schedule. Efflorescence should diminish over time as long as the surface salts are removed and not reintroduced to the substrate through repeated wetting and drying cycles.



E-1 - Efflorescence below roof drain overflow outlet.

Chalk Residue (E-2)

Cleaning chalkboard erasers by hittng them against a hard surface is a method evidently still in practice at CHS. Chalk residue was noted at several locations, primarily on brickwork around the perimeter of windows. The chalk is harmless and will likely disappear when saturated with pressurized water during overall exterior cleaning.

Recommendations:

1. Rinse with water and gentle scrubbing with natural bristle brushes (do NOT use metal or plastic bristles). If an exterior cleaning campaign is undertaken, this should take care of the chalk residue and no additional work will be necessary.

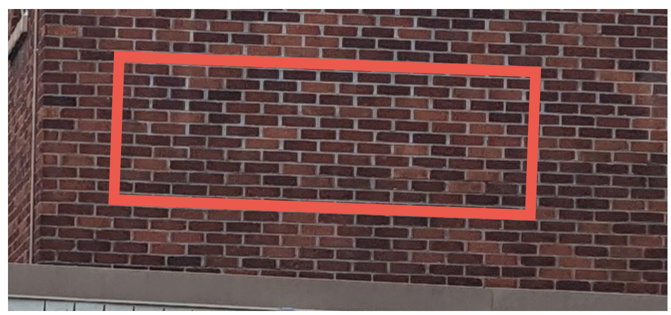
E-2 - Chalk residue visible at North elevation.

Graffiti /Graffiti Overpaint (E-3)

Graffiti was not noted, however evidence of prior graffiti remediation efforts is visible. These are typically noticeable in two ways: areas that have been overcleaned, and areas that have been painted over. The recommended approach is to remove the graffiti rather than paint over it, but by using methods that do not adversely impact the substrate.

Recommendations:

1. For new/existing graffiti: perform cleaning tests to determine the most effective solvent for removing the paint. Note that different paints respond to different cleaning agents, so what works on one may not work on another. The focus should be on protecting the substrate. Once an appropriate solvent has been identified, remove paint carefully using hand tools and clear the surface with water, capturing runoff so that it doesn't reach the municipal drainage system. Some strippers may require the application of a neutralizing agent after cleaning; refer to manufacturer's instructions.
2. For graffiti that has been overpainted: perform cleaning tests to determine the most effective paint removal product starting with the gentlest/least-caustic product. A poultice or "peel away" system may work best on brick. Once an appropriate solvent has been identified, remove paint and clear the surface with water, capturing runoff so that it doesn't reach the municipal drainage system. Some strippers may require the application of a neutralizing agent after cleaning; refer to manufacturer's instructions.
3. For overcleaned areas where graffiti has been removed: allow to soil and weather over time, which will soften the visual contrast. These areas should be inspected to ensure the substrate has not been adversely affected by the cleaning agents used, aside from the visible blanching.



E-3 - Discoloration of brick and mortar is evidence of previous graffiti removal is visible at northeast corner of 1929 building.

Localized Cleaning (E-4)

Remove localized deeper soiling, stains and graffiti with light-duty chemical cleaners. (Cleaning mockups will be required.)

E-4 - Heavy bio-growth soiling at brick window sill joints

Terra Cotta Repairs & Modifications

The upward facing joints at projecting cornices were not visible during the survey, but experience at other PPS schools suggests that the following conditions may exist:

- The upward-facing joints between units covered over with a black roofing mastic product, most likely in an effort to stop water infiltration. The mastic would stain the terra cotta, and likely no longer serves it purpose.
- Sealant (caulking) applied as a stop-gap measure for water infiltration. The sealants are likely to be deteriorated and ineffective, and may prevent natural moisture evaporation from masonry and mortar materials.

Parapet walls and copings have been covered with sheet metal flashing. The flashing appears to have been installed as part of the Portland Public Schools – Improvement Project 2016 *(Fig 3.15.1)*.

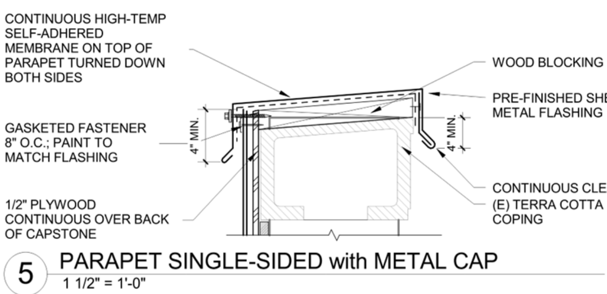


Figure 3.15.1 - Flashing detail from 2016 Roof improvement project, showing cap flashing attachment.

The flashing appears to be galvanized metal to painted metal *(Fig 3.15.2)*. It is unclear at this time how the wood blocking was installed and if damage was done to the terra cotta units during this, or previous, roofing projects. The condition of the coping units is unknown at this time. It can be assumed that the coping units are heavily soiled and the joints are eroded, and that the sheet metal flashing was installed in an effort to prevent water infiltration into the parapet walls.

Figure 3.15.2 - Sheet metal cap flashing visible at parapets

Previous repairs to terra cotta units were not observed, but are likely to be localized patch repairs at damage areas. These may be mortar-based products, and some may be successful than others.

Localized Cleaning (TC-1)

Remove localized deeper soiling, stains and graffiti with light-duty chemical cleaners. (Cleaning mockups will be required.)

TC-1 - Soiling at entablature above stair door.

TC-1 - Soiling at terra cotta window sill joint

TC-1 - Adhesive residue at terra cotta base

Cracks (TC-2)

At cracked units to remain, stabilize sections of unit to backup masonry with anchors as noted above, and repair crack with flowable crack filler or grout. Visually blend crack repair with custom color-matched surface treatments (see below).

TC-2 - Minor cracking at T.C. window sill joint.

Stabilization (TC-3)

At identified hollow/un-sound units (from further up-close inspection), stabilize units and re-anchor to backup masonry with stainless steel anchors (e.g. helical anchors). Install anchors through the face of the terra cotta to a minimum depth to engage the backup wall, inset a minimum 1/2-inch and patch anchor holes. Prior to work, test for adequate pull-out strength.

TC-3 - Significant cracking at main entry balustrade cap

Glaze Repair (TC-4)

At superficial chips and glaze spalls (less than ¼-inch deep), apply latex-modified re-profiling mortar. Mortar to be custom color-matched to the existing terra cotta glaze. Hand-apply paints as required to recreate the stippled texture.

TC-4 - Glaze spalls and chips visible at base of main entry balustrade

Unit Spalls (TC-5)

At larger unit spalls (more than ¼-inch deep but less than 16 inches square in size), prepare surfaces and patch with a latex-modified patching mortar. Mortar to be custom color-matched to the existing terra cotta glaze. Hand-apply paints as required to recreate the stippled texture. Prior to patching, cut back damaged area of terra cotta units as required to provide key and good bond surface for the mortar repair. (Note: In general, larger spalls at overhead public locations to be replaced with new units rather than patch repairs, due to potential for future fall hazards should the patch fail over time.)

TC-5 - Unit Spalls at terra cotta window sill

Unit Replacement (TC-6)

Remove and replace selected terra cotta units that are cracked, spalled, or otherwise damaged, and cannot be stabilized using the repairs noted above. Replace units in kind with new terra cotta units to match the existing in size, form, color, and finish. Prior to reinstallation, repair and/or parge backup masonry as required. Repair, prime and paint or replace as required any metal anchors or underlying steel supports. Install new units with galvanized or stainless steel anchors.

TC-6 - Heavily damaged baluster at front entry.

Terra cotta units that are damaged, but otherwise appear stable, should be assessed individually to determine the need for repair or replacement.

TC-6 - Non-historic steel lintel installed above window at front entry.

Decorative Metal

Original metal grilles below window sills remain. Original drawings note that these are over fresh air intake grilles for "unit ventilators". Original drawings indicate that these were to be cast bronze, but they are currently painted, so the material has not been confirmed.

Cleaning & Refinishing (DM-1)

Clean any biogrowth and debris from metal elements. Prep and refinish with rust inhibitive system. Preparation may include removal of loose and non-adhered coatings, removal of rust using wire brush, and/or paint stripping. Locations of significant corrosion may require replacement of damaged component in kind.

DM-1 - Typical painted metal intake grill.

Fig 3.18.1 - Window well at south elevation

Recommendations for Further Study / Areas of Concern

A. Perform mortar analysis to determine color/ composition/materials. Collect samples of presumed original mortar materials for laboratory testing. Perform gravimetric acid digestion of mortar samples to determine original mortar constituents and proportions for matching purposes.

B. Structural engineer should assess vertical crack at southwest corner (through multiple terra cotta quoins), to identify if it is a result of settlement, or a larger structural concern.

C. Structural engineer should assess he non-historic steel lintel at front entry window it determine if it has additional underlying structural implications.

D. Perform parapet investigation to evaluate condition of underlying materials.

E. Structural engineer should assess Foundation cracking at several locations to identify if they are a result of settlement, or larger structural concerns.

F. Perform an up-close survey of selected areas of the terra cotta masonry to further identify areas requiring repair. Use manual sounding techniques to detect loose or unstable units. At a minimum, survey the west elevation at the Main Entrance.

G. At terra cotta, selectively remove damaged materials or make small openings at select locations in order to inspect concealed areas and gather more detailed information relative to the construction and material conditions, in particular concealed metal anchors.

H. Confirm decorative metal material(s) with testing.

I. Confirm proper drainage at south window well *(Fig 3.18.1).*

Historic Windows

Description of Materials

The original wood windows that remain in the 1929 building are restricted to the main entrance at the west elevation; and the four stair towers on the north and south elevations. The original windows are multi-paned single glazed wood units. Wood window componants are painted at the interior and exterior. Glazing compound is used at the exterior. Glass is typically clear cylinder glass, characterized by slight distortion of the glass resulting in a wavy appearance.

The majority of the rest of thr original window sash have been replaced with aluminum sliding sash window, while the original wood frame, interior trim and brickmold remain intact. The original marble stools appear to remain at all locations *(Fig 3.19.1)*.

Figure 3.19.1 - Original exterior brickmold at aluminum replacement window (left); original marble stool at interior (right).

The original wood windows are large institutional sash typical of this era of public school construction. Some of the defining features are a beveled meeting rail, lugs, weight pockets, and pulley tracks *(Fig 3.19.2)*. A large percentage of the bottom sash remain in operating condition and appear to be actively used for ventilation purposes. Existing conditions of the weights could not be determined with this limited assessment; according to the original drawings, the species of wood is oak.

Figure 3.19.2- Original wood window from interior.

The original steel windows at the north and south courtyard have been replaced with wood windows, most of which (with the exception of the auditorium windows) appear to have been subsequently replaced with single-hung vinyl sash, keeping the wood frames in place *(Fig 3.19.3 & 3.20.1)*. It is not clear when these windows were replaced, but it can be assumed, due to the material choice, that the wood windows were installed relatively early in the buildings history.

Figure 3.19.3 - Vinyl sash replacement window, displaying potential water infiltration damage.

Figure 3.20.1- Vinyl sash replacement window at courtyard stairwell

The wood windows that remain appear to be sound. The degree of paint failure appeared to be largely dictated by window location, though paint at the interior side of the units was relatively consistent. In general, windows at the south and west elevations are in the worst condition. The windows at the east and north elevations are generally in good condition. Areas of paint failure, and deteriorated wood become more pronounced at the second floor.

There is one skylight, located in the second floor hallway, between the Auditorium, and the original Library (which has since been converted to a classroom); and six skylights above the ground floor cafeteria. The skylights were not observed from the roof and the condition is unknown, however it appears that they were all replaced during the 2016 Improvement Project. Skylights in the corridor outside the original gym were not observed, but appear to remain in place after the 2016 Improvement Project. Four skylights in the original gym appear to have been removed during a previous project.

The laylight on the second floor (referred to as "Ceiling Light" in the original drawings) was visible from the corridor. The frame appears to be in good condition, but the original glass appears to have been replaced with a textured plexiglass material.

A more detailed assessment is recommended to confirm specific repair locations and quantities. The following outlines the steps in completing a comprehensive window assessment and repair project:

- Assess overall condition of casings (interior and exterior), jambs, and sills.
- Assess sealant at frame/brick interface. If found lacking, identify approved sealant product.
- If decay areas are found, adhere to this criteria:
  - If decay area is greater than 50% of the component (bottom rail for example), replacement with in-kind material is recommended.
  - If decay area is less than 50% of component, an infill repair is recommended.
  - If decay area is 1"x1"x1" or smaller, an epoxy repair is recommended.
  - All decay repairs to be inspected by preservation architect.
- Prime entire frame with approved primer.
- Apply final coatings after preservation architect approval.

The following photos illustrate typical window types. Refer to *Appendix A* for complete survey drawings showing locations of original sash and frames.

Window Types

From Exterior

From Interior

Detail view of original hardware and painted stool

W-1

Typical original 8 over 8 double-hung window at main entry.

Interior of wood windows are typically in good condition, requiring paint only.

Exterior of windows are typically in fair condition, and will required additional putty repairs, prior to refinishing with paint.

Original hardware has been painted, but is intact and in good condition. It is recommended that paint be removed from hardware.

The original marble stool appears to have been painted to match the trim, in several locations.

From Exterior

From Interior

W-2

Typical aluminum sliding sash replacement window, with original wood frame and brickmold intact.

The original marble stools are intact.


From Exterior


From Interior

W-3

Typical original tripartite stairwell windows with 6 over 6 double-hung window flanked by fixed sidelites and three 4-lite transoms above.

Original wrought iron railing at landing intact and painted to match wood.

Original marble stools are intact and unpainted.


Wrought iron railing at landing


From Exterior


From Interior

W-4

Replacement wood auditorium windows. Steel sash and frame were originally installed in the courtyard elevations, but appear to have been replaced early in the history of the building.

From Exterior

Interior detail

W-5

Replacement wood window frames and vinyl sash at north and south courtyards. Steel sash were originally installed in the courtyard elevations.

Original marble stools are typically intact and unpainted.

From Interior

W-6

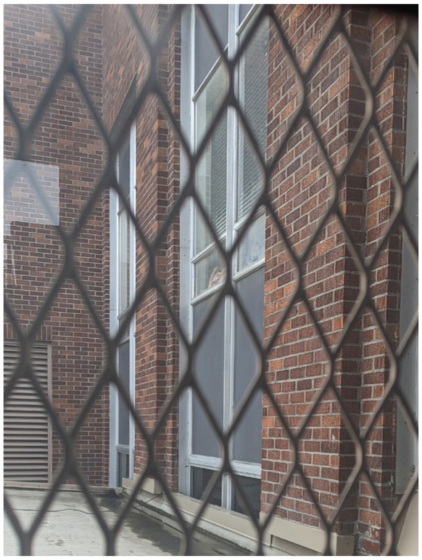
Laylite for skylight in 2nd floor main corridor

The original glass appears to have been replaced with a textured plexiglass material.

W-7

Original glazed partition at first floor, consisting of seven 3-lite transom over five 6-lite fixed wood windows, flanked by divided half-lite doors.

The original marble stool appears to have been painted to match the trim.



From Exterior

W-8

Replacement aluminum windows at east elevation of original Gym. Wood frame and brickmold have been removed.

From Exterior

W-9

Original wood window replaced with louver. Wood frame and brickmold have been removed.

Repair Conditions and Recommendations

It is our recommendation to retain all historic wood windows components where extant: sash, frame, interior and exterior molding. The intent of this assessment is to provide preliminary recommendations for window component repair, with a goal to maintain the historic appearance, and ensure their longevity.

Standard recommended repair procedures at all windows:

- Check all sash joinery for deterioration.
- Remove all deteriorated glazing putty.
- Assess glazing points for condition. If points are missing replace with in-kind product.
- Clean off each pane of glazing.
- Prime the glazing rabbet with approved product.
- Apply approved knife-grade glazing putty to areas that are missing.
- Prime the new glazing putty after a skin has formed, following manufacturer's recommended timeline for curing. The paint should lap up over the glazing onto the glass at least 1/16".
- Prime any areas of the sash that are bare.
- Apply final coatings after preservation architect approval.

The following Window Repair Category descriptions outline the preliminary findings for wood sash, frames, trim and brickmold. Refer to *Appendix A* for preliminary Window Survey Elevations. Windows not highlighted in the survey drawings were either not historic, or inaccessible.

Figure 3.25.1- Obsolete wiring through brickmold

Repair Category – Green: Fair

These sash and frame have minimal damage and the majority of the wood is sound and in good condition.

- Deteriorated coatings;
- Organic material and debris build up from activities taking place in classrooms and workshops;
- And minimal deterioration of glazing putty (0-30%).

Recommended repair procedures:

- Refer to Standard Recommended repair procedures

Repair Category – Orange: Poor

These window components are in various stages of deterioration. Lack of maintenance and coatings have contributed to this condition.

- Decay at one or two areas on the sash;
- Deteriorated or absent coatings on sills and large areas of the sash;
- Inappropriate products used in previous maintenance work;
- And glazing putty deterioration at 30-50% of the sash.

Perform Standard Recommended repair procedures, plus:

- Thoroughly dry any wet windows before beginning repairs.
- Apply a product to kill any decay-causing fungus before applying epoxy.
- Coat decayed fibers with an approved consolidating liquid epoxy.
- After cure time apply approved paste epoxy to decay areas.
- Sand and prep epoxied areas after they have cured.
- Prime epoxied areas with approved primer.

Repair Category – Red: Critical

These windows are in the worst condition and are typically found on the west and south elevations, which are exposed to greater weathering influences. A general lack of regular maintenance contributes to the severe conditions. No units were identified in this category during the survey. The following is provided for informational purposes, in preparation for a detailed comprehensive assessment.

Primary condition issues include:

- Active water infiltration;
- Visible rust/spalling and decay present, especially at the sill locations;
- Compromised sash joinery and missing components;
- Deteriorated or absent coatings;
- And glazing putty deterioration at 50%-100% of the sash.

Perform Standard Recommended repair procedures, plus:

- Remove sash from opening and transport to off site facility.
- Assess sash once removed from opening and adhere to this criteria:
  - If decay area is greater than 50% of the component (bottom rail for example), replacement with in-kind material is recommended.
  - If decay area is less than 50% of component, an infill repair is recommended.
  - If decay area is 1"x1"x1" or smaller, an epoxy repair is recommended. Adhere to the procedure in Repair Category Poor (Orange) for epoxy application.
  - All decay repairs to be inspected by preservation architect.

Skylight Recommendations

The laylight (referred to in the original drawings as "Ceiling Light") is in good condition and does not require any repair work. The plexiglass panes could be replaced, at the design team's discretion. Sealant joints at the roof should be reviewed to determine if they should be replaced as part of the overall project.

Recommendations for Further Study / Areas of Concern

A. Non-historic steel lintel at front entry window may have additional underlying structural implications, and should be inspected by a structural engineer.

Historic Doors

Description of Materials

Twelve (12) types of historic doors were observed to be extant at CHS. The majority are wood, 1- ¾" thick and 7'-0" in height. In some cases the doors may be wood veneer, or clad with sheet metal (kalamein doors). Widths vary by door type. Three of the four stairwells retain the original exterior doors. The main entrance doors appear to have been replaced at an unspecified time, but the frames and transom remain. All other remaining historic doors are interior doors. Where doors have been replaced in the original location, the frames typically remain in place. The majority of the original latchsets and closers have been replaced; but the original hinges remain. The interior classroom and support room doors are typically stained, while the exterior and stairwell doors are painted.

Figure 3.27.1- Original hinges (left) typically remain. Closures have been replaced, with the exception of one potbelly closure (right) found in the old gym.

In general, the remaining historic doors at CHS are in fair to good condition. The primary conditions identified were surface wear and finish damage, that appears to be the result of application and removal of tape over the years.

Door light glass panes are also in good condition and many of the original panes remain. Historic transom and relight windows have similar conditions as the wood doors where most of the original glass panes are still intact, including most of the wired glass panes at the staircases. These also have minor wood cracks and splits.

Most of the original historic hardware has been replaced except for several doors at the Auditorium and one door at the original gym *(Fig 3.27.1 & 3.27.2)*. Most replacements consist of door knobs and a few off -the-shelf levers. The large sheet metal panels applied at the replaced latchsets indicate that there may be underlying damage that is not visible, or the doors were modified to accept new latchsets, but the original attachment configuration was not infilled.

Figure 3.27.2 - Remaining historic push/pull hardware at Auditorium.

Some of the doors used mostly at restrooms and at closets have metal or wood grille vents *(Fig 3.27.3)*. The metal grilles seem to be in fair condition, though some of the grilles have been removed.

Figure 3.27.3 - Original metal grille in closet door.

The goal of the survey was to understand the nature and condition of the remaining historic doors, as well as their current location. A more detailed assessment is recommended to confirm specific repair locations and quantities. The following outlines the steps in completing a comprehensive door assessment and preliminary recommendations for door repair, with a goal to maintain the historic appearance, and ensure longevity of the units.:

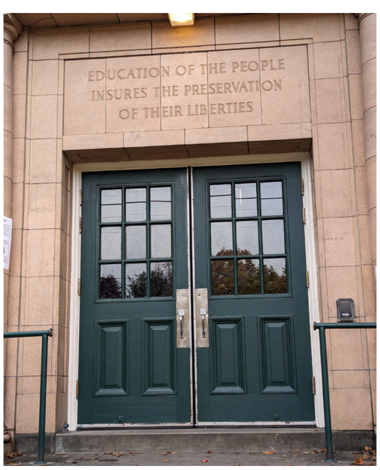
- Assess overall condition of casings (interior and exterior), doors, and hardware.
- If damaged areas are found, adhere to this criteria:
    - If decay area is greater than 50% of the component (bottom rail for example), replacement with in-kind material is recommended.
    - If decay area is less than 50% of component, an infill repair is recommended.
    - If decay area is 1”x1”x1” or smaller, an epoxy repair is recommended.
    - All decay repairs to be inspected by preservation architect.
- Apply finish coatings after preservation architect approval.
- Prep and apply new finish, if required by architect

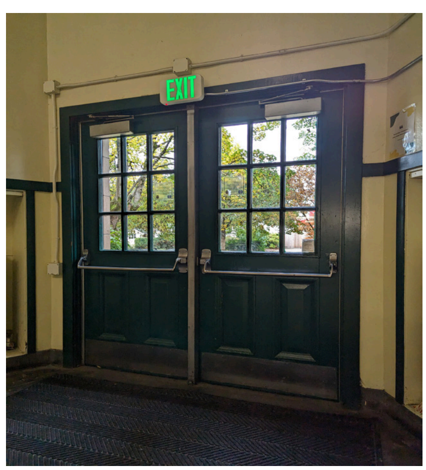
The following photos illustrate the door and frame types. Refer to floor plans in *Appendix A* for locations of original doors and frames.

D-1

Main entry doors.

Divided half-lite double doors, with arched divided-lite transom. Original drawings, and historic photos, show doors with two panel bottom. Current doors do not have paneled bottom. It is not known when these doors were replaced.





D-2

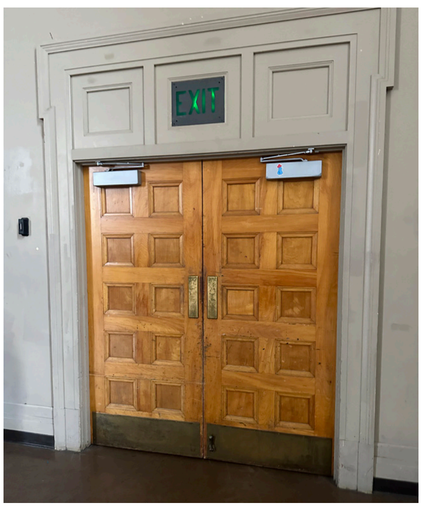
Stair tower exterior doors.

Divided half-lite double doors, with two panel bottom.


D-3

Typical original wood door and transom assembly at stairs.

Specific number of divided lites varies depending on floor level and location, but typically consists of two divided half-light doors with a single bottom panel, separated by a fixed divided lite window, and spanned by a divided-lite transom. Many lites retain the original wired glass.



D-4

Typical original wood ten-panel double doors at auditorium.

Casing trim and finish varies.

D-5

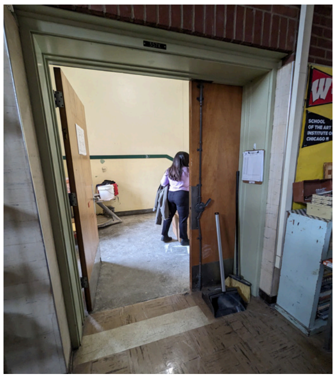
Painted ten-panel double doors from auditorium to north and south courtyards. These doors do not appear in the original drawing set, and it was not immediately apparent if they are wood or Kalamein doors.

D-6
Original wood divided full-lite double door and transom assembly at original library.

D-7
Original wood divided half-lite doors at classrooms.

Glazing type and casing varies.

D-8
Original wood restroom and back-of-house doors, with narrow horizontal grille.



D-9

Original wood uneven door at Gym stairwell. Door retains it's unique original hardware.

D-10

Miscellaneous wood access panel doors located in the stairwells.

The following Door Repair Category descriptions outline the preliminary findings for doors, frames, and trim. Refer to *Appendix A* for Door Survey Plans. Doors not highlighted in the survey drawings were either not historic, or inaccessible.

Repair Category – Green: Fair

These doors and frame have minimal damage and the wood is sound and in good condition.

Recommended repair procedures:

- Prep and apply new finish, if required by architect

Repair Category – Orange: Poor

These doors exhibit moderate damage, due to regular wear and tear associated with the high use of an educational setting.

- Deteriorated or absent coatings

Recommended repair procedures:

- Prep and apply new finish

Repair Category – Red: Critical

These doors are in the worst condition, and were identified in only one or two instances. The conditions identified at these doors are the result of damage beyond the normal wear and tear of use.

Primary condition issues include:

- Minor wood crack and split repairs
- Deteriorated or absent coatings;
- Missing components, such as metal vents and hardware.

Recommended repair procedures:

- Remove door from opening and transport to off site facility.
- Assess sash once removed from opening and adhere to this criteria:
  - If decay area is greater than 50% of the component (bottom rail for example), replacement with in-kind material is recommended.
  - If decay area is less than 50% of component, an infill repair is recommended.
  - If decay area is 1”x1”x1” or smaller, an epoxy repair is recommended.
  - All decay repairs to be inspected by preservation architect.
- Prep and apply new finish

Historic Interior Materials

This section is intended to provide a sufficient overview of existing conditions to inform the project team of general concerns and priorities, but a more detailed survey should be undertaken if there is a desire to gain a more thorough understanding of existing conditions and repair quantities for cost estimating or bidding purposes.

Main Entrance

The main entrance stair, and the corridor immediately adjacent are finished in a faux stone wall panel referred to as "Zenitherm" in the original drawings, with marble base and caps, and terrazzo flooring *(Fig 3.33.1)*. An ornamental plaster panel is inlaid into the half height wall at the first floor, and Zenitherm brackets are installed under the landing *(Fig 3.34.2)*. Ornate bronze handrails are installed at both sides of each stair run, and large metal grilles are installed in front of the radiators at either side of the entrance landing *(Fig 3.34.3 & 3.34.4)*.

The ceiling at the main entry, and adjacent corridor display an ornamental plaster cornice to create a coved appearance.

The finishes extend East to the outside face of the Auditorium, and north and south to Zenitherm-clad pilasters flanking the corridor, on either side of the middle two auditorium doors *(Fig 3.34.5)*.

Figure 3.33.1 - Zenitherm clad main entrance stairs.

Figure 3.33.2 - Discoloration visible at corner of Zenitherm clad half wall.

Given the location in a high-traffic area, the finishes at the main entrance are in remarkably good condition. The primary condition issue is cracking at the marble base and terrazzo flooring, and discoloration at the Zenitherm half wall panels, where generations of students have rubbed against it *(Fig 3.33.2)*.

The terrazzo flooring and steps are original and show moderate wear in areas, including spalls and chips at stair noses, heavy soiling at risers, a large crack adjacent to the north Auditorium door, and several smaller cracks in the landings *(Fig 3.34.1)*.

The display cabinet at the first floor landing is not reflected in the original drawing set, and is assumed to be a later installation *(Fig 3.34.6)*.

Recommendations for Further Study

- Zenitherm is a manufactured material that may contain asbestos. This material should be included in hazardous material testing.


Figure 3.34.1- Cracking at marble wall base


Figure 3.34.2 - Zenitherm bracket detail


Figure 3.34.3 - Bronze handrail


Figure 3.34.4- Radiator cover grille


Figure 3.34.5 - Ornamental plaster pilaster cap


Figure 3.34.6- Non-original display cabinet.

Auditorium

The auditorium's ground floor is an inclined polished concrete floor. A rubber flooring material, with a raised dot texture, has been installed at the circulation path around seating sections. The concrete is weathered, soiled and cracked due to age and everyday wear and tear. Where seating sections are located, the concrete floor is unadorned except for circular vents beneath many of the seats. The cracks do not pose a condition concern as they appear to be stable, but should be monitored for any changes to avoid the emergence of any trip/fall hazards. A more thorough assessment of the concrete floor should be performed to ensure that no hazards currently exist *(Fig 3.35.1)*.

Figure 3.35.1 - Typical cracking, found throughout auditorium.

The majority of the fixed wood theater chairs in the auditorium are original or date from soon after the building's construction. The end units are cast metal with an ornamental frieze. The chairs display typical wear patterns for their function and use. Ongoing regular maintenance should ensure they will continue to perform for years to come *(Fig 3.35.2)*.

The balcony retains its original configuration and materials, including the brass railing and wooden ledge. Non-historic acoustical tiles have been affixed to the outward-facing vertical surface, between the wooden ledge and lower edge. The historic drawings show that this area was originally plastered. In order to determine whether the original finish can be restored, an exploratory removal of one or two tiles is recommended.

Figure 3.35.2 - Original Auditorium seating

This process will identify appropriate methods for careful tile removal and reveal the existing conditions at the plaster surface.

The stage appears to be in its original configuration, with the stage at east end with arched apron and squared, paneled proscenium. The ornamental plaster exhibits some damage, adjacent to the two staircases at stage right and left *(Fig 3.35.3)*. Otherwise, these elements appear to be in good condition. The original canvas wainscot appears to have been removed, throughout the auditorium.

Figure 3.35.3 - Minor damage at proscenium arch ornamental plaster.

The coffered ceiling with ornamental plaster cornice and beams, pendant light fixtures and painted metal grills appears to retain its original configuration and original materials, though it is unclear if the acoustic tiles are original, or have been replaced

Figure 3.36.1 - Plaster ceiling grill with surrounding acoustical treatment

(Fig 3.36.1). Some water damage is visible, particularly at the north side of the auditorium. It is assume that this occurred prior to the reroofing scope during the 2016 Improvement Project, and there are no on-going water infiltration issues *(Fig 3.36.2)*. The lights are all operational and appear to be well maintained (refer to Historic Light Fixtures).

Figure 3.36.2- Water damage at ceiling and wall.

Plaster cracking is visible at the walls, in particular around the decorative plaster work, and may be a sign of building settlement *(Fig 3.36.3)*.

The baseboard molding and wall trim around the perimeter of the auditorium are painted a light tan color. Both are presumed to be original based on historic drawing details. A thorough assessment was not performed but the bases and trim appear

Figure 3.36.3- Ornamental plaster figure head, showing adjacent cracking.

to be in good condition with an expected amount of scuffs and scrapes. Verification of original trim color(s)and /or finish can be determined through cratering the surface with a scalpel and/or collecting cross sections to view microscopically.

The ornamental plaster organ grilles at either side of the stage remain intact, and in good condition *(Fig 3.36.4)*.

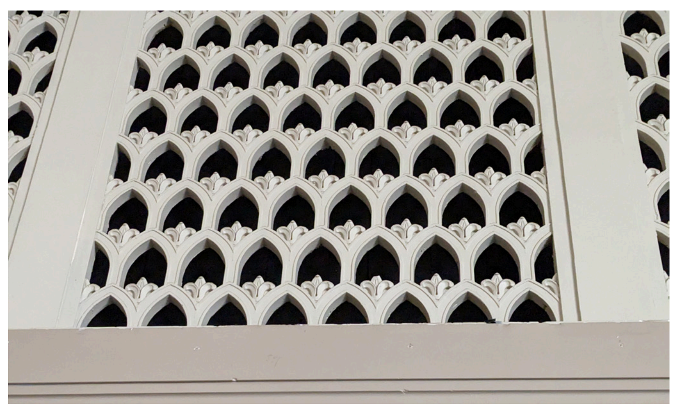


Figure 3.36.4 - Plaster organ grille

Recommendations for Further Study

- Structural assessment of concrete floor and monitoring of cracking
- Exploratory removal of acoustical tiles at balcony to determine condition of original plaster finish.
- Verification of original paint colors.

Corridors, Stairs and Classrooms

The corridors appear to retain their original widths. Furnishings —lockers, in particular,— have been added over the years but do not impact the original massing and spacial profile *(Fig 3.37.1)*.

Figure 3.37.1 - Typical corridor, showing baseboard and mid-wall trim elements.

Figure 3.37.2 - Typical locker bays, off the main corridor. Additional lockers have been added in the main corridor.

Painted baseboard molding runs the length of the North and West corridors, on both sides of the hallway, with interruptions at all door openings. Mid-wall trim also runs the length of both wings on both sides of the hallway. All trim pieces are painted a forest green color and appear to be in good condition ***(Fig 3.37.2)***. Some pieces may have been replaced over the years, but could not be confirmed by visual inspection. Original trim colors and verification of historic provenance can be determined through cratering and cross section samples viewed microscopically.

Figure 3.37.3- Plaster molding detail at locker bay

Wall plaster is generally in good condition corridors, and retains the original plaster detailing *(Fig 3.37.3)*. Plaster located below the mid-wall trim is in fair condition, with general scuffs and soiling and a few deeper gouges, obsolete fasteners, and pinholes. Wall plaster above the mid-wall trim is generally in good condition.

Radiators appear to be original *(Fig 3.37.4)*.

Figure 3.37.4 - Typical radiator

Acoustic panels have been applied to the underside of the ceilings throughout the building, and are often damaged, discolored or missing. These should be tested for asbestos.

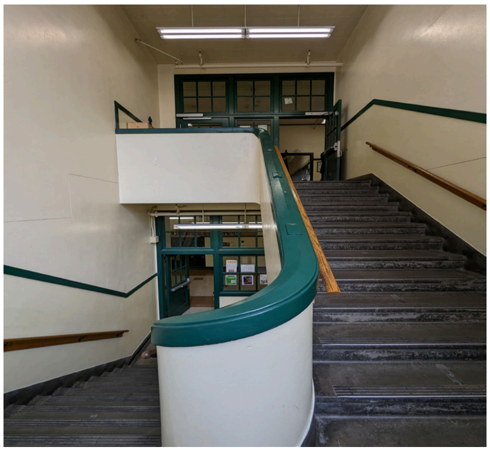


Figure 3.38.1 - Typical stair tower, with original, discontinuous wood railings

The six stairway configurations remain highly intact, with a high percentage of original materials, including cement risers and metal treads *(Fig 3.38.1)*, wood bases, handrails, wood trim, and wood half-wall caps *(Fig 3.38.1)*.

Wood baseboards, half-wall caps, and trim at the stairs have been painted to match baseboards, trim, and doors elsewhere in the building. These appear to be in good condition. Handrails are all original and unpainted, with the exception of the northwest stairwell, where the discontinuous handrails and brackets have been replaced with a continuous metal handrail *(Fig 3.38.3)*.

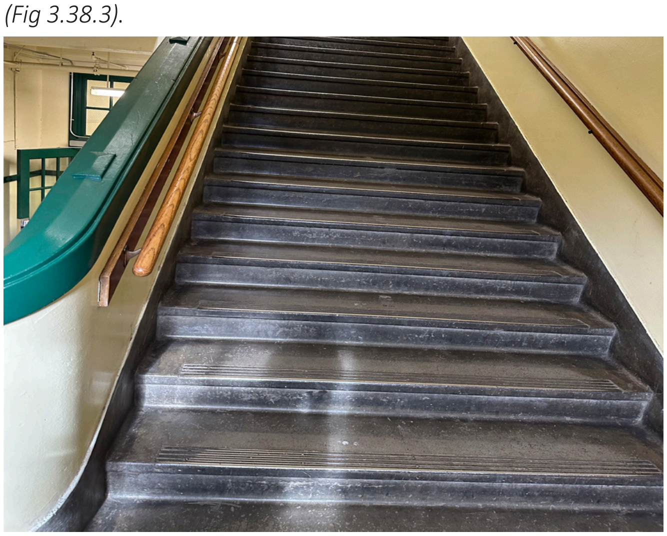


Figure 3.38.2 - Typical cement stair risers with inset metal safety treads.

Figure 3.38.3 - Continuous metal handrail at northwest stairwell.

The classrooms retain a high percentage of original wood bases and built-in furniture. The built-ins are still in use as storage, and have been painted over time. Primary condition issues comprise damage from everyday use. Most hardware at built-in classroom cabinets is original, except where locking hardware has been installed or pieces have been replaced. The wood paneling and casework, including the card catalogue and flat file drawers at the former library are original *(Fig 3.38.4)*.

Figure 3.38.4 - Flat files, card catalogue and shelving at former library.

Figure 3.39.1- Shelving and radiator cover in former library

The majority of original blackboards appear to have been replaced or covered with whiteboards and bulletin boards, but the original configuration appears intact *(Fig 3.39.2)*. Original chalk trays are generally intact, and typically share the same painted finish as trim and built-ins *(Fig 3.39.3)*.

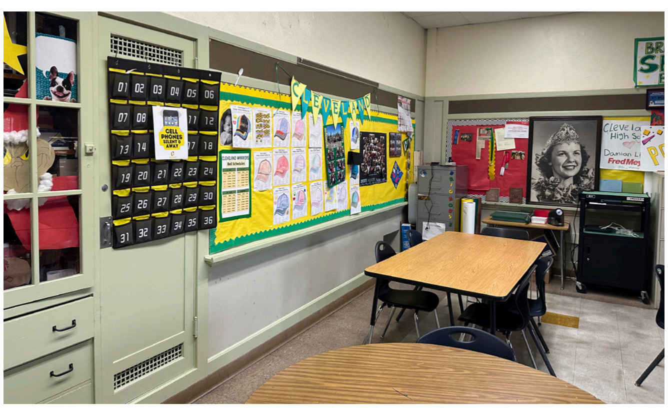


Figure 3.39.2 - Original blackboard built-in repurposed as a bulletin board.

Figure 3.39.3 - Original blackboard.

Some classrooms have interior doors that lead to other classrooms and/or storage areas. These openings and doors appear to be original.

Original lath and plaster walls are still in place. The plaster walls are a valuable resource for identifying historic paint colors.

Figure 3.39.4- Original wainscot trim at former library.

Recommendations for Further Study

- Verification of original paint colors
- Test acoustic ceiling panels for asbestos

Historic Light Fixtures

The remaining historic light fixtures are all interior to the building, and are located in or directly adjacent to the Auditorium. The fixtures are recognizable for their Art Deco-style characteristics. The interior light fixtures in and around the Auditorium consist of two types of bronze pendant light fixtures (Types A & B), one type of bronze wall sconce (Type C), and three ceiling mounted fixtures (Types D, E, & F) which are not original to the building, but may have been installed relatively early in the life of the building.

The light fixture locations and types are identified in the plans below, with representative photos of each type on the following page.

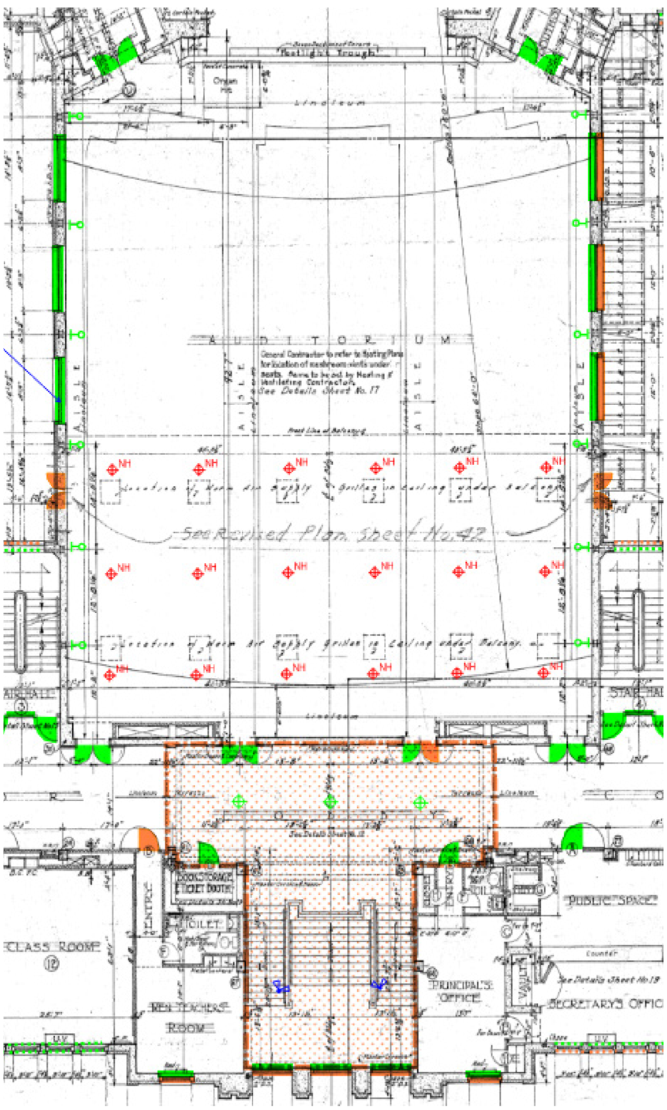


Figure 3.40.1 - First Floor Plan of Auditorium, and main entry

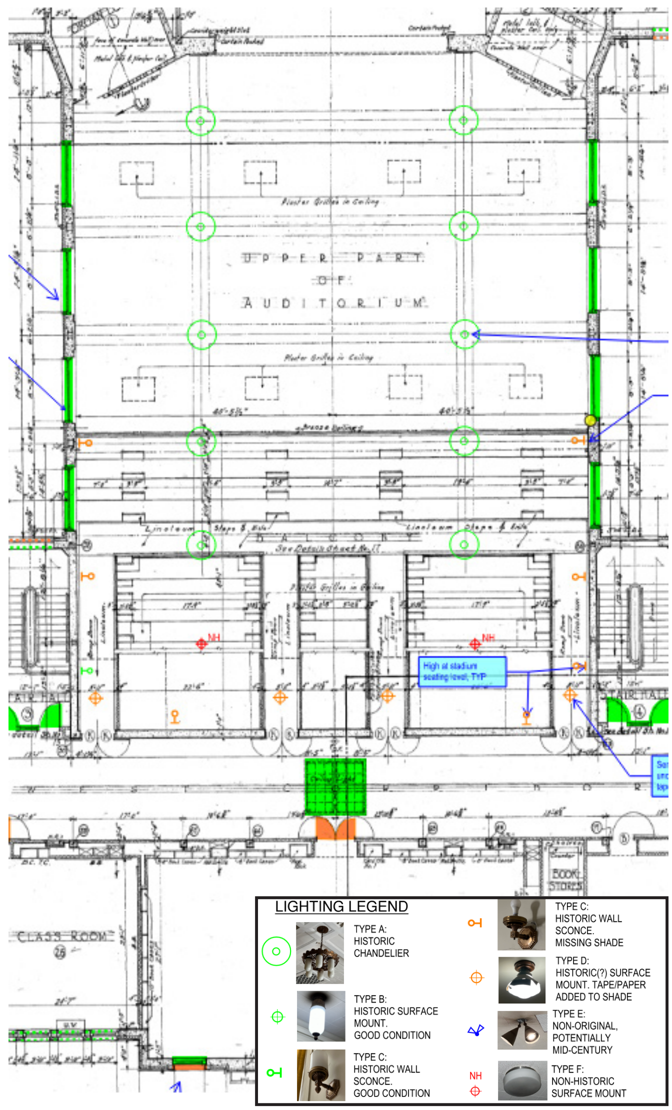


Figure 3.40.2- Second Floor Plan of Auditorium

Type A Light Fixture - Historic chandelier

Type B Light Fixture - Historic surface mount

Type D Light Fixture - Potentially Historic Surface mount

Type E Light Fixture- Non-original, potentially mid-century

Type C Light Fixture - Historic wall sconce

Type C Light Fixture - Historic wall sconce, missing shade

Type F Light Fixture - Non-historic surface mount

The historic light fixtures will require basic refurbishment and maintenance. Several of the sconce light fixtures have missing or damaged canopies that need to be repaired or replaced. Each of the Type D surface mounted fixtures have tape applied to the top of the canopy, and it is unclear if this is due to an underlying deficiency. Otherwise, the light fixtures are generally in good condition.

Recommended Items to Salvage and Repurpose

Salvage, Repair, and Reuse

ARG has identified the following items from the 1929 building that can be salvaged for repair and reuse; and which the design team should consider incorporating into the project, either in place, or installed in new locations.

- Millwork cabinetry and display cases
- Metal lockers
- Original exterior grilles (currently painted, but identified in original drawings as bronze)
- Original wood trim
- Original interior doors
- Original exterior doors and transoms
- Original windows, frames and brickmold
- Original light fixtures
- West entry flagpole base
- Exterior metal stair rails
- Bronze plaques in Main entrance stair (x4)
- Fixed wood theater chairs and end panels
- Brick (If design requires removal from existing locations)
- Marble cornerstone (If design requires removal from existing location)
- Other materials such as roof structural elements or decking if removal is required for the new design

Figure 3.42.1 Original Metal Lockers

Figure 3.42.2 Original cabinetry

Figure 3.42.3 Flagpole base

Figure 3.42.4 Theater chair end panel

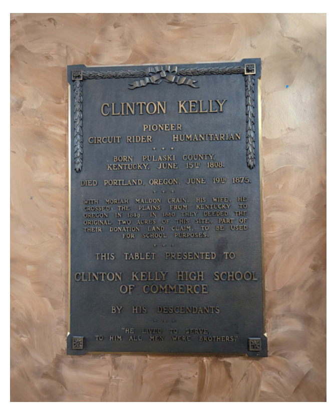


Figure 3.42.5 Bronze entry plaque

Figure 3.43.1 Display case at front entry

Figure 3.43.2 marble cornerstone at southwest corner of main entry.

Recycle and Reclaim

Any items listed for salvage in the previous section that cannot be used in the project should be recycled or reclaimed.

In addition ARG recommends recycling the following list of items. Recycling should include scrapping, as in the case of the miscellaneous metals; or reclaiming to a third party for repair and resale, as in the case of the radiators and door hardware.

Recycle

- Steel roof structure
- Wood framing
- Flashing
- Leader conductor heads/scuppers
- Miscellaneous metals (ladders, etc.)
- Non-historic windows

Reclaim

- Radiators
- Restroom fixtures
- Brick
- Historic door hardware & closers
- Lockers

The photos on these pages are indicative of the range of elements that should be salvaged, recycled or reclaimed.

Figure 3.43.3 Bronze grille

Figure 3.43.4 Original radiator

Figure 3.43.5 Access ladder

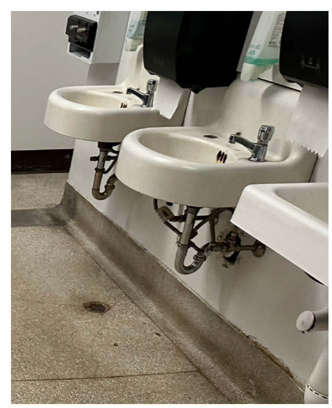


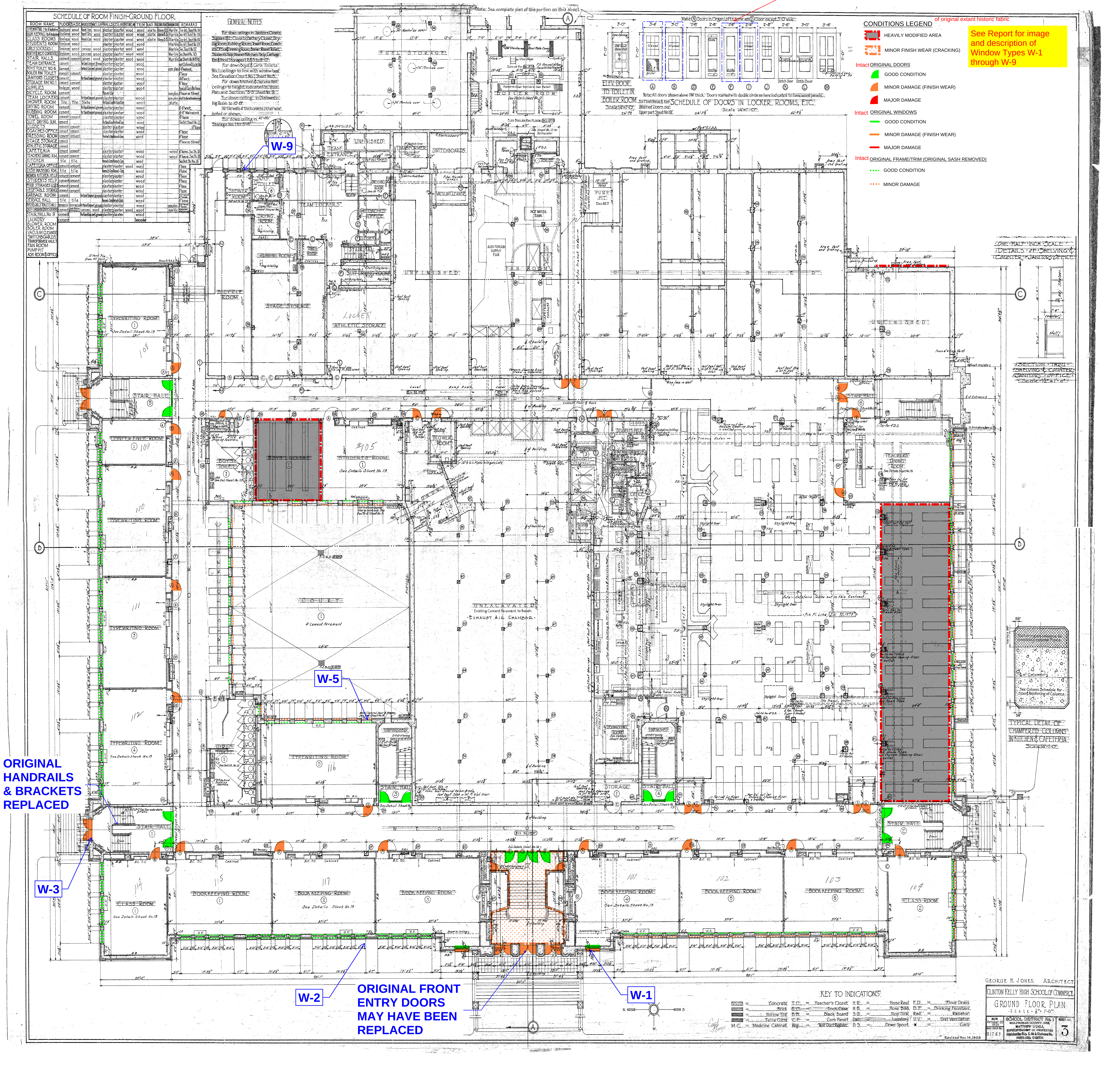
Figure 3.43.6 Restroom fixtures

SAN FRANCISCO
Pier 9, The Embarcadero
Suite 107
San Francisco, California 94111
T: 415.421.1680
F: 415.421.0127

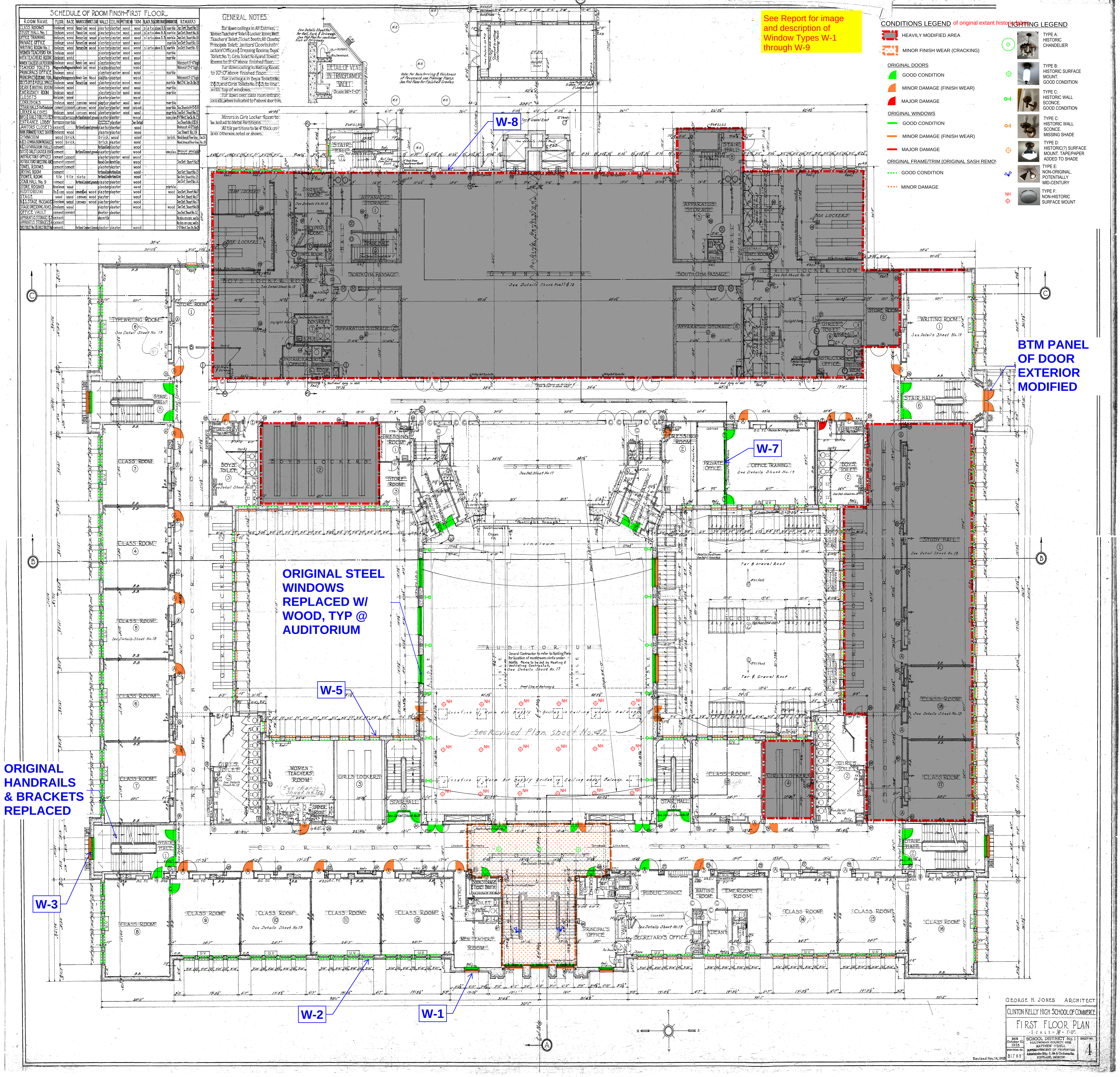
ARGcreate.com

LOS ANGELES
360 E. 2nd Street
Suite 225
Los Angeles, CA 90012
T: 626.583.1401

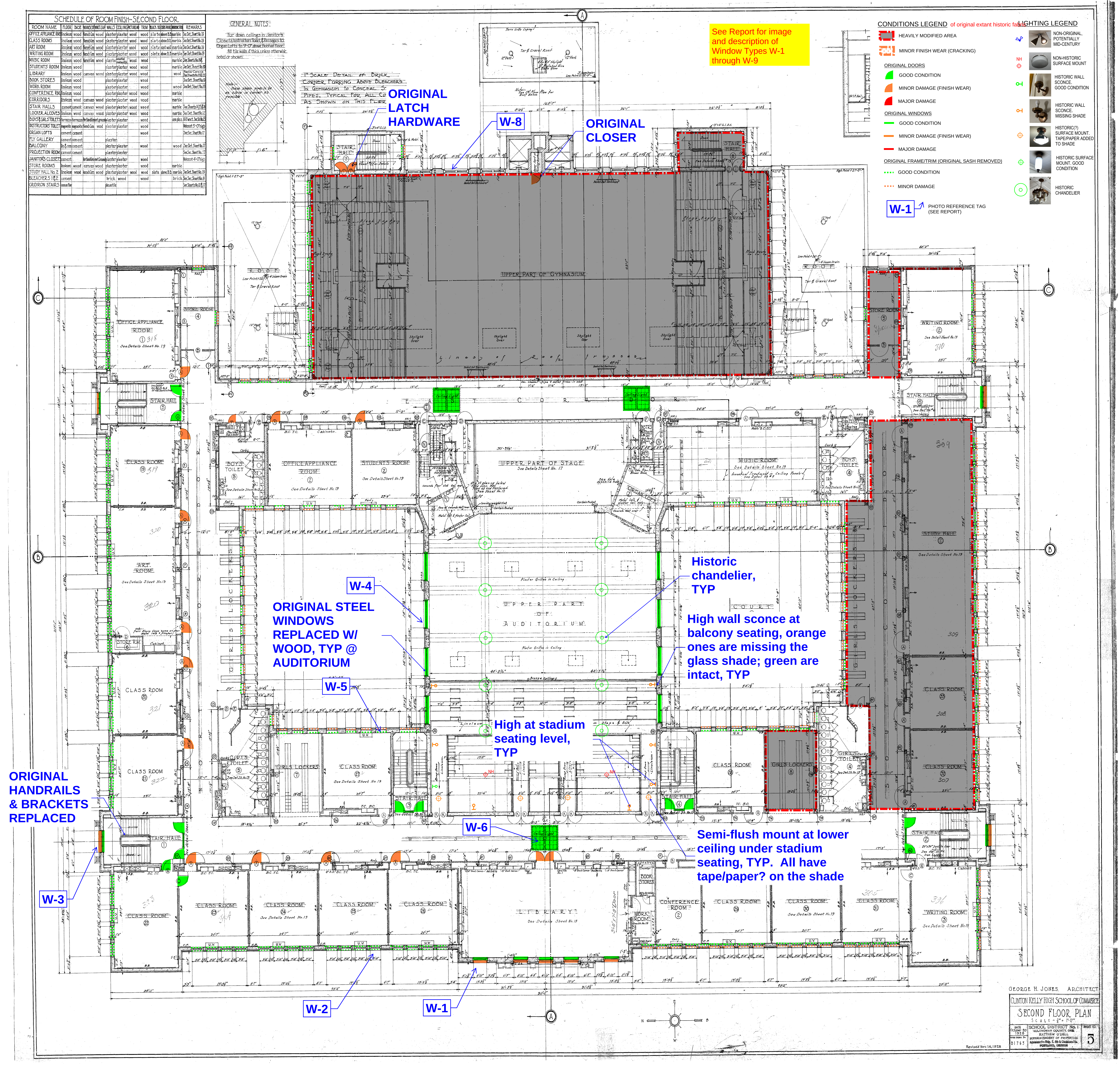
PORTLAND
720 SW Washington Street
Suite 605
Portland, OR 97205
T: 971.256.5324



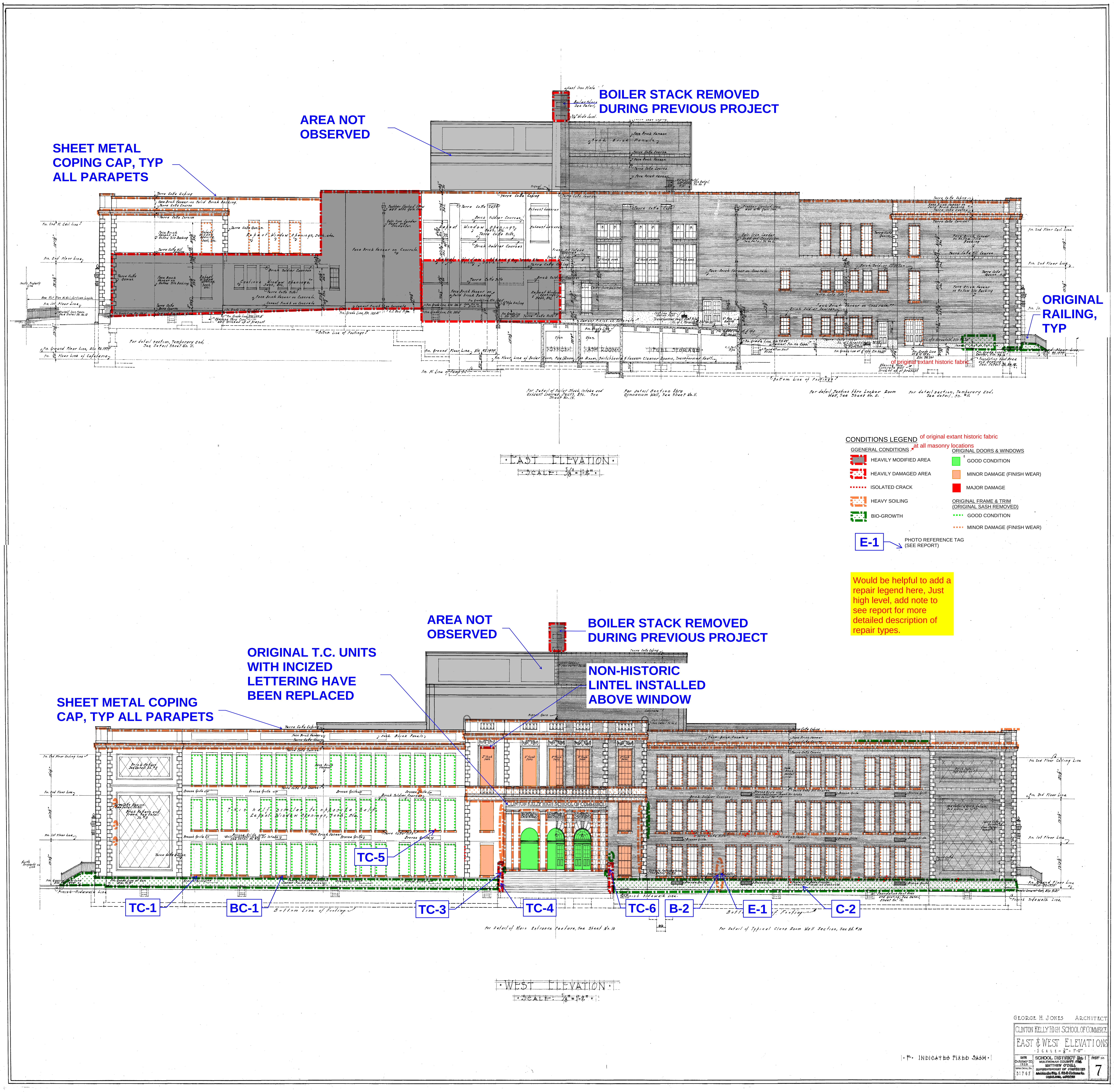
CONDITIONS LEGEND
of original extant historic fabric
HEAVILY MODIFIED AREA
MINOR FINISH WEAR (CRACKING)
Intact ORIGINAL DOORS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
Intact ORIGINAL WINDOWS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
Intact ORIGINAL FRAME/TRIM (ORIGINAL SASH REMOVED)
GOOD CONDITION
MINOR DAMAGE
See Report for image and description of Window Types W-1 through W-9
W-9
W-5
W-3
W-2
W-1
ORIGINAL HANDRAILS & BRACKETS REPLACED
ORIGINAL FRONT ENTRY DOORS MAY HAVE BEEN REPLACED
SCHEDULE OF ROOM FINISH-GROUND FLOOR
GENERAL NOTES
SCHEDULE OF DOORS IN LOCKER ROOMS, ETC.
BOYS' LOCKERS
STUDENTS' ROOM
TYPEWRITING ROOM
CONFERENCE ROOM
STAIR HALL
COURT
UNEXCAVATED
BOOKKEEPING ROOM
CLASS ROOM
TEACHERS' DINING ROOM
UNFINISHED
BOILER ROOM
FUEL STORAGE
TYPICAL DETAIL OF CHAMFERED COLUMNS IN KITCHEN & CAFETERIA
KEY TO INDICATIONS
GEORGE H. JONES, ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
GROUND FLOOR PLAN
SCALE 1/8" = 1'-0"
SCHOOL DISTRICT NO. 1
3



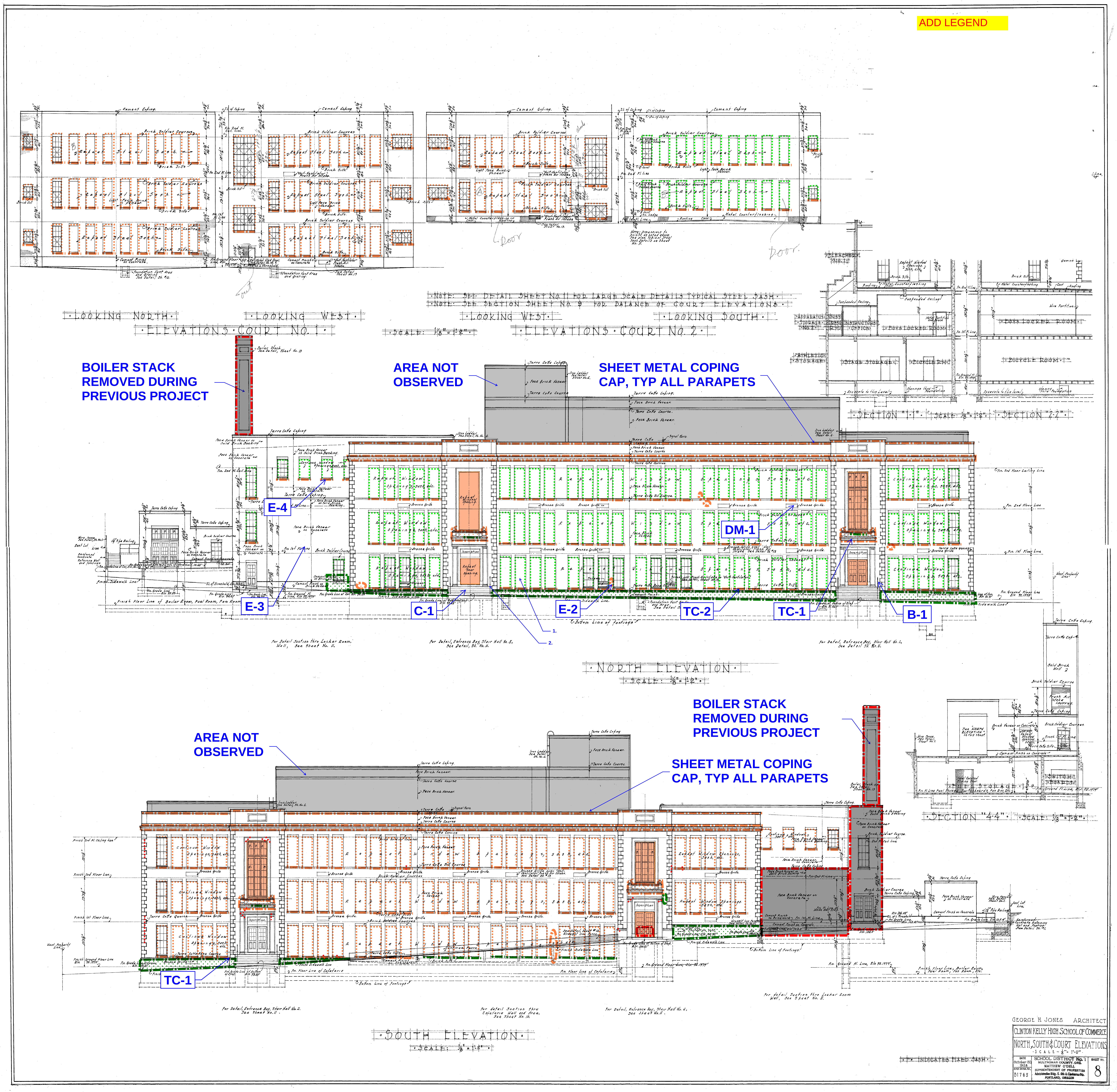
SCHEDULE OF ROOM FINISH-FIRST FLOOR
GENERAL NOTES
See Report for image and description of Window Types W-1 through W-9
CONDITIONS LEGEND of original extant historic fabric
HEAVILY MODIFIED AREA
MINOR FINISH WEAR (CRACKING)
ORIGINAL DOORS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
ORIGINAL WINDOWS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
ORIGINAL FRAME/TRIM (ORIGINAL SASH REMOVED)
GOOD CONDITION
MINOR DAMAGE
LIGHTING LEGEND
TYPE A: HISTORIC CHANDELIER
TYPE B: HISTORIC SURFACE MOUNT. GOOD CONDITION
TYPE C: HISTORIC WALL SCONCE. GOOD CONDITION
TYPE C: HISTORIC WALL SCONCE. MISSING SHADE
TYPE D: HISTORIC(?) SURFACE MOUNT. TAPE/PAPER ADDED TO SHADE
TYPE E: NON-ORIGINAL, POTENTIALLY MID-CENTURY
NH
TYPE F: NON-HISTORIC SURFACE MOUNT
W-8
W-7
W-5
W-3
W-2
W-1
BTM PANEL OF DOOR EXTERIOR MODIFIED
ORIGINAL STEEL WINDOWS REPLACED W/ WOOD, TYP @ AUDITORIUM
ORIGINAL HANDRAILS & BRACKETS REPLACED
GYMNASIUM
AUDITORIUM
STAGE
CORRIDOR
COURT
STUDY HALL
TYPEWRITING ROOM
WRITING ROOM
CLASS ROOM
BOYS LOCKERS
GIRLS LOCKERS
BOYS LOCKER ROOM
GIRLS LOCKER ROOM
APPARATUS STORAGE
PRINCIPAL'S OFFICE
SECRETARY'S OFFICE
PUBLIC SPACE
EMERGENCY ROOM
WOMEN TEACHERS ROOM
MEN TEACHERS ROOM
OFFICE TRAINING
PRIVATE OFFICE
STAIR HALL
GEORGE H. JONES ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
FIRST FLOOR PLAN
SCHOOL DISTRICT No. 1
MULTNOMAH COUNTY, ORE.
4

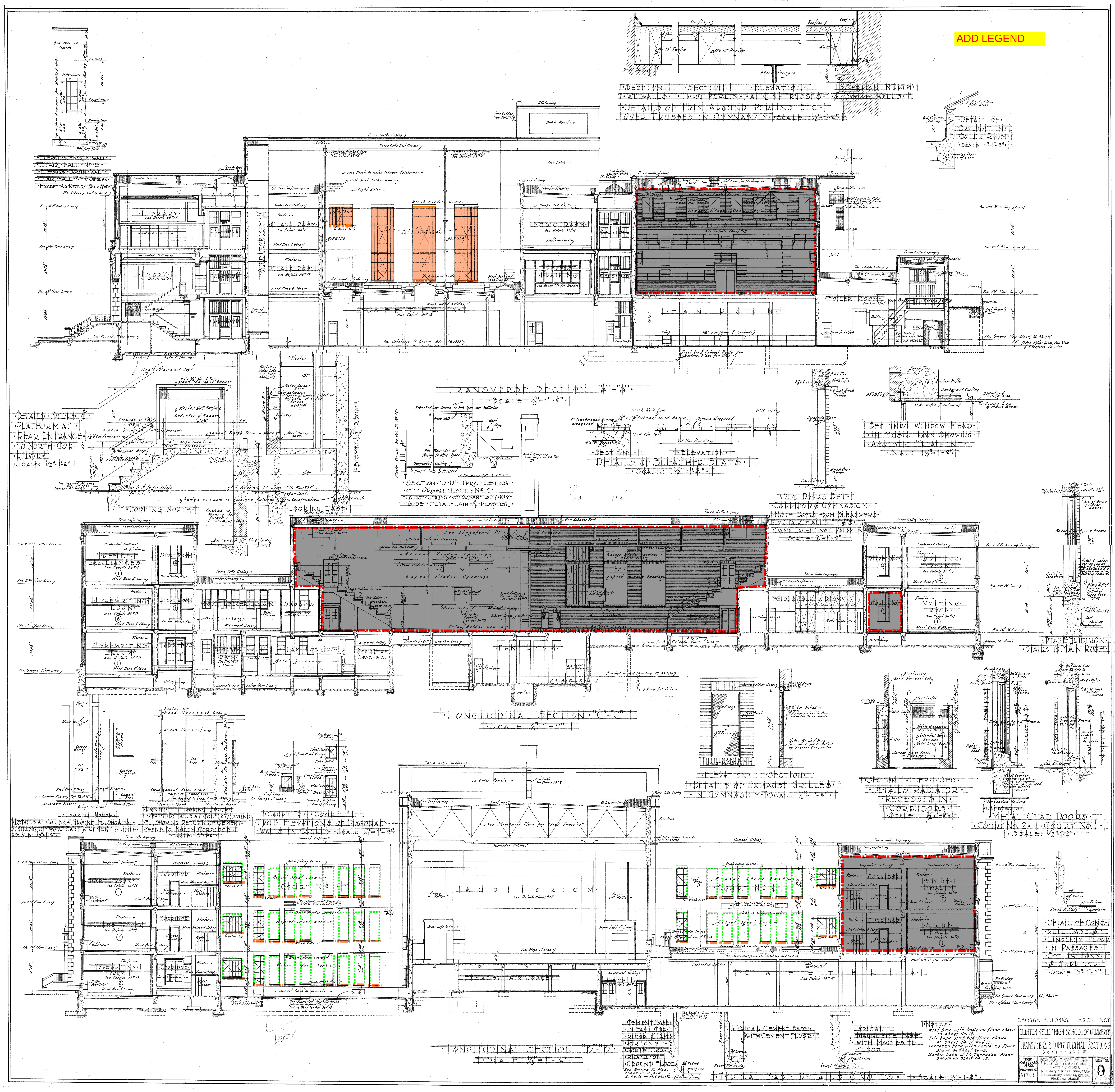


SCHEDULE OF ROOM FINISH-SECOND FLOOR
GENERAL NOTES
See Report for image and description of Window Types W-1 through W-9
CONDITIONS LEGEND of original extant historic fabric
HEAVILY MODIFIED AREA
MINOR FINISH WEAR (CRACKING)
ORIGINAL DOORS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
ORIGINAL WINDOWS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
ORIGINAL FRAME/TRIM (ORIGINAL SASH REMOVED)
GOOD CONDITION
MINOR DAMAGE
W-1 PHOTO REFERENCE TAG (SEE REPORT)
LIGHTING LEGEND
NON-ORIGINAL, POTENTIALLY MID-CENTURY
NON-HISTORIC SURFACE MOUNT
HISTORIC WALL SCONCE, GOOD CONDITION
HISTORIC WALL SCONCE, MISSING SHADE
HISTORIC(?) SURFACE MOUNT, TAPE/PAPER ADDED TO SHADE
HISTORIC SURFACE MOUNT, GOOD CONDITION
HISTORIC CHANDELIER
ORIGINAL LATCH HARDWARE
W-8
ORIGINAL CLOSER
UPPER PART OF GYMNASIUM
UPPER PART OF STAGE
UPPER PART OF AUDITORIUM
W-4
ORIGINAL STEEL WINDOWS REPLACED W/ WOOD, TYP @ AUDITORIUM
W-5
Historic chandelier, TYP
High wall sconce at balcony seating, orange ones are missing the glass shade; green are intact, TYP
High at stadium seating level, TYP
ORIGINAL HANDRAILS & BRACKETS REPLACED
W-3
W-6
Semi-flush mount at lower ceiling under stadium seating, TYP. All have tape/paper? on the shade
LIBRARY
W-2
W-1
GEORGE H. JONES, ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
SECOND FLOOR PLAN
SCHOOL DISTRICT No. 1
5

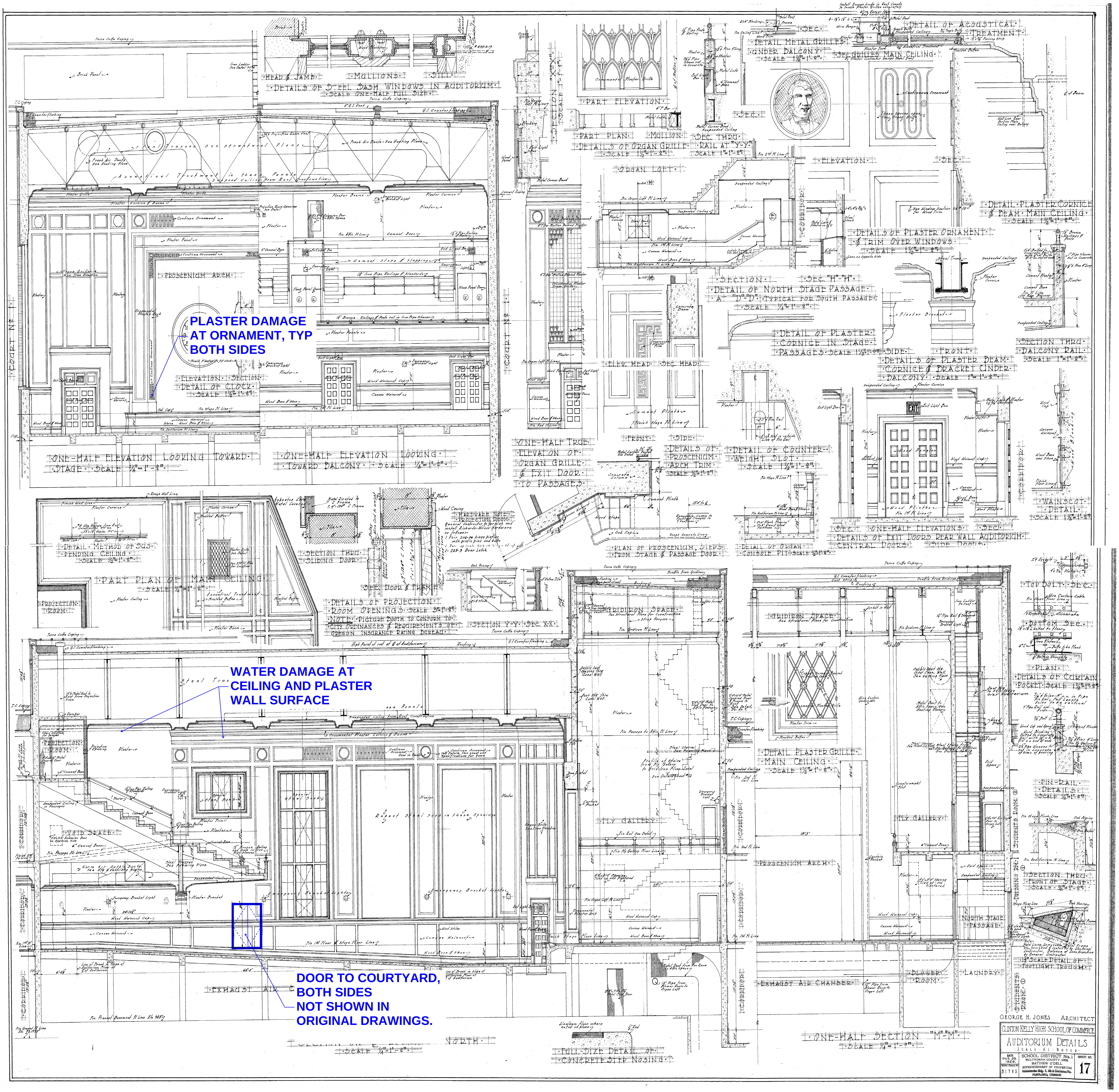


BOILER STACK REMOVED DURING PREVIOUS PROJECT
AREA NOT OBSERVED
SHEET METAL COPING CAP, TYP ALL PARAPETS
ORIGINAL RAILING, TYP
of original extant historic fabric
·EAST ELEVATION·
·SCALE· 1/8"=1'-0"·
CONDITIONS LEGEND
of original extant historic fabric
at all masonry locations
GGENERAL CONDITIONS
HEAVILY MODIFIED AREA
HEAVILY DAMAGED AREA
ISOLATED CRACK
HEAVY SOILING
BIO-GROWTH
ORIGINAL DOORS & WINDOWS
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
MAJOR DAMAGE
ORIGINAL FRAME & TRIM (ORIGINAL SASH REMOVED)
GOOD CONDITION
MINOR DAMAGE (FINISH WEAR)
E-1
PHOTO REFERENCE TAG (SEE REPORT)
Would be helpful to add a repair legend here, Just high level, add note to see report for more detailed description of repair types.
AREA NOT OBSERVED
BOILER STACK REMOVED DURING PREVIOUS PROJECT
ORIGINAL T.C. UNITS WITH INCIZED LETTERING HAVE BEEN REPLACED
NON-HISTORIC LINTEL INSTALLED ABOVE WINDOW
SHEET METAL COPING CAP, TYP ALL PARAPETS
CLINTON KELLY HIGH SCHOOL OF COMMERCE
TC-5
TC-1
BC-1
TC-3
TC-4
TC-6
B-2
E-1
C-2
·WEST ELEVATION·
·SCALE· 1/8"=1'-0"·
·F· INDICATES FIXED SASH·
GEORGE H. JONES ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
EAST & WEST ELEVATIONS
·SCALE· 1/8"=1'-0"
SCHOOL DISTRICT No. 1
MULTNOMAH COUNTY
7


ADD LEGEND
LOOKING NORTH
LOOKING WEST
ELEVATIONS · COURT No. 1
SCALE: 1/8" = 1'-0"
NOTE: SEE DETAIL SHEET No. 11 FOR LARGE SCALE DETAILS TYPICAL STEEL SASH
NOTE: SEE SECTION SHEET No. 9 FOR BALANCE OF COURT ELEVATIONS
LOOKING WEST
LOOKING SOUTH
ELEVATIONS · COURT No. 2
SECTION "1-1"
SECTION "2-2"
BOILER STACK REMOVED DURING PREVIOUS PROJECT
AREA NOT OBSERVED
SHEET METAL COPING CAP, TYP ALL PARAPETS
E-4
DM-1
E-3
C-1
E-2
TC-2
TC-1
B-1
NORTH ELEVATION
SCALE: 1/8" = 1'-0"
BOILER STACK REMOVED DURING PREVIOUS PROJECT
AREA NOT OBSERVED
SHEET METAL COPING CAP, TYP ALL PARAPETS
SECTION "4-4"
TC-1
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"
X INDICATES FIXED SASH
GEORGE H. JONES ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
NORTH, SOUTH & COURT ELEVATIONS
SCALE 1/8" = 1'-0"
SCHOOL DISTRICT No. 1
MULTNOMAH COUNTY ORE.
8



ADD LEGEND
SECTION AT WALLS · SECTION THRU PURLIN · ELEVATION AT ¢ OF TRUSSES · SECTION NORTH & SOUTH WALLS
DETAILS OF TRIM AROUND PURLINS ETC. OVER TRUSSES IN GYMNASIUM · SCALE 1½"=1'-0"
DETAIL OF SKYLIGHT IN BOILER ROOM · SCALE 1"=1'-0"
ELEVATION NORTH WALL STAIR HALL Nº 8 · ELEVATION SOUTH WALL STAIR HALL Nº 8 SIMILAR EXCEPT AS NOTED
LIBRARY
LOBBY
CLASS ROOM
AUDITORIUM
CAFETERIA
MUSIC ROOM
SPEECH TRAINING
CORRIDOR
GYMNASIUM
FAN ROOM
BOILER ROOM
TRANSVERSE SECTION "A"-"A" · SCALE ⅛"=1'-0"
DETAILS STEPS & PLATFORM AT REAR ENTRANCE TO NORTH CORRIDOR · SCALE ½"=1'-0"
LOOKING NORTH
LOOKING EAST
BICYCLE ROOM
SECTION "D"-"D" THRU CEILING OF ORGAN LOFT Nº 1 · ENTIRE CEILING OF ORGAN LOFT Nº 2 TO BE METAL LATH & PLASTER
SECTION · ELEVATION · DETAILS OF BLEACHER SEATS · SCALE 1½"=1'-0"
SEC. THRU WINDOW HEAD IN MUSIC ROOM SHOWING ACOUSTIC TREATMENT · SCALE 1½"=1'-0"
SEC. DOORS DET. CORRIDOR & GYMNASIUM · NOTE DOORS FROM BLEACHERS TO STAIR HALLS 7 & 8 SAME EXCEPT NOT KALAMEIN · SCALE ½"=1'-0"
OFFICE · APPLIANCES
STORE ROOM
TYPEWRITING ROOM
BOYS LOCKER ROOM
SHOWER ROOM
TEAM LOCKERS
OFFICE COACHES
GIRLS LOCKER ROOM
WRITING ROOM
STAGE GRIDIRON · STAIRS TO MAIN ROOF
LONGITUDINAL SECTION "C"-"C" · SCALE ⅛"=1'-0"
ELEVATION · SECTION · DETAILS OF EXHAUST GRILLES IN GYMNASIUM · SCALE ½"=1'-0"
SECTION · ELEV · SEC · DETAILS RADIATOR RECESSES IN CORRIDORS · SCALE ½"=1'-0"
CAFETERIA · METAL CLAD DOORS · COURT No. 2 · COURT No. 1 · SCALE ½"=1'-0"
LOOKING NORTH · DETAILS AT COL. No 4, GROUND FL. SHOWING JOINING OF WOOD BASE & CEMENT PLINTH · SCALE ½"=1'-0"
LOOKING WEST · LOOKING SOUTH · DETAILS AT COL. 127, GROUND FL. SHOWING RETURN OF CEMENT BASE INTO NORTH CORRIDOR · SCALE ½"=1'-0"
COURT #2 · COURT #1 · TRUE ELEVATIONS OF DIAGONAL WALLS IN COURTS · SCALE ⅛"=1'-0"
ART ROOM
COURT Nº 1
COURT Nº 2
STUDY HALL
EXHAUST AIR SPACE
KITCHEN
DETAIL OF CONCRETE BASE & LINOLEUM FLOOR IN PASSAGES · DET. BALCONY & CORRIDOR · SCALE 3"=1'-0"
LONGITUDINAL SECTION "D"-"D" · SCALE ⅛"=1'-0"
CEMENT BASE IN EAST CORRIDOR & EAST PORTION OF NORTH CORRIDOR ON GROUND FLOOR
TYPICAL CEMENT BASE WITH CEMENT FLOOR
TYPICAL MAGNESITE BASE WITH MAGNESITE FLOOR
NOTES
TYPICAL BASE DETAILS & NOTES · SCALE 3"=1'-0"
GEORGE H. JONES ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
TRANSVERSE & LONGITUDINAL SECTIONS
SCALE ⅛"=1'-0"
SCHOOL DISTRICT No 1
31765
9


PLASTER DAMAGE AT ORNAMENT, TYP BOTH SIDES
WATER DAMAGE AT CEILING AND PLASTER WALL SURFACE
DOOR TO COURTYARD, BOTH SIDES NOT SHOWN IN ORIGINAL DRAWINGS.
DETAILS OF STEEL SASH WINDOWS IN AUDITORIUM · SCALE ONE-HALF FULL SIZE
HEAD & JAMB · MULLIONS · SILL
DETAILS OF ORGAN GRILLE · SCALE 1½"=1'-0"
PART ELEVATION
PART PLAN · MULLION
SEC. THRU RAIL AT "Y-Y"
DETAIL METAL GRILLES UNDER BALCONY · SCALE 1½"=1'-0"
SEC. GRILLES MAIN CEILING
DETAIL OF ACOUSTICAL TREATMENT
ELEVATION
ORGAN LOFT
DETAIL PLASTER CORNICE & BEAM · MAIN CEILING · SCALE 1½"=1'-0"
DETAILS OF PLASTER ORNAMENT & TRIM OVER WINDOWS · SCALE 1½"=1'-0"
PROSCENIUM ARCH
ELEVATION · SECTION
DETAIL OF CLOCK · SCALE 1½"=1'-0"
ONE-HALF ELEVATION LOOKING TOWARD STAGE · SCALE ¼"=1'-0"
ONE-HALF ELEVATION LOOKING TOWARD BALCONY · SCALE ¼"=1'-0"
SECTION · SEC. "H"-"H"
DETAIL OF NORTH STAGE PASSAGE · A-"D"-"D" TYPICAL FOR SOUTH PASSAGE · SCALE ½"=1'-0"
DETAIL OF PLASTER CORNICE IN STAGE PASSAGES · SCALE 1½"=1'-0"
SIDE · FRONT
DETAILS OF PLASTER BEAM CORNICE & BRACKET UNDER BALCONY · SCALE 1"=1'-0"
SECTION THRU BALCONY RAIL · SCALE 1"=1'-0"
ELEV. HEAD · SEC. HEAD
ONE-HALF TRUE ELEVATION OF ORGAN GRILLE & EXIT DOOR TO PASSAGES
FRONT · SIDE
DETAILS OF PROSCENIUM ARCH TRIM · SCALE ½"=1'-0"
DETAIL OF COUNTER WEIGHT SLOT · SCALE 1½"=1'-0"
PLAN OF PROSCENIUM, STEPS FROM STAGE & PASSAGE DOOR
DETAIL OF ORGAN CONSOLE PIT · SCALE ¼"=1'-0"
SEC. · ONE-HALF ELEVATIONS · SEC.
DETAILS OF EXIT DOORS REAR WALL AUDITORIUM · CENTRAL DOORS · SIDE DOORS
WAINSCOT DETAIL · SCALE 1½"=1'-0"
DETAIL METHOD OF SUSPENDING CEILING · SCALE ½"=1'-0"
PART PLAN OF MAIN CEILING · SCALE ¼"=1'-0"
PROJECTION ROOM
SECTION THRU SLIDING DOOR
SEC. DOOR & FRAME
HARDWARE NOTE: PROJECTION ROOM
DETAILS OF PROJECTION ROOM OPENINGS · SCALE 3"=1'-0"
NOTE: PICTURE BOOTH TO CONFORM TO CITY ORDINANCES & REQUIREMENTS OF OREGON INSURANCE RATING BUREAU
SECTION Y-Y · SEC. X-X
GRIDIRON SPACE
FLY GALLERY
PROSCENIUM ARCH
DETAIL PLASTER GRILLE MAIN CEILING · SCALE 1½"=1'-0"
TOP BOLT · SEC.
BOTTOM SEC.
PLAN
DETAILS OF CURTAIN POCKET · SCALE 1½"=1'-0"
PIN-RAIL DETAILS · SCALE ½"=1'-0"
SECTION THRU FRONT OF STAGE · SCALE ½"=1'-0"
NORTH STAGE PASSAGE
DETAIL OF FOOTLIGHT TROUGH
VOID SPACE
EXHAUST AIR CHAMBER
BLOWER ROOM
LAUNDRY
CORRIDOR
STUDENTS ROOM
SECTION NORTH · SCALE ¼"=1'-0"
FULL-SIZE DETAIL OF CONCRETE STEP NOSING
ONE-HALF SECTION "M"-"M" · SCALE ¼"=1'-0"
GEORGE H. JONES ARCHITECT
CLINTON KELLY HIGH SCHOOL OF COMMERCE
AUDITORIUM DETAILS
SCALE AS NOTED
SCHOOL DISTRICT No. 1
MULTNOMAH COUNTY, ORE.
MATTHEW O'DELL
SUPERINTENDENT OF PROPERTIES
PORTLAND, OREGON
SHEET No. 17

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VOLUME 3: APPENDIX

ENGAGEMENT FINDINGS + RECOMMENDATIONS

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Cleveland High School

Community Engagement Findings & Recommendations for Cleveland High School Modernization Phase One

April 10, 2024

Background and Context

In late 2023, After Bruce conducted research and analysis to inform and establish a strategic framework for designing the community-based engagement component of the Modernization Process. As part of that effort, we conducted a scan of current and past PPS Modernization efforts, analyzed available data and information about the community directly served by Cleveland High School (CHS), and reviewed existing literature and materials, research, surveys, and community briefs.

Two key purposes guided that research:

1. Provide the Cleveland High School Modernization Design and Community Engagement teams with actionable information regarding the overall CHS community landscape, demographic insights, and key audience engagement considerations;
2. Identify gaps, needs, and opportunities related to community engagement that may inform the design, approach, recruitment, and facilitation of the Community Engagement sessions, within the actionable parameters of PPS educational specifications

Our research culminated in a findings memo that articulated findings and recommendations to PPS and the Design Team. The recommendations were crafted with the goal of ensuring meaningful, equity-informed, and impactful engagement of critical and marginalized community voices otherwise missing from or underrepresented in the CHS Modernization process.

Engagement Design & Summary of Efforts

Following review and discussion of the memo, feedback from PPS and the design team was incorporated into a finalized engagement plan, resulting in implementation of the following tactics and components:

Stakeholder Interviews

Stakeholder interviews were conducted one-on-one and in small groups to glean more specific and nuanced insights into the day to day experience of key communities, gather critical feedback or anecdotes, help identify current barriers and motivations, inform other engagement strategies, and refine questions asked in listening sessions. Interviews were conducted with the following people:

Principal, JoAnn Wadkins
Special Education Staff & Vice Principal, Sean Murray
Native Student Union Advisor & College Coordinator, Nicole “Niki” Trueblood
Black Student Union Advisor, Charles Hunter
AAPI Student Union Advisor, Poeko Waiwaiole
School Social Worker, Michelle Hardaway
Immigrant and Refugee Community Organization (IRCO), Jenny Bremner

The stakeholder interviews offered insights that confirmed a number of our strategic recommendations. These modalities are described later in this report.

Interview insights also spurred further refinement of our engagement strategy, resulting in the addition of an Intergenerational Household listening session, a Community-Based Organization leadership listening session, and a listening session hosted for students, families, and other residents at Kateri Park.

Survey

The online survey tactic is supplemental to our listening sessions, and is not meant to elicit mass-responses. Rather, It’s an opportunity to reach local communities who wouldn’t otherwise be able to participate in listening sessions but want to contribute input to the modernization process. These may also include community members who may not currently have students at Cleveland High School, but utilize or interact with the facilities in some way or are people who would otherwise not be engaged by existing materials. We drafted a 24-question survey that adapted listening session questions into a non-facilitator format. While there were some delays in review and approvals that affected the timing of the distribution date, the responses received to-date are integrated into the themes below. We will continue to circulate the survey and will look for an opportunity to update the questions in Phase Two.

Community Listening Sessions

Community Listening Sessions are intimate, thoughtfully cultivated spaces meant to provide a safe, inclusive, and intentional environment for participants to share their truths. Feedback and input from these listening sessions was summarized into memos provided shortly after each session. The analysis of that data is contained within this report. The following listening sessions and office hour were completed during Phase One:

1. Paraeducators, Teachers, and Staff in Special Education
2. Students in Special Education
3. Community-Based Organizations' (CBO) Leaders
4. Student Leaders of Affinity Groups
5. Students & Families of Color
6. Intergenerational Households
7. English as a Second Language (ESL) Students
8. Teachers & Staff of Color (rescheduling)
9. Office Hour

Paraeducators, Teachers, and Staff in Special Education

Summary Link

We met with teachers and staff in the Special Education program at Cleveland, including Nicole Miller and Jackie Cunningham who we knew from stakeholder interviews hold critical insight about both the more medically fragile student cohort as well as the students who are more integrated into Gen Ed. Their insights greatly informed what chronic needs should be prioritized in their classrooms. At this session, we also were introduced to Speech & Language Pathologist, Kiffen Menendez-Rowland; through our relationship with Kiffen, we were able to speak at length directly with students in DANSU (Disabled and Neurodivergent Student Union).

Students in Special Education

Summary Link

The opportunity to speak directly with students attending Cleveland, who also live with disabilities, provided profound understanding to some of the challenges this population currently faces at the school. After collaborating with the teachers, paraeducators, and staff in Special Education, we developed engagement sessions that would usurp two 45-minute alternating-weekly DANSU (Disabled and Neurodivergent Student Union) group meetings during lunch – rather than trying to get students to stay after school for a listening session. With a turnout of 15-20 students between the two sessions, this approach proved effective and the participating students were responsive and enthusiastic in sharing their insights and ideas.

Community-Based Organizations' (CBO) Leaders

Summary Link

Based on input from CBOs, we opted to schedule this session as virtual, midday conversation. It is important to recognize that CBOs and nonprofit organizations are often more trusted (than government organizations) in communities that are systemically underserved or marginalized. By partnering intentionally with CBOs, we build relationships that not only inform the process, but also expands our reach through their networks, offering a trusted avenue to connect with students and families who might otherwise be hesitant to participate. This listening session included CBO representatives that had all visited Cleveland High School previously.

Student Leaders of Affinity Groups

Summary Link

Throughout the session, a prevailing sentiment emerged as students expressed a desire to feel more authentically represented within the school's cultural landscape – as students and as members of these communities who are underrepresented in and out of the school. Safety and trust are key themes and it is often on the students, and a few trusted teachers, to collaboratively create safe spaces for themselves.

Students, Families, & Community Members of Color

Summary Link

Besides students and families, some of our attendees worked with local nonprofits or at the school itself, others were Portland locals with long-term connections to Cleveland High School. The concept of a multicultural center (MCC) was overwhelmingly favorable, and most participants didn't even realize that there was a "multicultural corner" of the library. Parents present were disappointed to hear of the problem of rats, the predominance of photos on the walls of older CHS history that lacked diversity, and the disorganized use of rooms near the gym and athletics center.

Intergenerational Households

Summary Link

From conversations held in the stakeholder interview portion of After Bruce's work, we learned that many students in intergenerational households may be accessible by hosting a listening session at the nearby Kateri Park apartment complex. Graciously, Kateri allowed the listening session to be held in their community room where we were able to engage with families and students. As we learned from one of our participating parents, people are often tired after a long day's work and are not necessarily interested in joining a listening session, but do want to share their input. The preference would be for a trusted community member to gather input to share with After Bruce. We'll continue to engage those interested parents with DIY support to gather additional input and feedback.

English as a Second Language (ESL) Students

Summary Link

This session was built in collaboration with the ESL teacher at Cleveland High School, Stefanie Goldbloom. Through her insights, we prepared our materials in English, Spanish, Vietnamese, Mandarin, Russian, Japanese, and Dari and brought in interpreters to support.

Teachers & Staff of Color

Engaging this group of teachers and staff has been challenging. We've scheduled and rescheduled the listening session quite a few times, even offering asynchronous opportunities for feedback and participation, but have yet to engage teachers and staff of color at Cleveland as a group. As we have exhausted other forms of recruitment support and are unable to compensate people for their time and expertise, there are few tools at our disposal for recruitment. Instead, we've pivoted to allocate this time to engaging more parents who are harder to reach.

Office Hour

Summary Link

The Office Hour was originally requested as a way for neighbors and others in and beyond our scope to engage and receive a report out of efforts, however, the event was fairly uneventful. We focused the office hour on a few questions circulating from participants about timeline and progress made thus far, the After Bruce team reiterated what had been heard from Mahlum and otherwise directed attendees to visit the PPS Office of Modernization website for the most up-to-date information. We heard from one participant, also an architect, that community engagement is often left out of the design process, and they were very thankful that we were intentionally working with historically underserved and marginalized communities.

A PDF of all summaries have been added to the end of the summary as an appendix.

DIY Engagement Guide

Stakeholder conversations confirmed our strategic recommendation to work alongside student leaders to develop an engagement and facilitation guide geared toward peer-to-peer engagement. Creating DIY facilitation guides and offering facilitation training not only offers students a career engagement opportunity, but supports peer-to-peer engagement between affinity group leaders and members. This method offers students a safe space to have open conversation, free of power dynamics that may otherwise arise.

A DIY guide was also created for parents later on, after some discussion during the students and families listening session. For parents and families with challenging schedules, it's often difficult to participate in listening sessions even when they're hosted nearby their residences. Some parents who attended our sessions are people who are seen as hubs of information or informal leaders in their communities, and offered to gather feedback on our behalf with other parents they've built relationships with. This approach doesn't forgo After Bruce-facilitated listening sessions, rather, it supplements those data gathering methods, enabling us to receive insights from people we wouldn't otherwise be able to reach.

Reach Summary

Our recruitment channels include a loose network of school-based stakeholders, parents and community members, and a cohort of 68 community-based organizations in addition to communications facilitated through the principal. To-date, we have engaged with over 40 students and 20 student leaders, nearly three dozen staff and teachers — 24 of whom are teachers, paraeducators, and staff in the Special Education program, and dozens of parents and community members. Some of this cohort continue to be re-engaged throughout multiple engagements. We plan to continue to deepen engagement with community members reached to-date, and also expect these numbers to grow significantly in Phase Two.

Challenges and Limitations

We experienced delays to engagement implementation due to the strikes and winter storms. These back-to-back events set the engagement schedule behind by six weeks, and had significant impacts on recruitment. We were able to find ways to pivot, including creating a bridge between Phase One and Two where we'll continue to deepen engagement.

After Bruce's engagement design is informed by the community-based participatory research (CBPR) framework that recognizes people are experts of their lived experience. As experts, they are well-qualified as researchers of their expertise, particularly as members of communities historically marginalized by systemic inequality. It's our best practice to fairly and adequately compensate experts for their contributions to the work. However, due to funding usage limitations, we have been unable to do so. While providing culturally-specific food in abundance is generally appreciated by our participants, it is not the same as compensation or honoraria. This restriction has limited our ability to recruit more participation, especially from people who lead busy, full lives and have to make hard decisions about how and where to spend their spare time.

Earlier in our work, during the strategy phase, we conducted a landscape scan and reported our findings. Those findings identified potential challenges and limitations due to the lack of available disaggregated data. While we were able to narrow some of those gaps by the end of Phase One, the aforementioned delays shortened the amount of time we had to gather more information earlier. We'll continue adapting content and engagement to better reach those communities in Phase Two.

Relatedly, some issues that have arised may be more systemic or programmatic in nature and difficult to address through engagement or design. For example, participants have raised concerns that the success of imbuing the engagement effort with DEIB principles isn't being equally matched with an effort to rename the school. We've felt confident in identifying and communicating limitations to the modernization process with participants, and will continue to work closely with PPS to be responsive to redirecting community questions and needs beyond the scope of design.

The lack of visibility into the full school schedule meant some suggested time slots actually were in conflict with other existing commitments. We are keen on receiving guidance that can help identify other solutions to event scheduling in Phase Two that create more visibility and expedite the flow of information.

Emergent Themes

History matters in the way it invisibilizes

Students and families from underrepresented and marginalized communities struggle to feel a connection to the building and its history. While there is an understanding toward celebrating the long legacy of alumni before them, the subtext is loudest: who is missing from these photos and trophies, and why? The history of CHS matters in this case because of the ways in which non-white communities are invisibilized. Besides programmatic and affinity group-organized efforts, the physical and visible elements of the building contribute to a sense of disconnect and perpetual othering — signs this place wasn't made for them. Overwhelmingly, the audiences we've engaged have little connection to the building itself but are especially interested in how their communities can be part of placemaking moving forward.

There is a strong desire to have permanence and intentionality imbued in the ways they are represented on campus and how that can reflect and impact belonging. Work with the Native student affinity group to understand how a land acknowledgement can go beyond performative to better reflect current and future students and their presence in the CHS community. There are repeated calls to preserve the current murals in some way and display them in the new campus alongside new, dedicated spaces for future murals to be created. On a campus where many of these students feel like they don't belong, the murals are one of the very few physical features of the building that reflect their presence, contributions, and the legacy of other students before them who have fought to be represented.

Nothing about us without us

In the 1990s, disability activists in South Africa used the phrase, "nothing about us without us" to reinforce the idea that no meaningful policy impacting the disability community should be made without intentionally, directly, and meaningfully including community in those processes. This slogan is particularly resonant at CHS, where currently, many efforts to reflect more of the student body may feel like an afterthought or accommodation at best and microaggression at worst. For example, there are no cases dedicated to the affinity groups and there is no dedicated place for them to gather despite an ongoing need. The impasse with displaying flags of Indigenous nations and changing the school's name further exacerbate feelings of otherness.

While design can't directly impact a name change, understanding the long context of that effort offers insight into the ways in which generations of students already marginalized by systemic barriers may continue to feel brushed aside.

The Modernization process is an opportunity to institutionalize community power by thoughtfully and intentionally co-creating opportunities to include students and families not only in design decisions, particularly for the spaces that will most impact these groups. In a place where the visible and static features of the building can create a feeling that this place wasn't made for them, offering a shared and permanent multicultural center in the new design would have tremendous impact. The desire to have a space these students can call their own on campus where they can feel pride, safety, and belonging has been a sentiment shared across multiple generations of students, particularly students of color, at CHS. Besides the classrooms of trusted teachers, very few students in our engagement efforts have expressed the ability to let down their guard or bring their full selves while on campus. This hypervigilance can have a significant impact on student health and success.

Inclusion without equity is performative

As the modernization process seeks to deepen relationships with community participants and include more underrepresented communities in the process, it's critical to continue to ground efforts in the community-based participatory framework. People who are underrepresented or marginalized by systemic inequities face multiple barriers to participation, including the very modes and methods of engagement themselves. Without the additional due diligence from those of us developing the engagement methods alongside input from community, we may fail to ensure that these spaces are well prepared and equipped to be safe and welcoming for all participants — invitations can feel performative. Inclusion without consideration for equity and belonging can often have an opposite effect, exacerbating the very conditions or dynamics that marginalize.

In other words, it's not enough to invite people who are underrepresented or marginalized by systemic inequities to get more involved in existing groups or committees — those spaces must be prepared and equipped to facilitate, listen to, and receive input from underrepresented communities as adequately as they do for people from dominant culture. To use an analogy, don't invite someone to a dinner party if the food being served isn't suitable for their diet. Using the framework developed and approved in Phase One, we recommend beginning Phase Two with a round of key insight interviews (also referred to as stakeholder interviews; we are moving away from that language due to feedback received) to gain nuance, inform strategies and approaches, and develop relationships to reach additional, priority community segments not yet engaged in Phase One. Additionally, participants in Phase One can be involved to help inform engagement strategies and approaches, and ensure that these new methodologies are culturally relevant and responsive to needs.

Creating spaces that invite pause can alleviate stigma

Students would feel less isolated and stigmatized if there were more comfortable, well lit, and inviting spaces for them to sit. Currently, the designated shared spaces for sitting, gathering, or “hanging out” further exacerbate class stigmatization and overwhelm. This includes the cafeteria, outdoor spaces, and the hallways. Consider how design can normalize a culture of pause and rest. There are very few opportunities to unwind or decompress from overwhelming situations. To make things worse, the current cafeteria stigmatizes students and compels them to leave campus or skip eating. Those who would take refuge in outdoor spaces find it challenging to do so, and this is made worse by the busyness of Powell. For students who may be grappling with less visible challenges due to mental health, situations at home, or class struggles, having access to places where sitting and resting are normalized can contribute to a more supportive campus climate.

Designing for the most impacted

Accessibility is often focused on compliance. While compliance guidelines are critical for establishing important universal standards, gaps often persist especially for people most vulnerable to systemic inequities that drive them to the furthest margins. As feedback and insights rolled in, we found that design that fully considered the full range of differences and sought to address needs — beyond compliance — for students most impacted by those differences revealed solutions to a multitude of challenges faced by other communities.

For example, while the new campus will have spaces intentionally designed for students in Special Education, we also know that concern remains around integrating SPED students into regular classrooms. If those classrooms aren’t designed with this practice in mind, they can inadvertently reinforce persistent feelings of being afterthoughts. Accommodations should go beyond space and accessibility, and might include dimmable lighting, proximity to sensory support spaces, or access to the outdoors. Designing with these considerations in mind will also benefit other students who may be grappling with less visible or clearly identified challenges related to anxiety, mental health, and other learning needs

Phase Two Recommendations

The following recommendations are based on feedback, insight, and learnings gathered from Phase One of community engagement. Upon commencement of Phase Two, we recommend After Bruce and Mahlum co-develop updated engagement plans and roadmap at the start of both Schematic Design and Design Development, to ensure alignment with the design team's goals, timing, and needs.

To further refine Phase Two Engagement and identify information gaps, we recommend an exercise with Mahlum at the conclusion of Phase One wherein findings memos are reviewed and questions are mapped based on Design Team reactions. Receiving this detailed feedback and information from the Design Team would help greatly with our team's ability to be responsive in real-time to the Design Team's needs so that we can co-create Phase Two materials. The questions we receive from Mahlum can be adapted into the facilitation guide for subsequent listening sessions. Relatedly, we recommend adding a debrief with After Bruce following Design Team meetings to receive more timely insights and report outs from the Design Team on the status of the design work, and also be able to provide real-time feedback and input on what we're hearing from engagement.

Phase Two engagement methods will be conducted with expanded audiences and with existing stakeholders. Recommended expanded audiences may include but are not limited to:

- Feeder schools' staff, faculty, students and families (particularly BIPOC, LGBTQ+, low-income, food insecure, English-language learners)
- Special Education, ongoing and deepening engagement with current high school students and families as well as feeder school communities
- Immigrant and refugee communities, particularly 1-1.5 gen students, Muslim, Arab and Middle Eastern, African-diasporic students and community, Vietnamese and Ukrainian communities
- Parents of students of color and CHS Parent Equity Group
    - Current & across the feeder pipeline

- Student leaders of affinity groups and organizers
    - CHS CARE Leadership Group
    - Deepening ongoing engagement and trust, particularly with Native students and other students of color
        - Dedicated Native Student listening session
        - DIY engagement as follow up to student leaders and students who also identify as LGBTQ+ and participated in Phase One
- Unhoused students and families; designing engagement via trusted stakeholders
- English-language learners, which may likely require a more bespoke approach in Phase Two than in Phase One, based on input to-date
- Students new to or navigating alternatives to college

Based on findings and learnings to-date, we are recommending expanding our engagement modalities to include more key insight interviews (formerly referred to as stakeholder interviews). Another round of key insight interviews should be conducted at the start of Phase Two to inform and co-create engagement strategies that will be culturally responsive. These would be conducted as small-group roundtables to include multiple participants together, though some conversations may warrant 1:1, such as a specific conversation with Niki Trueblood about designing the engagement modalities for Native students and families, or a follow-up conversation with Michelle Hardaway about engaging feedback from unhoused students and families. These new conversations will help to update, evolve, and inform our expanded strategy to engage new sets of audiences such as those from feeder schools while offering a strategic framework for deepening engagement with existing audiences so that the feedback will be responsive to the nuance of each design phase. In Phase One, these interviews helped us to quickly build relationships with stakeholders who later supported recruitment and helped centralize input from harder to reach students or families.

We also recommend Phase Two listening sessions organized based on topic or theme. By organizing the Phase Two listening session based on topic or theme, we can gather iterative feedback from existing participants, and offer new participants our priority audiences the ability to pick the session that best fits their schedule and interests. At least three of the listening sessions in Phase Two should include Design Team members as activity leads. These activities should be co-developed with After Bruce using insights and needs from the Design Team. The activities will aim to garner input from participants on specific design features.

Besides the key insight interviews described above, these listening sessions will be supplemented by surveys and DIY facilitation led by student leaders and by community ambassadors. Students and advisors have suggested that After Bruce join some of the affinity group student meetings to further engage with membership. Before DIY facilitation is conducted, advisors have suggested facilitation trainings that After Bruce will conduct with students interested in gathering feedback from their peers, and students within our key audiences who are interested in community engagement as a career.

The addition of two family nights and/or community events should be strongly considered as a way to supplement listening sessions — in anticipation of the impact of several months of summer break in the midst of Schematic Design. These community events will look similar to CHS family nights, which is a familiar setting that often attracts a significant number of families from our key audiences. Expanding upon these existing events to include catered food, translators, and multiple engagement activities will be a way to effectively reach families who we know wouldn't otherwise participate in standalone listening sessions. Many of these families attend these events primarily based on the trust and relationships they've built with some of our stakeholders. The family nights should be co-facilitated by After Bruce and Mahlum, with team members hosting feedback stations specific to certain topics or features that are priority focus in SD.

Recognizing the opportunity we hold through the relationships we're building with these communities, we've added report-out components that would allow our team to summarize events such as Open Houses or Design Workshops and provide those updates through our trusted community-based channels. Providing on-going engagement through these channels can demonstrate intentionality from the Modernization effort, and mitigate any concerns that engagement was merely performative by keeping the community we've built relationships and rapport with in the loop along the way as key milestones are reached. We'll provide status updates and through those communications encourage participation in Design-team led events and activities. This set of communications would culminate in a Move-In and Post-Occupancy Engagement component.

Finally, we've heard in multiple ways from our participants that people from the communities we've engaged with in Phase One largely feel uncomfortable or unwilling to participate in spaces like the CPC due to the overall nature of the environment and facilitation. For people of color and others experiencing systemic marginalization, dominant culture spaces especially in overwhelmingly white cities like Portland, often expose them to microaggressions or worse. The energetic and emotional labor of choosing to share a specific experience that others in the room may not understand, and then having to do the additional labor of fielding questions can often feel like that explanation is required justification in order for comments to be valid in these settings. These are entrenched, systemic barriers that are not easily overcome by a simple training or two, as the work of equity is a lifelong process. While our team will absolutely conduct outreach to recruit for the DAG in Phase Two, we also recommend utilizing existing engagement channels to gather ongoing and iterative feedback from After Bruce's engagement participants who wish to be continually involved. This would require collaboration from the Design Team to ensure that we understand content and timing needs in advance so that we can be set up to successfully deliver input in a timely manner.

Appendix

Cleveland High School Modernization

Listening Session Summary

Paraeducators, Teachers, and Staff in Special Education (SPED)

February 2024

Key Insights — Highlights

Impact of physical space on safety and feeling welcomed

A chair lift and chair training should be required for every stairwell in case of emergency or mechanical issues with the elevators. Some SPED classrooms should be on the first floor regardless of the chair lift accessibility due to the medical fragility of students, the difficulty of using a chair lift in an urgent or traumatic situation for both rider and operator, and the availability of staff and trained operators. For students with mobility issues and their families, these concerns may always be present in their minds and that stress can negatively impact their overall experience throughout high school.

The lack of common area in the school directly impedes students' ability to connect with each other outside of the classroom setting. There is currently no sense of community. This may be exacerbated by the many changes since COVID and students are still adjusting to being back. For example, freshman lockers used to be in one hallway and facilitated more community.

Spaces feel segregated beyond what might be expected at a high school, including the cafeteria. The combination of location, exposure, and utility impact where kids choose to eat. It's a place where some kids go to hide away because it's darker and lacks seating to accommodate a lot of students. Others often sit in between lockers because there is nowhere else to sit.

Kids typically go off-campus to eat lunch, which is viewed as dangerous because they usually have to cross over 26th or Powell. Having a location for food trucks and other vendors to park could encourage students to stay on campus during lunch.

Having artwork, posters, and personalization throughout the halls does help make kids feel more welcomed, but currently postage areas are scattered. Digital signage or a central smart TV to promote school activities could be a solution to centralizing information and gathering space.

Not having shared space to gather or slow down doesn't help when it also feels like there's a rush at this school to get kids into college — students lack opportunities to really enjoy a high school experience.

Entryways that are immediately met by stairs or other mobility challenges, or ramps that are obscured or hard to find, instantly impact the way certain students feel like they belong.

On the other hand, teachers feel most welcomed when they have individual classrooms where they don't share space. This also makes it easier for students to find them at all times.

Faculty and staff needs

A teacher's lounge that's centralized, near copiers and printers, that has access to daylight and running water.

Having two staff bathrooms on every floor that are accessible would be helpful between classes. A gender neutral bathroom is imperative — trans substitute teachers don't know where to go to the bathroom and that doesn't feel welcoming or inclusive.

Auditorium seating should be accommodating of the wide range of body types.

Overlooked aspects critical to day-to-day

There is a critical need for accessible restrooms that are close to the SPED classrooms, especially when there's existing staffing issues that impact the support available to students. En suite bathrooms would be helpful so they're quickly accessible and students have privacy, as teachers can't always go into existing restrooms to help their students.

Some SPED classrooms are the furthest from the elevator and some aren't close to ramp access even though they use it the most. The classrooms feel tucked away and hidden from other things happening in the school, and they lack sunlight.

Critical food access in SPED classrooms is challenging when there is sink access for teachers and paraeducators to conduct safe food prep for students. Similarly, thinking about resource access for subject-matter specific classes such as running water in science classes. Classrooms that can accommodate an oven and a full sink for teachers that teach life skills and transitional skills, as well as a shower and washers and dryers.

The washers and dryers would be helpful across multiple SPED classes. These and the shower should also be accessible to unhoused students (this note has been shared by multiple stakeholders).

There are kids that may need to do their laundry at school (according to a social worker), they would benefit from a washer and dryer.

The future size of SPED classrooms is critical to consider. Bigger rooms can accommodate medical equipment, wheelchairs, etc. as well as rooms that can store medical equipment for medically fragile students.

There are makeshift spaces where lots of little small groups gather and not a space for larger groups or multiple groups to collaborate. Common areas between classrooms or a flexible space close by would be helpful for many SPED programs and other students.

Things that come up regularly — "I wish we had this"

Teachers do not want all the SPED spaces together. It infringes on privacy and makes students feel secluded. When it comes to privacy, having an office space within the classroom that is sizable enough to accommodate a desk, filing cabinet, and seating would be helpful, especially for private conversations. This office space would be game changing. For example, If an incident happens in a classroom, teachers could immediately have the privacy to make parent calls without having to wait or leave their classroom unattended (note staffing issues raised above). For learning center teachers, having private space to do evaluations would be critical since this is required in their roles.

Two elevators on opposite sides of the school.

Intensive skills classes on the first floor (a main floor that is actually the 1st floor) and easily accessible.

Having a small de-escalation room that is safe so teachers don't have to do room clears. Relatedly, a sensory room and pacing social and emotional classes by a door so if kids need to leave class quickly they can do that easily.

Proper signage and sorting floors or sections by color would offer a more intuitive, clear, and easier way to navigate the school for students and families, particularly immigrant families where language is a barrier.

Things that work well currently

The existing, designated communication center for speech pathology works well as do the words/signage on doors.

The memorabilia from the past, such as all of the old trophies, rose festival princess information, things that evoke nostalgia, and awards are a plus.

Cleveland High School Modernization
Listening Session Summary

Students in Special Education (SPED)

February 2024

Key Insights — Highlights

Impact of physical space on safety and feeling welcomed

In everyday experiences at school, students find a sense of welcoming in specific spaces such as the nurse's' office, special education rooms, and specific teachers' rooms (like Mr. Ereckson's). However, they feel largely unwelcome throughout the school due to factors like overcrowded classrooms and narrow hallways, chaotic cafeteria experiences, bright and inconsistent lighting, and inaccessible areas such as the East Wing.

SPED students struggle to find a sense of belonging in areas like these due to a myriad of factors, including poor accessibility (stairwells without handrails, often-broken elevators, lockers that require fine-motor skills and sharp eyesight), lack of clear signage (tiny room numbers sporadically placed, no navigational tools throughout the building, inconsistent or absence of braille or raised lettering), and uncomfortable environments (firm and stagnant seating in classrooms, no seating in the hallways for students that tire easily from walking, round tables at lunch wasting unused space in the center and not being wheelchair accessible, lockers are very narrow and multiple students have never been assigned a locker).

School provided accommodations creates capacities for students

Students identified that they have to provide themselves with the accommodation tools that allow them to focus throughout the day. These include tactics such as noise-canceling headphones, wheelable backpacks, and seeking quiet or dark corners of the school for when they're overstimulated.

Dimmer lighting is preferred by some, but not all, highlighting the need for adjustable lighting solutions throughout the school – and certainly within the SPED classrooms and dedicated sensory rooms, or quiet spaces.

Students voiced the importance of navigational issues alike for newcomers and students who've attended the school for years; it is easy to get lost! Suggestions of color-coded floor markers, standardized numbering systems, landmark murals (student crafted), more elevators or ramps, and informational signage throughout the school would help people feel more confident and welcomed in a school (especially one that is slated to have multiple stories/floors). Physical markers and clear indicators of designated areas for different subjects and grade levels are also suggested to improve wayfinding.

With ISC classrooms providing life-skills to their students, having essential assets such as (clothing) washing and drying machines, a dishwasher, a deep sink with hot-water access, a microwave, an oven (of some sort), and lockable storage (for knives, pans, and other kitchen-specific items) are vital.

Safety at the school needs to be for all students

Concerns about safety during emergencies such as earthquakes and fires were raised when discussing safety, emphasizing the need for clear evacuation routes, accessible exits, and better communication during drills. Students' suggestions include establishing ground-level exits and staggering evacuation routes to ensure the safety of all students; seating while outside is another issue expressed by the students as many of them have resolved to sitting on the wet ground when they cannot physically hold themselves up long enough for the emergency drills to conclude.

Outdoor spaces were identified as essential for students, but concerns were raised about the lack of safe outdoor areas – safe from the inconsistent Oregon weather and passersby. Using the outside during school would be an effective tool for our SPED students – both for deescalating emotions and for educational or artistic purposes –

but isn’t currently useable due to a lack of proper coverage, clean seating options, and, as students described, barriers from strangers.

Students expressed frustration with the traffic and lack of designated drop-off areas during school arrival and departure. To the students, and facilitators, it does not make sense why the school would have two of the most popular entrances/exits on some of the busiest streets in Portland (Powell & 26th).

Furthermore, the SPED classroom for the more medically fragile students puts those students at high risk in the event of a major disaster. Within 20 feet of the classroom door there is an exit to the outside, however, it is rendered inaccessible by a set of rampless stairs. On the other side of this classroom is the home-economics room; if there was a fire in the home-ec kitchen, the students who require wheelchairs or other devices would be trapped.

Cleveland High School Modernization

Listening Session Summary

Community-Based Organization Leaders

February 2024

Key Insights — Highlights

General impressions from Visiting Campus

There aren't a lot of community based programs that are well integrated with the school due to the facilities. The campus is disjointed and hard to navigate, which impacts feelings of togetherness especially for people who may have a harder time navigating due to language, disability, or other factors. The lack of outside space to gather adds to this.

Cleanliness and lack of upkeep impacts kids. There are strong feelings of demoralization amongst students due to run-down-ness, or having to go across the street for lunch.

The designated welcoming/greeting areas, however, have a good blend of safety and welcoming. Once inside, the impression of office staff is very welcoming. First connection with school is the front line office folks (Principal, other office person Michelle), who all seem very professional and organized.

CBO-specific use of space

When coming to provide services to younger kids and families, it's hard to find rooms that fit more than two people (hard to have more than a one-on-one session) and there isn't a designated counseling center that has space flexibility. For some students, there's a lot going on at home and having a place to counsel kids who don't feel safe or seen elsewhere is imperative.

There are currently only a couple of rooms for people to use for community needs and the one nice community room is often in high-use. Some kids who don't feel welcomed could benefit from having a community space for youth like them to gather.

There are also times, due to the lack of available private space, that they can't do a one-on-one meeting unless they take a kid across the street to Burgerville. Private space, however, should factor in dynamics and what might feel safe for a student. So, convertible cubicles with glass or a view to the outside while being reasonably soundproof to help maintain confidentiality would be important.

The small, cramped spaces make it challenging for mentors to do their work in groups. It's hard for young adults to feel safe and vulnerable at the same time without a larger communal space.

Kids don't really know about the health center but even when they are directed there, it's hard for them to find because the school is maze-like, and that reinforces existing barriers to accessing health care and resources.

How space could impact future CBO programming

A community space with plenty of availability that gives organizations more opportunities to be on campus more often. With the relationships and connections that CBOs have and can form with students, being more present means that they can support students, motivating them to attend school and giving them more reasons to be there.

Consideration for access to those spaces during the summer, when students have more time and less to do. CBO presence can make a difference year-round. Similarly, these spaces should accommodate students who want to stay on campus after school and participate in after school activities, especially if they don't have anywhere else to go after classes because of parent/guardian work schedules.

Making sure any community space has access to bathrooms and facilities that make it conducive to having meals in that space, and ensuring that these spaces are also culturally and intergenerationally welcoming and inclusive for families of students. Some students bring culturally-specific food with them because they can't eat off campus, and having access to a space where they can reheat that food and also won't be stigmatized for their food is important to consider.

Due to the inconsistency and lack of space currently, some organizations that are trying to grow their relationship and partnerships with the school don't currently use the school spaces. These organizations use their own spaces to provide their students with afterschool lounge spaces, tables for doing homework, larger areas for art projects, jam sessions, film and art, as well as laptops for use. While this space is available through the organization, it may be difficult for some students to participate because of transportation. Having a space at the school would encourage more students to participate and be engaged.

Information requests as community members and partners

As community members, CBO staff and leaders don't receive regular communications from PPS. They want to continue to be engaged early and regularly about the future design, how it may impact students and services, how resources are generated and if they're sharable, information about the modernization and who is involved in planning and funding. Up until they were invited to participate in the listening session, this information has not been made readily available to them.

Cleveland High School Modernization

Listening Session Summary

Students Leaders of Affinity Groups

February 2024

Key Insights — Highlights

Day to Day Experience

There are not enough lockers for students, and many in these groups report not having access and having to carry around heavy backpacks all day. Having enough lockers and in convenient places is important to students. Lockers with digital locks would be great for students with disabilities.

The availability of showers in the locker rooms or elsewhere for student use is important because they provide access for students who don’t have hot water at home or are houseless. Losing this access would be exponentially detrimental.

All-gender restrooms are almost always closed and grouped in only one area of the school. This becomes challenging for access. The students referenced liking the way the bathrooms at Grant are set up for all genders. Overall, students identified needing more consistency in the layout of bathrooms across all floors and areas of the school.

Impact of space on feeling welcomed and sense of belonging

Some students had trouble identifying specific areas where they felt welcomed or like they belong.

Most students identified specific teachers’ classrooms as areas they felt most comfortable. These rooms tend to have big windows and lots of light. For this reason,

the rooms on the 3rd floor feel more welcoming. One of the rooms has sinks which students found to be helpful in a variety of situations.
Most Freshmen identified the art room as the place where they felt most comfortable because of the mini studio room which offers a separate space away from the class that is less impacted by lots of noise and sound.

A Freshman only hall would be helpful for new students to be near all their peers and their graduating class. Similarly, grouping subject area classrooms would make it easier to navigate.

Generally, students like hallways that have student murals but noted that most of the spaces at the school feel dull and bare.

The students feel that the library space is uncomfortable and felt too empty for a library, though they did note that it is a good space for club meetings.

Part of the issue with the cafeteria is that it is small with no windows, and the flow of the serving area causes a lot of traffic jams during lunch.

The current name and mascot of the school is not welcoming for Native students

Regarding safety and preparedness, students would like to see map and evacuation routes, preferably in a digital format. They also noted that the fire escape routes are not visible or easily identifiable.

Affinity group spaces and gathering

Ease of gathering for group meetings varies between groups depending on their advisor and the nature of their club. While some have easier access to classrooms — the Latinx club meets in the Spanish teacher's classroom which has culturally-relevant decor — others like the AA&PI students have a hard time because they don't have a similarly specific location. Sometimes the AAPI group attempts to meet during lunch but without conducive space for gathering, they will sometimes have to meet outside even when it's cold or damp.

Groups host a big event at the beginning of the year but after that, it’s hard to know what clubs exist without making an active, concerted effort to find out. Having a message board near the front of the school would allow groups to post and advertise their meeting times and locations.

At the moment, clubs use classrooms, library, college and career center but often need to get a permit for exclusive use or have to compete for space. This makes it difficult to plan long term. A centralized location for clubs to share, with enough space for each group to decorate or personalize a section of the wall, and have their own storage would be ideal.

Student use of cafeteria

The lack of functional space, natural light, and personalization or character in the current cafeteria deter students from using it. Many students do not like the long tables and would prefer to have actual chairs and circular tables that would be more conducive to socializing. These would also be helpful for groups that want to meet during lunch time.

Access to greenery or outdoor spaces

Students would love multiple outdoor spaces on each floor, with places for students to go outside and read during class or so that teachers can take students out for short walks or lectures. Art students could use these spaces for live studies as well.

The students currently feel confined to the school. Although there are benches outside, the size and fixed locations deter students from using them. Many students expressed an interest in being able to have a community garden space on campus.

Representation on campus

Students suggested a plaque in front of the school that displays a land acknowledgment as well as flag poles in front of school that represent the tribes whose traditional lands the school is on

Overwhelmingly, affinity group students want to keep the murals if possible. They also expressed a desire to do more murals, especially if they can be near the area(s) where the clubs can regularly meet as well as in highly visible areas of the school.

Mural are a nice way to show that there are safe communities that exist within Cleveland that students who feel isolated or marginalized can be part of. These murals should be in populated areas, not tucked away. Currently near the front office, there's a mural of Grover Cleveland and that isn't welcoming for students across the affinity groups. Student also expressed enthusiasm for the murals inside of the classrooms.

Students would like to preserve affinity groups mural since they worked really hard on them. If the existing mural can't be saved, students suggested taking photos of them and getting them framed and reflected in the new building.

Other features to keep or consider

Digital clocks would be helpful for accessibility and ease.

More accessible stairwells that are not as steep, and have rails in the center.

Students mentioned the bomb shelter at the bottom of the school and wanted to preserve or explore it.

When it comes to the auditorium, students are hoping for better acoustics, more comfortable seating, preservation of the "cool details on the walls of the auditorium", and preservation of the pipe organ.

Having more outlets around the school that are accessible for students would be helpful.

Students noted the gym does not have great acoustics, and hope for better sound insulation for the music room.

Cleveland High School Modernization
Listening Session Summary

Students (active and prospective) and Families of Color

March 2024

Key Insights — Highlights

On welcoming and belonging at CHS

Affinity spaces are where many students of color feel safest. For example, Mr. Akuna's room is where Latino students feel welcomed and tend to hang out during lunch. They cited it as a space where cultural events, education, and activities are held and where they don't feel like they need to code switch or translate because they are free to talk with people who share similar identities, foods, ways of being, and upbringings. One student noted that the areas beyond the space feel traumatic.

When it comes to a shared multicultural space, students want to prioritize a place that reflects the different communities on campus, that feels supportive especially when they are stressed or experience anxiety, where students can have accountability check ins and a place to rest, and ideally situated near counseling services.

While students see the importance to reflecting the history of the school, they don't feel like the representation is reflective of current demographics and newer students. This creates a great deal of marginalization, making it hard to feel like the school is welcoming especially when a lot of these older pictures are near the entrance.

It's important that any future gathering space such as the cafeteria is designed in a way that doesn't cause chaos with the lunch lines or cause students to feel like they need to rush through their food. The current space isn't inviting and there's a lot of stigmas that come with eating in the cafeteria. It says that students don't have money for lunch or that their parents don't have the time or resources to pack their lunch.

Space-specific things that reflect community needs

The location of the counseling center can have a serious impact on flow of movement, privacy, and stigma. For example, a location near the cafeteria has too much visibility during lunch hours when it's crowded in the general area and students might be using that time to access resources. That visibility is generally seen as negative.

Students also expressed a concern about safety for those who find themselves in a crisis situation and need to access the counseling center and related services. For example, if there is an emergency or if students are contained in the center for other students' safety. At times like that, if the counseling center is shut down then the staff has to shut down an entire wing and the nearby staircases. Participants suggest that the design team consider how areas used for safety or emergency situations may impact the flow of people to other hallways and classrooms nearby. The center should also have easy access for emergency response services (Ie. currently for gurneys, you'd have to go all around the building, up the ramp, out the gym. Or take them the back way with a zig-zam ramp).

Participants suggest centralizing main non-class resources such as the office, clinic, student success center, college center, and multicultural center. Having the counseling center nearby, such as at the outer edge of the cluster, would be helpful. It's difficult for students who already feel isolated or othered to navigate the school and feel part of the community. Being able to point students to a central location can alleviate some of that difficulty and anxiety.

The current layout and assignment of the lockers is ineffective and students don't always use them. Students would rather put their bags in an office or friendly teachers' classrooms. Having the lockers clustered for the incoming class may be helpful to increase utilization. Participants noted that lockers are a good way to be responsible for individual items and space, and not have someone else be in charge of your stuff. Additionally, when thinking about creating a welcoming environment for incoming students, it's important to keep in mind the middle-to-high school transition. Currently, there are no play or social recreation elements incorporated into the design and having those areas to serve incoming students would also benefit others.

Current spatial challenges impacting student experience

The current numbering of the classrooms causes a lot of confusion with the even numbers on the south side and off on the north side, while the numbers are not in chronological order.

In the auditorium, the number and placement of entrances causes a bottleneck and the aisles and lobby get crowded very quickly making it difficult to enter and exit in a timely manner. The signage isn't effective and it's hard to direct people to the right section, which causes a lot of chaos and confusion. Students don't enjoy the experience especially when they don't know where to go and get scared to ask to sit next to others they don't know. The seating is also outdated and small, and there aren't enough seating options to accommodate students of all body types.

Parking and drop-off/pick-up presents a number of difficulties and challenges. The drop-off lines in the morning are very long and cause students to be late for school. Alternatively, parents may drop off a block away but it's dangerous because students have to cross Powell.

Reflecting all students through intentional community spaces

Participants felt strongly about finding a way to honor the existing murals in the school as a way of recognizing and preserving all of the hard work, effort, and emotional investment students made into creating them. It would be ideal to continue this legacy by having space in the future school to display art and reflect students' backgrounds and cultures.

Some groups such as the LatinX group use the anthropology club's trophy case for their Día de Muertos celebration. Participants noted that it would be nice to have dedicated trophy display cases that are intentionally meant for affinity groups so that they don't have to borrow cases temporarily.

A flexible multicultural space that can reflect the ideas and expressions of the affinity groups is a hope of the students. If such a space were to be included, they would like to participate in design in some way to help inform group contributions for decor, murals, and artwork. There should also be empty walls to draw and represent cultures, and these spaces should be flexible and adapt to the changing student population. Including flags that represent where each of the students' families are from in some visible part of the building would help reflect the diversity that exists, making these communities more visible to the broader community.

While a visible land acknowledgement or tribal nation flags would be important to honor the land the school sits on, it would also be important to revisit the name change conversation. Students want to have a name they can connect with that feels empowering, but feel like their student-led efforts get the runaround.

Participants don't feel strongly about the building but did suggest incorporating some of the building's original bricks or the brass materials into the new building in some commemorative way.

Misc.

Many students and staff are still confused about the timeline of the modernization. They want to continue to be engaged and provided with simple and clear information about things such as: when the new school will break ground, when it will be completed, when they will know about where classes will continue while the new school is being built, etc.

Cleveland High School Modernization

Listening Session Summary

Intergenerational Households

March 2024

Key Insights — Highlights

Ideal high school experiences are student-centered

Participants envision a high school with improved facilities including temperature control (accessible by teachers directly for their rooms), more water fountains (with potable, clear water), additional parking spots (to accommodate teachers, students, and visitors), cleaner bathrooms (with ventilation), and relaxation spaces for students (such as access to secured outdoor spaces, a multi-cultural center, and comfortable seating options for classrooms, auditoriums, or cafeterias).

Our attendees also expressed a desire for resources such as vending machines for snacks and school supplies, smart screens in classrooms for interactive learning, and pest control (as the middle school currently attended by a participant has had rats scurry through their rooms). Additionally, comfortable seating options should be explored for classrooms; some of our students not-yet in high school noted that they were nervous about the 90 minute class lengths, with fear of shorter attention spans.

One of our students present emphasized the importance of accommodating diverse cultural backgrounds and languages. While she speaks Spanish at home, many of her friends are Afghan, and they feel excluded in available curriculum as well as the cultural representation at their schools.

Eco-friendly designs received a lot of enthusiasm, and emphasis of importance; while reserving historically significant aspects of the Cleveland building received lukewarm support.

Integrate community resources into the building design

Having community resources within the school premises is valued for its convenience; participants appreciate initiatives like food drives and stores on the campuses of their middle schools – especially for families that struggle financially, or whose finances fluctuate.

In addition to literal resource hubs at the school, accessible language resources were identified as a key method to better engage underrepresented families. One of our parents – who is engaged as a Community Ambassador – noted that she feels welcomed in a building when she sees the word “welcome” in different languages; she acknowledged that this is an intentional way to let someone know that they will be included in what comes with the building.

Improve navigation with consolidated school design

Parents are grateful when their childrens’ school buildings are intuitively connected. This not only makes the school easier to navigate for parent-teacher visits, as it also reaffirms that students are safer during the school day. Without having to cross dangerous streets, without having the ability to leave school unsupervised, and by decreasing the threat of strangers entering the school space, this makes parents feel safer.

Furthermore, safety measures such as badges for students and a single entry point for pickup/dropoff were highlighted as things that make students and parents feel safer while at school.

Safety means different things to different people

When discussing the level-setting prompt “What does safety at school mean to you?”, attendees talked about academic safety (appreciating AVID tutors and GPA checks), and cultural safety (such as affinity groups having dedicated space for cultural education and community building).

Cleveland High School Modernization

Listening Session Summary

English as a Second Language (ESL) Students

March 2024

Key Insights — Highlights

Physical spaces impact a sense of belonging

When asked what spaces feel welcoming, students' initial response was, "nowhere feels welcoming." After some additional follow up and consideration, students shared that areas like specific teachers' classrooms (Mr. Acuñas, for example) are where they feel welcomed.

Similarly, many of the spaces these students identified as feeling welcoming were centered around their ability to be with their peers. Finding camaraderie and connections in larger spaces like the gym, auditorium, or cafeteria can allow for some more relaxed environments. However, students noted each of these areas of the school building have challenges of a "free-for-all nature" that tends to benefit students other than themselves or those like them. An intentional space, such as a multicultural center (MCC) would give students the opportunity to have a core space to meet new friends or take solace in the community that look and talk like them.

Access to multilingual assets would improve integration

Our students expressed a need for more support for English-language learners, including books, resources, and signs in different languages.

Additionally, the difficulties in navigating the school upon first arrival were highly felt across all students and language groups. The students suggested improvements like clearer signage and multilingual support to aid new students and their families.

Participation in school sports is limited for some students due to barriers such as lack of accessibility to online forms, information and coaching in non-English languages, and inadequate/outdated equipment. Students would appreciate easier access to sports activities and more inclusive participation opportunities for themselves and their families.

Historic preservation is not important to ESL students

Although students acknowledged that Cleveland High School has a legacy in the city of Portland, no one from our listening session aloud said that it would be even slightly important for the building to be kept in the new school's design. A resounding perspective stemmed from students and their families being new to the area and not feeling connected to the history of the school.

In envisioning their ideal school, students emphasize the importance of cultural representation, language support, comfortable spaces, navigation tools, and inclusive extracurricular activities that are easier to access, rather than maintaining historical elements.

Cleveland High School Modernization
Listening Session Summary

Office Hour

March 2024

Key Insights — Highlights

Community questions center timeline and anticipated impacts on students

Participants who were parents of an active student at the high school were mostly concerned about the project's timeline, and if their student was going to get to experience the new high school.

Additionally, there was sincere concern from parents with prospective students of the school in regards to where their students would attend high school in the interim of the project. For parents who live across the street from Cleveland, the prospect of their child(ren) traveling to Marshall for the reconstruction period was daunting and unwelcomed. Will PPS help transport their kids? Where will sports and extracurricular activities be held?

The After Bruce team provided attendees with the community perspective surveys, as well as directed folks to visit PPS's Office of Modernization website for the most up-to-date information about the project.

Community engagement efforts are appreciated

An architect in the audience noted how often community engagement work can be left out of the design process and was grateful for our work being focused largely on historically underserved and marginalized communities in Portland.

SURVEY RESULTS

As part of the community engagement effort, PPS conducted a survey for the Cleveland Modernization Project. The survey asked which of two design options was favored for the modernization:

PLAN A
Build an all-new Cleveland High School.

PLAN B
Keep and renovate only the 1929 structure and build new facilities around it.

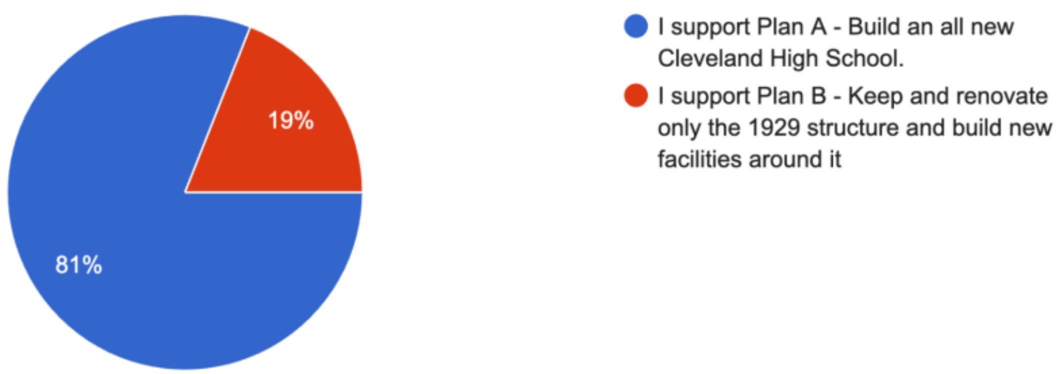
A total of 1,413 people responded to the survey with 81% in support of building an all-new Cleveland High School. Current CHS and feeder school students made up 40% of respondents, and they overwhelmingly support an all-new building. The main reasons people cited were that all new construction provides better educational options for teachers and students and more outdoor open space for the school and community. Those who wanted to preserve the 1929 building expressed the importance of preserving historic buildings even though they pose some challenges for future use. Some expressed concern about what the loss of the historic building would mean for the neighborhood and the community.The site diagram later in this section shows one possible configuration for the field house, plaza, bleachers, and practice fields.

The design team will continue to study additional options during the Schematic Design phase, in conjunction with the PPS Athletics department and members of the CHS community.

On the following pages are summaries of the data collected, as well as all of the comments we received in support of each plan.

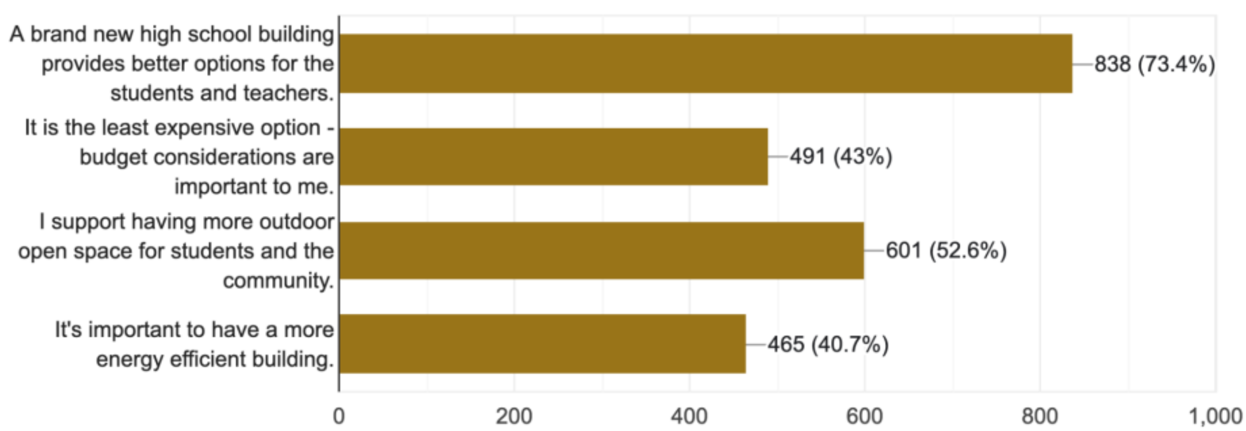
QUESTION ONE - Are you in favor of all new construction or modernizing the existing 1929 building and adding to it?

1,410 responses



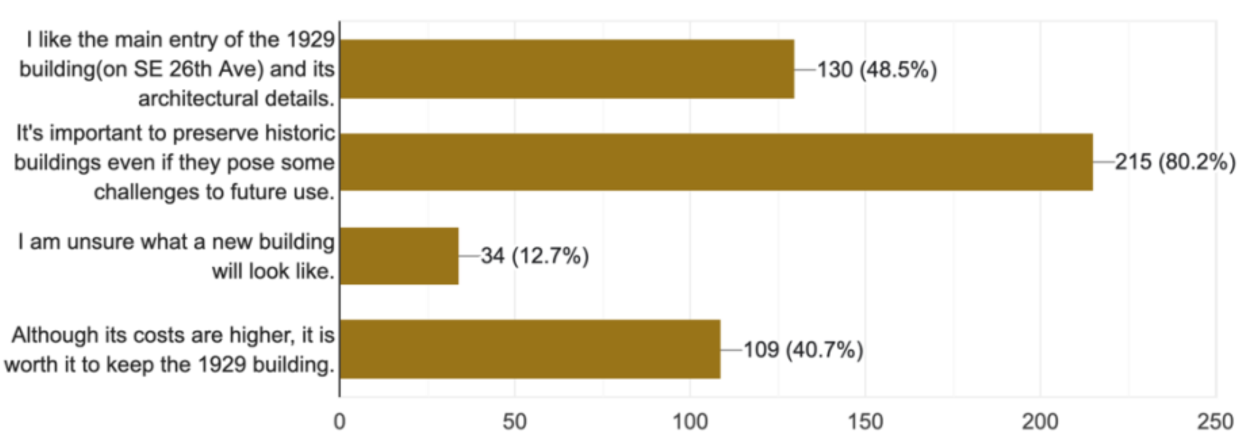
Please indicate your top 2 reasons why you support building an all-new Cleveland High School below.

1,142 responses



Please indicate your top 2 reasons why you support keeping and renovating the 1929 building.

268 responses



Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

Please consider maximizing natural light when designing the new structure.
Please prioritize the voices of CHS teachers and staff in this process! They are the ones who will be working in the building for years to come, as students come and go.
The performing arts building being close to the gym with a shared alley for deliveries, etc is a great plan.
The top priority should be to move the high school to the largely vacant Fred Meyer site and get Cleveland off of Powell.
I strongly suggest the team looks at a larger site for the new building such as the Fred Meyer headquarters nearby. The effects of being relocated for several years takes its toll on the currently enrolled students. Please consider this!
Not seeing speed of the project mentioned, but it is important to find a way to minimize student and teacher disruption. I assume Option A, the new building does that, but I hope it is a consideration in any plan.
Would there be a more predictable construction timeline with a new building? What about the designs for the stadium/field renovations?
Please prioritize softball and baseball fields and facilities to make it more equitable like the other high schools!!!
I liked the option of moving the school to a different campus that wasn’t at the terrible intersection of 26th and Powell. It’s a safety issue!
It is important for my child to attend school in a seismically safe modern building.
speed of project is also important
Can we use any of the historical building architecture?
It has to be safer to do an all new building than to keep one the fourth generation of my family is currently enrolled in.
Purchase and rebuild (remodel) the Fred Meyer corporate office and land. Bigger, safer, better
The location of Cleveland high school is the worst part of this- very much hoping that other sites are considered for a new build still as my two kids will not be going if it continues to sit on Powell blvd
Is there a way to save some of the historic features and have them on display in a new building?
The current structure is out-of-date and too cramped for the number of students currently enrolled.
If all other things were equal, I would have preferred to keep some of the old building for its character.
Is there any scenario that utilizes the parking lot across the street with a sky bridge? It's such wasted space... which is at such a premium.
I don’t see the Cleveland building as an important structural icon. I think a completely new building will not sacrifice any historical significance of the space.
Please prioritize a maker space/location for the robotics team
Build Across 26th Ave
All of the above reasons are valid in my opinion, and I don't find the exterior of the 1929 building to look very nice or historic.
Please consider a new site althogether. The current site is a bad location with dangerous traffic on SE Powell Blvd.
All of the reasons above are important to me. While the historic building is a nice bonus, we should not compromise student and teacher facilities for a historic facade that could be memorialized with photography or murals.
I support both options but do not want to see cost as a reason to not move forward with modernization as it is greatly needed.
Please find another site, one that is off busy Powell.
Old buildings are just that - old buildings
Whichever option would be completed first is the priority for me.
Can’t we get a new location, where the Fred Meyer building is? This would be the best option to have a campus like every other school in the PIL where Ella fields are on the school grounds.
An all-new CHS can still pay homage to the design and aesthetics of the building it is replacing.
I know it's hard to let go of a historic building, but I believe we need to provide the best facilities possible for our students and teachers in order to provide the best environment for learning that we can. The world has changed since 1929, and the needs of educators and students alike have changed. Let's look to the future!
Please share when construction would begin
As long as the location is very close to the existing location. I heard the former Fred Meyer headquarters is a consideration?
Ensure that the plans include improvements for the school’s athletic, arts, technical, and academic facilities
I also value speed -- I prefer the option that will be completed the quickest.
I'm very disappointed we're not building at a different location (Fred Meyer headquarters) b/c the existing Cleveland block is still incredibly small, limiting, and has very little ability for open and outdoor space. It's the only PPS high school w/out a campus. The field is blocks away. To reach the park they must cross US-26 and another street. A new building, or even a renovation on the old building, on the existing site seems like extremely poor use of funds.
Keep the students at Cleveland, until the new one is built. Look to buy the Fred Meyer Building and and ask the city to support making Powell Park the Sports Complex, OR Buy the building that was Target, and build there. Build a bridge to the Turf and track, and then a path to where the current school is to build a baseball/softball/all turf complex for all other sports.
Would love if the community could get started on this sooner than later, as the current structure is in dire need.
If people are being all fussy about it being a historic building, you can always build the front of the brand new school to look similar to the old.
I ultimately would defer to the preferences of staff who work in the building as they have first hand knowledge and are most impacted by the final choice.
Are there any advantages to keeping the old building? If not then why is it an option?
Is building on site the only consideration? What about purchasing the land on the southwest corner of 26th and Powell or swapping out property?
Do not in any form keep the old auditorium. Brand new please.
Why can't we add space on/over the parking lot? This is an enormous waste of space. Could we build places for students to learn instead? Climate emergency?
The new building option makes better use of the land by building on the current dead space alongside Powell and SE 26th.
I wish you could move the school off Powell Blvd altogether. It's not safe and generates a lot of pollution.
Safety of the building is critical
There needs to be a serious look at relocating Cleveland HS to a new site. Immediately south of Powell Park, the Kroger HQ has 4+ acres of parking that is rarely used immediately. Has anyone approached Kroger about the possibility of purchasing land and buildings? If this were done, a new school could be constructed without the need to relocate students to Marshall. Then the old school building could be refurbished for adaptive reuse, as was done with the old Washington HS building.
Buy the Fred Meyer property! That is the way to go . Come on PPS be bold!
I am eager to understand where Cleveland students will be during the construction, and how long they will be at a different location. I'm very concerned about the impact of construction on my kids experience and education.
In my view as a parent and teacher, the most important consideration is enough space in and outside of classrooms for reasonable class sizes—small class sizes being the primary goal with enough classrooms for all teachers; safe, accessible, highly functional spaces with WINDOWS in all classrooms being the secondary concern. Budget and environmental considerations should be highly valued to make the best school possible for the long-term!
Only that I support SAFETY of the students as a top priority, be it from natural disasters, or threats of violence.
It would be great to expand the parking lot to make it two or even three stories with 3 exits - one on each street (except Powell/Burgerville area.) Parking around the school is such a traffic nightmare. Also, I hope there is a way to salvage the historic organ... it is such an amazing instrument, it would be sad to lose it.
With such a small footprint providing a new space efficient layout is extremely important. The risk of unforeseen conditions increases significantly when renovation of existing 100 year old buildings.
can you unlock the gates on cleaveland field
Are there any options that expand into additional space like adding floors or utilizing Powell Park?
Although it would be nice to keep some of the historical aspects, the existing buildings are in bad shape. A new building will provide more flexibility and be quicker to market for the children. In addition, a new building will be far more energy efficient.
Don't let misplaced nostalgia and/or historical significance negatively impact the future generations. Build what is necessary too give them the best education options as possible.
We need to let go of the past a design a state of the art facility.

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

On larger campuses, it may make sense to preserve a historic building. However, preserving a mediocre old building like Cleveland does not serve the students.
as a cleveland alum, I am happy to see the old building go.
I feel like renovating an old building always comes with unanticipated findings that result in delays and added cost. Unlike some of the other historic buildings, such as Franklin, the 1929 building isn't particularly interesting and I think making a new building that will better serve students is more important than trying to preserve an outdated structure.
Incorporate Powell Park for Cleveland High School athletics. This can be comanaged by Portland Parks and Rec and PPS similar to Grant Bowel. Why does Cleveland not have the same access to athletic fields as other Portland Public Schools?
26th Avenue (in front of school) should be closed permanently in order to provide for student and staff safety
Build a facility designed for modern learning. No reason to hold on to outdated facilities.
I would have been interested to hear about how the construction timelines compare.
Keep the focus on what's best for 10-20 years out. No student attending Cleveland now will ever benefit from this work and holding on to the past with the facade seems to sell future students short.
I love the historic facade but realize it might be unrealistic to save it. Also love the auditorium...can the organ be saved?
I appreciate the character of old buildings, but energy efficiency and low carbon approaches need to take precedent. We need to create a new school that better serves our students and teachers.
Will the busy traffic along Powell and SE 26th Ave be addressed at all?
Budget over runs are more likely when accommodating existing conditions than with new construction generally. Has the project team considered the purchase of another building such as an office campus nearby as a third alternative?
As a Cleveland Alumni I fully support a completely new design. The building is in such poor shape when I went there 20 years ago that I cannot imagine the amount of work & money necessary to modernize it the way our students deserve.
It would be great if the Fred Meyer space becomes available. Getting CHS off Powell Blvd would be a huge win for the safety and well-being of the staff and students. If this is not an option, building school services over the parking lot with a connector skybridge also seems very feasible. The bottom level can still be staff parking with multiple floors of classrooms/school space above. I do not see how Plan A provides more outdoor space on the current postage stamp of a HS campus. Construction multiple levels on top of the parking lot could provide even more open space.
What are your plans to address ADA issues since the district is out of compliance with ADA since there is no current ADA Transition Plan for the district?
Cleveland is already hobbled by being on a small lot. It needs to be as functional and flexible as possible. Plus, the extra cost and time needed to keep the old building is not worth while.
BUY FRED MEYERS BUILDING!
Would love to have a separate space for the dance team so they don't have to "fight" with basketball to have gym time or potentially injure themselves dancing in a small space with other equipment, etc in the way.
All four reasons are important considerations. Although I don't know, I suspect timing would also be faster to tear down and rebuild rather than to work around the existing structures.
I'm so glad the 2 lot option(s) are off the table and you've narrowed down to a single site/lot which was far more feasible for so many reasons! My family has been at CHS for 4 generations and I'm more than happy to do away with the old structure. An all new build is cheaper (and faster?) to build, cheaper and more efficient to maintain, and makes better use of the site allowing for outdoor space, makes it easier to reorient the main entry which seems especially important to encourage people to access the campus on the safer interior streets. New build / plan A all the way!
Please don't listen to anyone who is afraid of kids darting across SE 26th instead of the sky bridge. Please use native plants in the landscaping.
Also, having a new building can be more energy efficient with new technology etc. Old buildings have so many hidden costs and problems that arise during renovations etc.
Consider including recycled materials from existing building in new building design. Features such as wood work/millwork from stair rails etc, wood floor from stage (?), notable and historic features that can be thoughtfully reused in the new build, paying tribute in smaller ways to the historic essence of the existing building.
Renovating the 1929 building would probably come with its own set of delays and unforeseen problems. Start fresh so that the campus will last longer!
All four of the above reasons are important but cost and creating the best learning environment for students are the most critical. Thank you.
Please build soon!
We need some brand new buildings. I'm usually sentimental, but this is a no brainer. Seems like it will be a lot better for the students, and PPS needs some truly modern schools.
Is there a site across Powell Blvd that was being considered? I believe it was a Fred Meyer Corporate site. It has much larger lot size. My daughter is in seventh grade this year at Hosford and having the grounds for the school all in one lot was something we both thought made more sense. Currently the fields are a few blocks away. I love the idea of using the old building, but it has such a tiny lot, new building or not. It's very unsafe being so close to the road on Powell.
I'd prefer the district explore renovating or building new on a different site to minimize disruption to upcoming students.
It's important that the kids get fresh clean air and save water to drink. Also important is air conditioning.
Students & staff deserve a new, efficient environment for learning. Short of moving to a new location, creation of any bit of Green space is vital.
I think it is important to the community to preserve the original look and feel of the building, but I believe this can be done with new construction as well, while providing more freedom with space and efficiency.
I think it is inaccurate that either option will provide the same 100 year design life as mentioned in the survey. In my opinion virtually every system of an already 100 year old building will not perform equally to a new building either in year 1 or 100. Also, although the same seismic design criteria can be met with either retrofitting an older building or building a new one, I don't believe they perform equally in the real world. Perhaps this question should be asked of the structural engineer and the answer shared to help with informed decision making.
Whatever the decision is, it is critical that the new HVAC system meets the ASHRAE Standard 214P. A well ventilated classroom is critical for student achievement. 5 ACH is minimum. 6-12 ACH is optimal. Clean air is as important as clean water. Future generations of our students and teachers need this to be done right.
A new building plan should include disaster preparedness and damage mitigation to improve occupant survivability in the event of a major earthquake or other disaster. Such design provisions should also account for the facility to be used as a community response site following any disaster.
Safety of the building for our students, staff and teachers as well as time to complete the renovation is also a consideration. It should also be an extensible plan. Most of the new HSs are already overcrowded. We can't plan for yesterday, we need to plan for tomorrow.
The costs of time are not clear here
Seems FASTER and EASIER to go 100% all-new. Trying to maintain historic facades sounds like a nightmare process to me.
All four reasons are equally important to me.
While selecting all new. It will be important to make the new construction fit the character of the neighborhood modern look and boring exterior like Kellogg school won't be welcome
Timelines would be nice to know
While I hate the idea of tearing down historic structures, in this case I believe we need to prioritize kids education over that. PPS is sorely lacking resources for our students and teachers and it is important to use this 'one bite at the apple' to modernize the facilities so that the education of our students is not limited by school building itself...both now and as far into the future as possible.
I like the idea of having building up to code. While I'm sad to see a historic building go. It makes a lot of sense to have a new, clean and safe environment that's cost effective and adds the most green space.
A newer building is always better especially in light of current gun laws and the need to secure buildings quickly.
Performing arts are what Cleveland is know for!!! We are nationally recognized as a performing arts school, so the performing arts facilities should reflect that. Listen to the performing arts department, they'll tell you what we need
I heard a rumor the Phil Knight was willing to donate money to the school and was told no by PPS for inequality - I don't agree with that.I wish PPS was looking at the Fred Meyers property - would be nice to have a bigger campus and the amenites that the other newer PPS schools have.
I'm a Lincoln Alum. The new campus LHS building is I think the 6th, and has been housed on 5 campuses throughout it's history. Us Cardinals are doing fine. Don't cave to sentimental arguments for keeping the original Cleveland structure.
Please let families of incoming students know the plan for students while construction is happening

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

More earthquake safety features
I suggest securing a new campus location entirely. The existing space is much too small.
Is the Kroger - Fred Meyer office an option?
Top notch security and fencing all around the school. Nobody should be able to see into the school/property grounds. No chain link fencing please. Entrance needs to be maximum security to desuade potential school shooters. Entrance to be moved off of near Powell Street so our kids are safer getting to/from school. Skills labs like woodshop, ceramics so kids gain practical skills in high school. Solar panels on the roof. Large underground parking lot. Thank you for this survey!
I think that this HS should not be in this location due to safety concerns and lack of space. My preference is to change the location entirely.
The location of the current school is horrible and unsafe. If the school is simply renovated and kept at the current location we will not be sending our kids there.
Good Luck!
All of the above reasons are important. I don't consider the architecture of the current building advantageous in any way, and see no reason to keep it.
Making the school all connected without having to go outside to another building is safer and more acessible for students with limited mobility. The gym is currently in another building where students have to exited and enter external doors. These doors are sometimes locked so a student will have to stand there and wait for someone else to open it. It's a hassle and a safety issue.
Dan Patla
Many people are resistant to change because of loss. You will not make 25% of people happy. Loss of their memories, and letting go of the past. Build something new that is safe, modern and equipped. Never once have I wished I worked in an old building. Do the right thing and upgrade! Stay strong, be the voice of the future. Cost effective and better for everyone. The building is NOT historical. Historical to whom??? And why?? Be strong team! The next generations will benefit from your strength, courage and leadership!
Make the locker rooms equal - they boys locker room is so much better than the girls and it makes me mad
Please consider using a different site to build a new building so that students aren't displaced and the potential for more space. The Fred Meyer site on the other side of Powell would be a great location for a rebuilt CHS.
Please find a way to co-locate the athletic field.
Powell Park should ALSO be utilized for better student and community outdoor space since the Cleveland campus is so small with the track blocks away
Starting with an all new energy efficient building is very exciting. There is no reason to be loyal to the old facade- it would be very challenging to have it not end up looking like a bricolage or hodge podge if it is retained.
Cheaper and safer are better. We don't need to keep old aesthetics that will crumble during an earthquake.
Safety is also really important to me. The building is pretty close to SE Powell. A new building could address the heavy traffic loads on Powell and funnel kids away from it.
This option offers a better opportunity for accessibility, daylight, layout, experience, connection to outdoors, and efficient use of the small existing site - all at a lower cost in a more energy efficient building. The current building does not have historic characteristics that are worth preserving. I was on the initial committee during research. This is a once in a lifetime opportunity - let's do it right.
Both models keep the parking lot across the street. Are there plans to consider using this space for building?
Can there be a woodshop space? Maybe with a lathe?!
Athletic facilities are important. I'd like those to be prioritized- a single gym and a football field blocks away is problematic.
I really wish we could keep the historic building facade.
Can we add on a sky bridge to the parking lot?
I'm concerned about a brick facade knowing that we will face a major earthquake in the future. Please consider replacing all brick with a more secure facade.
It would be nice to hear about about the exploration of other spaces available in the immediate area that might fit the criteria for modernizing Cleveland.
I believe some of the program should be built on the parking lot next to Burgerville so that a 5 story building is not necessary. I would also support building Cleveland on the current track/field and NOT replacing the track/field as it doesn't fit on the current school site. We should be prioritizing the best site for the school, NOT for athletics. Students can use a track at another school. Build our community a pool please!!! Swimming is a life skill that is dramatically under supported in our city.
As much as I would like to retain the original facade, energy efficiency must be a top prioirty, given our dire situation and the ever expanding cost for energy. This is a no-brainer.
Being a Cleveland high School student and being in my junior year, I have wished there was more outdoor space for us students in campus, who may not have the option or want to go of campus for lunch, it would also be beneficial for teachers to have the ability to bring their students outside but not off campus.
Build a structure on the parking lot with lower level parking
New building design can still reference and honor aspects of the 1929 design that are valued by the community. As part of climate justice, include large trees on the site that can grow to provide shade, cooling, air purification, wildlife/pollinator benefits, and beauty. Design the site to encourage active transportation and address serious safety issues with Powell Blvd. Please also modernize the school mascot name. Warriors is not something my future Cleveland student feels connected to or aspires to be part of. War has had a profound and painful impact on our family which has been directly affected. How many other families in our community have also been affected? Look at the news — do we need to glorify war amid so much suffering?
I assume this includes improvements to the field. The entrance to the field needs better lighting. Kids waiting for parents to pick them up after practice wait in very dimly lit areas. This is highly unsafe. I would also say that areas around the school should have better lighting for kids and families that are there late in the evening.
It would be great to find out which option has a quicker timeline
I would like to know more about timeline for each option. I'm hoping the new build is both cheaper and faster or at least the same timeline.
I also think that the lower expense is attractive. I get lost almost every time I have to enter the building, even when I'm going to rooms in the building that I've been to many times. The current layout is horrific!
Buy up the old Fred Meyer campus!
School should be relocated to a site that allows for on campus track and field.
If it's all new construction please build something with an ultra modern design. Cleveland High School could stand out above the rest! Let's look forward, not back.
It makes more sense to build a new building for less money that is geared towards the future.
Renovating old buildings still means that they have old building problems that will sneak up some day, and often have too many compromises during the design process.
Limiting amount of time students are sent to a temporary high school is my biggest concern during construction.
Trauma informed spaces are vital in creating equitable learning environments. The previous building did/does not consider our current population or current climate. Our students and our community need something completely different, including more green spaces, windows, communal spaces, and inclusive spaces that showcase all of our students and are transparent to the exclusion that has occurred.
It would be in the best interest of the community, who will utilize this space now and the future, to fully modernize the high school with the best budget. Retaining the 1929 structure does little to improve learning or the environment and if all is equal (in terms of modernization) we should be stewards of the money the community is entrusting us with.
Unknown costs of brand new building seem likely to be lower than trying to save part of the 1929 building.
I hate the idea of loosing the historical components of the building, and all the brick & stone materials. Much rather see an option that keeps those while still prioritizing outside space and energy efficiency. If it's all new it would be nice to have some architectural interest, not look like Kellogg or an office building plopped in the neighborhood.
A universally accessible main entrance should also be a top priority.
This site is still too small to provide an adequate campus. Alternative sites would be better suited and improve the student learning environment and experience.
I think all four of the above are important and make a all new building the better way to go.
A new building would better address the endemic rodent problem

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

I don't see the design that includes a new building to house the theater where the parking lot across 26th is. I hope that is still part of a design option, I thought it was the best one.
All four of the reasons to support this plan are nearly equal in importance; while I love the look of the 1929 building, resources should be directed toward maximizing benefits for student learning and outcomes, which necessarily means better light, space, regulation of temperature and air flow, energy efficiency, and of course budget. All too often teachers and students are short changed when it comes to budgetary considerations.
If the Fred Meyer site is available that is an even better location for a new building.
Sustainability and energy efficiency should be priority while providing a better experience for how teachers and students navigate the building.
All of the options above are important to me, including safety, which I worry maintaining the current structure won't provide. I also wish there was an opportunity to move to a bigger footprint.
I like both options A and B, but option A has more overall advantages, where Option B's only advantage is the emotional attachment to the old facade. I think the other advantages outweigh the building preservation for me.
I do not want kids to be displaced to another high school, so I wish I knew which option could support that. That is actually my biggest consideration, but it's not mentioned in the survey. Is the Fred Meyer space really off the table? Seems like it would allow for a bigger space and nobody would have to move during construction.
All 4 answers are important
I generally prefer to maintain the historical integrity of a building; if the budget could allow for it, that would probably be my preference for the school. However, the district finances terrify me and I would rather fight for more money for our teachers vs higher building costs.
I would like to see phased options which allow for continuity of classes on site
Having participated in multiple renovations myself, they are never on time or on budget. Starting from new is both faster and cheaper and maximizes benefits over esthetics.
I would like to know which option will provide better/cleaner indoor air quality.
A new building is also faster. Just look at Buckman.
Move to new site!
What is the timeline for each option?
I would prefer if option A was at an entirely new, safer location.
I prefer the plan that builds on the existing parking lot as well
I think a new, modern building will excite the students and be a source of motivation and pride.
Safety is a top priority. I expect that the lower cost of this option will enable more money to be invested in safety improvements for students.
Opinions of people currently experiencing chs should hold more weight than people who only look at chs.
Sentimentality for a mid-level architecture based in colonialism and Eurocentric styles has no value and should not be preserved. Let's imagine a new, more inclusive design language for our students.
It should be noted that my children will not benefit from this modernization. It is important for all the children of Multnomah county, who are in the Cleveland cluster, get a safe, modern building. While the 1929 façade is beloved by many, it is neither Beautiful enough nor visible enough from the street to be considered a viable option.
Generally, I believe in preserving old buildings, because of the waste of material and especially how it's disposed of (more waste on the dump?). I'm concerned this plan does not take into consideration, preservation of history and environmental concerns with disposing of building materials. While it seems like the best option, these other concerns should also be explained to the community
Thank you for all of your hard work on this project. We are grateful.
It is unacceptable to build into the old building, as Cleveland is the smallest site in POS, but has the same number of students
100% utilization model is garbage, please include in plan one where teachers are not shuffling classrooms.
PLEASE have windows, and windows that can be opened. I know that goes against energy efficiency, but the HVAC systems at the other rebuilds have been hugely problematic and I will feel like I am suffocating if I can't open any windows. Also, the shared classroom model is AWFUL.
Not at this time, thank you.
Old should be in pictures, these buildings should be updated every 100 years to fit with todays technology and improvements. Would be better for children and staff.
If you keep the old school you might have to keep renovating that part anyway
History is important but PPS must focus on optimizing education on an already strapped budget. We need to maximize finances to best support the education of the next generation of Portlanders.
It seems like the parking lot should still be optimized. A rooftop outdoor open space above the parking perhaps?
good luck
Make the building inclusive --the ISC programs deserve to have quality rooms that match MHS (sensory, laundry, and cooking, etc).
I'm a parent of two Cleveland students and I've been a teacher here for 26 years.   My only concern about a brand new building is actually the trees outside this one. The trees on the Powell side were planted by CHS teachers/students/community and it is troubling to see them go. But this old building is no architectural wonder, and ascetic and nostalgic considerations are not as important as having a good ecologically and structurally sound building in my opinion.
I am concerned about the amount of time it will take to get through the City of Portland design review process, so I hope the design team has their proposal dialed in when they submit to the City for review and permitting in order to avoid undue delays in the start of construction.
Retaining only a portion of a historical building at a higher cost seems wasteful simply for nostalgia. I love the older buildings but this is a financial burden on Portland citizens
If the challenge is to preserve the 1929 structure for historical purposes - instead of making it "the main school facility" repurpose it for another support function. Perhaps for afterschool, enrichment programs, athletic support space, or community center type functions to keep its maintain its service for the community. It need not be the main "school" as we are learning from the Buckman renovation it is bigger can of worms than one can anticipate with many unforseen challenges.
Please please please make the bathroom doors swing out instead of in im tired of having to slide against the dirty bathroom wall to do my business and i cant fit inside with a backpack
Starting from a blank space seems like it would be easier to add new pipe, electrical, heating and cooling units. It seems like you could create bigger classrooms if you start from scratch. If you started over the building might last longer as well (might not need as many costly repairs).
Given that usable space for the school is the lowest of all PPS high schools, it makes sense to completely reconfigure/rebuild the campus to maximize efficiency. Only gaining 50k square feet for a complete remodel doesn't make sense if you aren't able to utilize the space to it's fullest modern potential. Suggest incorporation of historic high school components into the new school. Move entrance to SE 28th or Franklin, entrance on 26th is dangerous. Maybe get under agreement with Fred Meyer for majority of staff parking to use their parking area and use the existing 1-acre parking lot parcel to increase usable space! NE corner of Fred Meyer parking lot is only about 500 feet from campus.
Working in construction I frequently deal with remodels. While they can be useful sometimes they come with many, many hidden costs that cannot be considered until whatever problem caused them is unearthed. A complete demolition and fresh construction allows for crews to work the most quickly and efficiently at their tasks allowing for the most viable path to finishing the project on time and on budget.
Earthquake safe building should be the top priority. Old buildings cannot be retrofitted well enough to keep our kids safe. We also need modern lockdown technology for keeping them safe.
I am an architect - I love historic buildings, don't get me wrong. But in this instance, a lower budget, ease of construction and just creating a more modern, useful and SAFE building is far more important than maintaining yet another somewhat historic brick building.
BUILD A SEPARATE ARTS BUILDING!
We need more space for the kids
The front façade of the building maybe be historically significant, but it is not in good shape and is not nearly as important as providing student the best and newest option possible.
If we want to preserve the historical architecture, seems simple enough to recreate it on the new building (pop off existing facade and reinstall on new building)
n/a thanks :)

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

It is integral to the future of Cleveland students and staff that the outdoor space is connected directly to the school so students do not have to walk blocks down busy Powell street to access the track and field. And while historical significance is important, students and staff deserve a modern and energy efficient center for learning. Perhaps aspects of the historical building can be preserved and incorporated into the new structure.
I support all the reasons listed for a new campus: better for students and teachers, outdoor space, budget (only because it is easier to get funded) and energy efficiency. My top concern is it gets done soon. These poor kids have waited too long already!
Safer and cheaper
It's unfortunate that both options remain at the current site. Considering the size of the location, it's not a particularly safe location and even a new building doesn't take away the fact that high schools aren't meant to be at a location of that size.
Lunch is a problem at Cleveland. No covered outdoor space. No one likes the cafeteria. Students leave and eat out which is expensive and creates disparate groups. Students need a new building and new design that creates community and makes them want to stay on campus.
I’ve heard about the distributed option with a sky bridge over 26th and think that is worth the extra expense! Better to go a little bigger and make a school that will delight students and staff.
Why isn’t anyone considering a building across the street and on the Fred Meyer site?
The top priority should be to make our school the BEST version it can be without constraints placed upon it to keep a "look" that people like. The old facade isn't what makes Cleveland great and the students deserve a modern, well designed that isn't hindered by the old section of the building.
I love old buildings, but retaining an old masonry facade is not even close to a priority for Portland Schools. We need to fast track a major infrastructure upgrade. Not a time to be sentimental.
The timeline is also important to me. I want the new high school or renovation to be complete as soon as possible and as quickly as possible. I do not want students – including my own child – to have to attend another high school across town for any significant period of time.
Timing and need to relocate during construction are a big consideration for me, too.
I haven't been involved in the planning but I am disappointed to see that building a new school nearby (Powell Park or Fred Meyer) is off the table. This would be ideal as it would be the least disruptive to students.
I have been teaching at CHS for over 17 years. The building is so dirty, and this has nothing to do with age, but the lack of custodial support. There has to be a means to keep a new building/redesign clean and ensure this is a part of discussions and even new contracts. It is so demoralizing and unhygienic to be working in such filth. The messaging to students, staff and community is a huge "Who cares?" and... what are we teaching the next generation. I'd much prefer a clean building than a remodeled one. Also, I have heard numerous reports that the current contracts with the new schools HVAC folks are terrible, that the systems are constantly breaking. I also heard they put no windows in counseling offices at Lincoln. Please consider light/windows as you design. Please don't cut corners with materials and HVAC which down the road cost$, and please consider changing contractors if data shows issues.
The intersection at SE 26th and Powell is notoriously dangerous pedestrians. I've heard that PPS has asked Fred Meyer about the possibility of buying their lot, which is in a much safer area. I believe the school should be move to a different location altogether.
Saving the old facade is expensive and the building is not architecturally significant.
Another important factor to consider is (1) how long will the construction of A vs B take and (2) where the kids will go to school during construction. Also, where are we on the idea of buying and building at the Fred Meyer HQ? These seems like the best option - more space, room for the track / field, close to the Max, get the school off of a busy intersection, etc etc etc
Thank you for your work--I hope you get to build the new building!
Can you move the campus to the Fred Meyer complex over by the park?
least expensive option so that the option to build on the parking lot can be considered. Building on the parking lot received lots of support in the planning committee meetings. I hope that this survey is not an indicator that this plan is off the table.
we can't afford option B
Please add a card reader to a gate to access STAFF parking lot.
Is there any way to speed up this process. The current building is unsafe.
(Parent comment): I've been wondering when this would happen. We supported taking on higher home taxes through school bonds years back in the hopes that by the time our son was in high school that he'd be at a good facility. We've watched with admiration (and envy) when Franklin was re-done; wishing we could have those kinds of resources at high school. Now I've got a junior, who will be a senior next year, and it's unlikely he'll ever see these changes. He, and the other students have struggled through not-great bathrooms, limited facilities, horrible chairs that are meant for middle schoolers, poor ventilation, no air conditioning, and more. So it's bittersweet to vote for this knowing he will not attend the new school; he will be graduated by the time you all get to the rebuild. Hard to choose the top two options, as all four are important...if I have to choose: 1) I support a full rebuild because even historically, I don't believe there's a lot to preserve here architecturally or logistically. It's such a small campus, that really it should be re-done from the ground up to maximize space, ease on budget, and especially to 2) gain more open outdoor space for students. With car accidents, bike accidents, shootings and everything else we've seen at/near the school, it's evident that a more protected outdoor space is needed for students. Energy efficiency is also key, as kids are too hot or too cold, overdried out in the winter, and roasting in the summer. Ventilation in the school isn't good and we had Covid to understand that first hand. I wonder where you will house students while this is all being built...but it just needs to be done. When will building start? Is there no state budget for this without bringing it to vote on a bond measure and having people with already too high taxes have to pay for it? Lots of questions... but I really hope you do build it. Thanks for giving me an opportunity to comment.
I feel a brand new structure will be up to date with codes for earthquake protection and just overall a healthier environment. Students shouldn't be uncomfortably hot or cold while trying to learn and a new building will have proper ventilation and adequate insulation. I am not thrilled about the location since it appears to become more unsafe throughout the year, however, a more modernized building would allow for more safety through use of updated technologies.
You guys are doing a great job!
If you could make the new buildings front entrance look like how it currently looks, then that would be most beneficial. Having the new buildings entrance look like the original design from 1929 would be welcoming for many people in the community knowing how the old school looked like. No asbestos please!
To preserve simply the facade of the old building would be a total waste of money.
I went to Cleveland. Even back then the building was nothing special. Just a brick cube - not architecturally beautiful like many other PPS schools.
A new building should provide better utilization of space and safety concerns like asbestos, lead paint, lead water pipes and maybe more importantly lower maintenance costs.
In your original bullet points about each option, there weren't really any pros associated with the renovating of the existing building other than preserving it. Is the historical significance so great that it's worth doing so?
I cannot imagine a less appealing building than Cleveland High. My eldest student attended there and I would consider trying to lottery into a different school for the sole reason that I do not believe the current structure lends itself to community, beauty, safety, or pride. A great book about the psychology of space pertaining to high schools called “Landscapes of Betrayal, Landscapes of Joy” is a very moving, informative read.
I have been involved with other significant renovations of ~100 year old buildings and have found the risks and additional costs far outweigh the benefit of keeping the original building.
I think that we also need to look at a better solution for athletics fields for students - especially baseball and softball. Our kids need better - they deserve better, both baseball and softball need to have a indoor facility that they can utilize when PP&R shuts down the fields that they are required to play/practice on during wet weather. We don't always get gym time to practice
I am a Cleveland parent working as a construction working on the Benson High rebuild. The decision to maintain some of the older building in hat project have caused major design problems. To try maintain/rebuild the 1939 Cleveland building isn’t work the effort given it current condition of structural conditions, leaks, lead and asbestos contamination.
While historic, I don't believe it is feasible to save the old structure and also create a school for the future. Cleveland students and the community will be better served by an entirely new facility. It would be good if some historic architectural elements of the old building could be saved and incorporated into the new building's facade and interior public spaces.
CHS grad here! I love the idea of retaining some element of the original old building.
Handicap accessibility is also an important consideration
A district that has budget issues needs to make correct decisions and this also provides a better place for kids.

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

This school NEEDS more space. Please consider options to acquire land such as acquiring the old target building near the field- and consider building gym and weightlifting classrooms on the field. Please also consider sharing Gym and auditorium space as rarely are these spaces used at the same time.
At Grant, where they rebuilt part of the old school, the concrete floors have small cracks in them and water leaks through them if the eyewash stations are used in the Science wing etc… Having a new building also provides better HVAC options with air filters to keep students and staff healthy.
I heard possible expansion into current Fred Meyer headquarters would be better than both these options. More space, fields attached to school, off major thoroughfare and safer for students.
While historic preservation is important, providing the better learning environment for students must be the top priority for PPS.
What is better for students and learning. Please make that the top priority!
As you rebuild Cleveland High School and other high schools in the district, please do not over spend unnecessarily. I teach in a PPS elementary school where the roof is literally collapsing (a temporary support beam is being put in this week so we can finish the year). PPS desperately needs to fix many of its schools. I support making small, less expensive fixes across the district rather than just rebuilding our high schools.
Looking forward to witnessing this project! I have two young kids who are future Cleveland students
The existing building facade is brick and stone, which will be dangerous in the event of a strong earthquake.
These are not the reasons that I support a new building but your survey forced a decision that was only 4 options
Having a building that is up to current Earthquake/seismic standard is important. Also, it is important for the committee to ensure they consider the fact that Portland is a growing city. Building a brand new state of the art school that is too small and thus overcrowded fixes one problem, but creates another.
I would hope it would keep some of the likeness of the old building.
Open hardscapes for kids to hangout needs to be considered
Integration with the outdoors supports the health and well being of the students.
Best option is relocating Cleveland to the Fred Meyer space near Powell. Keep the kids at Cleveland while renovating the Fred Meyer space for the new high school.. Use existing Cleveland bldg for administration offices. The current location of building is unsafe for students due to traffic on Powell and 26th. Fred Meyer location is much safer for students. This plan allows students to stay at existing location on Powell and SE 26th while Fred Meyer space is being built out.
My heart wants to support option B, my head is saying to support option A. My grandmother went here when it was Commerce High School and was in one of the first graduating classes. I've always thought it would be so cool for my kids to walk the same halls as my grandmother did in the 1920's. But alas, the opportunity to provide a building that much better meets the needs of the students while also keeping the budget lower seems like the more sensible option. If the building is demolished, I would like to see the re-use of as many elements of the old Cleveland building as feasibly possible- as a way to keep building parts out of the landfill and to honor the old building.
The current building is old, sick, done, haunted with the past - stuck in the past in every way really. We need a clean, SAFE, new building that students and staff can be proud off. With green space that will protect them from being hit by cars. This city has proven inert in every way, we can't be dependent on them for anything extra like historic permitting this or that. Clean, safe, new, green, and the fastest path to that outcome. Exciting times!
It sure sounded like you wanted us to vote for option A, and I support that if what you say about A and B are true. I would like to have part of the original 1929 building saved, for historical reasons, but maybe thats not to be.
The best option would be to have a new building with a true school campus, something that Cleveland High School has never had in its over 100 year existence.
The footprint of Cleveland is outrageously small. It is a deeply disappointing facility. The detached athletics facilities are problematic to navigate to and from. The city should do all it can to shrink the commercial span between the two land parcels.
I thought I heard of an option to move to the Fred Meyer space. Is that still on the table?
Can certain historical facade details be reused maybe
Please honor the original design and match historic elements where possible.
An all new building should be built with only electric hook-ups,
I feel they need to adopt the park, and perhaps build an even larger school. Several stories taller is needed for an school in the city. I feel the population will outgrow this school in the future.
This is tough. The outside facade is beautiful and it would certainly be nice to preserve, however, the listed benefits of tearing it down and starting from scratch seem to be the better option. Can they just try to make it not so ugly? Like, what happened with Kellogg? Can't we have an all-new High School that is also architecturally attractive???
The benefits of saving the existing building shell does not out way the costs of less outdoor space and optimally planned interior spaces.
Is there any way to utilize Powell Park? It is a highly underutilized park, and Cleveland and the community surrounding it would be much better served with a full campus like all of the other PPS high schools have. I am disappointed that our kids won't have the kinds of facilities and spaces that the other PPS high schools have.
The building was old and inadequate when I attended back in the '50s
Please preserve and repurpose some special elements of the old building. For example, the half moon windows in the main entry are lovely- as are the brass hand railings and the cornices... Saving and reusing key, meaningful parts of the old building can keep the connection to the past while maintaining current standards of safety and energy efficiency.
You could preserve some elements from the original 1929 building to be show cased in The building - example original mailboxes, Cleveland name from the original entry, etc.
curious about the timeline for completion and if that is different depending on which option is selected
Historic buildings are important but in this case Cleveland has had multiple add ons from 1929 to the 60s so isn't truly an authentic historic building in my opinion. New will be cheaper and safer for students and faculty.
I am really sad that the building wouldn't be the same after I graduate but I think that this is for the best.
You should consider another site all together to accommodate a full campus. The existing site is too small. The Kroger Headquarters nearby is the obvious choice. PPS could also broker a deal with Portland Parks and Recreate to create enhanced field space similar to Grant where it's good for the school but the whole community. Parks and Rec lacks resources to maintain park amenities and safety. Win win with a little imagination.
Great job!
Thank you! I attended some of the workshops. I truly think we need an entirely new building
I wonder if some of the decorative elements of the historic Cleveland HS building entry (the lovely arched window shapes and molding around them) could be repurposed into a new building facade.
I voted for Option A (new building) for the optimized use of space (better options for teachers and students), the green space, and the energy efficiency but I would have been even more inclined to vote for Option A if I had been reassured that the new building would preserve the historic look of the existing building. I am not in favor of a modern looking building and would much prefer a historic looking building with modernized features.
This is a no-brainer. The current "historic" facade is neither remarkable nor particularly architecturally significant. Let's tear it down and build a shiny new building.
It would be nice to have a few more options and/or details about the options.
I'd suggest vacating 26th for more space. It's not as if it's a through street. Move traffic to 21st. I lived on 20th and Brooklyn for 20 years, from 12th to Ceasar Chavez-between Powell and Burnside, is a Neighborhood, many zigs and zags. 26th would add enough space for a Real School/Community environment and the rest of the neighborhood is already trying to move to walking/biking. Add a full student drop off and Bus pull out on the vacated street/pathway to the field. I'm for spending the money for a Real, 50 year option, not more making do!
Unfortunately, the location is horrible. Unsafe block on Powell. I can't imagine sending my child to the school the way that area currently is.
Let's get it done soon. Would be great to give community members more access to the facilities.
Thank you for your work on building a beautiful new school!
Why aren't we building in the parking lot if the school has the smallest footprint?
It would be helpful to know more about the timeline for this project and how these options may impact that timeline differently.

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

I am really disappointed in both designs. I wish that you all had considered expanding or seriously changing the existing Cleveland footprint. I am thinking about Lincoln High School as an example and how the district/ architects considered the footprint and designed upwards. There were also some discussions of adding and/ or updating the sports field space which the district seems to have done at every school except Cleveland. I would also like the district to consider safer crosswalks- maybe an overpass. Powell is dangerous.
There is no benefit to students of keeping the old building.
All of the answers above are important to me.
please provide the classrooms with good air ventilation
Thank you for your hard work!!
All four reasons are compelling. Hard to pick a top two. Option A for sure. Let's get it done for our community! I'm continually envious seeing all of the other newly remodeled high schools city-wide.
Please make more room for students to go outside and eat lunch, I graduated in 2020, my name is Leo Camacho, the schools big issues was it was just a square if u think about it. There is no uniqueness to this school, in 2019 I remember seeing blue prints of may be building a sky bridge towards the parking lot. I think that would be a great option for the school, but at the same time it could be a risk because of the drivers.
The existing building doesn't have much worth preserving.
all of those reasons are important to me
PLEASE FINISH IT BEFORE I GRADUATE IN 2028 BRUH
What makes the current building is "historic" other than age and architecture?
Energy efficiency is also very important to me
I really do love so many of the historic features of the original building. Can we save light fixtures, door handles, hardware, windows, sconces, etc. and use them around the building? Can we consider saving the middle part of the building that includes the main entrance and auditorium? We are eager to have a beautiful, sustainable, and usable space for our high school students. Can we purchase the former Target/Bowling Alley site and use that as an Athletic facility with lockers, workout spaces, play courts, offices, and parking? I would love if we could build on the football field or purchase the Fred Meyer/Kroger campus. Thank you!
I would love to see the SE 26th Ave closed or diverted so the school can have a large front quad, safer crossings and access to the parking lot. It also makes sense to me to better use the parking lot space. Perhaps building a parking garage, and above you could put art facilities, a theater, or some sort of multi-use space. If traffic patterns do not allow for this, I would support the new building having second or third-story walkways so students can cross directly over to the parking garage building without having to cross 26th.
I hope students and BIPOC community being heard loudly and also any students and families with disabilities input is strongly considered and time and space is made safe for them to do so.
I am a graduate of Cleveland when we were called the Indians and the newspaper was the Tomahawk. The building sits on stolen land claimed for free by Clinton Kelly. His eldest son was an Oregon militia member and fighter against indigenous people during the Yakima War. Stop honoring the Kelly family. The 'historic' building is a symbol of oppression and genocide. Please tear it down and create an inclusive and welcoming school that looks forward to a better future and not glorify the tragic past.
I notice that neither options includes building on a portion of the parking lot as discussed at the community meetings. Is this because of the cost and the parking Issues for teachers?
Can we at least have what the other schools have had done.
The exterior of the 1929 building is not worth saving
I wish there was more publicity about these community meetings, very poor notification. I signed up several times and have never received any prior notice! As an Alum, I am hoping that with a complete redo of Cleveland, there is a way to save some architectual historic elements, etc. to incorporate into the new building, ie stone quotations over the doors, auditorium decor, etc. i really liked the sky bridge idea too.
Retain historical art, wall of supporters/donator names, original history of the school (Principles, teachers, difference makers etc) to integrate into the modern build throughout the bulding. We don't have to forget about the past and where we came from to go towards the future and where we want to be. Both can beautiful co-exist.
The proposal to retain the existing structure rests on the idea that the outer façade of the building (all that would be saved) has historic importance to the community and they would want it to be saved. However, the students and staff seem at best ambivalent about the old brick walls, and I do not believe the neighborhood has strong opinions in either direction. Additionally, renovating the existing structure rather than demolishing it is projected to cost an extra $10M, which simply does not seem worth it.
The original facade doesn't seem to me historically important enough to be worth constructing the entire design around. I do think the cornerstone should be preserved.
In all, a school is meant to be a teaching and learning facility, while I would love to have a historic and beautiful building, the biggest question for me is if we can keep that without having to hinder the learning experience of Cleveland, which through previous years clearly shows results.
I don't like how the building looks
I strongly support a new purpose-built school that will be more energy efficient, universally accessible, properly situated on the site, welcoming to all and will support the contemporary pedagogies and mission of PPS. The existing building is failing miserably on of the above, and does not properly support the needs of teachers and students. I usually am a huge proponent of utilizing embodied carbon of existing buildings, but it makes no sense in the case of the existing Cleveland High School building. Our students, teachers, and neighborhood deserves better.
A dedicated performing arts space would benefit an often overlooked community within our high school.
Please consider restoring Cleveland track back to natural wetland. Involve all area high school students interested in hands on, real environmental restoration. How fantastic that would be.
See what can be salvaged from the old building to use in the new build like what Milwaukie high school did when the did a complete rebuild
I trust the school Faculty and Board to know what is best for the students. Change is OK! However, please spend the money to invest in a very good architect firm for the design! It'll be worth the money, and hopefully result in a more attractive building! (I am a local on Franklin St.)
A new school will provide better technology for the infrastructure. Who is the fool who required the above question to be answered with only their two options?
The current building has no ac and also does not have good heating
I think that it would be great to keep some of the history but I think it's more important to think about the future and energy efficiency along with outdoor spaces.
Nope :)
i really hope it's not one of those stark modern buildings. i like the old tiny vibe to this one
I've heard rumors about there being asbestos in the walls so honestly I'm glad that students after me won't have to study in a potentially unsafe building
I feel like we need to prioritize being wheelchair accessible
i personally prefer modern architecture
No school should be located on a highway. Powell Blvd is unsafe for students. The existing building does not provide adequate space for students. The high school and athletic field should be on the same premises. Having students walk a half-mile to the track is also unsafe and wastes time. The students and staff at Cleveland deserve a safe and modern space with outdoor spaces and parking for staff, parents and visitors.
I think a lot of students would like the option with a sky bridge across the street but if you don't build in the parking lot just sticking a sky bridge somewhere would probably get a lot of students excited. I think the parking lot is a waste of space but everyone loves cars so if you get rid of it (or if you keep it) PPS should give all staff Trimet passes (if they don't already have them)
I think that while much of the original building has nice brickwork it definitely has many flaws and a new building would be more beneficial to the students, and staff
This building is old and it sucks
While I like the look of some of the older element in the school, I think it would greatly benefit from a full remodel, as it would allow for a more ideal layout of the building.
This building is terrible
Cudi what
I think that most of the school should go, except for the entry way and maybe parts of the auditorium.
You should buy the target and put something in there
I appreciate giving us students a say in things.

Do you have any additional comments to share with the Cleveland Modernization project team? (Support Plan A)

I think some preservation is important and trying to save some of the schools character would be cool
I must appreciate the current architectural style. If this option is chosen, it'd be great if the new building had a similar style if possible
The school is already really small and the whole school is just falling apart, as well as all around the school there is no actual good place to drop off and pick up your kid bc there is so much traffic getting in and out. There needs to be more room sense most of these people are student drivers and don't have good experience getting around. Classrooms are outdated and every room is different to each class. Some areas of the school have the room to be really muggy.
I was concerned that maybe a sky bridge could get really crowded during passing periods.
please provide more common areas
Two site option preferred for neighborhood feel, traffic slowing, outdoor space.
Please make sure we have more than one elevator, preferably 3-4
Build on 2 sites

Please share any additional comments with the Cleveland Modernization project team? (Support Plan B)

I am an alumni from Cleveland High School and I loved the old architecture that will not be there if you tear it down. PPS should work to not only preserve the faced but PPS should maintain the frame of the current theater if they place the commons in that area like Seattle Public Schools did and Garfield High School. PPS should do as much as possible to preserve the original building facade and re-use the current theater as the commons space. PPS should also remove the ugly 1980s replacement windows and ugly infill in the upper part of the window openings as part of any plan that re-uses the original school.
More like Benson, less like Lincoln.
Please don't destroy history and replace it with generic modern design
They don't build things like they used to the older building is structurally more safe than a new building would be considering they have changed building materials a lot so if there was an emergency that would be the safest area to go into
I have no hreat affection for the facade of the building, but preserving old buildings is a means of saving energy that should be part of the calculation. It saves the embedded energy that was already spent firing bricks, quarrying stone, etc. Additionally, where does all rubble go? It needs to be hauled away, processed, and invariably a large portion will end up in a landfill. That said, if it is being done simply to keep the facade, then it may not be worth it.
Did you factor in embodied energy loss from demolishing the old building when factoring in the energy efficiency of the new building scheme?
Keeping historical buildings is what brings beauty to cities. Our children deserve a safe and beautiful campus and that is my number one priority, however, I know this can be accomplished with the existing architecture.
I feel like this survey was worded to discourage keeping the 1929 and it should have been more neutral in the wording. Clearly the person who created this survey favors demolishing the building.
It is very important to make sure there's adequate spaces for ALL STAFF & STUDENTS! PPS's previous rebuilds have been poorly planned, lacking enough spaces for everyone! Please DO NOT relegate special ed classrooms to the basement!!! And every teacher and specialist needs their own PRIVATE WORKSPACE in order to test students in private, make confidential phone calls in private, to have adequate storage space for materials, etc. Expecting teachers to travel from room to room with carts is inefficient and ridiculous. Franklin and Kellogg rebuilds were a DISASTER because there wasn't enough rooms or space allotted for both staff and students!!!!
Holding onto some of the past is an important part of learning, it's how we remember where we have come from.
Accessibility issues are real though. It would be unfortunate to have to keep accessible entrances separate.
eminent domain some of the neighborhood?
The survey does not say when the rebuilt or renovation will start and when it will be done. It also plays an important role in my decision making.
There is a lot of history from the old building, and I don't want the new building to just look like a glass box like McDaniel, it has character and memories. <3
Seismic retrofitting needs to be integral to keeping the original structure.
I am more interested in knowing the timeline of the construction for these proposals. The group of students who will be displaced have already had their elementary schooling greatly impacted by Covid and their middle school experience and now after that may have to not be at their high school. The more important factor is when will this construction take place and for what duration of time. I am more concerned about the effects on students than what the exterior of the building will look like.
I like the school, idk why it needs to be remodeled
i like the historical look of the architecture
Unless the cost difference is truly prohibitive (as defined by budgetary outcomes), I feel that preserving the historical building is worth the cost.
Our taxes are out of control already. We need to make better use of the resources we have. I won't be voting for a single new tax, even though I have kids that will go to Cleveland
Historic buildings offer a level of craftsmanship and detail that is hard to replicate today, due to expense and lack of expertise. These old buildings (as renovated) are inspiring places for students to learn and for the community at large. It is also an equitable decision, where Portland's diverse communities can all benefit from their attractive, old civic buildings. PPS has a strong legacy for sensitive renovation. This community deserves no less. I'll quote architect Suman Sorg FAIA: "In Washington, D.C., I designed projects in underserved communities and for people in need. These were not the largest or most elaborate projects I was fortunate enough to design, but I have carried them in my heart because they made such a direct impact on people's lives. One example is the Anacostia High School renovation. A student had recently been murdered in the existing building, and many people in this African-American neighborhood wanted the building to be demolished. By contrast, in the city's more affluent neighborhoods parents and residents vigorously supported the preservation of their historic school buildings. I convinced residents of the Anacostia community and school board members of the building's merits and potential, and the structure was preserved and restored. The pride of the students and teachers alike when the renovated Anacostia High School reopened was gratifying for everyone involved in the project."
Please buy more land or take over a road to get more space
Why did you remove putting a building in the parking lot to preserve more open space in the existing building?
I was interested in the idea of moving the high school to the corporate buildings of Fred Meyer and getting the school off of Hwy26. Then perhaps the historic high school building could be used by Portland Parks and Rec. The area could use a community center. I'm assuming the Fred Meyer buildings were eliminated for some good reason but I do wish that had been an option.
History is why we are here today. I think it's important to preserve as much of it as we can.
What happened to acquiring the Burgerville site to expand the campus?
Needs proper sports facilities like a baseball stadium.
My husband went to school here and our kids will one day walk the halls so that's cool. I'd love to preserve as much as possible
The built environment and local contributing features matter to our community. The high school exists as part of a community and will hopefully survive another 100 years. Students deserve the investment in a building that respects the local architecture for the long term.
Maintaining the historic integrity of the building while modernizing it teaches the importance of not tearing down historic buildings for convenience and honors current need.
please god start working on this in 2026
We would like the high school renovations to be complete by 2029-2030 so our child can attend Cleveland, not a satellite campus. If the old building could be open while a new one was built that would be ok too.
If the main entrance has to move that's fine, but it's a beautiful front entrance with historic value and hopefully it could be moved fully. Also, I think it's important to invest heavily and think long term when you're going to make a 100 year change so the higher costs don't really bother me. In 100 years those relatively small percentages of higher cost will look like nothing, but the value of having some remnants of a 200 year old building will be important.
I think it's important to preserve the Kimball pipe organ.
Re-utilizing the parking lot would have been a better decision - a wasted opportunity.
Every new building built in my neighborhood looks worse than whatever was there previously, and this seems to be happening all over Portland. It's also wasteful, when the bones of the older building are good enough to renovate, why throw it all away?
I want to be clear that my preference for preserving the original buildings are entirely aesthetic and that a more detailed pitch for plan A would easily sway me. Also, the most important distinction (and this may be the same for both plans) is how disruptive it could be. My older daughter will be going to high school starting 2027 and my suspicion is that a complicated build wouldn't be done before she gets to 9th grade. So if Plan A gets done faster, I'm probably supporting that.
It is rare for modern public school construction to generate something of enduring architectural value. Unless the new building was going to be architecturally compelling, there is a significant community value to keeping the historical detail of the original building intact rather than replacing it with a bland but functional space that doesn't hold history.
The existing building is a great scale for the surrounding neighborhood.
I would love it if some of the 1929 building can remain. It's a gorgeous building. Please try to update with original door knobs, etc
I think preserving some of the long history of the site is worthwhile and increases the architectural interest along powell
i don't have a strong position,
Outdoor space for students is nice, but the best weather in Portland is during the summer. Keeping a little space makes more sense than not using indoor space needed for an empty outdoor area.
What happens to Burgerville across the street?
The brand-new PPS high schools (like Lincoln) have zero soul. They might as well be a commercial building or a hotel. Terrible. On the other hand, the partially-preserved schools (Grant, Franklin) still have a sense of history and feel like an educational facility.

Please share any additional comments with the Cleveland Modernization project team? (Support Plan B)

Within reason. If keeping the original facade doubles the construction cost, it is no longer viable. But, I think keeping the historic aesthetic has value.
Good luck!
My answers are solid, I'm certain preservation is worth the efforts and costs.
If the costs are significantly higher, I would be fine with an entirely new building since the Cleveland building is one of the least impressive of the old high schools but to be honest my strongest opinion is that the district would be better off to wait for a better site that would allow way more space for future generations than to spend costly tax payer money on an extremely suboptimal state that will quickly outgrow the needs of the community. This feels like a hasty decision that doesn't serve the goals of these redesigns and we have 2 future Cleveland students that will be in the old/current site. I would like to see that survey go out to constituents.
Acquire the block bounded by 28th, Powell, 29th and Franklin. If you acquire the next block between 29th and 31st, you can replace the 1968 gym at that location.
Keep old building it's basically ancient (which makes it cool duh)
ADD GARGOYLES PLEASE!!!
It would be really good to understand the timeline for this project. I understand we have to vote on a new bond in November 2024, but when would construction start bond were to pass?
Actually, I don't care whether existing structure is kept. What I am sure is better for students' education is to AVOID the so-called "100% utilization" model and give (almost all) teachers their own classrooms. The benefits are numerous.
As alumni it would be important to keep it how so many other alumni are used to the building looking like
Too many schools have lost too much character and become hyper-modern looking. Franklin was able to keep some of its aesthetic, whereas Lincoln was not. There's already far too much boring modern architecture that has spouted up in the past 15 years and we don't need more. Preserving this exceptional facade will be well worth it.
I have personal reasons to keep the old structure: my grandfather attended Cleveland H.S. and walked those hallways, and in about 6-7 years my son would have the chance to walk the same hallways as his great-grandfather. But also, I always advocate for keeping historic buildings: we can never get them back. They are a part of our community's collective history, and worth preserving.
This survey doesn't have very many options and I picked to keep the old building because i felt forced to choose the other option. Are you saying there are no positives to keeping part of the old building? I believe with renovation old buildings can be more sound.
With the negative enviro impact of new construction & concrete, I hope that keeping the 1929 building -- compared to an all new structure -- will mean a lower PPS carbon footprint.
The historic schools of Portland were built with architectural integrity and beauty that modern buildings cannot ever accomplish because that time of high architectural craft is over. The beauty of the older building inspires students and shows them that learning is a beautiful thing and a humanitarian endeavor. Modern facilities are needed for sure as a compliment to the older building for the basic needs of the students. Blending the old and new is the best way to celebrate both kinds of studies; The Humanities and the Sciences. Both of these subjects are important for keeping society together and functioning at a high level. Keeping this older building as a touchstone of the importance of the humanities can create a daily reminder of the foundation for a great education and will help accomplish a holistic human-centered experience for both teachers, administration, and especially students. Do not throw a great opportunity away. There are many psychological benefits in keeping well designed, older buildings as part of the human experience.
Erasing a fine building from the cityscape of Portland is erasing Portland's heritage. There is embodied energy as well as embodied memory and beauty in that building and buildings of past generations. It is not each generation's privilege to erase the past and impose wholly modern interpetations
In a rapidly changing inner Portland, landmarks of familiarity like the 1929 school building will be crucial to keeping Portland familiar to those who've been here a long time. Areas like Sandy Blvd., Foster Blvd., Division St., are unrecognizable compared to their pre-2015 appearance. Additionally, preservation of the original structure allows for architectural experimentation in how to preserve our heritage for the future in the light of seismic design (I'm a seismologist) and efficiency. The Grant HS project was exemplary, and truly one of the best of its kind ever done. Cleveland has features that other schools lack, like the historic pipe organ (really the best instrument of it's kind north of San Francisco), the courtyards on either side of the theater which could be repurposed for gardens or greenspace, and one of PPS's great arts programs. I personally envision a Cleveland HS that prioritizes and props up the arts and science programs; enlarging the theater space while preserving the wonderful 1929 auditorium and pipe organ spaces, building modern music facilities, and 21st-century science education facilities. An additional building where the current parking facility is, connected by skybridge, would provide extra space for a cramped school. I want to see the 1929 school at the heart of a new complex. Rooftop greenspace, outdoor teaching space, modest new buildings to complement the historic building, and a redesigned relationship with Powell Blvd. will enhance the community's relationship with the school as well as provide a wonderful experience for students. Think like a teenager! If it's cool, build it!
I know that other schools such as Franklin have been able to preserve the historic building so I think that the budget should allow for Cleveland to do the same. It's unfortunate that Cleveland has such little property space compared to all other high schools in the district, and I know that can't be helped, but I think that otherwise Cleveland students should have all of the same resources and opportunities as other high school students in PPS. They deserve a beautiful building with modern amenities and space.
As a parent of a potential future architect that will be starting at Cleveland in a few years, his feeling is that it will be really sad to lose all of the historic details and inspiration that comes from the 1929 building. All of the ornamentation, trim work and detailing is just not something that is done anymore and can not or will not be replicated. Once demolished, it can never be replaced. Any negative thoughts or feelings about anything that someone might view about the history of the building or the times it represents should try to remember that we do not learn lessons from the past by simply trying to erase it. This is very similar to banning books that teach a history that you're not necessarily proud of. Showing that we can adapt the building to the times demonstrates a capacity to learn and correct over time. From my conversations at the public meetings, it's not necessarily that the people that favor building all new would even be all that upset about maintaining the historic building but the people that do support maintaining the historic building will surely be upset to see it gone. I think if the 1929 building is fully demolished it will be a shocking experience for all to see the anchor of the neighborhood erased from existence.
As an alumnus and a Portland native and now the parent of a CHS student (and a future student), the Cleveland High School building means a lot to me. It is so important to celebrate and retain as much of the 1929 building as possible. As the beautiful renovations of Grant, Franklin, and Benson have shown, it is entirely possible to modernize while recognizing and honoring the past. If 1929 building carries a past that perpetuated the marginalization of certain groups, it would be better to shift the narrative and the "ownership" by reimagining the historic building rather than tearing it down and completely erasing the past. We as a community will learn nothing if we "cancel" the original building. Please honor the alumni and all those who were a part of the CHS community and fabric and do not pretend that we and the halls we once roamed do not exist and do not deserve to exist. We cannot study and learn from history if we keep erasing and "canceling" it. We must face the past--warts and all--and understand how we can use it to build a better present and future. Demolition is forever. But by keeping the 1929 building and modernizing, CHS will stand to represent our city and communities' commitment to reuse and creative repurposing. And 50 years from now, the costs will be forgotten if we have an early-2000s eyesore on a prominent corner, just as we do with Kellogg.
Your presention above is obviously oriented toward a complete replacement. Anyone in their right mind should choose it. But people who live here also value historic continuity and just might argue against a common sense (choice A) design.
Keep the Historic Auditorium
I'm also concerned with the embedded carbon costs of an entire rebuild vs partial reuse.
The old architecture looks nice
The old building is history and should not be destroyed

Please share any additional comments with the Cleveland Modernization project team? (Support Plan B)

This one of the worst surveys I've ever seen and should be discredited due to improper methodology. As educators this is shameful - you've biased the entire process by heavily weighting the school of which information is emphasized and what is completely left out. For example when you mention it costs more to preserve - you don't say how much more and on order of magnitude - 2% (10M out of 400 total Million budget) is a tiny part of the total project cost for preservation. But the way it is emphasized make it seem like it is a larger factor. Further, there are hardly any benefits FOR preservation included in the framing of the choices for evaluation on this survey. Nor is there any reference for that the retention of the building (embodied carbon) means less climate impact. Laypeople don't u destined this connection. PPS needs to seriously check their professional work before conducting shoddy research as the entire framing of this research should invalidate the results. Ask a survey expert. You have inadvertently put your weigh on the scale. It takes between 30-80 years to offset the impact of building demolition, even in a building that is 30% more energy efficient (see Preservation Green Lab, Quantifying the Environmental Impact of Building Reuse). PPS and Portland needs to deepen then understanding of the importance of Existing Buildings as a critical strategy for reducing global warming and climate change impacts. First cost in dollars only accounts for a portion of impacts and far outweighs the energy savings that are only gained over the longer term. The survey mentions none of the reasons why preservation matters culturally and socially. This place matters to many beyond the students and families currently and none of the other options for even keeping the facade were included in this so it is incredibly oversimplified and should not be used as reputable nor defensible research. Surveys are wonderful but they require expertise or you get false data. Hire survey professionals in the future and have these vetted. As an educator, a survey writer that does public engagement, and a parent of a PPS child I am deeply concerned to see this type of bias from PPS. I understand this site is challenging and costly and necessitates a loss of an important cultural resource eligible for national registry designation that could yield other benefits for selling FAR air rights to gain you greater density, I would rather see PPS do a land swap for this site and develop part of Powell Park, perhaps turning it into a Cultural and Arts Center, and/or with a McMenamins hotel that brings visitors and tourism to SE Powell and serves the whole community for another century with its art, history and beauty. Maybe even give some part of the land back where some of the ugly modern addition currently is situated to native leaders as commitment to social justice. There could many be other win-wins to be had thinking more creatively than only the sites you have. Be bold and seek "both-and" solutions. There may be other benefactors (Schnitzer Family or Bosco-Milligan Foundation) that might be willing to help seek solutions. I know the choices are challenging for PPS, that is why innovation and creative solutions are needed now more than ever. We need wins not losses for Portland. If you lose this place, it will be a stain on PPS's legacy forever.
While I believe that constructing a new building is a good idea and I appreciate the cost and flexibility that would be provided, I think that much of the character of Cleveland lives within its current structure. Specifically the current facade and concert hall. There is a lot of history that I believe connects current students with past ones which would be lost with the replacement of the original building
Despite larger cost I believe reusing is a better choice for the environment assuming upgrades can be made to make the new building energy efficient.
It gives such a welcoming and authentic feeling that I personally love. One of the reasons I came to this school was because it didn't look new or modern. It looked homey and comfortable. And I'd like to keep it that way as much as we can.
keep it cool bro
The CHS theater is a beautiful space and though it will need some renovation I think it should remain
Cleveland's auditorium is one of the more spacious and visually appealing of the district! All in all I feel like the Cleveland charm is its brick and molding exterior.
I also think that it's important to preserve historic buildings. I am also somewhat attached to the current building.
I think you should keep auditorium's
I've seen Kellogg and it's really ugly on the Powell side. Powell is probably going to have a lot of modernization stuff soon, so having a new Cleveland high school orient away from Powell is a mistake.
I like the way Cleveland is now it's not brand new and it has personality
I think it is good to keep the building because it is old and historic, it would be really cool if you could integrate the new building into the old building.
I think that the auditorium and the entryway are the only necessary parts to keep.
Students don't need more outdoor space they need more educational spaces. Whichever option gives the most educational space to students is the one I support
Add a swimming pool please :)
Appreciate we need to improve schools, but would prefer to keep as much of Portlands landmarks to preserve as much of Portlands iconic architecture as possible. Franklin High School is a perfect example. Understand Cleveland has less available land.
Please do not make the whole color scheme gray and white it is so depressing. I think the auditorium should be preserved including the wooden seats. I also think more windows everywhere! Bright LED lights give many kids headaches and it makes school a lot more exhausting. Again please use some color or something I hate seeing historic buildings get renovated into just grey boxes, it's an eye sore!!!
I think the main reason why it would be good to keep the 1929 building is because it will mean less embodied carbon. However, I would be in favor of a new building if it could be made to have lower carbon levels from use. Is there a way to modernize this he current building so that it's more environmentally friendly while using the minimum of new materials?
i liked that keeping some of the old building would decrease the release of carbon emissions
Destruction of buildings causes huge amounts of waste in addition to the unseen costs of pollution from the creation of all the new materials needed, and the dumping of the old. I hesitate to choose a more expensive plan with less outdoor space, but don't like the idea of trashing an existing building of any kind, especially a historical one. Is there no way to come up with a better remodel design? Have other planners/architects been asked for ideas?
My teen is a 9th grader at Cleveland and she wants to preserve the historical building
I think it would also cost a lot less money to build a new entire school. I think it would be a lot less money trying to renovate the original school.
save just the brick facade, the rest can be modern

Cleveland High School Upgrades

Preliminary Geotechnical Engineering Report

April 17, 2024 | Terracon Project No. 82245002

Prepared for:

Portland Public Schools
501 N Dixon
Portland, OR 97227

Terracon
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- Facilities
- Environmental
- Geotechnical
- Materials

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Note: **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you back to this page. For more interactive features, please view your project online at **client.terracon.com**. Refer to each individual Attachment for a listing of contents.

Report Summary

Topic [1]	Overview Statement [2]
Project Description	This project is in the preliminary conceptual stage, but will consist of: ▪ Seismically upgrading the existing high school building or replacing the structure. ▪ The existing gymnasium and possibly several of the other site structures will be replaced. ▪ A new auditorium will be constructed on either the existing school site or on the existing parking lot west of the school. ▪ New structures will be constructed at the athletic fields to support the high school sports program.
Geotechnical Characterization	▪ Soft to medium stiff compressible and liquefiable soils (low plasticity silts and clays) to depths of about 35 feet (Flood Deposits) ▪ Some areas of existing fill up to 7½ feet deep ▪ Groundwater encountered between 25 and 50 feet within explorations
Geologic Hazards	Based on our site-specific analyses, we estimate the subsurface soils to have a high risk of liquefaction.
Geologic Hazard Reduction Methods	Due to the anticipated structural loads, liquefaction, soft underlying soils, and limited settlement tolerance of the planned structures, the structures should be supported on ground improved soils or deep foundations.
Earthwork	▪ Near surface soils expected to be encountered in excavations are fine-grained and low to medium plasticity. ▪ Fine-grained soils will not likely be reusable as structural fill without cement modification and/or significant drying during summer months. ▪ Surface drainage should be planned during construction as fine-grained soils will not allow infiltration of precipitation and could cause further subgrade disturbance due to ponding and/or saturation. ▪ Within new pavements and exterior slabs and appurtenances, remove existing fill and replace with new structural fill

Topic [1]	Overview Statement [2]
Support for New Structures – Ground Improvements	Ground improvement of the liquefiable soils and the overlying soft compressible soils are a feasible alternative for support of new structures at the site. For this site, aggregate piers are recommended for ground improvements. Aggregate piers are typically designed by a specialty contractor's engineer to meet a performance specification. We provide preliminary recommendations for structural design planning in this report.
Support for New or Existing Structures – Deep Foundations	Deep foundations can be used to support existing structures to be seismically upgraded and may be considered an alternative for support of new structures. For this application, we recommend Continuous Flight Augercast Piles (CFA) piles or micro piles. CFA piles and micro piles are common foundation types in this region and can be used to support the structure loads.
Supplemental Exploration	Based on the depth of compressible soils encountered onsite and the extent of the loose unconsolidated soils encountered within our explorations, we recommend additional deeper explorations be completed to refine the settlement estimates in this report and is dependent on the final planning of the site redevelopment.
Below-Grade Structures	Some structures may include daylight basements, subsurface utility rooms, elevator pits, or underground parking. Backfill of these structures should be planned to consist of imported Select Fill.
Pavements	We recommend a minimum pavement section of 3 inches for light duty areas and 6 inches for heavy duty areas. We recommend minimum concrete sections of 5 inches for light duty areas and 7 inches for heavy duty areas.
General Comments	This section contains important information about the limitations of this geotechnical engineering report.

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.
2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

Introduction

This report presents the results of our subsurface exploration and Preliminary Geotechnical Engineering services performed for the proposed upgrades to Cleveland High School located at 3400 SE 26th Avenue in Portland, Oregon. The project is in its conceptual stage; upgrades are anticipated to consist of seismic upgrades to portions of the existing structures, replacement of some buildings, and construction of additional facilities. The purpose of these services was to provide information and preliminary geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site class per ASCE 7-16 & ASCE 7-22
- Site response analysis in accordance with ASCE 7-16
- Preliminary liquefaction and lateral spread potential
- Preliminary site preparation and earthwork
- Demolition considerations
- Preliminary foundation design and construction
- Preliminary floor slab design and construction
- Lateral earth pressures for permanent walls and temporary shoring
- Pavement design and construction
- Infiltration test results

Our recommendations are considered preliminary since the proposed plans are at their conceptual stage. The geotechnical engineering Scope of Services for this project included the advancement of fifteen borings to depths of 33½ to 61½ feet below existing ground surface (bgs), laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and exploration locations are shown on the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the exploration logs and/or as separate graphs in the **Exploration and Laboratory Results** section.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. The project is in preliminary planning stage at this time and our current understanding of planned development is as follows:

Item	Description
Information Provided	▪ "Request for Proposals, High School Geotech, RFP No. 2023-033," prepared by Portland Public Schools. ▪ Cleveland High School Modernization Memo, prepared by KPFF Consulting Engineers, dated January 5, 2024. Additional information was provided in phone calls on December 22, 2023, and January 8, 2024, and during a site walk on January 3, 2024.
Project Description	This project is in the preliminary conceptual stage, but will consist of: ▪ Seismically upgrading the existing high school building or replacing the structure. ▪ The existing gymnasium and possibly several of the other site structures will be replaced. ▪ A new auditorium will be constructed on either the existing school site or on the existing parking lot west of the school. ▪ New structures will be constructed at the athletic fields to support the high school sports program.
Proposed Structure	The footprints of new structures are not known at this early stage of planning.
Finished Floor Elevation	We anticipate most new buildings will be developed at grade. Some of the existing structures include daylight basements. Some new structures may include basement levels. The proposed auditorium may include one level of subsurface parking.
Maximum Loads	Anticipated structural loads were not provided. In the absence of information provided by the design team, we will use the following loads in estimating settlement based on our experience with similar projects. ▪ Columns: 250 kips ▪ Walls: 5 kips per linear foot (klf) ▪ Slabs: 250 pounds per square foot (psf)
Grading/Slopes	▪ Maximum cuts associated with anticipated below-grade development are anticipated to be on the order of 12 feet. ▪ Slopes at the athletic field are anticipated to have a maximum gradient of 3 horizontal to 1 vertical.
Below-Grade Structures	Some structures may include daylight basements, subsurface utility rooms, elevator pits, or underground parking.

Item	Description
Free-Standing Retaining Walls	Free-standing retaining walls may be constructed as part of site development to achieve final grades. Wall heights of up to 8 feet are anticipated based on existing topography.
Pavements	The proposed development will likely include new parking areas and loading docks. A preferred pavement surfacing has not been identified to us as part of the preliminary information. Asphalt surfacing is common in the parking and/or drive areas for projects of this nature and is the assumed preference for parking lots. Concrete pavements are anticipated for loading docks and/or dumpster pad areas. Unless information is provided prior to the report, we assume that the traffic classification will consist of: ■ Class I: Parking stalls for autos and pickup trucks ■ Class II: Traffic consisting of delivery trucks, trash pickup The pavement design period is 20 years.
Building Code	2022 Oregon Structural Specialty Code (2022 OSSC) Seismic Site Class was also determined in accordance with ASCE 7-22, which will likely be adopted during the next building code cycle in 2025.

Terracon should be notified if any of the above information is inconsistent with the planned construction, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The site consists of three parcels, as follows: **Primary Site:** The primary high school site is located at 3400 SE 26th Avenue in Portland, Oregon. The 4.03-acre site is bounded by SE 26th Avenue to the west, SE Franklin Street to the north, SE 28th Avenue to the east, and SE Powell Boulevard to the south. The center of the Primary Site is located at the following approximate coordinates: ▪ Latitude: 45.4985° N ▪ Longitude: 122.6386° W **Parking Lot Parcel:** The second parcel consists of the current teacher's parking lot, which is located west of the Primary Site across SE 26th Avenue. The 1.03-acre parcel is bounded by SE 25th Avenue to the west, SE Franklin Street to the north, SE 26th Avenue to the east, and an offsite fast food restaurant property to the south. **Athletic Field Parcel:** The athletic field parcel is located approximately 1,000 feet west of the Primary Site. This 6.49-acre parcel is bounded by SE 31st Avenue to the west, offsite residential properties to the north, SE 33rd Avenue to the east, and SE Powell Boulevard to the south. (See **Site Location** and **Exploration Plan**)
Existing Improvements and Ground Cover	The **Primary Site** is occupied by the existing Cleveland High School. The school consists of a three-story masonry building with several outbuildings, including a gymnasium building and wood shop building. Some of the structures include daylight basements. The perimeter of the site is surfaced with sidewalks and landscaped lawn, trees, and shrub vegetation. The **Parking Lot parcel** is asphalt-surfaced with a perimeter chain-link fence. The **Athletic Field Parcel** is occupied by a football field, track, grandstands, and support building with a perimeter fence. The area of proposed work is grass-surfaced.

Item	Description
Existing Topography	The **Primary Site** generally descends gently to the northwest, with approximately 20 feet of total vertical relief. The **Parking Lot parcel** is sloped to gradually drain to the east and west of the approximate centerline axis of the site. A 4- to 5-foot-tall retaining wall is located along the northwest, south and west edges of the lot. The majority of the **Athletic Field Parcel** is flat and level. The site is generally at the same elevation as the neighborhood to the east, sits approximately 10 feet below the residences to the north, 5 feet below SE 31st Avenue to the west, and 10 feet below SE Powell Boulevard to the south. These slopes have a maximum slope gradient of approximately 3 horizontal to 1 vertical.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

Geotechnical Characterization

Geology

Based on our review of the Lidar-based Surficial Geologic Map and Database of the Greater Portland, Oregon, Area[1] the site is underlain by Pleistocene catastrophic flood deposits originating from glacial outburst floods of Lake Missoula. Periodic failure of glacial ice dams that impounded Lake Missoula in present day Montana between 18,000 to 15,000 years ago[2] produced catastrophic floods that flowed through northern Idaho, eastern Washington, and through the Columbia River Gorge into the Portland area. Restrictions in the Columbia River valley caused floodwaters to back up the Willamette and Tualatin Valleys forming temporary lakes.

Missoula flood deposits are mapped in the vicinity of the site. These soils were deposited in a rhythmic nature, meaning that the depositional structure varies quite dramatically in

1 Madin, I.P., 2004, Geologic Mapping and Database for the Portland Area Fault Studies: Final Report, Clackamas, Multnomah, and Washington Counties, Oregon.

2 Allen, John Eliot, et al., 2009. Cataclysms on the Columbia, The Great Missoula Floods, Revised Second Edition: Ooligan Press, Portland State University.

composition (gravels, sands, silts, and clay) in vertical sequences as little as inches to feet in thickness, each of which represent a single flood event.

The soils encountered below the flood deposits within our boring explorations were indicative of older, undifferentiated alluvium. These deposits pre-date the Missoula Flood deposits and consist of gravels, sands, silts, and clays of minor streams and creeks filling valleys incised into older deposits. These materials are underlain by Troutdale Formation sediments, which consist of poorly lithified conglomerate and sandstone. While the borings appear to not extend into the Troutdale Formation, it appears evident within the shear-wave velocity testing performed at the site.

Groundwater

We observed our explorations while drilling and after completion for the presence and level of groundwater. The water levels observed in the explorations are provided on the exploration logs in **Exploration and Laboratory Results**, and are summarized below.

Exploration Number	Approximate Ground Surface Elevation (feet) [1]	Approximate Depth to Groundwater while Drilling (feet)
B-1	92	31.25
B-2	90	Groundwater not encountered
B-5	90	35
B-7	93	Groundwater not encountered
B-9	105	50
B-11	Boring not completed due to presence of underground utilities	
B-12	110	37.75
B-13	102	Groundwater not encountered
B-14	92	40
B-15	120	26
B-16	120	25
B-3, B-4, B-6, B-8, B-10	Not observed due to mud rotary drilling method	

1. Based on elevations obtained from Google Earth and depth to the observed groundwater during explorations. Note the assumed ground surface elevation is presented on the exploration logs.

Well logs available on the Oregon Water Resources Department (OWRD)[3] website indicate that groundwater levels around the site generally range from about 15 to 35 feet below site grades, depending on topography. It is our opinion that some of the water levels encountered during our explorations exhibited a "perched" condition due to variable subsurface low permeability soils.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the explorations were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the exploration logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GeoModel

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration and Laboratory Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each exploration location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	Fill	ASPHALT; CONCRETE; GP FILL: fine to coarse grained, angular; SM/CL/ML FILL: brown to grayish brown, moist, soft/loose to medium stiff/medium dense, low plasticity
2	Fine Grained Flood Deposits	CL, ML, CL-ML, CH, SM, SP: brown, gray-brown, light brown, soft to medium stiff, nonplastic to high plasticity, variable fine grained sand content

3 Oregon Water Resources Department, 2024. Well Log Records, accessed February 2024, from OWRD web site: **http://apps.wrd.state.or.us/apps/gw/well_log/**.

Model Layer	Layer Name	General Description
3	Coarse Grained Flood Deposits	SM, SP, GP, GP-GC: brown to yellowish brown, medium dense to very dense, fine to coarse grained, subangular to subrounded
4	Undifferentiated Alluvium	CL; medium plasticity, medium stiff to very stiff, yellow-brown; SP, GP, GP-GM: gray to greenish gray, dense to very dense, subangular to subrounded

Geologic Hazards

Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope stability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed the Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) and available online[4]. The viewer categorizes the expected earthquake shaking from light, moderate, strong, very strong, severe and violent; and the landslide susceptibility from low, moderate, high, and very high. These publications should be considered preliminary for the site because they are intended for planning purposes and are not site specific. We provide site specific evaluation of the seismic hazards at the site in the following section.

- Earthquake Liquefaction Hazard: Low
- Expected Earthquake Shaking: Very Strong
- Landslide Susceptibility (due to earthquake): Low

Seismic Overview

Due to the Special Occupancy Structure (Risk Category III) designation, a site-specific seismic response analysis (SRA) is required. The SRA was completed in accordance with

[4] Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) **https://gis.dogami.oregon.gov/hazvu/,** accessed February 2024

ASCE 7-16 Section 21.4, and the results of this study are presented in the **Site Response Analysis** section in **Supporting Information** below.

In summary, our recommended site-specific seismic design parameters determined in accordance with ASCE 7-16 Section 21.4 are presented in the following table:

Description	Value
Seismic Site Class	F[1,2]
S_{DS} Spectral Acceleration for a Short Period [3]	0.880g
S_{D1} Spectral Acceleration for a 1-Second Period [3]	0.524g
S_{MS} Spectral Acceleration for a Short Period [3]	1.320g
S_{DS} Spectral Acceleration for a Short Period [3]	0.786g

1. Seismic site classification in general accordance with the 2022 OSSC, which refers to ASCE 7-16.
2. ASCE 7-16 requires a site soil profile extending to a depth of 100 feet be used for seismic site classification. A geophysical survey consisting of three lines measured shear wave velocities to a depth of 100 feet.
3. The methods used in determination of these values are presented in the **Site Response Analysis** section in **Supporting Information** in this report.

Liquefaction

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity, where groundwater is shallow and loose granular soils or relatively low- to non-plastic fine-grained soils are present. Soft silts and loose sands were encountered in the explorations to the full depths explored, up to 61½ feet bgs. Groundwater was observed as shallow as 25 feet in the borings advanced during our field exploration. It is our opinion that some of the water levels encountered during our explorations exhibited a "perched" condition due to variable subsurface low permeability soils. Groundwater was modeled at a depth of 35 feet bgs for this site.

We performed a site-specific liquefaction analysis using the methods based on empirical methods originally developed by Seed and Idriss and subsequently modified by others. The latest recommended procedures were presented by Idriss and Boulanger (2014). The peak ground acceleration and moment magnitude used in the analysis were based on the PGA calculated in our **Site Response Analysis**. We estimate liquefaction-induced total settlements of approximately 1½ to 5½ inches could be experienced at the site from the interbedded layers of low to non-plastic silts and silty sands. We anticipate up to 2/3 of the total settlement could be experienced as differential settlement. Based on

Table 12.13-3 Differential Settlement Threshold of ASCE 7-16, a Risk Category of III, and assumed length between footings of approximately 50 feet, the code defines a differential settlement maximum threshold of 1.8 inches to support structures on shallow foundations. Since the estimated liquefaction settlement is above this maximum threshold, we recommend the structures be supported on either deep foundations or conventional shallow foundations supported on ground improved soil.

Liquefaction Lateral Movement

In addition to vertical settlement, horizontal deflections are commonly observed in areas subjected to seismic events. Horizontal deflections or lateral spreading occurs in areas adjacent to broad river valleys and free vertical faces. Generally, the magnitude of lateral spread is based on the horizontal distance between the structure and a free face or water source, the height of the vertical face or slope of the area, and the presence of liquefiable soils beneath the structure. No free faces were identified in the vicinity of the project that could result in lateral spreading during a major seismic event.

Infiltration

We conducted infiltration tests in explorations B-3 and B-6 in general accordance with the 2020 City of Portland Stormwater Management Manual Section 2.3.2.3 Encased Test. The tests were conducted in 6-inch inner diameter PVC pipes placed into holes excavated using a backhoe by our drilling subcontractor. The PVC pipes were pushed approximately 2 to 3 inches into the soils at the infiltration test depth to create a seal with the surrounding soils, and a thin layer of open-graded gravel was placed in the bottom of the pipe to prevent scouring.

The test pipes were filled with 12 inches of water, and the soils were allowed to soak for 1 hour in accordance with the test method. After the soaking period, we adjusted the water level so that there was approximately 12 inches of water in the pipe, and the drop in water level was recorded at regular intervals. Measurements were taken with a measuring tape and recorded to the nearest 1/8 of an inch. Soil samples were collected at the infiltration test depths following completion of the testing for laboratory analysis.

Exploration ID	Approximate Exploration Elevation (ft)	Test Depth Below Grade (ft)	Soil Type	GeoModel Layer Number	Measured Infiltration Rate (in/hr)[1]
B-3	85	5	Silt with Sand	2	0
B-6	85	5	Silty Clay	2	0

1. These rates do not include any correction factors.

Based on our field test results, we recommend methods other than subsurface infiltration be planned for stormwater management. Depending on final development plans and depths of potential stormwater facilities, it may be beneficial to perform infiltration testing at boring locations with more granular soils encountered to evaluate infiltration feasibility further.

Geotechnical Overview

Based on the results of our explorations and our geotechnical analyses using the preliminary loads estimated, the primary geotechnical considerations at this site are the potential for liquefaction-induced settlements to occur from a design level earthquake and static settlements to occur within the loose/soft soils underlying the site. Our liquefaction analyses indicate approximately 1½ to 5½ inches of settlement may occur from such an earthquake.

Based on the concerns of static and seismic settlement, we recommend that structures to remain in-place and be seismically upgraded to be supported by deep foundations. New or replacement structures may be supported by deep foundations or on conventional shallow foundations bearing on ground improved soils.

New Structure Support - Ground Improvements: Based on the results of our explorations and analyses, it is our opinion that the soils under planned new structures could be improved through the installation of aggregate piers. Aggregate piers consist of compacted gravel columns typically placed in a grid pattern within a building pad to improve the bearing capacity of the soils and reduce the potential for differential settlements. Based on our liquefaction analyses, we anticipate the depth of ground improvement will be on the order of 30 to 45 feet below existing site grades (not considering site grading) in the proposed building areas to reduce the risk of liquefaction to acceptable levels. The depth of the ground improvement elements will be a function of the settlement tolerances of the proposed structures while meeting code required thresholds for the building risk category.

New and Existing Structure Support - Deep Foundations: Deep foundations consisting of micropiles could be used to aid in support of the existing structures that may be seismically upgraded. Deep foundations consisting of Continuous Flight Augercast Piles (CFA) piles could be used to support new or existing structures at the site. These foundation systems are presented in the **Deep Foundations** section below.

The proposed area of construction is underlain by up to 7½ feet of undocumented fill (GeoModel Layer 1). Undocumented fill is fill that was previously placed without available records regarding placement and compaction. We recommend existing fill be removed and recompacted in new pavement or exterior floor slab areas prior to site grading to minimize the potential for differential settlements. Interior floor slabs should be supported by ground improvements or structurally tied to the deep foundation systems.

Near surface soils should be expected to have moderate moisture sensitivity, which means they are subject to degradation with exposure to moisture, particularly with repeated traffic. To the extent practical, earthwork should be performed during the summer and fall due to the shorter duration of precipitation and increased drying potential associated with these seasons. This does not necessarily preclude performing earthwork during other times of the year; however, increased remedial measures due to wet and soft or otherwise unsuitable conditions should be expected if earthwork is performed during other times of year. During the winter, fill material should not be placed, and no fill should be placed upon a frozen subgrade.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration and Laboratory Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

Earthwork

Earthwork is anticipated to include demolition, clearing and grubbing, excavations, and structural fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Demolition

Proposed structures may be constructed within the footprint of the existing building or parking lot which will need to be demolished, as well as exterior sidewalks, pavements, and utilities. We recommend existing foundations, slabs, and utilities be removed from within the proposed building footprint and at least 5 feet beyond the outer edge of foundations. Basements slabs and walls should be removed and backfilled with structural fill.

For areas outside the proposed building footprints and foundation bearing zones, existing foundations, floor slabs, and utilities should be removed where they conflict with proposed utilities, retaining walls, and pavements. In such cases, existing foundations, floor slabs, and utilities should be removed to a depth of at least 2 feet below the affected utility or design pavement subgrade elevation.

Excavations that may be necessary in proximity to existing foundations that may remain in place will need to be performed under engineering controls. Due to the preliminary nature of the project, we recommend that no excavations within 5 feet and/or extend below a line of influence extending from existing foundations at a 2H:1V be planned without further geotechnical engineering review.

Site Preparation

Prior to placing fill, existing vegetation, topsoil, and root mats should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas.

Mature trees are located within or near the footprint of some of the proposed structures, which will require removal at the onset of construction. Tree root systems can remove substantial moisture from surrounding soils. Where trees are removed, the full root ball and all associated dry and desiccated soils should be removed. The soil materials which contain less than 5 percent organics can be reused as structural fill provided the material is moisture conditioned, meets the specifications for structural fill below, and properly compacted.

If unexpected fills or underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Existing Fill

As noted in **Geotechnical Overview**, we encountered previously placed fill to depths ranging from about 2 to 7½ feet bgs. We have no records to indicate the degree of control, and consequently, the fill is considered unreliable for support of pavements or exterior floor slabs. Support of interior floor slabs on ground improved soil is discussed in this report as an alternative to complete removal and replacement of undocumented fill within the extent of individual building pads.

Subgrade Stabilization

We expect subgrades to need stabilization in order to provide a suitable working surface. Therefore, some overexcavation or subgrade stabilization should be expected, especially during wet periods of the year.

Methods of subgrade improvement, as described below, could include scarification, moisture conditioning and recompaction, removal of unstable materials and replacement with granular fill (with or without geosynthetics), and chemical stabilization. The appropriate method of improvement would be dependent on factors such as schedule, weather, the size of area to be stabilized, and the nature of the instability. In addition, ground improvement and/or deep foundation contractors (depending on the selected approach and method) will need to provide guidance and/or review of the planned stabilization to confirm ground improvement equipment can penetrate any stabilization measures.

More detailed recommendations can be provided during construction as the need for subgrade stabilization occurs. Performing site grading operations during warm seasons and dry periods would help reduce the amount of subgrade stabilization required.

If the exposed subgrade is unstable during proofrolling operations, it could be stabilized using one of the methods outlined below.

- **Scarification and Recompaction** - It may be feasible to scarify, dry, and recompact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1-foot, if the unstable soil is at or near groundwater levels, or if construction is performed during a period of wet or cool weather when drying is difficult.
- **Crushed Stone** - The use of crushed stone or crushed gravel is a common procedure to improve subgrade stability. The use of high modulus geotextiles (i.e., engineering fabric or geogrid) could also be considered after underground work such as utility construction is completed. Prior to placing the fabric or geogrid, we recommend that all below grade construction, such as utility line installation, be completed to avoid damaging the fabric or geogrid. Equipment should not be operated above the fabric or geogrid until one full lift of crushed stone fill is placed above it. The maximum particle size of granular material placed over geotextile fabric or geogrid should not exceed 1-1/2 inches.

- **Chemical Modification** - Improvement of subgrades with portland cement or class C fly ash could be considered for improving unstable soils. Chemical modification should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions. Results of chemical analysis of the additive materials should be provided to the geotechnical engineer prior to use. The hazards of chemicals blowing across the site or onto adjacent property should also be considered. Additional testing would be needed to develop specific recommendations to improve subgrade stability by blending chemicals with the site soils.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below, or within 10 feet of structures, pavements or constructed slopes. General fill is material used to achieve grade outside of these areas.

Reuse of On-Site Soil: Existing poorly graded gravel (GP) fill soils and low plasticity native soils may be reused as structural fill provided they meet the requirements of the subsequent sections and are properly placed and compacted.

Fill Materials: Structural fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

Fill Type [1]	Specifications	Acceptable Location for Placement (for Structural Fill)
Common Fill	Oregon Department of Transportation Standard Specifications for Construction (ODOT SSC) Section 00330.13 Selected General Backfill (Maximum PI = 10% and LL = 40%)	All locations across the site, with the exception of underneath footings. Dry weather only acceptable
Select Fill	ODOT SSC Section 00330.14 Selected Granular Backfill [2]	All locations across the site. Wet and dry weather acceptable.

Fill Type [1]	Specifications	Acceptable Location for Placement (for Structural Fill)
Crushed Aggregate Base Course (CABC)	ODOT SSC Section 02630.10 Dense Graded Aggregate (2”-0 to ¾”-0) [2]	All locations across the site. Wet and dry weather acceptable.
Trench Backfill	ODOT SSC Section 00405.14 for Trench Backfill with additional stipulations [4]	Acceptable materials include Common and Select Fill listed above.

1. Controlled, compacted fill should consist of approved materials that are free (free = less than 3% by weight) of organic matter and debris (i.e. wood sticks greater than ½ inch in diameter). A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. Material should have a maximum aggregate size of 2 inches, and a minimum laboratory CBR of 20% for granular soils, and no more than 8% passing the No. 200 sieve by weight determined by ASTM D6913. Fines should have a Plasticity Index (PI) of less than 20% per ASTM D4318. Reclaimed glass will not be accepted.
3. The contractor shall select the appropriate material for use based on the current and forecasted weather conditions at the time of construction.
4. Maximum aggregate size shall be limited to 2½ inches.

Fill Placement and Compaction Requirements

Structural should meet the following compaction requirements.

Item	Structural Fill
Maximum Lift Thickness	▪ 8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used ▪ 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used
Minimum Compaction Requirements [1,2]	▪ 95% of max. above and below foundations and within 2 feet of finished pavement subgrade ▪ 92% of max. when more than 2 feet below finished pavement subgrade
Water Content Range [1]	-2% to +2% of optimum

Item	Structural Fill

1. Maximum density and optimum water content as determined by the modified Proctor test (ASTM D1557).
2. If the granular material is a coarse sand or gravel, or of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. In this case, granular materials should be compacted to at least 70% relative density (ASTM D4253 and D4254). Materials not amenable to density testing should be placed and compacted to a stable condition observed by the Geotechnical Engineer or representative.

Utility Trench Backfill

Any soft or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with structural fill or bedding material in accordance with public works specifications for the utility be supported. This recommendation is particularly applicable to utility work requiring grade control and/or in areas where subsequent grade raising could cause settlement in the subgrade supporting the utility. Trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the building. The trench should provide an effective trench plug that extends at least 5 feet from the face of the building exterior. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

Grading and Drainage

All grades must provide effective drainage away from the buildings during and after construction and should be maintained throughout the life of the structures. Water retained next to buildings can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. Roofs should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the building.

Exposed ground should be sloped and maintained at a minimum 5% away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Excavations for the proposed structures are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of grade-supported improvements such as floor slabs and pavements. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local and/or state regulations. In addition, excavations adjacent to the existing building will require protective systems such as shoring, bracing, or underpinning to ensure that the adjacent structure remains stable while undergoing construction activities.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review of available final grading information or consider potential temporary grading performed by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/ precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or experienced professionals under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and pavements), evaluation and remediation of existing fill materials, as well as proof rolling and mitigation of unsuitable areas delineated by the proof roll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. Where not specified by local ordinance, one density and water content test should be performed for every 100 linear feet of compacted utility trench backfill and a minimum of one test performed for every 12 vertical inches of compacted backfill.

In areas of excavations, the bearing subgrade should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

Ground Improvement – New Structures

As an alternative to supporting new structures on deep foundations, the new structures and potentially floor slabs could be supported on native soils reinforced with ground improvements. Ground improvement methods are proprietary systems designed by licensed contractors who could provide further information regarding support options.

Aggregate Piers

A possible ground improvement alternative that may allow more efficient shallow foundation support (i.e. higher allowable bearing pressures and/or lower estimated settlement) includes the installation of aggregate piers. An aggregate pier consists of a stone-filled column constructed by excavating or displacing a cylindrical hole and backfilling it with crushed stone placed in lifts by applying a high degree of compactive effort resulting in stone filled piers. The aggregate pier construction process not only results in a rigid stone-filled column that lends support to structures, it also helps to densify the soils surrounding the pier. Aggregate pier foundations should be designed and installed by a specialty contractor. Due to the specialty of this soil improvement procedure, we recommend that a performance specification be used for this system.

We anticipate if aggregate pier foundations are utilized, the aggregate pier design should be completed and provided to Terracon for review in accordance with the geotechnical report. As such, the design firm would provide the necessary design parameters for the planned foundation system including, but not limited to, allowable bearing capacity, settlement estimates and foundation-specific earthwork recommendations.

Design-Build Contractors

We recommend that design build proposals for ground improvement be based on soil conditions noted on the explorations, and the settlement tolerances established by the project structural engineer depending on the final building structural tolerances. The contractor will require the subsurface information presented in this report to formulate a scope and budget for the improvements. Subject to review by the project structural engineer, we recommend that the design-build contractor's design be based on the following minimum criteria:

- Depth of ground improvements is dependent on design settlement tolerances and grading plan. For this stage of the project, we recommend depths be planned to the bottom of the potentially liquefiable soils between 35 and 40 feet bgs.
- Total Static Settlement of all footings shall be less than 1-inch when considering the structural loads for both the improved and un-improved depths of the ground improvement.
- Static differential settlements of footing should also be less than ½ of the total settlement over 50 feet (or column spacing).
- Achieve an allowable bearing capacity of at least 5 ksf.
- Depending on the structural engineer and owner coordination, reduce maximum differential liquefaction related settlements to less than 1½ inches over an estimated span of about 50 feet (assumed column spacing).
- The design shall provide a post-installation verification testing program that includes design assumption verification and demonstration of subsurface improvements. The submittal shall include the Tip resistance (for CPTs), N-value (for borings), or other proposed improvement criteria for the methodology required for acceptance.
- Floor slab subgrade modulus of at least 150 pounds per square inch per inch (psi/in) should be achieved in the ground improved areas supporting slabs.

Ground Improvement Construction Pad

We recommend that a granular working surface be placed within the building pad over the subgrade after stripping for support of the equipment necessary to install the Aggregate Pier improvements. The thickness of the working mat will need to be determined by the design-build contractor because a stable working mat will be dependent on the equipment necessary for installation. After installation of the ground improvements is complete, the granular working mat fill should be stripped of loose and disturbed soils and compacted and tested in accordance with the requirements of this report. Following preparation of the prepared subgrade, the surface should be evaluated to detect soft, yielding soils which should be removed to a stable subgrade. The granular working mat materials could then be left in-place as subgrade for the building and slab base.

Geotechnical Review

Design of a soil improvement system requires a thorough understanding of site subsurface conditions. Furthermore, soil improvement design is somewhat approximate and often involves an evaluation of project risks and benefits relative to the extent of the improvement. Terracon should be retained to review the plans, and specifications once they have been prepared by the ground improvement contractor.

Because aggregate piers are considered a specialty type construction, it is our opinion that geotechnical special inspection during the construction should be performed by personnel experienced in the construction methods. Therefore, we recommend that Terracon be retained to provide geotechnical special inspection services during the ground improvement process.

Shallow Foundations – New Structures

If the site has been prepared in accordance with the requirements noted in the **Earthwork** and **Ground Improvement** sections, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

Item	Description
Maximum Net Allowable Bearing Pressure [1, 2]	5,000 psf[3]
Required Bearing Stratum [4]	GeoModel Layer 2 with ground improvements

Item	Description
Minimum Foundation Dimensions	▪ Columns: 30 inches ▪ Continuous: 18 inches
Ultimate Passive Resistance[5] (equivalent fluid pressures)	450 pcf (granular backfill)
Ultimate Sliding Resistance[6]	0.5 – granular material
Minimum Embedment below Finished Grade[7]	12 inches
Estimated Total Settlement from Structural Loads [3]	Less than about 1 inch
Estimated Differential Settlement [3, 8]	About ½ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Values assume that exterior grades are no steeper than 20% within 10 feet of structure. These values can be increased by 1/3 for short-term wind and seismic loading condition cases.
2. Values provided are for maximum loads noted in **Project Description**. Additional geotechnical consultation will be necessary if higher loads are anticipated.
3. Final bearing capacity to be determined by aggregate pier design-build firm.
4. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in the **Earthwork** section.
5. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face. Assumes no hydrostatic pressure.
6. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Frictional resistance for granular materials is dependent on the bearing pressure which may vary due to load combinations. For fine-grained materials, lateral resistance using cohesion should not exceed ½ the dead load.
7. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
8. Differential settlements are noted for equivalent-loaded foundations and bearing elevation as measured over a span of 50 feet.

Footing Drains

A perforated rigid plastic drain line installed at the base of footings along the perimeter of the structures. The invert of a drain line around a building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material meeting the specifications for Select Fill as defined in the **Fill Material Types** section. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted native material to reduce infiltration of surface water into the drain system.

Design Parameters – Overturning and Uplift Loads

Shallow foundations subjected to overturning loads should be proportioned such that the resultant eccentricity is maintained in the center-third of the foundation (e.g., $e < b/6$, where b is the foundation width). This requirement is intended to keep the entire foundation area in compression during the extreme lateral/overturning load event. Foundation oversizing may be required to satisfy this condition.

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils with consideration to the IBC basic load combinations.

Item	Description
Soil Moist Unit Weight	120 pcf
Soil Effective Unit Weight[1]	40 pcf
Soil weight included in uplift resistance	Soil included within the prism extending up from the top perimeter of the footing at an angle of 20 degrees from vertical to ground surface

1. Effective (or buoyant) unit weight should be used for soil above the foundation level and below a water level. The high groundwater level should be used in uplift design as applicable.

Construction Adjacent to Existing Building

As discussed in the **Earthwork** section of this report, excavations that may be necessary in proximity to existing foundations that may remain in place will need to be performed under engineering controls. Due to the preliminary nature of the project, we recommend that no excavations within 5 feet and/or extend below a line of influence extending from existing foundations at a 2H:1V be planned without further geotechnical engineering review.

Differential settlement between new structures and existing buildings to remain in place is expected to approach the magnitude of the total settlement of the new structures. Expansion joints should be provided between the existing building and adjacent new structures to accommodate differential movements between the two structures.

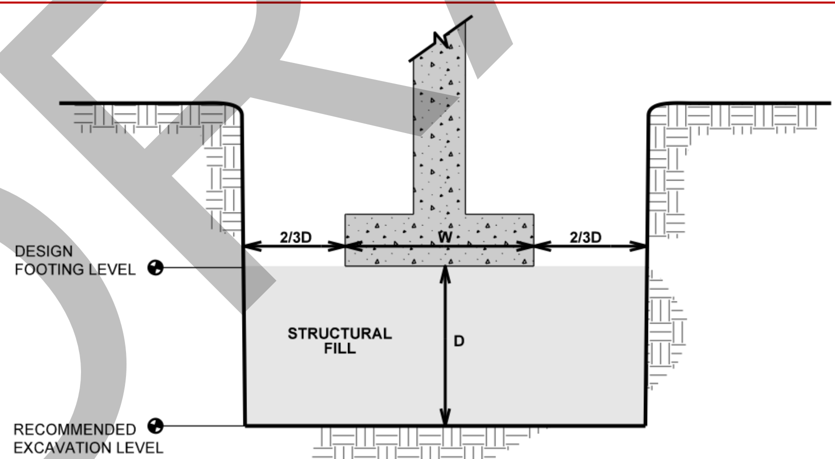
Underground piping between the two structures should be designed with flexible couplings and utility knockouts in foundation walls should be oversized so minor deflections in alignment do not result in breakage or distress. Care should be taken during excavation adjacent to existing foundations to avoid disturbing existing foundation bearing soils.

Once plans are more developed, we should be provided an opportunity to review site development plans relative to the recommendations in this report in order to provide further geotechnical recommendations regarding excavations and/or existing foundation support during construction.

Foundation Construction Considerations

As noted in the **Earthwork** section, the footing excavations should be evaluated under the observation of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

Over excavation for structural fill placement below footings should be conducted as shown below. The over excavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.



OVER-EXCAVATION / BACKFILL ZONE

NOTE: EXCAVATIONS ARE SHOWN VERTICAL; HOWEVER, THE SIDEWALLS SHOULD BE SLOPED AS NECESSARY FOR SAFETY

Deep Foundations

Micropile Foundations – Existing Structures

We recommend that existing structures be supported on deep foundations to mitigate the liquefaction risks and develop adequate bearing capacities for the seismic upgrades. The new improvements that will be supported on deep foundations will need to be designed to tolerate the potential differential liquefaction settlement and maintain life-safety. The new improvements will be constructed within the existing building.

There are a variety of micropile sizes, types, and installation methods which could be designed and employed for the project. The foundation design recommendations contained herein are based on a Type B, composite micropile consisting of a casing with a centralized reinforcing bar installed as defined by the Federal Highway Administration in the Micropile Design and Construction Reference Manual, FHWA NHI-05-039, December 2005. This method would include the following basic installation steps:

- Drillhole advanced with casing to the design depth with the minimum embedment into the bond zone.
- Casing is gravity-filled with grout (neat cement) and the reinforcing bar centralized for the full length within the casing.
- Withdraw casing to a typical depth (plunge length) as the grout column is pressurized to establish bond.

For purposes of this report, the composite micropile has been considered to consist of the following basic elements:

- Steel pipe casing meeting the requirements of ASTM A252, Grade 3 with a minimum yield strength of 80,000 psi, inclusive of pipe joints.
- Steel reinforcing bars: could range from No. 6 to No. 28, Grade 75 (ASTM A615) Williams All-thread bars with couplers of similar strength and centralizers at intervals not greater than 10 feet.
- Grout: Neat cement grout consisting of a pumpable mix batched with Type I-II cement at a water:cement ratio not exceeding 0.45 that will attain a minimum 3-day compressive strength of 2,000 psi and a 28-day compressive strength of at least 4,000 psi.

Micropile Design Recommendations

The primary factor in the geotechnical design is estimating the appropriate grout-ground bond strength, α_{bond}. This parameter depends on the method of grouting that is used. Based on the guidance in the FHWA Publication No. NHI-05-039 Micropile Design and Construction Reference Manual, we assume Type B micropiles will be used. From AASHTO 10.9.1, Type B means that "micropiles are constructed by injecting a neat cement grout under pressure (typically 6 to 21 ksf) into the hole while the temporary drill casing or auger is withdrawn." The following table references the soil type and values we have chosen from Table 5-3: Summary of Typical α_{bond} (Grout-to-Ground Bond) Values for Micropile Design from the FHWA manual:

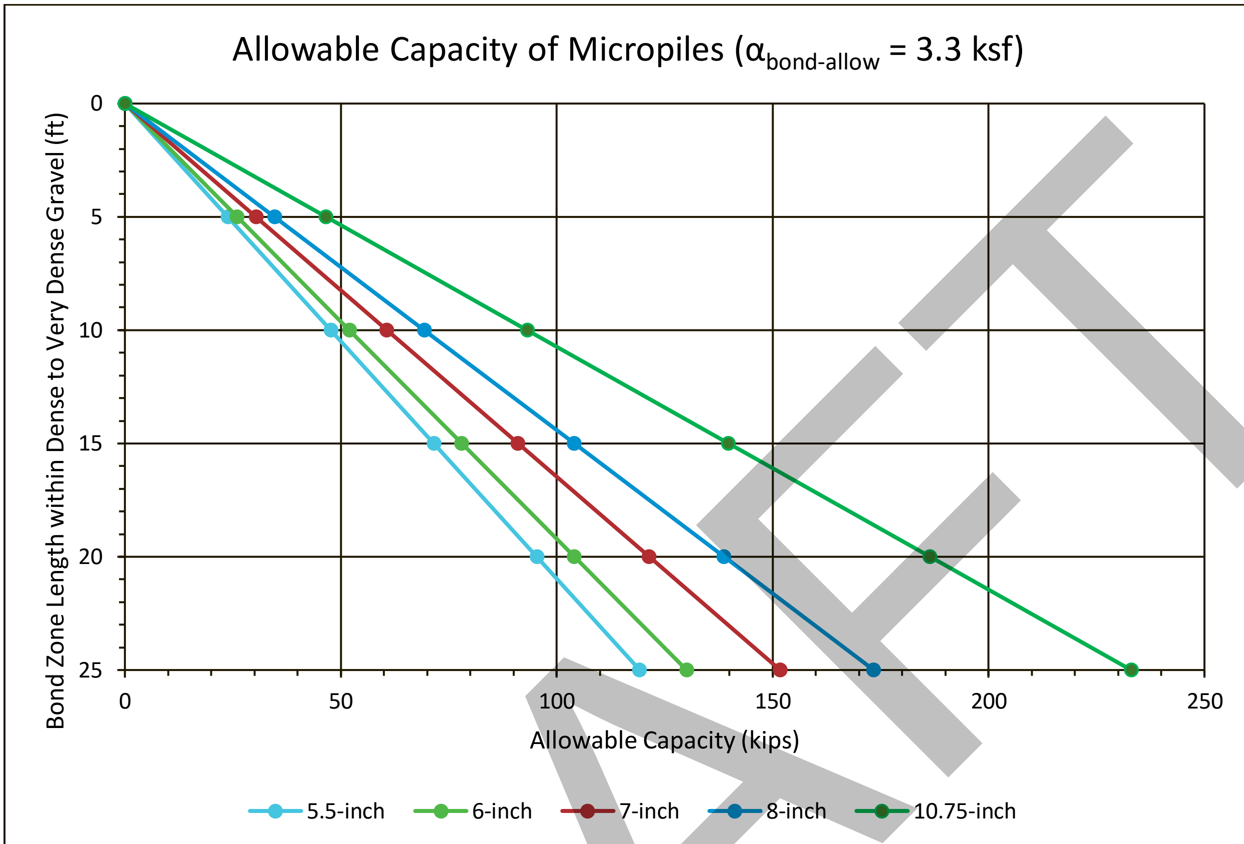
Soil Description[1]	Typical Range of α_{bond} (Grout-to-Ground Bond) Ultimate Strengths, kPa (psi)[2]
Gravel (some sand) (medium - very dense)	120 – 360 (17.5 – 52)

1. Soil descriptions referenced from Table 5-3 of the FHWA Micropile Design and Construction Reference Manual
2. Values are assumed for Type B micropiles

The FHWA manual recommends that "Unless the design engineer has previous experience in similar ground, values no greater than average values for α_{bond} … be used"

Based on the SPT N-values recorded within the predominately gravel soils (described as Poorly Graded Gravel with Silt & Sand; Poorly Graded Gravel with Sand) within the Undifferentiated Alluvium (GeoModel Layer 4), these soils can be characterized as dense to very dense. Accordingly, we propose to use an ultimate α_{bond} value of 46 psi (6.6 ksf) to provide design recommendations; however, the intent is to require the contractor to submit a "design" that shows their means and methods and includes a Professional Engineering stamp verifying that 46 psi (6.6 ksf) or more will be achieved.

The following graphs provides design curves for 5.5-, 6.0-, 7.0-, 8.0- and 10.75-inch diameter micropiles. It should be noted that the left axis presents the bond length within the dense to very dense gravels of the Undifferentiated Alluvium (GeoModel 4), beyond the extents of the liquefiable soils. The graph presents allowable capacity using a safety factor of 2.



Because of the presence of liquefiable soils at the project site, these soils will have significantly reduced strengths during earthquake shaking, as well as for post liquefaction conditions. Accordingly, for preliminary design purposes, we have assumed no grout to ground bond strength contribution from any soil above the dense to very dense gravel soils of the Undifferentiated Alluvium (GeoModel Layer 4). Due to their high slenderness ratio (length/diameter), there are potential concerns of buckling resulting from loss of lateral support, such as due to the strength reduction of liquefied soil. For this reason, we recommend that the micropiles be cased down to the dense to very dense gravel soils using ASTM A252, Grade 3 steel casing with a minimum yield strength of 80 ksi to increase micropile buckling capacity.

In addition, downdrag loads (i.e., caused from liquefaction-induced settlement around the micropiles) will need to be considered in micropile design. Although downdrag loading does not reduce axial micropile capacity, downdrag does need to be considered as a permanent load for the extreme (i.e., seismic) loading condition. Micropiles after installation may by subjected to additional axial compression loading due to downdrag forces when the soils in contact with the cased portion near the top of the micropile move downward relative to the micropile and tend to “drag” the micropile downward. Possible development of downdrag loads on micropiles should be considered where: (1) the site is underlain by compressible silts, clays, or peats; (2) fill has recently been placed on the earlier; (3) the groundwater is substantially lowered; and (4) settlement of soils due to seismic liquefaction. For this site, only (4) applies.

The above recommendations are intended for preliminary design purposes. Therefore, in addition to downdrag loads and buckling capacity, other micropile design factors such as lateral loading, and group effects (for compression, uplift, and lateral capacity) should be evaluated as the project design progresses.

Continuous Flight Augercast Piles (CFA) – New and Existing Structures

Pile Design Parameters

The following tables can be used to estimate capacities for individual, continuous flight augercast piles, commonly referred to as Continuous Flight Augercast Piles (CFA) . The values may be used to design the piles using allowable (safety factors applied) axial compressive capacity for 24-inch-diameter CFA piles. We have presented the data in three separate tables representative of the overall subsurface conditions for each site parcel.

CFA piles should be spaced at least three pile diameters apart (center-to-center) if side friction is used for compressive loads.

CFA Design Summary – Primary Site[1]

Elevation (feet)	Stratigraphy [2]		Allowable Skin Friction (psf) [3]	Allowable End Bearing Pressure (psf) [4]
	GeoModel No.	Material		
105 - 100	1	Lean Clay Fill	0	0
100 – 95	2	Lean Clay	120	0
95 – 70	2	Silt & Sand Alluvium	650	0
70 – 65	3	Poorly Graded Gravel with Sand	1,580	0
65 – 60	4	Silty Clay	815	0
60 – 45	4	Poorly Graded Gravel with Sand	1,770	21,300

CFA Design Summary – Primary Site[1]

Elevation (feet)	Stratigraphy [2]		Allowable Skin Friction (psf) [3]	Allowable End Bearing Pressure (psf) [4]
	GeoModel No.	Material		

1. Design capacities are dependent upon the method of installation and quality control parameters. The values provided are estimates and should be verified after finalization of installation protocol.
2. See Subsurface Profile in the **GeoModel** section for more details on stratigraphy.
3. Applicable for compressive loading only. Reduce to 2/3 of values shown for uplift loading. The effective weight of the pile can be added to uplift load capacity to the extent permitted by IBC.
4. Piles should extend a minimum of 10 feet into the dense to very dense gravel bearing stratum for end bearing to be considered.

CFA Design Summary – Parking Lot[1]

Elevation (feet)	Stratigraphy [2]		Allowable Skin Friction (psf) [3]	Allowable End Bearing Pressure (psf) [4]
	GeoModel No.	Material		
92 - 87	1	Silt Fill	0	0
87 – 64	2	Silt & Sand Alluvium	460	0
64 – 61	3	Poorly Graded Gravel with Sand	1,425	0
61 – 56	3	Silty Sand	1,170	0
56 – 49	4	Silty Clay	320	0
49 – 32	4	Poorly Graded Gravel with Silt & Sand	1,740	21,300

1. Design capacities are dependent upon the method of installation and quality control parameters. The values provided are estimates and should be verified after finalization of installation protocol.
2. See Subsurface Profile in the **GeoModel** section for more details on stratigraphy.
3. Applicable for compressive loading only. Reduce to 2/3 of values shown for uplift loading. The effective weight of the pile can be added to uplift load capacity to the extent permitted by IBC.
4. Piles should extend a minimum of 10 feet into the dense to very dense gravel bearing stratum for end bearing to be considered.

CFA Design Summary – Athletic Field[1]

Elevation (feet)	Stratigraphy [2]		Allowable Skin Friction (psf) [3]	Allowable End Bearing Pressure (psf) [4]
	GeoModel No.	Material		
120 - 117	1	Lean Clay Fill	0	0
117 – 112	2	Silty Clay (Soft)	65	0
112 – 105	2	Silty Clay (Medium Stiff)	250	0
105 – 95	2	Sandy Lean Clay	200	0
95 – 85	2	Poorly Graded Sand with Silt	810	0
85 – 80	2	Lean Clay	870	0
80 – 67	3	Silty Sand	1,540	0
67 – 55	4	Poorly Graded Gravel with Sand	1,770	21,300

1. Design capacities are dependent upon the method of installation and quality control parameters. The values provided are estimates and should be verified after finalization of installation protocol.
2. See Subsurface Profile in the **GeoModel** section for more details on stratigraphy.
3. Applicable for compressive loading only. Reduce to 2/3 of values shown for uplift loading. The effective weight of the pile can be added to uplift load capacity to the extent permitted by IBC.
4. Piles should extend a minimum of 10 feet into the dense to very dense gravel bearing stratum for end bearing to be considered.

Due to the preliminary nature of the project, lateral design capacities are not able to be determined. In addition, lateral pile design necessitates an iterative approach with both the structural and geotechnical engineer to evaluate the soil-pile interaction. Therefore, once lateral demand, pile size, and estimated reinforcement is determined, we can provide a recommended geotechnical design parameters for the piles.

CFA Pile Construction Considerations

Installation of adjacent piles with a clear distance spacing of less than ten pile diameters should be delayed until grout in the initial pile has set to avoid possible grout intrusion between the piles which could jeopardize pile integrity.

Proper CFA pile installation is highly operator-dependent and requires a greater than average dependence on quality workmanship and quality control monitoring. In addition, the successful CFA pile completion largely depends on the equipment and installation procedures. The auger should be withdrawn in a controlled manner and a sufficient head of grout should always be maintained in the augers to prevent necking of fluid grout due to hydrostatic pressures.

If practical drilling refusal is experienced above the planned termination depth, then a boulder or other obstruction may be present, and a replacement pile should be installed. The situation should be evaluated by the Geotechnical Engineer and the Structural Engineer during the pile construction operations. Continued "hard" drilling to attempt to extend through an obstruction should not be performed due to the possibility of excessive soil removal.

The CFA pile installation process should be performed under observation of the Geotechnical Engineer. The Geotechnical Engineer should document the pile installation process including soil/rock and groundwater conditions observed, consistency with expected conditions, and details of the installed pile.

Interior Floor Slabs

Interior floor slabs constructed as part of new buildings should be supported on soils improved by the installation of aggregate piers or should be structurally supported by deep foundations in order to limit excessive settlements. For slabs supported on ground improvements, an estimated modulus of subgrade reaction of 150 pounds per square inch per inch (psi/in) could be used for point loads.

Exterior Floor Slabs

Design parameters for floor slabs assume the requirements in the **Earthwork** section have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Existing fill materials were observed at the site to depths of 2 to 7½ feet below existing grade. As previously described, any existing fill present beneath exterior floor slabs should be completely removed.

Floor Slab Design Parameters

Item	Description
Floor Slab Support[1]	A minimum of 6 inches of CABC compacted to at least 95% of the maximum dry density determined by ASTM D1557 over at least 12 inches of Select Fill over native soils (exterior slabs)

Item	Description
Estimated Modulus of Subgrade Reaction [2]	150 pounds per square inch per inch (psi/in) for point loads

1. Exterior floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in the **Earthwork** section, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.

Saw-cut contraction joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations, refer to the ACI Design Manual. Joints or cracks should be sealed with a waterproof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Floor Slab Construction Considerations

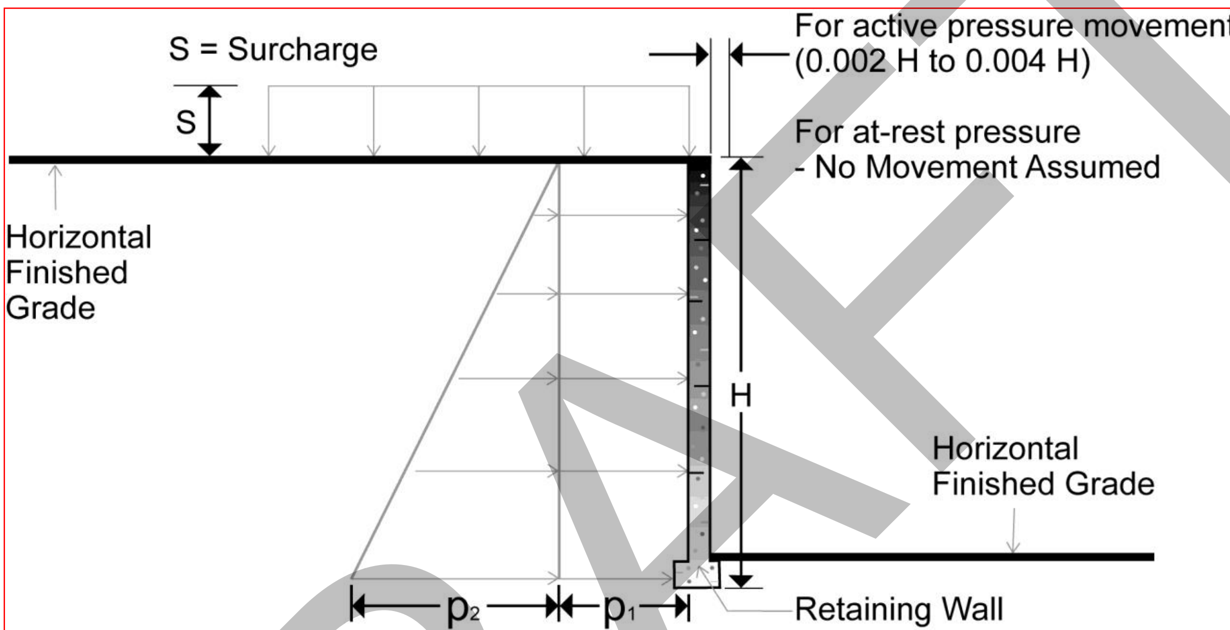
Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should observe the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

Lateral Earth Pressures – Permanent Retaining Structures

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction, and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The "at-rest" condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



Lateral Earth Pressure Design Parameters

Earth Pressure Condition [1]	Coefficient for Backfill Type [2]	Surcharge Pressure [3] p_1 (psf)	Equivalent Fluid Pressures (psf) [2,4]	
			Unsaturated [5]	Submerged [5]
Active (Ka)	Granular - 0.33	(0.33)S	(42)H	(83)H
At-Rest (Ko)	Granular - 0.50	(0.50)S	(63)H	(94)H

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance. Fat clay or other expansive soils should not be used as backfill behind the wall.
2. Uniform, horizontal backfill, with a maximum unit weight of 120 pcf for granular soils.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. To achieve "Unsaturated" conditions, follow guidelines in the **Subsurface Drainage for Below-Grade Walls** section. "Submerged" conditions are recommended when drainage behind walls is not incorporated into the design.

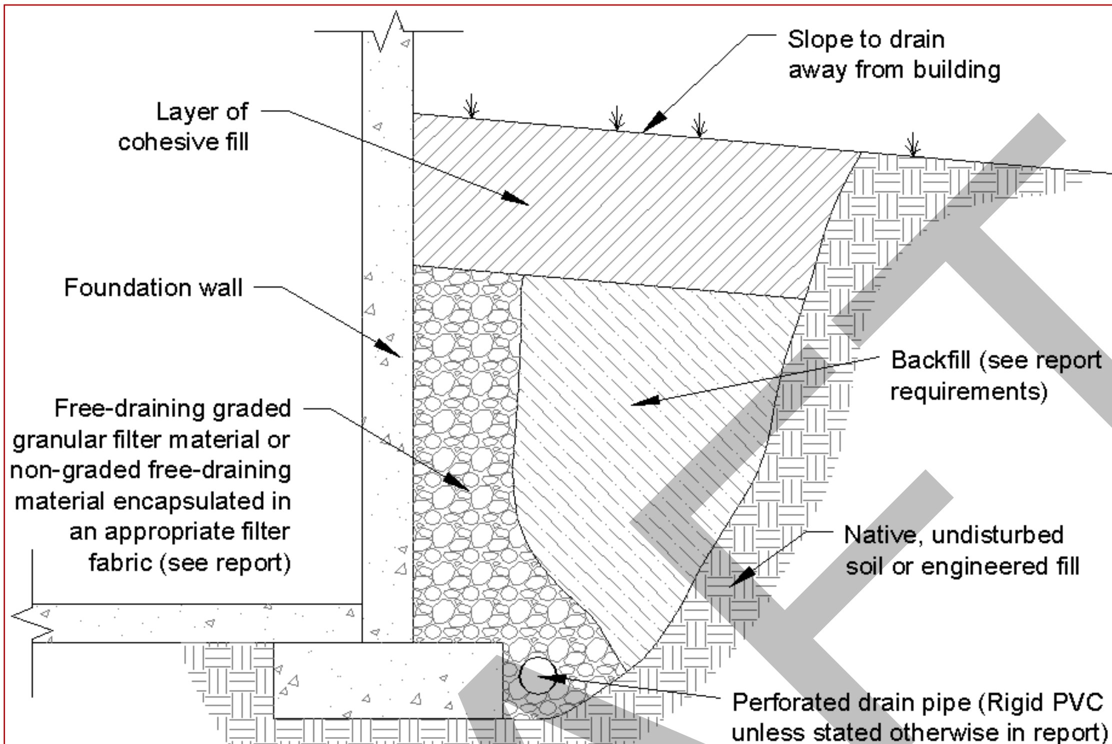
Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 degrees from vertical for the active case.

Footings, floor slabs or other loads bearing on backfill behind walls may have a significant influence on the lateral earth pressure. Placing footings within wall backfill and in the zone of active soil influence on the wall should be avoided unless structural analyses indicate the wall can safely withstand the increased pressure.

The lateral earth pressure recommendations given in this section are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block - geogrid reinforced backfill walls (also termed MSE walls). Recommendations covering these types of wall systems are beyond the scope of services for this assignment. However, we would be pleased to develop a proposal for evaluation and design of such wall systems upon request.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should be a minimum of 12 inches in thickness and extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a prefabricated drainage structure may be used. A prefabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion and is fastened to the wall prior to placing backfill.

Temporary Soldier Pile Shoring

Excavations for below grade structures (basements) are anticipated to be on the order of about 10 to 15 feet bgs. Due to the poor strength characteristics within the existing soils, we recommend temporary shoring to support the excavations and adjacent structures during construction where temporary slopes constructed at 1½H:1V cannot be maintained. The construction contract should include provisions for protection of the existing structures to remain in place that are satisfactory to the owner and structural engineer, but in addition the contractor should be allowed to implement additional protective measures, if appropriate, depending on conditions disclosed in the excavation once construction is underway.

The following geotechnical design criteria relates primarily to cantilever soldier pile shoring. The shoring design criteria presented in this report should be used to design an appropriate system. The shoring system design should be reviewed by Terracon for conformance with the design criteria presented in this report. Terracon could design temporary shoring systems, however, often it is cost effective to design the soldier piles as part of the structure foundation. Permanent systems should be designed by a structural engineer. It is generally not the purpose of this report to provide specific criteria for construction methods, materials, or procedures. It should be the responsibility of the shoring subcontractor to verify actual ground conditions of the site and determine the construction methods and procedures needed for installation of an appropriate shoring system.

Lateral Earth Pressures and Movement

The design of soldier pile walls is conventionally accomplished using empirical relationships to develop earth pressure distributions. These earth pressure distributions are a function of the number of lateral supports for the shoring wall. Additionally, pressures must be selected adjacent to sensitive existing improvements that will tend to limit deflections, both vertical and horizontal.

Design of temporary shoring could be based on either "active" or "at-rest" lateral earth pressures, depending on the degree of deformation of the shoring that can be tolerated. Shoring which is free to deform on the order of 0.001 to 0.002 times the height of the shoring is capable of mobilizing active earth pressures. This lateral deformation is likely to be accomplished by vertical settlement of roughly 0.002 to 0.004 times the height of the shoring and may extend back from the side of the cut a distance equal to roughly the height of the cut. A greater amount of lateral deformation could allow greater vertical settlements. If no structural elements are located within this zone, or if any structural elements within the zone are insensitive to this degree of settlement, then it would be appropriate to design utilizing active earth pressures.

An assumed "at-rest" earth pressure condition theoretically assumes no movement of the soil behind the shoring; however, some settlement should realistically be anticipated due to construction practices and/or the fact that it is not possible to construct a perfectly stiff shoring system.

All excavations do invite a certain amount of risk. Since the selection of shoring techniques and criteria affect the level of risk, we recommend that the final selection of shoring design criteria be made by the owner in conjunction with the structural engineer and other design team members. The project shoring walls could be designed using active pressures, provided lateral movement and vertical settlement to the degree described above is considered tolerable. The anticipated lateral and vertical movements of about ½-inch or less with active earth pressures are typically tolerable for pavements and buried utilities.

For the case of a cantilevered shoring system, we recommend that the applied lateral pressure be represented by a triangular distribution. The table below provides strength design parameters for the soils located in the proposed soldier pile wall area, as well as

Soldier Pile Wall Details in **Figures** of this report. Additional lateral pressure should be added to this value to model construction and other temporary surcharge loads.

Material Type	Total Unit Weight	Lateral Earth Pressure Coefficients		
	(pcf)	Active (K_a)	At-Rest (K_o)	Passive (K_p) [3, 4]
Undocumented Fill/Soft Native Soils [1]	110	0.36	0.53	2.75
Silt & Sand Alluvium Soft to Medium Stiff/Loose to Medium Dense Native Soils [2]	115	0.32	0.47	2.90

1. Represents soils within the upper 15 feet of subsurface profile.
2. Represents soils from depths of 15 to about 30 feet of subsurface profile.
3. We recommend applying a factor of safety (FOS) of 1.5 to the reported Kp value because more movement may be required to mobilize passive resistance than what may be tolerable. For passive earth pressure to develop, wall must move horizontally to mobilize resistance. Passive pressure may be applied to 2 times the pile diameter (or the pile spacing), whichever is less.
4. We recommend ignoring passive pressure in the upper 2 feet of soil below the excavation cut level.
5. For active earth pressure, wall must rotate about base, with top lateral movements of about 0.001***H** to 0.002***H**, where **H** is wall height.
6. Active or at-rest pressure act over the retained and embedded portions of the soldier pile wall.
7. Uniform surcharge, where S is surcharge pressure, equivalent lateral surcharge pressure is equal to the Active (Ka) or At-Rest (Ko) coefficients should be multiplied by the surcharge pressure, whichever is appropriate for the wall design (**Ka*S** or **Ko*S**).
8. Existing Undocumented Fill soils are being retained
9. Native, undisturbed soils are providing passive resistance below the excavation grade.
10. No hydrostatic pressures acting on wall, assumes drainage allowed through the wall face.
11. Soldier pile shoring walls are providing temporary support.

Temporary walls constructed for excavation cuts should not require drainage features since any water would seep through the lagging. However, if the temporary walls are provided as the form for permanent retaining walls, drainage mats and pipes should be included in the permanent wall design and construction. Heavy equipment should not operate within a distance closer than the exposed height of retaining walls to prevent lateral pressures more than those provided. If construction equipment or other vertical loads are anticipated to be placed behind the wall, design equations for calculating the load effects on the wall are presented on **Surcharge Pressure Diagrams** in the **Figures** of this report.

Embedment depth of soldier piles below final excavation level must be designed to provide adequate lateral or "kick out" resistance to horizontal loads. For design, the lateral resistance may be computed on the basis of passive pressure, expressed as equivalent fluid density acting over twice the diameter or flange width of the soldier pile section or the pile spacing, whichever is less. Passive resistance within the upper 2 feet of soil below the excavation base should be neglected. Active pressures may be assumed to act on the pile diameter or flange width (for driven piles) below the base of the excavation. We recommend a minimum embedment depth of 1.5 times the excavation height for cantilever solder piles.

Soldier Piles and Lagging

Soldier piles for temporary shoring are typically set in pre-augered holes and backfilled with lean or structural concrete. If soldier piles are to be installed by drilling methods, excessive ground loss (caving) could occur during pile installation and should be prevented. Soldier pile drilling is expected to encounter clay and silt, fill soils with periodic construction debris (i.e. asphalt, concrete, wood debris, etc). Casing may be needed to prevent caving in the fill soils. The contractor should be responsible for installation of casing, or using alternate means at their discretion, to prevent caving and loss of ground during pile drilling.

We recommend lagging, or some other form of protection, be installed in all areas. Provided soldier piles are installed into pre-augered holes backfilled with lean or structural concrete, the lagging may be designed for 50 percent of the lateral earth pressure used for shoring design due to soil arching effects. Self-compacting fill other than lean concrete or concrete should not be used. Prompt and careful installation of lagging will reduce potential loss of ground. The requirements for lagging should be made the responsibility of the shoring subcontractor to prevent soil failure, sloughing and loss of ground and to provide safe working conditions. We recommend backfilling any voids between the lagging and soil. However, the backfill should not allow potential hydrostatic pressure to build-up behind the wall. Drainage behind the wall must be maintained.

Shoring Monitoring

Any time an excavation is made below the level of existing utilities or other structures, there is risk of damage even if a well-designed shoring system has been planned. We recommend that a systematic program of observations be conducted on adjacent facilities. We believe that this program is necessary for two reasons. First, if excessive movement is detected sufficiently early, it may be possible to undertake remedial measures that could prevent serious damage to existing facilities. Second, in the unlikely event that problems do arise, the responsibility for damage may be established more equitably if the cause and extent of the damage are better defined. Monitoring can consist of conventional survey monitoring of horizontal and vertical movements.

The monitoring program should include measurements of the horizontal and vertical movements of the retained improvements and the shoring system itself. At least two reference lines should be established adjacent to the excavation at horizontal distances back from the excavation space of about 1/3*H and H, where H is the final excavation height. Monitoring of the shoring system should include measurements of vertical and horizontal movements at the top of each soldier pile wall.

The measuring system used for shoring monitoring should have an accuracy of at least 0.01-foot. All reference points on the retained improvements should be installed and readings taken prior to commencing the excavation. All reference points should be read prior to and during critical stages of construction. The frequency of readings will depend on the results of previous readings and the rate of construction. As a minimum, readings should be taken twice a week throughout construction until the excavation is completed. All readings should be reviewed by Terracon.

In addition to the shoring monitoring program, we recommend a pre-construction survey of the adjacent properties to document existing conditions. The survey should include both a visual (photographs and/or videotapes) and written record of the buildings, pavements, utilities, and landscape areas bordering the future excavation. Separate surveys by the owner and contractor are common.

Geotechnical Review

Design of a shoring system requires a thorough understanding of site subsurface conditions. We strongly recommend that Terracon be retained to assist the shoring contractor in the preparation of suitable shoring plans and specifications for this project. Terracon should also be retained to review the plans, calculations, and specifications once they have been prepared.

Pavements

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in the **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Site Preparation** section.

Pavement Design Parameters

Design of Asphaltic Concrete (AC) pavements are based on the procedures outlined in the American Association of State Highway and Transportation Officials (AASHTO), 1993. Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330; Guide for Design and Construction of Concrete Parking Lots.

Based on California Bearing Ratio (CBR) testing on this site and nearby, a subgrade CBR of 6 was used for the AC pavement designs, and a modulus of subgrade reaction (k) of 150 pci was used for the PCC pavement designs. The values are based on achieving a 95 percent compaction of a Modified Proctor effort (ASTM D1557) as prescribed by the **Site Preparation** section. A modulus of rupture of 600 psi was used for pavement concrete.

Pavement Section Thicknesses

The following table provides our opinion on minimum thickness for AC and PCC sections:

Layer	Minimum Thickness (inches)			
	Asphalt Concrete	**Portland Cement Concrete**	**Aggregate Base**	**Total**
Parking Lots	3	--	10	13
	--	5	--	5
Drive Lanes	6	--	10	16
	--	7	--	7

- Areas for parking heavy vehicles, concentrated turns, and start/stop maneuvers could require thicker pavement sections. Edge restraints (e.g., concrete curbs or aggregate shoulders) should be planned along curves and areas of maneuvering vehicles.
- Although not required for structural support, a minimum 4-inch-thick base course layer is recommended to help reduce the potential for slab curl, shrinkage cracking, and subgrade pumping through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer. PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with ACI 330 and ACI 325.
- Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting the concrete in its "green" state typically reduces the potential for microcracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Microcracking of pavements may lead to crack formation in locations other than the sawed joints and/or reduction of fatigue life of the pavement.
- Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils, thereby degrading support of the pavement. Islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils are particular areas of concern. The civil design for the pavements with these conditions should include features to restrict or collect and discharge excess water from the islands. Examples of such features are edge drains connected to the stormwater collection system, longitudinal subdrains, or other suitable outlets and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavement Drainage

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. Islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils are particular areas of concern. The civil design for the pavements with these conditions should include features to restrict or collect and discharge excess water from the islands. Examples of features are edge drains connected to the stormwater collection system, longitudinal subdrains, or other suitable outlets and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic upkeep should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.

Data Gaps – Recommended Work

In order to refine the geotechnical recommendations for the proposed project, several data gaps need to be addressed during future exploration at the site:

- At the time of our field investigation, we were unable to advance one of the proposed borings (B-11) due to abundant underground utilities within the immediate vicinity of the planned boring.

- Depending on the final design configuration of proposed buildings, additional borings and/or deeper borings may be needed. These explorations may be necessary depending on the final settlement tolerances with respect to static and/or seismic related settlements and to refine the settlement estimates in this report. These explorations may need to extend to about 100 feet to identify the transition to stiffer/denser materials (Troutdale Formation).

The additional explorations should be completed once site plans showing the proposed construction have been developed.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

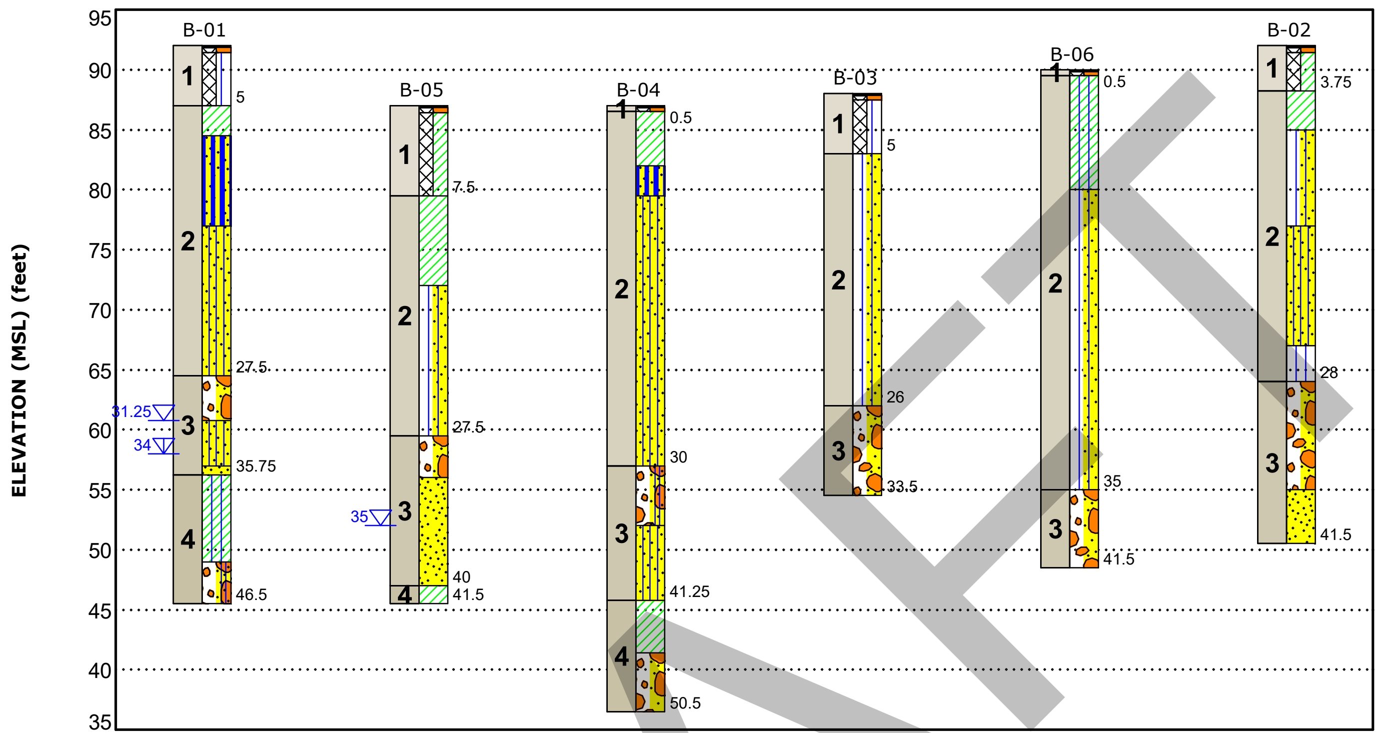
Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

Figures

Contents:

Terracon
700 NE 55th Ave
Portland, OR

GeoModel - Parking Lot



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	FILL	ASPHALT; CONCRETE; GP FILL: fine to coarse grained, angular; SM/CL/ML FILL - brown to grayish brown, moist, soft/loose to medium stiff/medium dense, low plasticity
2	FINE-GRAINED FLOOD DEPOSITS	CL, ML, CL-ML, CH, SM, SP: brown, gray brown, light brown, soft to medium stiff, nonplastic to high plasticity, variable fine grained sand content
3	COARSE-GRAINED FLOOD DEPOSITS	SM, SP, GP, GP-GC: brown to yellowish brown, medium dense to very dense, fine to coarse grained, subangular to subrounded
4	UNDIFFERENTIATED ALLUVIUM	CL: medium plasticity, medium stiff to very stiff, yellow-brown; SP, GP, GP-GM: gray to greenish gray, dense to very dense, subangular to subrounded

Legend

- Asphalt
- Poorly-graded Gravel with Sand
- Silt
- Lean Clay
- Sandy Silt
- Silty Sand
- Poorly-graded Sand
- Silty Clay
- Poorly-graded Gravel with Silt and Sand
- Silt with Sand

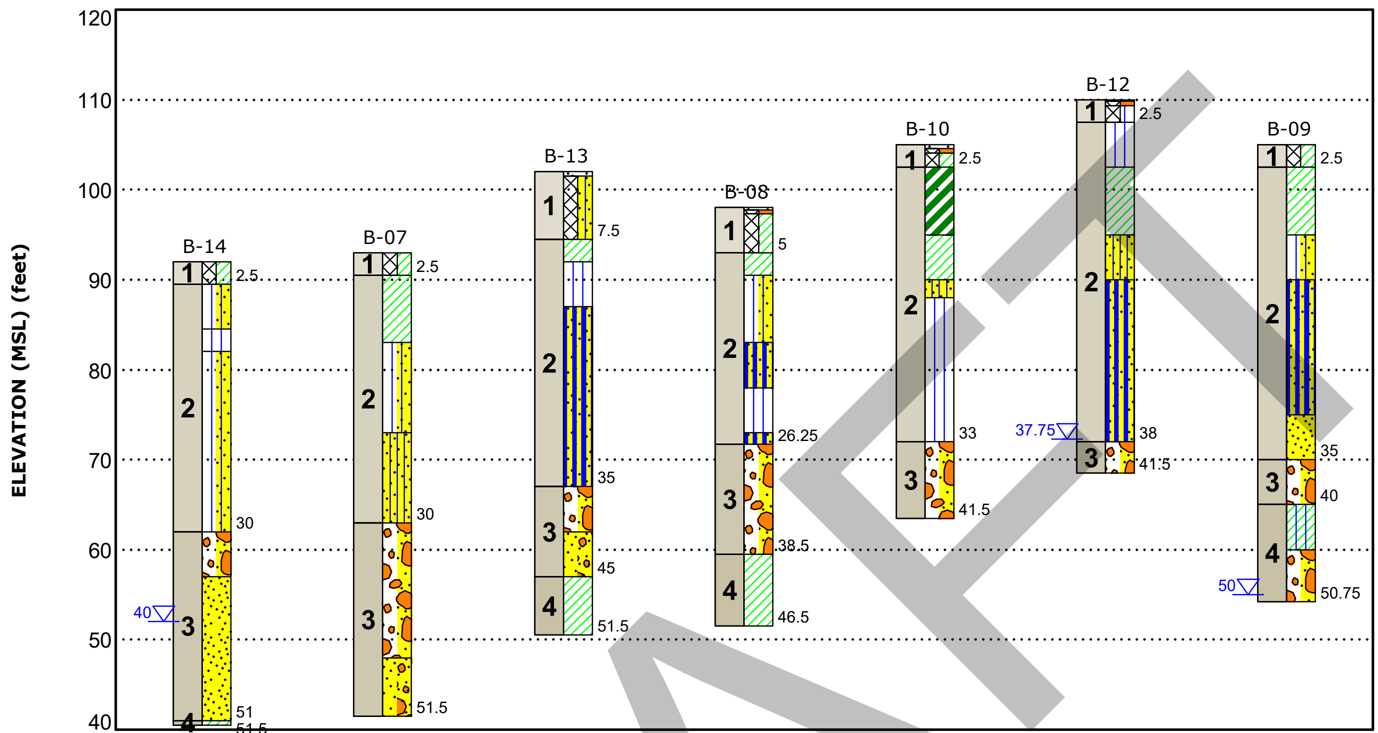
First Water Observation
Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

Terracon
700 NE 55th Ave
Portland, OR

GeoModel - Primary Site



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Model Layer	Layer Name	General Description
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3	COARSE-GRAINED FLOOD DEPOSITS	SM, SP, GP, GP-GC: brown to yellowish brown, medium dense to very dense, fine to coarse grained, subangular to subrounded
4	UNDIFFERENTIATED ALLUVIUM	CL: medium plasticity, medium stiff to very stiff, yellow-brown; SP, GP, GP-GM: gray to greenish gray, dense to very dense, subangular to subrounded

Legend

Lean Clay	Silt with Sand
Silty Sand	Poorly-graded Gravel with Sand
Poorly-graded Sand with Gravel	Concrete
Sandy Silt	Silt
Poorly-graded Sand	Silty Clay
Fat Clay	Asphalt

First Water Observation
Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

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Numbers adjacent to soil column indicate depth below ground surface.

700 NE 55th Ave
Portland, OR

GeoModel - Athletic Field

This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	FILL	ASPHALT; CONCRETE; GP FILL: fine to coarse grained, angular; SM/CL/ML FILL - brown to grayish brown, moist, soft/loose to medium stiff/medium dense, low plasticity
2	FINE-GRAINED FLOOD DEPOSITS	CL, ML, CL-ML, CH, SM, SP: brown, gray brown, light brown, soft to medium stiff, nonplastic to high plasticity, variable fine grained sand content
3	COARSE-GRAINED FLOOD DEPOSITS	SM, SP, GP, GP-GC: brown to yellowish brown, medium dense to very dense, fine to coarse grained, subangular to subrounded
4	UNDIFFERENTIATED ALLUVIUM	CL: medium plasticity, medium stiff to very stiff, yellow-brown; SP, GP, GP-GM: gray to greenish gray, dense to very dense, subangular to subrounded

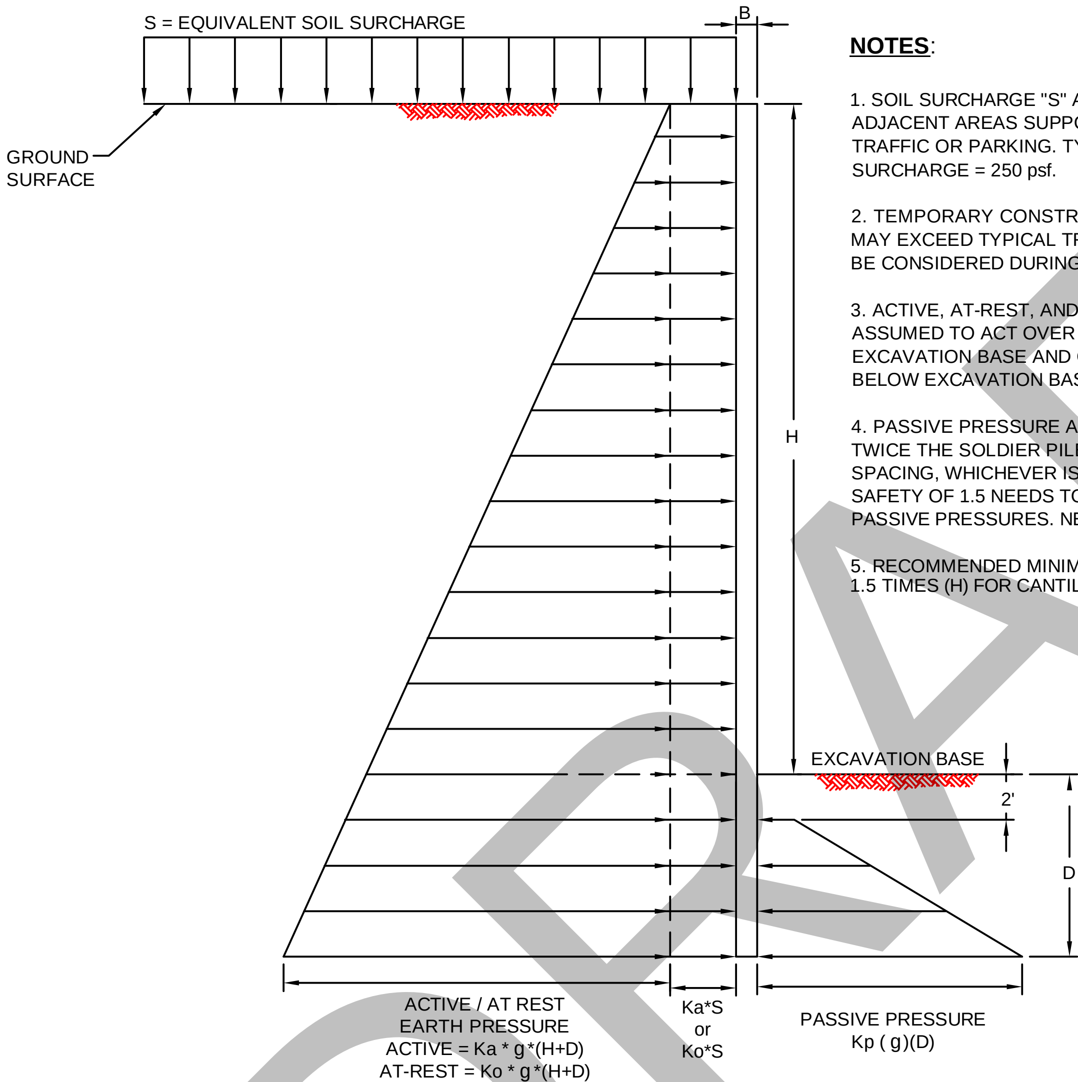
Legend

- Lean Clay
- Clayey Sand
- Sandy Silt
- Poorly-graded Sand with Silt
- Silty Clay
- Sandy Lean Clay
- Silty Sand

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

First Water Observation
Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.



LATERAL EARTH PRESSURE - DIAGRAM

NOTES:

1. SOIL SURCHARGE "S" APPLIES TO ALL ADJACENT AREAS SUPPORTING VEHICLE TRAFFIC OR PARKING. TYPICAL TRAFFIC SURCHARGE = 250 psf.

2. TEMPORARY CONSTRUCTION SURCHARGES MAY EXCEED TYPICAL TRAFFIC LOADS SHOULD BE CONSIDERED DURING SHORING DESIGN.

3. ACTIVE, AT-REST, AND SURCHARGE PRESSURE ASSUMED TO ACT OVER PILE SPACING ABOVE EXCAVATION BASE AND OVER PILE DIAMETER BELOW EXCAVATION BASE.

4. PASSIVE PRESSURE ASSUMED TO ACT OVER TWICE THE SOLDIER PILE DIAMETER OR THE PILE SPACING, WHICHEVER IS SMALLER. FACTOR OF SAFETY OF 1.5 NEEDS TO BE APPLIED TO PASSIVE PRESSURES. NEGLECT UPPER 2 FEET.

5. RECOMMENDED MINIMUM EMBEDMENT 1.5 TIMES (H) FOR CANTILEVER SOLDIER PILES.

WALL DESIGN PARAMETERS

SOIL TYPE	UNIT WT. (PCF)	LATERAL EARTH PRESSURE COEFFICIENTS ACTIVE (Ka)	AT-REST (Ko)	PASSIVE (Kp)
SOFT FILL/NATIVE SOILS	110	0.36	0.53	2.75
SAND & SILT ALLUVIUM	115	0.32	0.47	2.90

* SEE REPORT TEXT FOR DEPTHS OF LAYERS

Project Mngr:	RTH
Drawn By:	BWP
Checked By:	KTH
Approved By:	KTH
Project No.	82245002
Scale:	NOT TO SCALE
File No.	SoldierPile
Date:	April 2024

Terracon
700 SE 55TH AVENUE PORTLAND, OR
PH. (503) 659-3281 FAX. (503) 659-1287

SOLDIER PILE WALL DETAILS

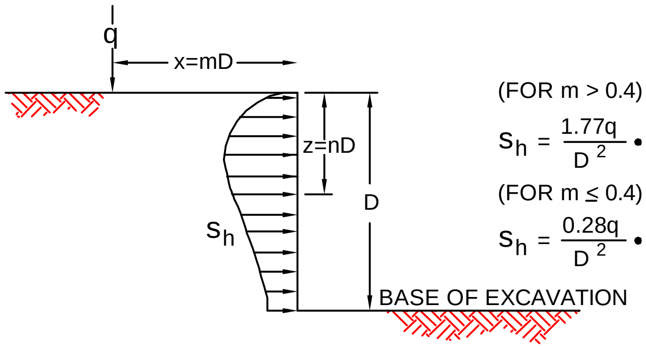
Cleveland High School Upgrades

3400 SE 26th Avenue

PORTLAND OREGON

FIGURE

POINT LOAD



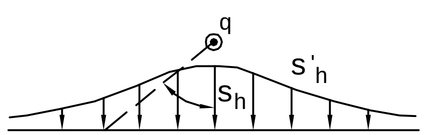
(FOR m > 0.4)

$$s_h = \frac{1.77q}{D^2} \bullet \frac{m^2 n^2}{(m^2 + n^2)^3}$$

(FOR m ≤ 0.4)

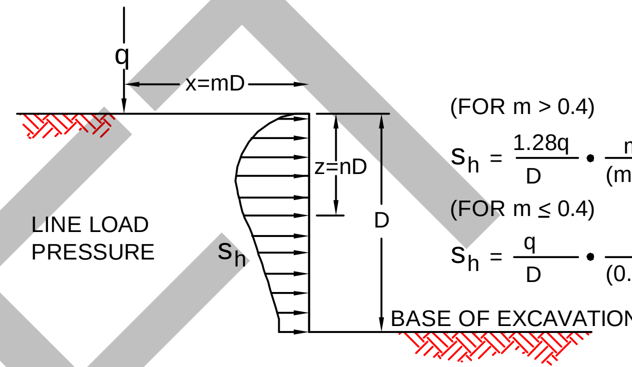
$$s_h = \frac{0.28q}{D^2} \bullet \frac{n^2}{(0.16 + n^2)^3}$$

$$s'_h = s_h \cos^2 (1.1*\Theta)$$



PLAN VIEW OF WALL

LINE LOAD



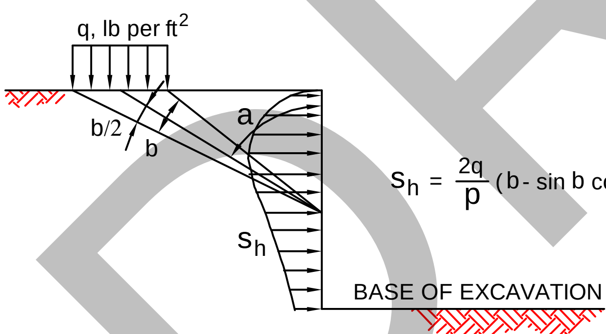
(FOR m > 0.4)

$$s_h = \frac{1.28q}{D} \bullet \frac{m^2 n}{(m^2 + n^2)^2}$$

(FOR m ≤ 0.4)

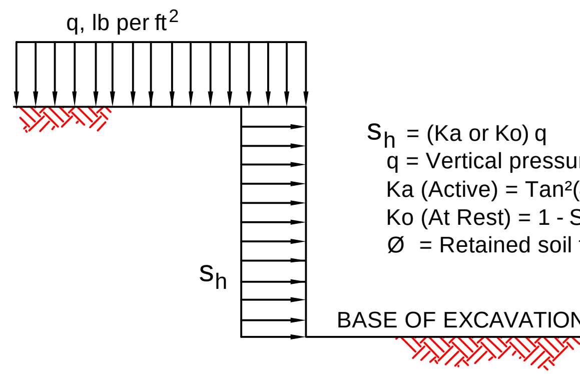
$$s_h = \frac{q}{D} \bullet \frac{0.2n}{(0.16 + n^2)^2}$$

STRIP LOADING PARALLEL TO EXCAVATION



$$s_h = \frac{2q}{p} (b - \sin b \cos 2a)$$

UNIFORM LOAD DISTRIBUTION



s_h = (Ka or Ko) q
q = Vertical pressure in psf
Ka (Active) = Tan²(45 - Ø/2)*
Ko (At Rest) = 1 - Sin Ø
Ø = Retained soil friction angle

Project Mngr: RTH	Project No. 82245002	Terracon	SURCHARGE PRESSURE DIAGRAMS	FIGURE
Drawn By: BWP	Scale: NOT TO SCALE		Cleveland High School Upgrades	
Checked By: KTH	File No. Surcharge	700 SE 55TH AVENUE PORTLAND, OR	3400 SE 26th Avenue	
Approved By: KTH	Date: April 2024	PH. (503) 659-3281 FAX. (503) 659-1287	PORTLAND OREGON	

Attachments

Exploration and Testing Procedures

Field Exploration

Exploration Number	Exploration Type	Approximate Exploration Depth (feet)	Location	
			Latitude	Longitude
B-1	Drilled Boring	46½	45.4990°N	122.6405°W
B-2	Drilled Boring	41½	45.4991°N	122.6398°W
B-3	Drilled Boring	33½	45.4989°N	122.6400°W
B-4	Drilled Boring	50½	45,4987°N	122.6402°W
B-5	Drilled Boring	41½	45.4986°N	122.6404°W
B-6	Drilled Boring	41½	45.4984°N	122.6399°W
B-7	Drilled Boring	51½	45.4990°N	122.6395°W
B-8	Drilled Boring	46½	45.4990°N	122.6384°W
B-9	Drilled Boring	50¾	45.4990°N	122.6377°W
B-10	Drilled Boring	41½	45.4986°N	122.6380°W
B-11	Not completed due to presence of underground utilities			
B-12	Drilled Boring	41½	45.4980°N	122.6380°W
B-13	Drilled Boring	51½	45.4981°N	122.6388°W
B-14	Drilled Boring	51½	45.4983°N	122.6395°W
B-15	Drilled Boring	51½	45.4982°N	122.6332°W
B-16	Drilled Boring	61½	45.4975°N	122.6333°W

Exploration Layout and Elevations: Terracon personnel provided the exploration layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were obtained by interpolation from Google Earth Pro aerial imagery. If elevations and a more precise exploration layout are desired, we recommend explorations be surveyed.

Drilled Borings: We advanced the borings with subcontracted truck-mounted drill rig and a Terracon track-mounted drill rig. Borings were advanced using hollow stem auger and mud rotary drilling techniques. Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths.

Exploration Logging: All explorations were supervised and logged by geotechnical staff who record field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field exploration logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final exploration logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Property Disturbance: We backfilled borings according to local jurisdiction requirements after completion of each exploration. Pavements were patched with cold-mix asphalt and/or ready mixed concrete, as appropriate. Our services did not include repair of the site beyond backfilling our boreholes and patching existing pavements. Excess auger cuttings were collected and drummed for disposal offsite. Since backfill material often settles below the surface after a period, we recommend boreholes be checked periodically and additional backfill added, if necessary.

Geophysical Exploration Methods

S-Wave: Geophysical testing was performed along three arrays (Array 1 through Array 3) representative of the subsurface conditions encountered at the project site. Terracon used a Geometrics Geode Exploration Seismograph and a linear array of 24 geophones to collect seismic refraction data. The profile was collected using the Multichannel Analysis of Surface Waves (MASW) method. The recorded data was processed using the computer program SurfSeis, published by the Kansas Geological Survey to generate a 1-dimensional shear-wave velocity versus depth (profile) for the array, as shown on the Shear Wave Velocity Results in the **Exploration and Laboratory Results**.

Laboratory Testing

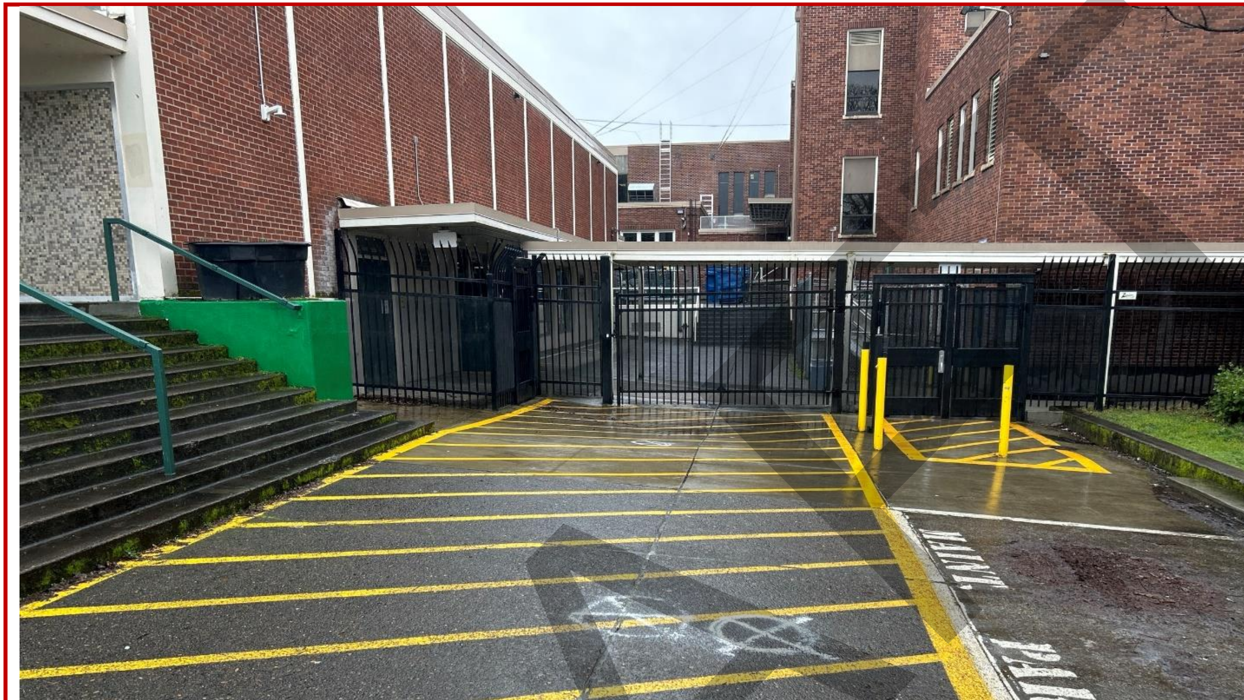
The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Water content
- Unit dry weight
- Atterberg limits
- Grain size analysis
- One dimensional consolidation
- Unconfined compressive strength

- Corrosivity analyses suite – pH, sulfates, chloride ion, oxidation-reduction potential electrical resistivity
- Moisture-density relationship (Modified Proctor)
- California Bearing Ratio Test (CBR)

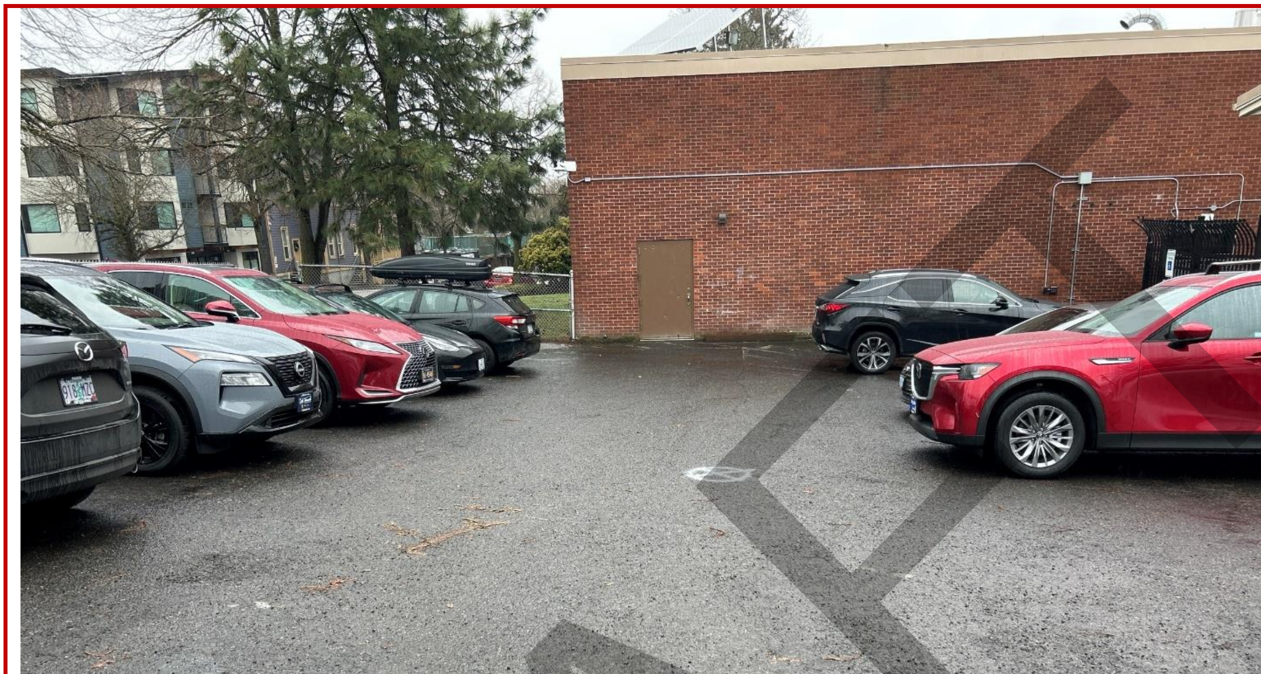
Laboratory test results are presented on the exploration logs and/or as separate graphs in the **Exploration and Laboratory Results** section. The laboratory testing program often included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the **Unified Soil Classification System**.

Photography Log



North side of existing high school building; facing south toward B-08.

Existing main parking lot area; facing southeast toward B-06 and western façade of the primary campus.



Existing parking lot area on the southwest corner of the high school; facing west.

Athletic field; facing south toward B-16.

Site Location and Exploration Plans

Contents:

Note: All attachments are one page unless noted above.

Site Location

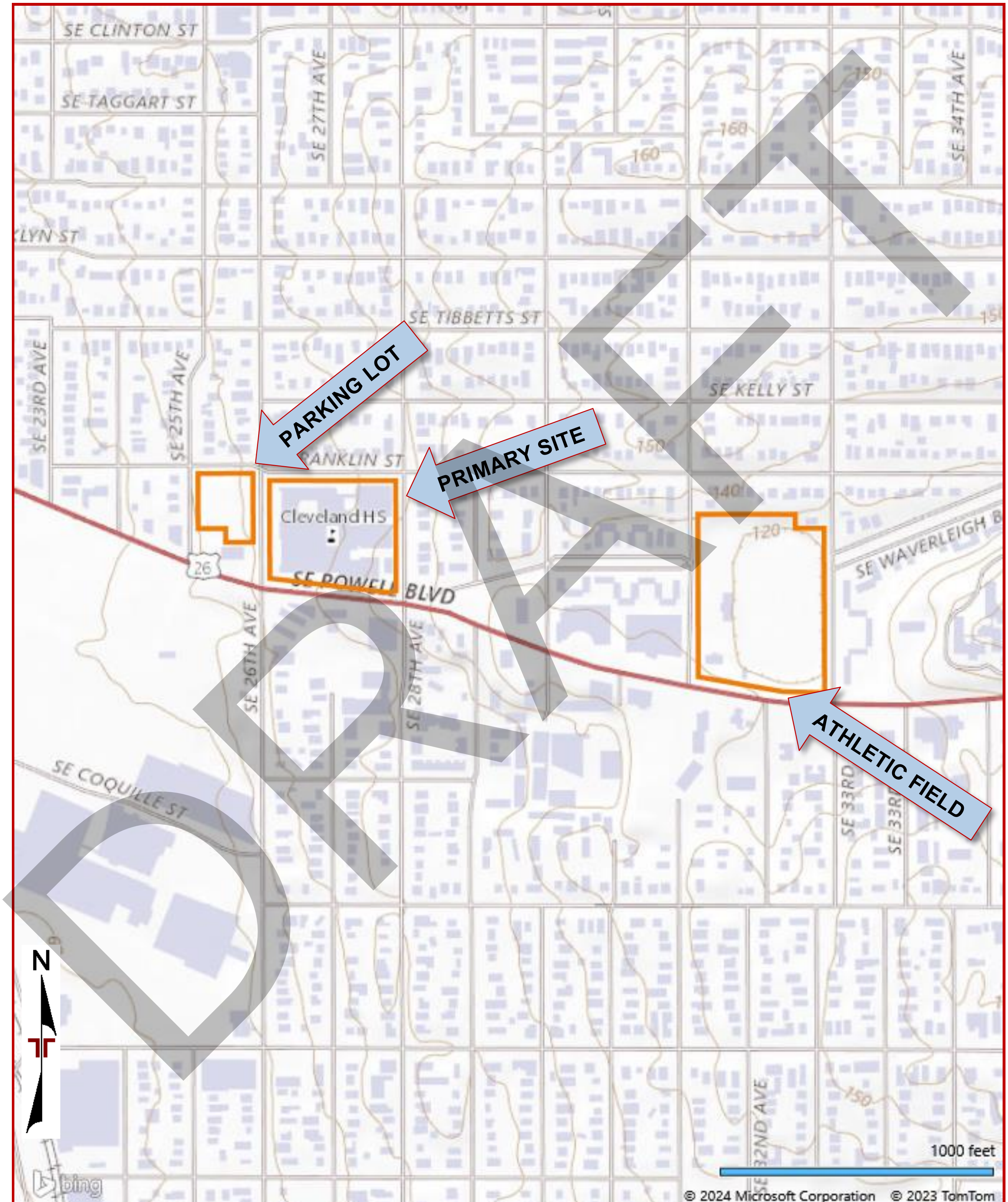


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan – Primary Site and Parking Lot

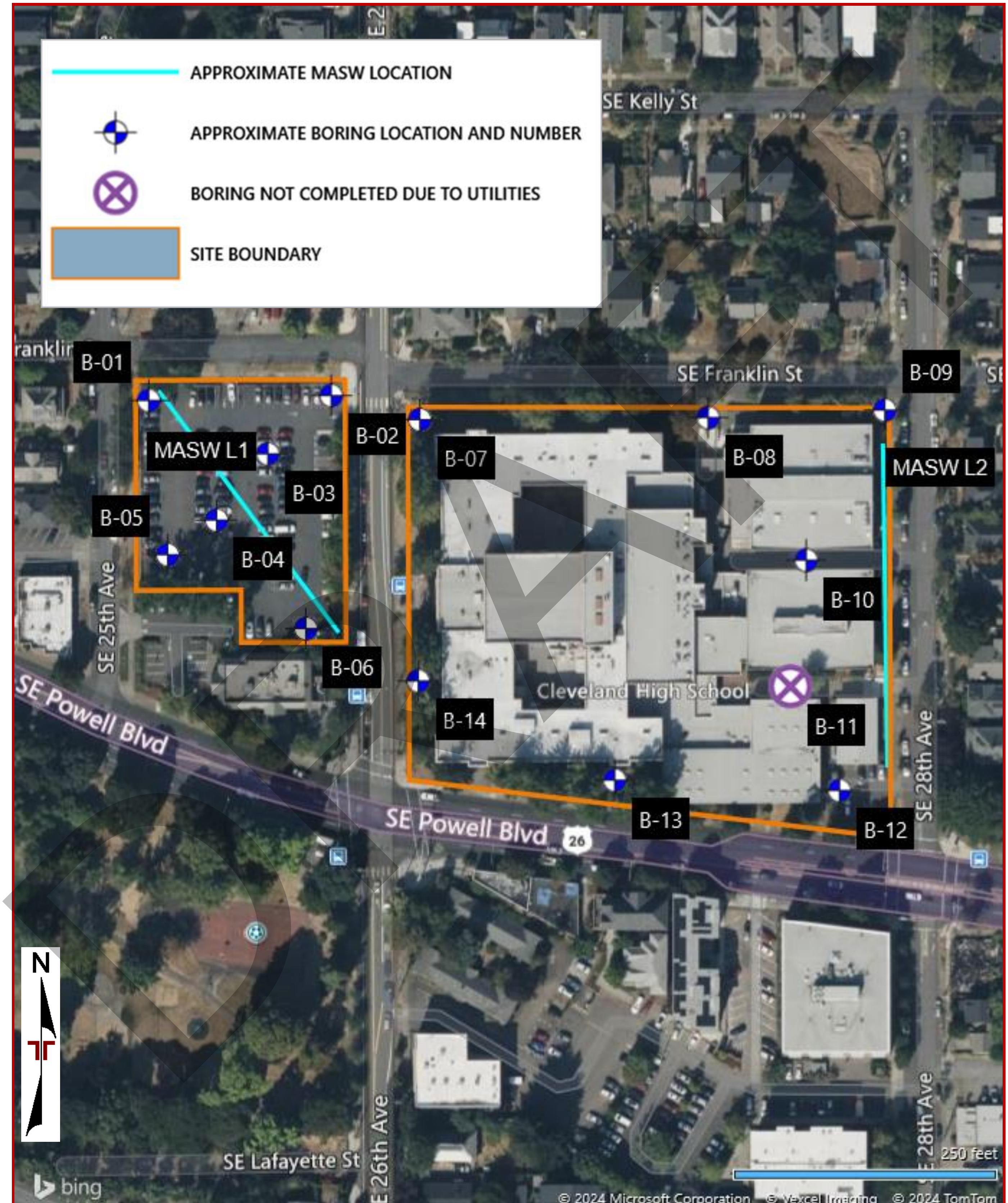


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan – Existing Athletic Field

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Note: All attachments are one page unless noted above.

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-01

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6405°

Depth (Ft.) Elevation.: 92 (Ft.)

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)	Sample Depth (Ft.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.2	**ASPHALT**, 2 inches thick	91.83						
1	0.6	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, gray, moist, 5" thick {base rock}	91.42						
1	5.0	**FILL - SANDY LEAN CLAY WITH GRAVEL (CL)**, low plasticity, grayish brown, moist, medium stiff; soft	87		2-3-4 N=7	0.0			
					1-1-1 N=2				
2	7.5	**LEAN CLAY (CL)**, low plasticity, brown, moist, medium stiff	84.5	5	2-2-3 N=5	34.4			
2	15.0	**SANDY SILT (ML)**, nonplastic, brown, moist, soft to medium stiff, fine-grained sand	77		2-2-2 N=4	32.5			65
				10	2-2-2 N=4	36.9			
2	27.5	**SILTY SAND (SM)**, fine grained, grayish brown, moist, loose	64.5	15	2-2-3 N=5	19.9			43
		increase in moisture content		20	2-2-3 N=5	31.1			
		gray and brown, medium dense, mottled		25	2-6-7 N=13	29.5			
3	31.3	**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense	60.75	30	15-21-12 N=33	4.9			
3	35.0	**SILTY SAND (SM)**, fine grained, brown, moist, dense	57	35					

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
▽ While drilling
▽ At completion of drilling

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-16-2024

Boring Completed
02-16-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-01

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6405°

Elevation.: 92 (Ft.)

Model Layer	Graphic Log	Depth (Ft.)	Material Description	Elevation (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		35.8	**POORLY GRADED SAND (SP)**, fine to medium grained, gray and brown, wet, medium dense	56.25				7-7-10 N=17	25.5			
4			**SILTY CLAY (CL-ML)**, low plasticity, light gray, moist, very stiff									
			medium stiff to stiff		40			3-3-5 N=8	26.9		26-21-5	
		43.0		49								
			POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), fine to coarse grained, subrounded, gray and brown, wet, very dense		45			14-21-29 N=50	11.8			
		46.5		45.5								

Boring Terminated at 46.5 Feet

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
While drilling
At completion of drilling

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-16-2024

Boring Completed
02-16-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-02

Location: See Exploration Plan

Latitude: 45.4991° Longitude: -122.6398°

Elevation.: 92 (Ft.)

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)
1	0.2	**ASPHALT**, 2 inches thick	91.83
1	0.6	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, gray, moist, 5" thick {base rock}	91.42
1	3.8	**FILL - LEAN CLAY (CL)**, low plasticity, brown and gray, moist, soft to medium stiff, with brick fragments red	88.25
2	7.0	**LEAN CLAY (CL)**, low plasticity, brown, moist, soft	85
2	15.0	**SANDY SILT (ML)**, nonplastic, light brown, moist, soft to medium stiff, fine-grained sand	77
2	25.0	**SILTY SAND (SM)**, fine grained, brown, moist, loose; medium stiff to stiff	67
2	28.0	**SILT (ML)**, low plasticity, grayish brown, moist, stiff	64
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense	

Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1-2.5			2-3-4 N=7				
2.5-4			7-7-2 N=9	30.9			
5-7				39.4	74		
7-8.5			2-2-2 N=4	35.7			71
10-11.5				31.9			
15-16.5			3-4-5 N=9	14.9			43
20-21.5			3-4-4 N=8	12.4			
25-26.5			6-4-5 N=9	17.6		33-26-7	
30-31.5			15-16-17 N=33	4.6			

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Groundwater not encountered

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-18-2024

Boring Completed
02-18-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-02

Location: See Exploration Plan

Latitude: 45.4991° Longitude: -122.6398°

Elevation.: 92 (Ft.)

Model Layer	Graphic Log	Depth (Ft.) / Material Description	Elevation (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense *(continued)* medium dense					8-10-9 N=19	5.2			
		37.0	55								
		POORLY GRADED SAND (SP), fine grained, reddish brown, moist, medium dense		40			13-15-13 N=28	30.9			
		41.5 gray	50.5								
		Boring Terminated at 41.5 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Groundwater not encountered

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-18-2024

Boring Completed
02-18-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-03

Location: See Exploration Plan

Latitude: 45.4989° Longitude: -122.6400°

Elevation.: 88 (Ft.)

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)
1	0.2	**ASPHALT**, 2 inches thick	87.83
1	0.5	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, brown and gray, moist, 5" thick {base rock}	87.5
1	5.0	**FILL - SILT (ML)**, low plasticity, brown, moist, stiff	83
2	26.0	**SILT WITH SAND (ML)**, nonplastic, brown, moist, medium stiff, fine-grained sand stiff stiff trace gravel	62
3	33.5	**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded to subangular, gray, moist, dense coarse grained, very dense	54.5
		at 33.5 Feet	

Sample Depth (Ft.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
2.5	4-5-6 N=11				
5	2-4-3 N=7				
7.5	3-3-4 N=7				73
10	4-5-5 N=10	37.9			
15	4-4-6 N=10	35.3			84
20	5-5-6 N=11	32.7			
25	3-8-22 N=30				
30	27-21-29 N=50				
32	10-33-34 N=67				

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Water level not determined due to mud rotary drilling method

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes
Infiltration test performed at 5 feet bgs

Advancement Method
Mud Rotary; Hollow Stem Auger 6½" ID for upper 5 feet

Abandonment Method
Boring backfilled with Bentonite Chips
Surface Capped with Asphalt

Logged by
C. Stempel

Boring Started
02-26-2024

Boring Completed
02-26-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-04

Location: See Exploration Plan

Latitude: 45.4987° Longitude: -122.6402°

Model Layer	Depth (Ft.)	Material Description	Elevation: 87 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.2	**ASPHALT**, **ASPHALT**, 2 inches thick	86.83								
2	0.5	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular to subangular, brown and gray, moist, 5" thick {base rock}	86.5								
		LEAN CLAY (CL), low to medium plasticity, brown, moist, stiff				X	3-5-5 N=10	27.9			
	5.0		82	5							
		SANDY SILT (ML), nonplastic, brown, moist, medium stiff, fine-grained sand				X	3-3-3 N=6	40.9			
	7.5		79.5								
		SILTY SAND (SM), fine grained, light brown, moist, loose				X	3-4-3 N=7				
				10		X	3-4-3 N=7	25.3			
				15		X	4-4-4 N=8	34.2			
		medium dense		20		X	4-5-5 N=10	30.5			
		grayish brown, medium stiff		25		X	2-3-5 N=8				
	30.0		57	30							
3		**POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM)**, fine to coarse grained, subrounded to subangular, gray and brown, moist, very dense				X	35-33-50 N=83	9.9			
	35.0		52	35							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Notes

Water Level Observations
Water level not determined due to mud rotary drilling method

Advancement Method
Mud Rotary

Abandonment Method
Boring backfilled with Bentonite Chips
Surface Capped with Asphalt

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Logged by
C. Stempel

Boring Started
02-27-2024

Boring Completed
02-27-2024

Boring Log No. B-04

Location: See Exploration Plan

Latitude: 45.4987° Longitude: -122.6402°

Model Layer	Graphic Log	Depth (Ft.) / Material Description / Elevation.: 87 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**SILTY SAND (SM)**, fine to medium grained, brown and gray, moist, medium dense				13-13-14 N=27	26.2			14
			40			13-14-16 N=30	26.1		NP	
		41.3 — 45.75								
4		**LEAN CLAY (CL)**, medium plasticity, bluish gray, moist, stiff to very stiff								
		45.6 with gravel — 41.42	45			20-50/5"				
		POORLY GRADED GRAVEL WITH SAND (GP), fine to coarse grained, angular, gray and yellow, moist, very dense								
		50.5 — 36.5	50			50/5"				
		Boring Terminated at 50.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Notes

Water Level Observations
Water level not determined due to mud rotary drilling method

Advancement Method
Mud Rotary

Abandonment Method
Boring backfilled with Bentonite Chips
Surface Capped with Asphalt

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Logged by
C. Stempel

Boring Started
02-27-2024

Boring Completed
02-27-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-05

Location: See Exploration Plan

Latitude: 45.4986° Longitude: -122.6404°

Depth (Ft.) Elevation.: 87 (Ft.)

Model Layer	Depth (Ft.)	Description	Elevation (Ft.)
1	0.2	**ASPHALT**, 2 inches thick	86.83
1	0.6	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, gray, moist, {base rock}	86.42
1	7.5	**FILL - LEAN CLAY (CL)**, low plasticity, brownish yellow and grayish brown, moist, soft to medium stiff brown, soft medium stiff, brick and concrete fragments	79.5
2	15.0	**LEAN CLAY (CL)**, medium plasticity, light brown, moist, medium stiff stiff	72
2	27.5	**SILT WITH SAND (ML)**, grayish brown, moist, medium stiff, fine grained sand stiff	59.5
3	31.0	**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense	56
3		**POORLY GRADED SAND (SP)**, fine to medium grained, gray and brown, moist, medium dense	

Depth (Ft.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	4-2-2 N=4				
3	1-1-1 N=2	26.9			
5.5	3-3-3 N=6	18.3			
8	2-3-4 N=7	31.9			
10.5	2-4-6 N=10	25.9		36-23-13	
15.5	3-3-3 N=6	15.3			
20.5	4-6-7 N=13	6.1			73
25.5	4-5-5 N=10	15.4			
30.5	26-15-19 N=34	4.6			

Depth scale: 5, 10, 15, 20, 25, 30, 35

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
While drilling

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-16-2024

Boring Completed
02-16-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-05

Location: See Exploration Plan

Latitude: 45.4986° Longitude: -122.6404°

Model Layer	Graphic Log	Depth (Ft.)	Material Description	Elevation: 87 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		40.0	**POORLY GRADED SAND (SP)**, fine to medium grained, gray and brown, moist, medium dense *(continued)*	47				5-5-8 N=13	13.1			
4		41.5	**LEAN CLAY (CL)**, low plasticity, light gray and gray, moist, very stiff	45.5	40			5-6-10 N=16	25.4			
			Boring Terminated at 41.5 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
While drilling

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-16-2024

Boring Completed
02-16-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-06

Location: See Exploration Plan

Latitude: 45.4984° Longitude: -122.6399°

Depth (Ft.) Elevation.: 90 (Ft.)

Model Layer	Depth (Ft.)	Material Description	Elevation	Sample Depth (Ft.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.2	**ASPHALT**, **ASPHALT**, 2 inches thick	89.83						
2	0.5	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular to subangular, brown and gray, moist, 5" thick {base rock}	89.5						
2		**SILTY CLAY (CL-ML)**, low plasticity, brown, moist very soft to soft		2.5	1-0-2 N=2	28.8		26-19-7	
2		medium stiff		5	2-3-3 N=6				90
2		trace fine sand, stiff		7.5	2-4-5 N=9	43.9			
2	10.0		80						
2		**SILT WITH SAND (ML)**, fine, brown, moist, medium stiff		10	2-4-3 N=7	33.9			74
2		stiff		15	4-3-5 N=8	34.9			77
2		trace gravel, medium grained sand fine grained sand		20	5-4-4 N=8	26.0			
2				25	5-6-6 N=12				
2		with gravel, very stiff		30	14-9-8 N=17	8.2			
2	35.0		55						

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Water level not determined due to mud rotary drilling method

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes
Infiltration test performed at 5 feet bgs

Advancement Method
Mud Rotary; Hollow Stem Auger 6½" ID for upper 5 feet

Abandonment Method
Boring backfilled with Bentonite Chips
Surface Capped with Asphalt

Logged by
C. Stempel

Boring Started
02-26-2024

Boring Completed
02-26-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-06

Location: See Exploration Plan

Latitude: 45.4984° Longitude: -122.6399°

Model Layer	Graphic Log	Depth (Ft.) / Description — Elevation.: 90 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subangular to subrounded, gray and brown, moist, medium dense				8-8-15 N=23				
		dense	40			20-15-17 N=32				
		41.5 — 48.5								
		Boring Terminated at 41.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Water level not determined due to mud rotary drilling method

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Mud Rotary; Hollow Stem Auger 6½" ID for upper 5 feet

Abandonment Method
Boring backfilled with Bentonite Chips
Surface Capped with Asphalt

Logged by
C. Stempel

Boring Started
02-26-2024

Boring Completed
02-26-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-07

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6395°

Elevation.: 93 (Ft.)

Model Layer	Depth (Ft.)	Description	Elevation (Ft.)	Sample Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.0–2.5	**FILL - LEAN CLAY (CL)**, low plasticity, gray brown, moist, soft to medium stiff	90.5	0–1.5		Split spoon	2-2-2 N=4				
2	2.5–10.0	**LEAN CLAY (CL)**, low plasticity, light brown, moist, medium stiff	83	2.5–4		Split spoon	2-1-3 N=4	37.9		41-24-17	
				5–7		Shelby tube		37.5	79		
				7.5–9		Split spoon	1-2-3 N=5				
	10.0–20.0	**SILT WITH SAND (ML)**, nonplastic, light brown, moist, medium stiff	73	10–11.5		Split spoon	2-3-4 N=7	15.1			72
				15–16.5		Split spoon	2-2-3 N=5	18.7		NP	
	20.0–30.0	**SILTY SAND (SM)**, brown, moist, loose		20–21.5		Split spoon	3-4-5 N=9	12.0			34
		medium dense	63	25–26.5		Split spoon	5-6-8 N=14	14.6			
3	30.0–	**POORLY GRADED GRAVEL WITH SAND (GP)**, gray brown, moist, dense		30–31.5		Split spoon	17-22-23 N=45				

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Logged by
Y. Yohannes

Boring Started
02-17-2024

Boring Completed
02-17-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-07

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6395°

Depth (Ft.) Elevation.: 93 (Ft.)

Model Layer	Description	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3	**POORLY GRADED GRAVEL WITH SAND (GP)**, gray brown, moist, dense *(continued)*			X	12-13-10 N=23	8.0			
	medium dense								
	wet, dense	40		X	8-22-20 N=42				
	45.0 — 48	45							
	POORLY GRADED SAND WITH GRAVEL (SP), coarse grained, grayish brown, wet, very dense			X	18-39-16 N=55	14.0			
	fine to coarse grained, orange gray and brown, wet, medium dense	50		X	10-17-12 N=29				
	51.5 — 41.5								
	Boring Terminated at 51.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Groundwater not encountered

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
02-17-2024

Boring Completed
02-17-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-08

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6384°

Elevation.: 98 (Ft.)

Model Layer	Depth (Ft.)	Description	Elevation (Ft.)
1	0.3	**CONCRETE**, 3 inches thick	97.75
1	0.7	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, gray, moist, 5" thick {base rock}	97.33
1	5.0	**FILL - LEAN CLAY (CL)**, low plasticity, brown and reddish brown, moist, stiff, mottled	93
2	7.5	**LEAN CLAY (CL)**, low plasticity, brown, moist, medium stiff	90.5
2	15.0	**SILT WITH SAND (ML)**, low plasticity, brown, moist, stiff	83
2	20.0	**SANDY SILT (ML)**, nonplastic, light brown, moist, medium stiff, fine grained sand	78
2	25.0	**SILT (ML)**, trace sand, nonplastic, grayish brown, moist, medium stiff, fine grained sand	73
2	26.3	**SANDY SILT (ML)**, nonplastic, grayish brown, moist, medium stiff, fine grained sand	71.75
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense very dense	

Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
12-5-4 N=9				
2-3-3 N=6	40.6			
3-5-5 N=10	33.7		34-27-7	
	29.7	81	39-32-7	
3-3-3 N=6	28.6			
3-3-4 N=7	31.8			
4-5-27 N=32	6.1			
24-29-26 N=55	9.6			

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Notes

Water Level Observations
Water level not determined due to mud rotary drilling method

Advancement Method
Mud Rotary

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with concrete

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Logged by
D. Dunn

Boring Started
02-17-2024

Boring Completed
02-17-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-08

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6384°

Model Layer	Graphic Log	Depth (Ft.)	Description	Elevation.: 98 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3			**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense *(continued)*				X	22-35-32 N=67	8.5			
		38.5		59.5								
4			**LEAN CLAY (CL)**, medium plasticity, gray, moist, stiff		40		X	3-5-4 N=9	31.1			
			very stiff		45		X	5-9-15 N=24	35.3		43-25-18	
		46.5		51.5								

Boring Terminated at 46.5 Feet

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Water level not determined due to mud rotary drilling method

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Mud Rotary

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with concrete

Logged by
D. Dunn

Boring Started
02-17-2024

Boring Completed
02-17-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-09

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6377°

Elevation.: 105 (Ft.)

Model Layer	Depth (Ft.)	Description	Elevation (Ft.)
1	2.5	**FILL - LEAN CLAY (CL)**, medium plasticity, brown, moist, soft, orange mottling, some rootlets	102.5
2	10.0	**LEAN CLAY (CL)**, medium plasticity, brown, moist, soft	95
2	15.0	**SILT WITH SAND (ML)**, low plasticity, light brown, moist, medium stiff, fine grained sand	90
2	30.0	**SANDY SILT (ML)**, light brown, dry to moist, stiff, fine grained sand; medium stiff	75
2	35.0	**POORLY GRADED SAND (SP)**, fine grained, yellowish brown, moist, loose, trace silt	70

Depth (Ft.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
	4-2-3 N=5				
	1-1-2 N=3				
5	1-2-2 N=4	42.2		43-23-20	
		36.7	80		
10	2-3-3 N=6	38.5			
15	3-3-5 N=8	21.4			65
20	3-4-5 N=9	23.9			
25	3-3-4 N=7	21.0			
30	3-3-5 N=8	8.2			
35					

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
At completion of drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-03-2024

Boring Completed
03-03-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-09

Location: See Exploration Plan

Latitude: 45.4990° Longitude: -122.6377°

Elevation.: 105 (Ft.)

Model Layer	Graphic Log	Depth (Ft.) / Description	Elevation (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, coarse grained, gray brown, moist, dense				X	15-17-17 N=34				
		40.0	65	40							
4		**SILTY CLAY (CL-ML)**, low plasticity, greenish gray, moist, very stiff, trace fine grained sand				X	3-5-15 N=20	20.6		25-18-7	
		45.0	60	45							
		POORLY GRADED GRAVEL WITH SAND (GP), fine to coarse grained, subangular to subrounded, gray brown and red, wet, very dense				X	48-50/5"				
		50.8	54.25	50	▽	X	41-50/3"				

Boring Terminated at 50.75 Feet

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
▽ At completion of drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-03-2024

Boring Completed
03-03-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-10

Location: See Exploration Plan

Latitude: 45.4986° Longitude: -122.6380°

Model Layer	Depth (Ft.)	Description	Elevation.: 105 (Ft.)
1	0.4	**CONCRETE**, 5" thick	104.58
1	0.9	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, gray, moist, 5" thick base rock	104.08
1	2.5	**FILL - LEAN CLAY (CL)**, low plasticity, brown, moist, medium stiff	102.5
2	10.0	**FAT CLAY (CH)**, medium plasticity, brown, moist, soft; medium stiff	95
2	15.0	**LEAN CLAY (CL)**, medium plasticity, brown, moist, medium stiff	90
2	17.0	**SILTY SAND (SM)**, fine grained, brown	88
2	33.0	**SILT (ML)**, low plasticity, brown, moist, stiff, trace fine grained sand	72
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense	

Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
5-3-2 N=5	24.2			
1-2-2 N=4	24.8			
	38.9	77	51-28-23	
1-2-3 N=5	40.4			
0-2-3 N=5	35.0			
	29.7	78	NP	
2-4-5 N=9	28.8			
4-5-5 N=10	28.9		27-23-4	
5-4-6 N=10	22.5			
5-5-4 N=9	30.0			

Depth (Ft.): 5, 10, 15, 20, 25, 30, 35

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Water level not determined due to mud rotary drilling method

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Mud Rotary

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with concrete

Logged by
D. Dunn

Boring Started
02-17-2024

Boring Completed
02-17-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-10

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 45.4986° Longitude: -122.6380° Depth (Ft.) Elevation.: 105 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, dense *(continued)*				17-23-17 N=40	9.4			
		very dense	40			23-28-32 N=60	10.8			
		41.5 63.5								
		Boring Terminated at 41.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Water level not determined due to mud rotary drilling method

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Mud Rotary

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with concrete

Logged by
D. Dunn

Boring Started
02-17-2024

Boring Completed
02-17-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-12

Location: See Exploration Plan

Latitude: 45.4980° Longitude: -122.6380°

Elevation.: 110 (Ft.)

Model Layer	Depth (Ft.)	Material Description	Elevation (Ft.)
1	0.2	**ASPHALT**, 2" thick	109.83
1	0.7	**FILL - POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, angular, gray, moist, 5" thick base rock	109.33
1	2.5	**FILL - SILT (ML)**, low plasticity, brownish gray and brown, moist, stiff	107.5
2	7.5	**SILT (ML)**, low plasticity, light brown, moist, medium stiff	102.5
2	15.0	**LEAN CLAY (CL)**, medium plasticity, light brown, moist, stiff; grayish brown	95
2	20.0	**SILTY SAND (SM)**, light brown, moist, loose	90
2		**SANDY SILT (ML)**, nonplastic, light brown, moist, stiff, fine grained sand	

Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3-4-5 N=9				
3-2-3 N=5				
	16.1	79	NP	
4-4-7 N=11				
4-5-6 N=11	28.4		37-22-15	
2-3-4 N=7	25.3		NP	
2-3-6 N=9	26.6			
3-4-7 N=11	18.2			70
3-6-8 N=14	20.6			

Depth (Ft.): 5, 10, 15, 20, 25, 30, 35

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
At completion of drilling

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-18-2024

Boring Completed
02-28-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-12

Location: See Exploration Plan

Latitude: 45.4980° Longitude: -122.6380°

Model Layer	Graphic Log	Depth (Ft.) / Description / Elevation.: 110 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
2		**SANDY SILT (ML)**, nonplastic, light brown, moist, stiff, fine grained sand *(continued)* gray with brown, brownish-yellow, very stiff			X	3-7-8 N=15	24.3			65
		38.0 — 72		▽						
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subrounded, gray and brown, moist, very dense	40		X	17-32-34 N=66	4.4			
		41.5 — 68.5								
		Boring Terminated at 41.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
▽ At completion of drilling

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Western States

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
D. Dunn

Boring Started
02-18-2024

Boring Completed
02-28-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-13

Location: See Exploration Plan

Latitude: 45.4981° Longitude: -122.6388°

Elevation.: 102 (Ft.)

Model Layer	Depth (Ft.)	Description	Elevation (Ft.)
1	0.5	**CONCRETE**, 6 inches thick	101.5
1	7.5	**FILL - SILTY SAND (SM)**, fine to coarse grained, brown, moist, medium dense loose	94.5
2	10.0	**LEAN CLAY (CL)**, low plasticity, light brown, moist, medium stiff	92
2	15.0	**SILT (ML)**, low plasticity, light brown, dry to moist, medium stiff	87
2	35.0	**SANDY SILT (ML)**, low plasticity, light brown, dry, stiff, fine grained sand yellowish brown, very stiff, fine to medium grained sand	67

Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
0.5–2		Split spoon	8-4-6 N=10				
2.5–4		Split spoon	2-3-3 N=6				
5–7		Solid (black)					
7.5–9		Split spoon	1-3-3 N=6	29.6			
10–11.5		Split spoon	3-3-4 N=7	18.6			
15–16.5		Split spoon	3-5-4 N=9	11.6			
20–21.5		Split spoon	3-4-4 N=8	6.1			61
25–26.5		Split spoon	4-6-6 N=12	6.6			
30–31.5		Split spoon	5-7-9 N=16	12.1			

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Groundwater not encountered

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-02-2024

Boring Completed
03-02-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-13

Location: See Exploration Plan

Latitude: 45.4981° Longitude: -122.6388°

Depth (Ft.) Elevation.: 102 (Ft.)

Model Layer	Graphic Log	Material Description	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, brown gray, moist, dense				7-18-30 N=48				
		40.0 — 62	40							
		POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC), coarse grained, gray brown, wet, very dense				27-30-33 N=63	9.6			
		45.0 — 57	45							
4		**LEAN CLAY (CL)**, low plasticity, greenish gray, moist, very stiff				4-7-11 N=18	30.7		31-21-10	
		dark gray, stiff	50			4-6-7 N=13				
		51.5 — 50.5								

Boring Terminated at 51.5 Feet

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
Groundwater not encountered

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-02-2024

Boring Completed
03-02-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-14

Location: See Exploration Plan

Latitude: 45.4983° Longitude: -122.6395°

Elevation.: 92 (Ft.)

Model Layer	Depth (Ft.)	Material Description	Elevation	Sample Depth (Ft.)	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1		**FILL - LEAN CLAY (CL)**, low to medium plasticity, brown, moist, soft		0-1.5	Split spoon	2-1-2 N=3				
	2.5		89.5							
2		**SILT WITH SAND (ML)**, nonplastic, brown, moist, medium stiff		2.5-4	Split spoon	2-3-4 N=7				
				5-7	Shelby tube		37.3	80		
	7.5		84.5							
		SILT (ML), nonplastic, light brown, moist, medium stiff		7.5-9	Split spoon	1-3-4 N=7				
	10.0		82							
		SILT WITH SAND (ML), nonplastic, light brown, dry to moist, medium stiff		10-11.5	Split spoon	1-3-3 N=6	18.3			80
				15-16.5	Split spoon	2-3-4 N=7	14.6			
		fine to coarse grained, yellowish brown, stiff		20-21.5	Split spoon	3-4-6 N=10	14.9			
				25-26.5	Split spoon	2-4-5 N=9				
	30.0		62							
3		**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, subangular to subrounded, gray brown, moist, dense		30-31.5	Split spoon	19-19-19 N=38				
	35.0		57							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
At completion of drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-02-2024

Boring Completed
03-02-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-14

Location: See Exploration Plan

Latitude: 45.4983° Longitude: -122.6395°

Elevation.: 92 (Ft.)

Model Layer	Graphic Log	Depth (Ft.) / Material Description / Elevation (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
3		**POORLY GRADED SAND (SP)**, fine to coarse grained, yellowish brown, moist, medium dense			X	8-11-15 N=26	7.9			
		wet	40	▽	X	4-7-14 N=21	34.5			
		light brown, dense	45		X	10-19-20 N=39	25.7			
		51.0 … 41	50		X	7-6-4 N=10				
4		51.5 **LEAN CLAY (CL)**, medium plasticity, greenish gray, wet, stiff … 40.5								
		Boring Terminated at 51.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
▽ At completion of drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-02-2024

Boring Completed
03-02-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-15

Location: See Exploration Plan

Latitude: 45.4982° Longitude: 122.6332°

Depth (Ft.) | Elevation.: 120 (Ft.)

Model Layer	Depth (Ft.)	Description	Elevation (Ft.)	Water Level Observations	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	0.0–7.5	**FILL - LEAN CLAY (CL)**, medium plasticity, brown, moist, soft, orange mottling, some rootlets	120–112.5		0-0-2 N=2				
					0-0-0 N=0				
2	7.5–15.0	**LEAN CLAY (CL)**, low plasticity, brown, moist, very soft	112.5–105		0-0-0 N=0				
					0-0-0 N=0	34.5		31-22-9	
2	15.0–20.0	**CLAYEY SAND (SC)**, medium plasticity, greenish gray, moist, very loose	105–100		0-0-3 N=3	35.8			49
2	20.0–30.0	**SANDY SILT (ML)**, greenish gray, wet, medium stiff	100–90		2-4-5 N=9	27.4			57
		light brownish yellow, wet, medium dense		▽ (approx. 26 ft, while drilling)	4-8-8 N=16				
2	30.0–35.0	**LEAN CLAY (CL)**, medium plasticity, light yellowish brown, wet, medium stiff	90–85		2-2-3 N=5	31.5		32-19-13	

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
▽ While drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-01-2024

Boring Completed
03-02-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-15

Location: See Exploration Plan

Latitude: 45.4982° Longitude: 122.6332°

Elevation.: 120 (Ft.)

Model Layer	Graphic Log	Depth (Ft.) / Description	Elevation (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
2		**SANDY SILT (ML)**, low plasticity, yellow and orangish brown, wet, stiff, fine grained sand				X	3-4-7 N=11				
		40.0	80	40							
3		**POORLY GRADED SAND WITH SILT (SP-SM)**, fine to coarse grained, yellowish brown, wet, medium dense				X	4-10-11 N=21				
		dense		45		X	12-19-19 N=38	6.4			11
		dark yellowish brown		50		X	6-16-19 N=35				
		51.5	68.5								

Boring Terminated at 51.5 Feet

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
While drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-01-2024

Boring Completed
03-02-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-16

Location: See Exploration Plan

Latitude: 45.4975° Longitude: -122.6333°

Depth (Ft.) Elevation.: 120 (Ft.)

Model Layer	Depth (Ft.) / Description	Elevation	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1	**FILL - LEAN CLAY (CL)**, medium to high plasticity, brown, moist, soft				0-0-2 N=2				
	2.5	117.5							
2	**SILTY CLAY (CL-ML)**, low plasticity, dark brown, moist, soft				0-1-2 N=3	29.3			
	very soft				0-0-0 N=0	27.0		29-22-7	
	yellowish brown, medium stiff				1-3-4 N=7				
						29.1	93		
	15.0	105							
	SANDY LEAN CLAY (CL), low plasticity, yellowish brown, moist, medium stiff, fine grained sand				3-4-4 N=8				
	soft				2-2-1 N=3	34.4			
	25.0	95	▽						
	POORLY GRADED SAND WITH SILT (SP-SM), fine grained, brown, wet, medium dense				5-5-6 N=11				
	loose				4-4-4 N=8				
	35.0	85							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
▽ At completion of drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-01-2024

Boring Completed
03-02-2024

Terracon
700 NE 55th Ave
Portland, OR

Boring Log No. B-16

Location: See Exploration Plan

Latitude: 45.4975° Longitude: -122.6333°

Model Layer	Graphic Log	Depth (Ft.) / Material Description / Elevation.: 120 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
2		**LEAN CLAY (CL)**, medium to high plasticity, gray, wet, very stiff			X	5-9-13 N=22	23.4		38-20-18	
		40.0 — 80	40							
3		**SILTY SAND (SM)**, fine grained, yellowish brown, wet, medium dense			X	9-10-14 N=24	20.8			19
			45		X	9-10-11 N=21				
		dense	50		X	13-16-17 N=33	26.1			
		medium dense	55		X	11-11-11 N=22				
		greenish gray	60		X	7-4-6 N=10				
		61.5 — 58.5								
		Boring Terminated at 61.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations were interpolated from Google Earth Pro

Water Level Observations
At completion of drilling

Drill Rig
Geoprobe 312GT

Hammer Type
Automatic

Driller
Terracon

Notes
* Due to water level, HSA methods may understate N-values due to disturbance

Advancement Method
Hollow Stem Auger 4¼" ID

Abandonment Method
Backfilled with auger cuttings/bentonite chips, base rock, capped with asphalt

Logged by
Y. Yohannes

Boring Started
03-01-2024

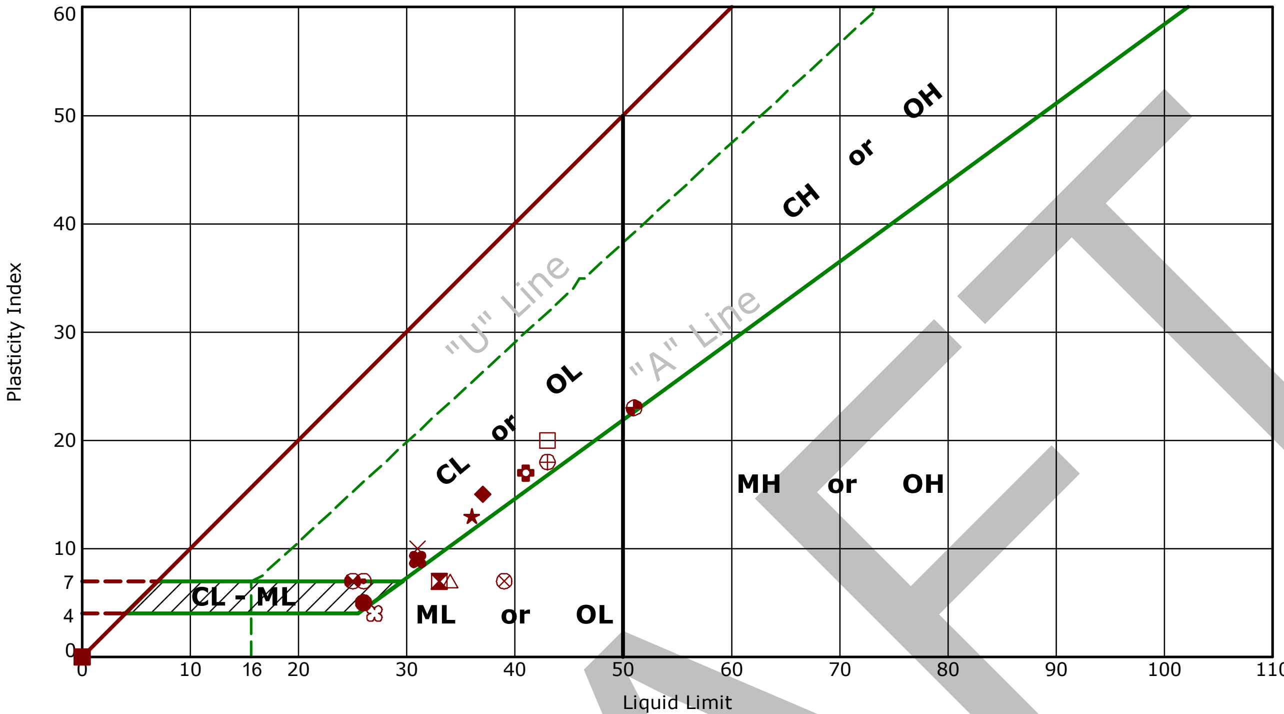
Boring Completed
03-02-2024

Cleveland High School
3400 SE 26th Avenue | Portland, OR
Terracon Project No. 82245002

Terracon
700 NE 55th Ave
Portland, OR

Atterberg Limit Results

ASTM D4318

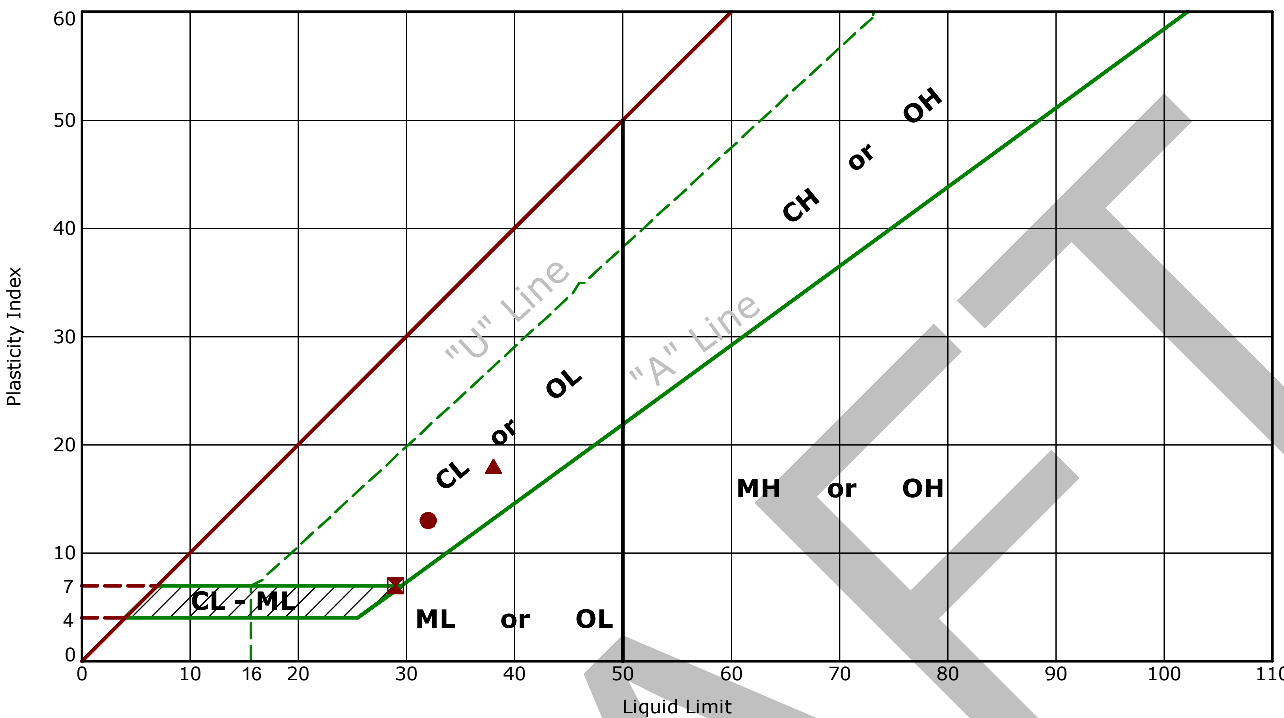


	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
	B-01	40 - 41.5	26	21	5		CL-ML	Silty Clay
	B-02	25 - 26.5	33	26	7		ML	Silt
	B-04	40 - 41.5	NP	NP	NP		SM	Silty Sand
	B-05	10 - 11.5	36	23	13		CL	Lean Clay
	B-06	2.5 - 4	26	19	7		CL-ML	Silty Clay
	B-07	2.5 - 4	41	24	17		CL	Lean Clay
	B-07	15 - 16.5	NP	NP	NP		ML	Silt with Sand
	B-08	7.5 - 9	34	27	7		ML	Silt with Sand
	B-08	10 - 12	39	32	7		ML	Silt with Sand
	B-08	45 - 46.5	43	25	18		CL	Lean Clay
	B-09	5 - 6.5	43	23	20		CL	Lean Clay
	B-09	40 - 41.5	25	18	7		CL-ML	Silty Clay
	B-10	5 - 7	51	28	23		CH	Fat Clay
	B-10	15 - 17	NP	NP	NP		SM	Silty Sand
	B-10	20 - 21.5	27	23	4		ML	Silt
	B-12	5 - 7	NP	NP	NP		ML	Silt
	B-12	10 - 11.5	37	22	15		CL	Lean Clay
	B-12	15 - 16.5	NP	NP	NP		SM	Silty Sand
	B-13	45 - 46.5	31	21	10		CL	Lean Clay
	B-15	10 - 11.5	31	22	9		CL	Lean Clay

Terracon
700 NE 55th Ave
Portland, OR

Atterberg Limit Results

ASTM D4318

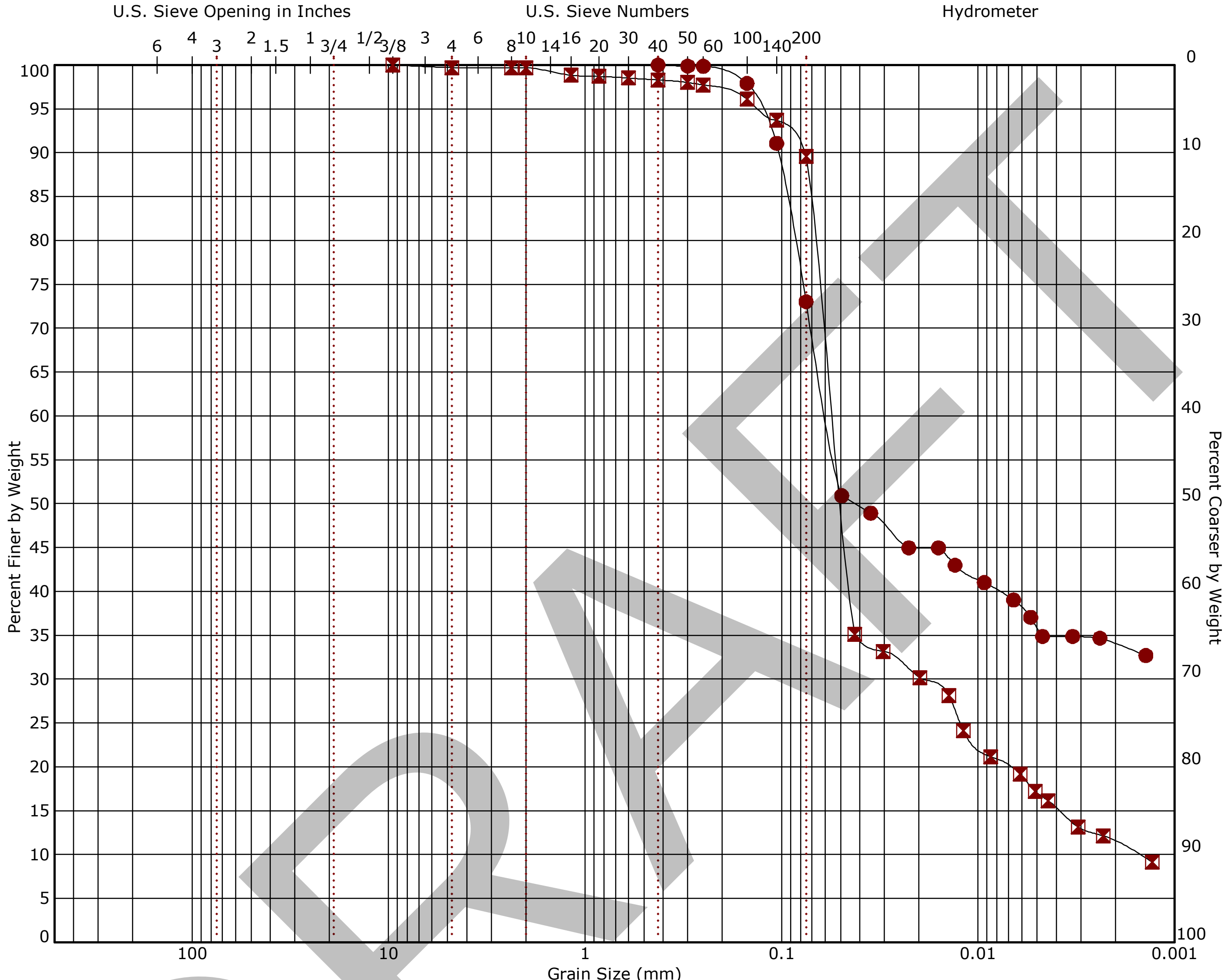


	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B-15	30 - 31.5	32	19	13		CL	Lean Clay
⊠	B-16	5 - 6.5	29	22	7		CL-ML	Silty Clay
▲	B-16	35 - 36.5	38	20	18		CL	Lean Clay

Terracon
700 NE 55th Ave
Portland, OR

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID	Depth (Ft)	Description		LL	PL	PI	Cc	Cu
● B-03	7.5 - 9	Silt with Sand						
⊠ B-06	5 - 6.5	Silty Clay					4.40	35.89

Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{50}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
● B-03	7.5 - 9	0.425	0.059	0.042			0.0	0.0	27.0		37.2	35.8
⊠ B-06	5 - 6.5	9.5	0.055	0.049	0.019	0.002	0.0	0.3	10.1		72.6	17.0

Infiltration Testing Results

Cleveland High School | Portland, Multnomah County, Oregon

Test Date: February 26, 2024 | Terracon Project No. 82245002

Project	Cleveland High School	Date	2/26/2024	Exploration Number	B-3
Test Method	2020 City of Portland Stormwater Management Manual Section 2.3.2.3 Encased Test				
Inner Diameter of Pipe	6 inches	Infiltration Test Depth	5 ft	Approximate Test Elevation[1]	85 ft
Soil at infiltration test depth	Brown Lean Clay				
Presaturation Start Time	8:55 AM	Presaturation Notes	No drop during presaturation		
Presaturation End Time	9:55 AM				
Head During Presaturation	12 inches				

Time	Time Interval (Minutes)	Measurement[2] (inches)	Drop in Water level (inches)	Infiltration Rate[3] (inches per hour)	Remarks
10:00 AM		46	---		
10:10 AM	10	46	0	0	
10:20 AM	10	46	0	0	
10:30 AM	10	46	0	0	
10:40 AM	10	46	0	0	
10:50 AM	10	46	0	0	
11:00 AM	10	46	0	0	
11:10 AM	10	46	0	0	
11:20 AM	10	46	0	0	

1 Elevation interpolated from Google Earth Pro

2 Measured to nearest 1/8 inch from top of pipe

3 Values calculated are raw (unfactored) rates.

Infiltration Testing Results
Cleveland High School | Portland, Multnomah County, Oregon
Test Date: February 26, 2024 | Terracon Project No. 82245002

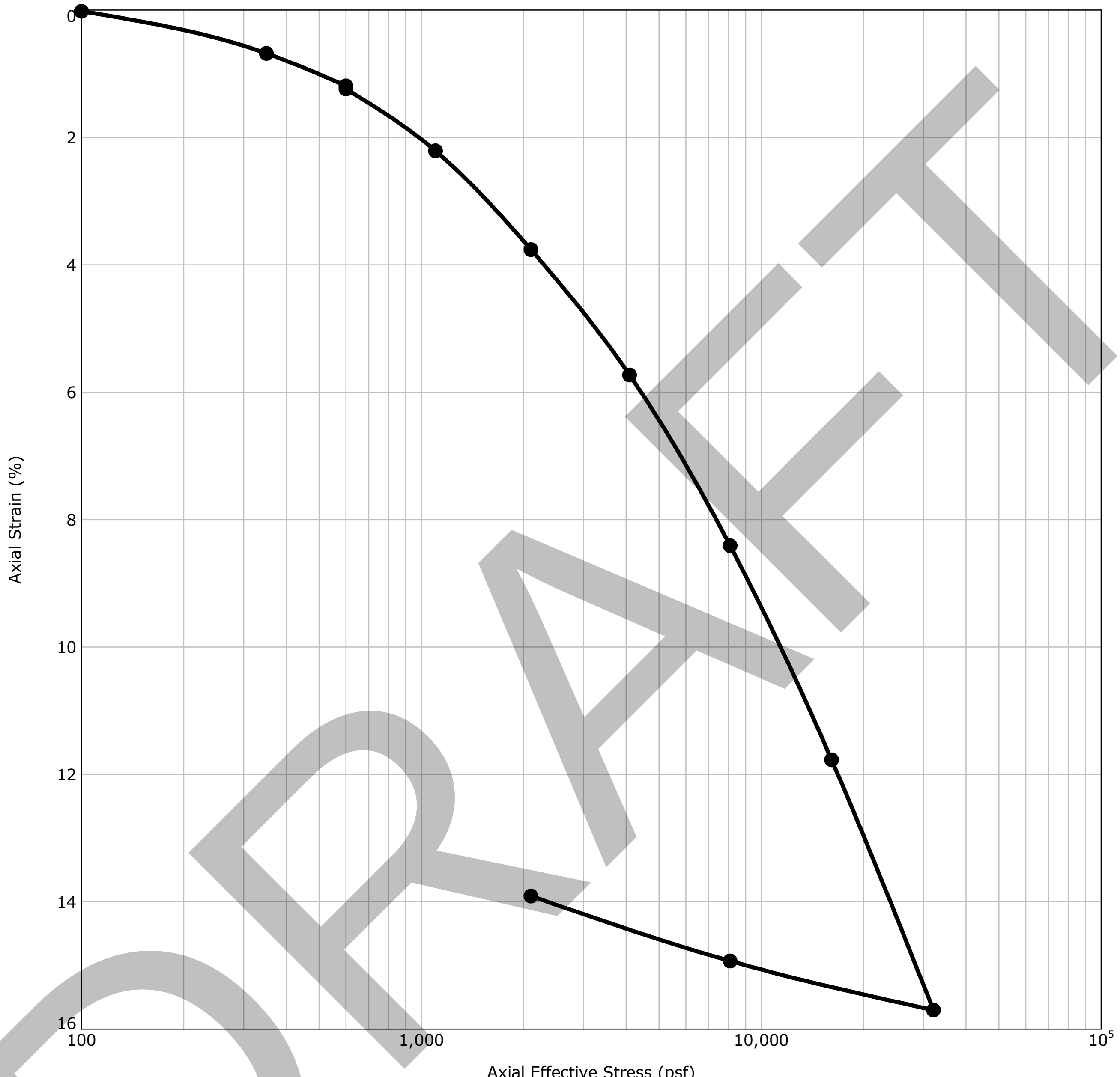
Project	Cleveland High School	Date	2/26/2024	Exploration Number	B-6
Test Method	2020 City of Portland Stormwater Management Manual Section 2.3.2.3 Encased Test				
Inner Diameter of Pipe	6 inches	Infiltration Test Depth	5 ft	Approximate Test Elevation[1]	85 ft
Soil at infiltration test depth	Brown Lean Clay				
Presaturation Start Time	12:40 PM	Presaturation Notes	No drop during presaturation		
Presaturation End Time	1:40 PM				
Head During Presaturation	12 inches				

Time	Time Interval (Minutes)	Measurement[2] (inches)	Drop in Water level (inches)	Infiltration Rate[3] (inches per hour)	Remarks
1:40 PM		50	---		
1:50 PM	10	50	0	0	
2:00 PM	10	50	0	0	
2:10 PM	10	50	0	0	
2:20 PM	10	50	0	0	
2:30 PM	10	50	0	0	
2:40 PM	10	50	0	0	
2:50 PM	10	50	0	0	
3:00 PM	10	50	0	0	
3:10 PM	10	50	0	0	

1 Elevation interpolated from Google Earth Pro
2 Measured to nearest 1/8 inch from top of pipe
3 Values calculated are raw (unfactored) rates.

One-Dimensional Consolidation Test

ASTM D2435



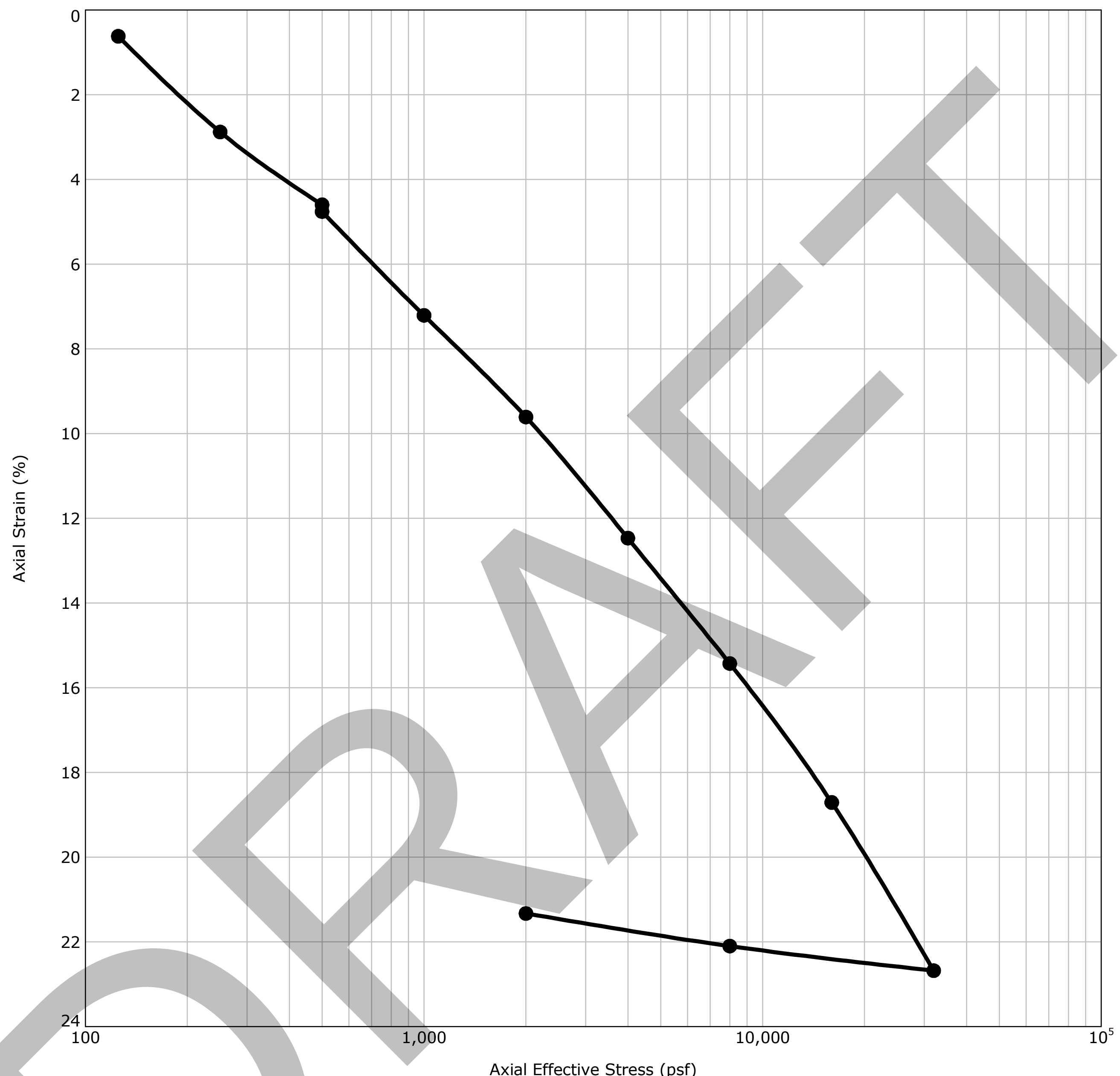
Boring ID	Depth (Ft)	Specimen #	Material Description	USCS	AASHTO
B-08	2.5 - 4.5	S-2	Lean Clay Fill	CL	

Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation (%)	Moisture (%)									
87.3	31.0	86.0			2.70	1000	3,046	13.114	1.511	0.959

Notes: Saturation and the initial void ratio are calculated using an assumed specific gravity. The Casagrande Method was used to estimate Pc. Sample indundated at 500 psf.

One-Dimensional Consolidation Test

ASTM D2435



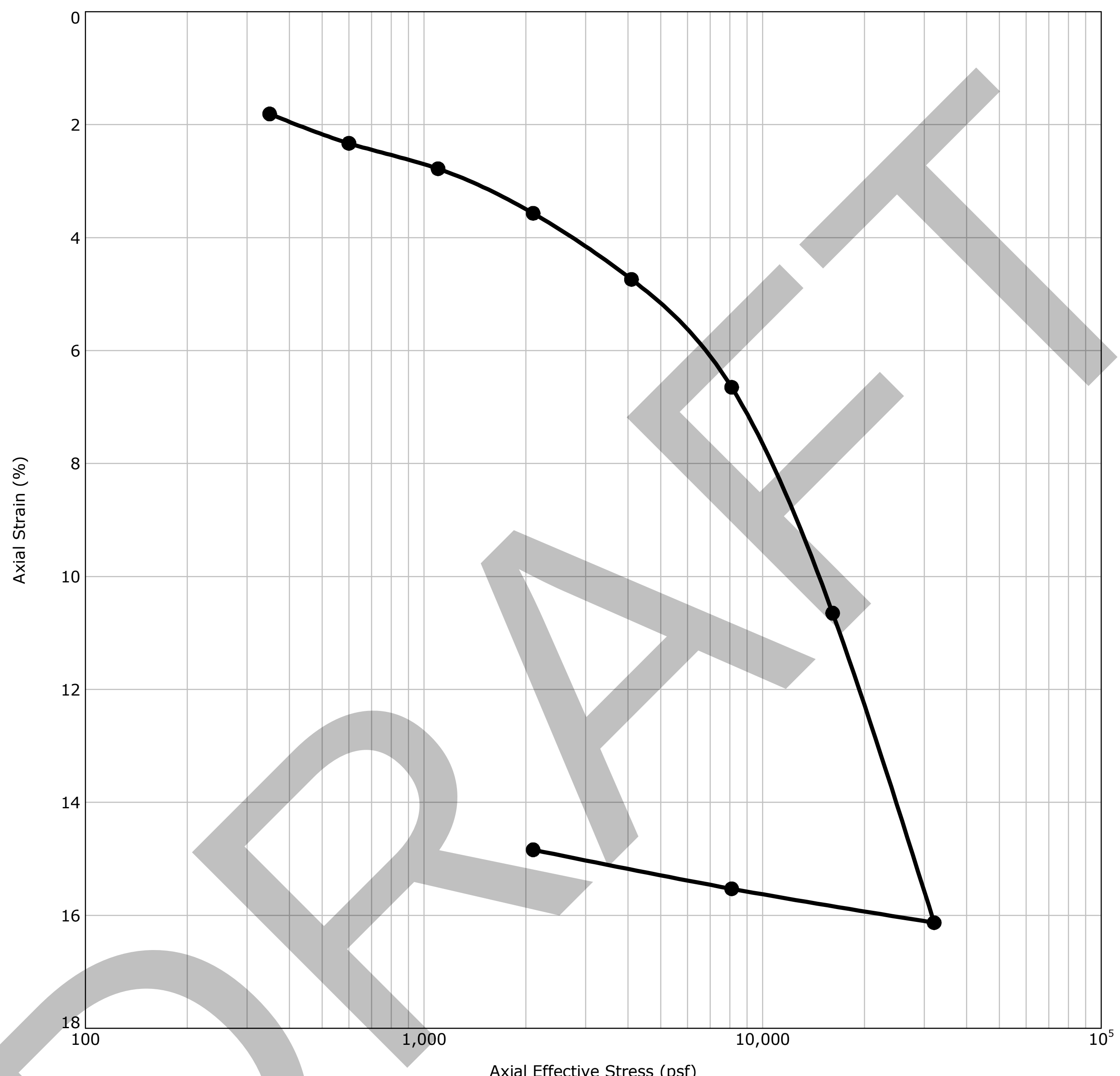
Boring ID	Depth (Ft)	Specimen #	Material Description	USCS	AASHTO
B-08	10 - 12	S-5	Silt with Sand	ML	

Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation (%)	Moisture (%)									
66.4	32.3	72.9	39	7	2.70	812	1,545	13.188	1.121	1.313

Notes: Saturation and the initial void ratio are calculated using an assumed specific gravity. The Casagrande Method was used to estimate Pc. Sample indundated at 500 psf.

One-Dimensional Consolidation Test

ASTM D2435



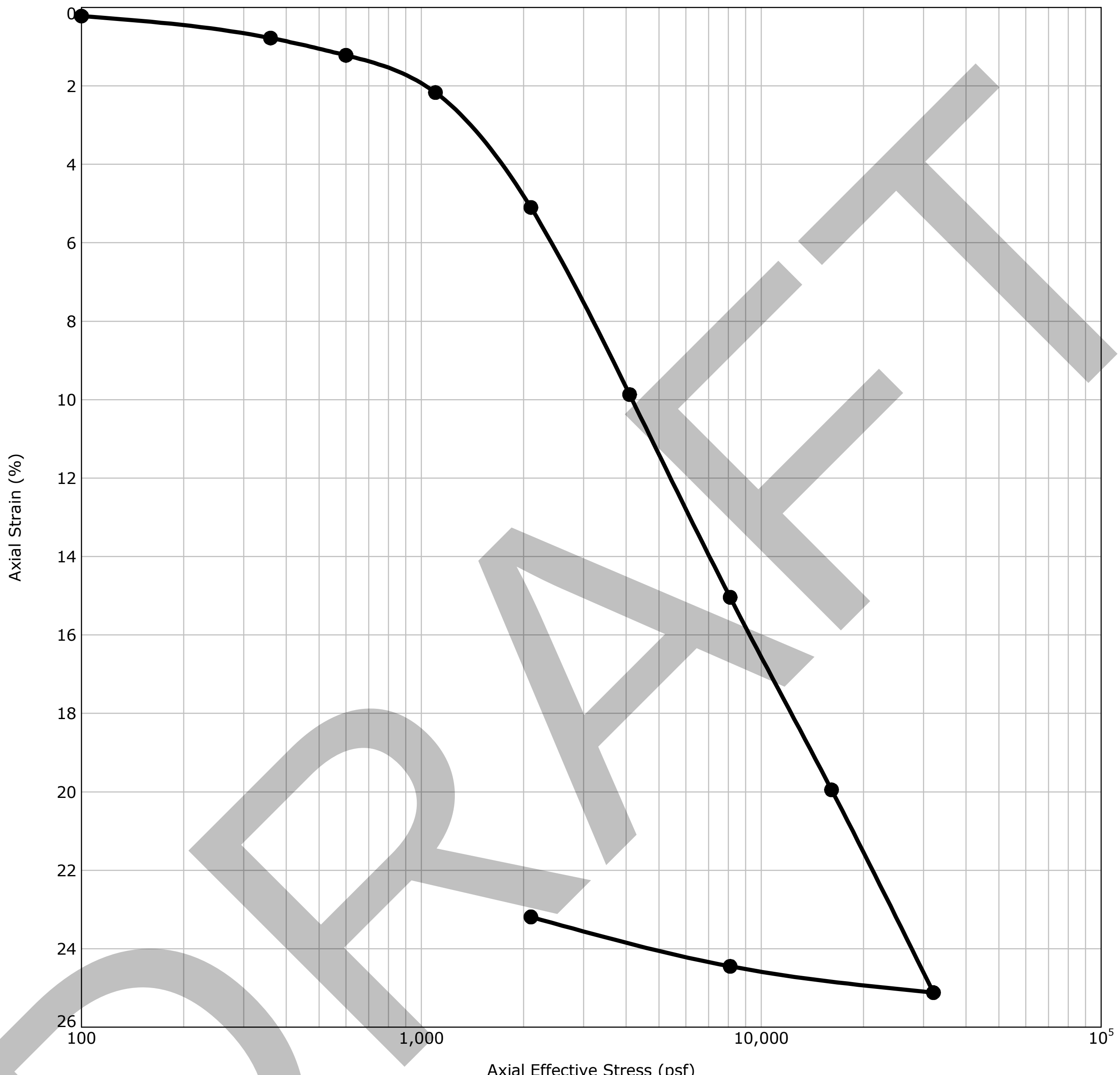
Boring ID	Depth (Ft)	Specimen #	Material Description	USCS	AASHTO
B-09	7.5 - 9.5	S4	Lean Clay	CL	

Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation (%)	Moisture (%)									
89.3	34.3	82.8			2.70	750	6,673	18.286	1.089	1.035

Notes: Saturation and the initial void ratio are calculated using an assumed specific gravity. The Casagrande Method was used to estimate Pc. Sample indundated at 500 psf. Seating adjustment - revised to seating load of 350psf

One-Dimensional Consolidation Test

ASTM D2435



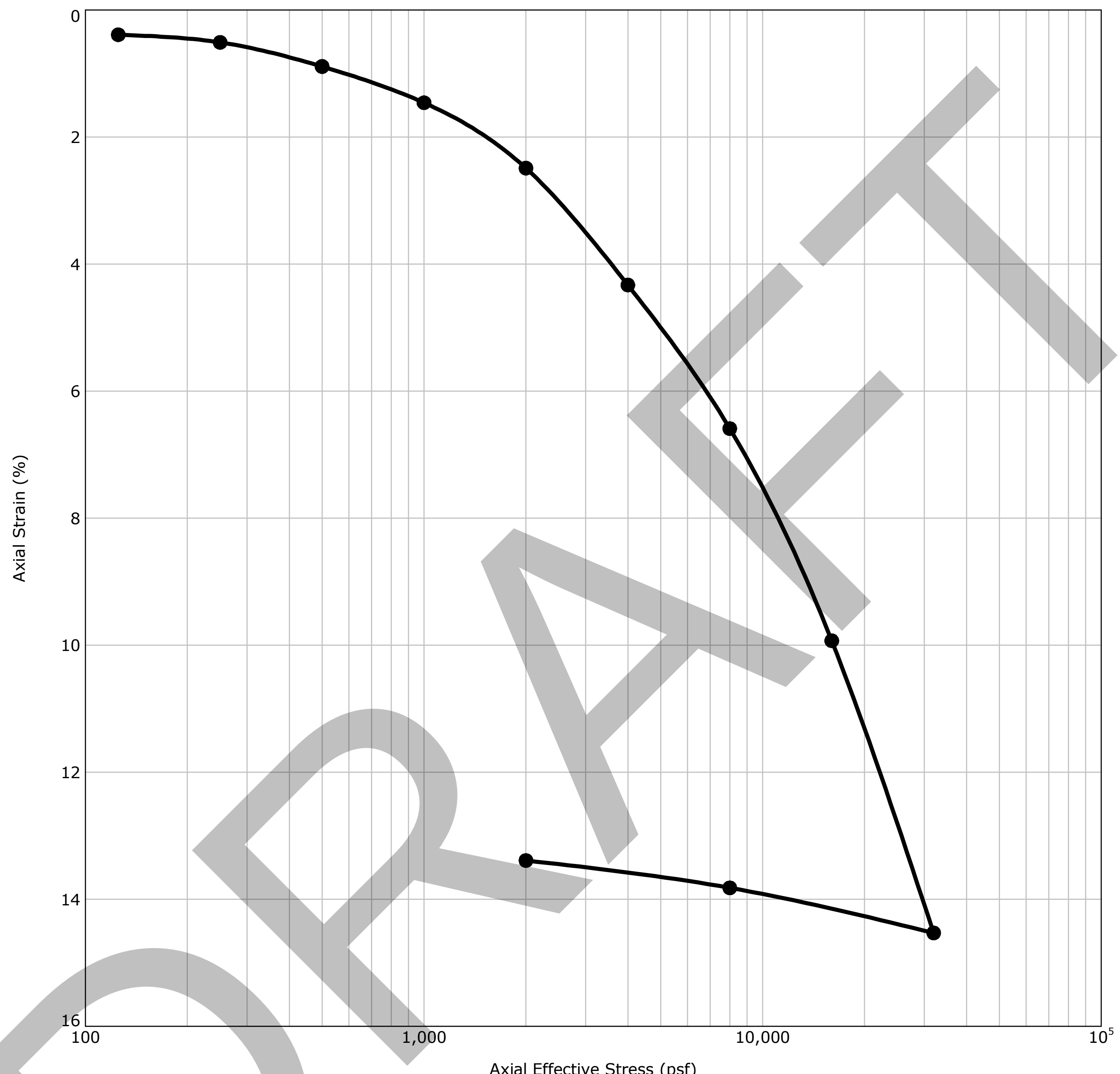
Boring ID	Depth (Ft)	Specimen #	Material Description	USCS	AASHTO
B-10	5 - 7	S-3	Fat Clay	CH	

Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation (%)	Moisture (%)									
74.0	36.0	72.8	51	23	2.70	500	1,551	17.252	1.628	1.314

Notes: Saturation and the initial void ratio are estimated using an assumed specific gravity. The Casagrande Method was used to estimate Pc.
Sample was inundated at 500 psf

One-Dimensional Consolidation Test

ASTM D2435



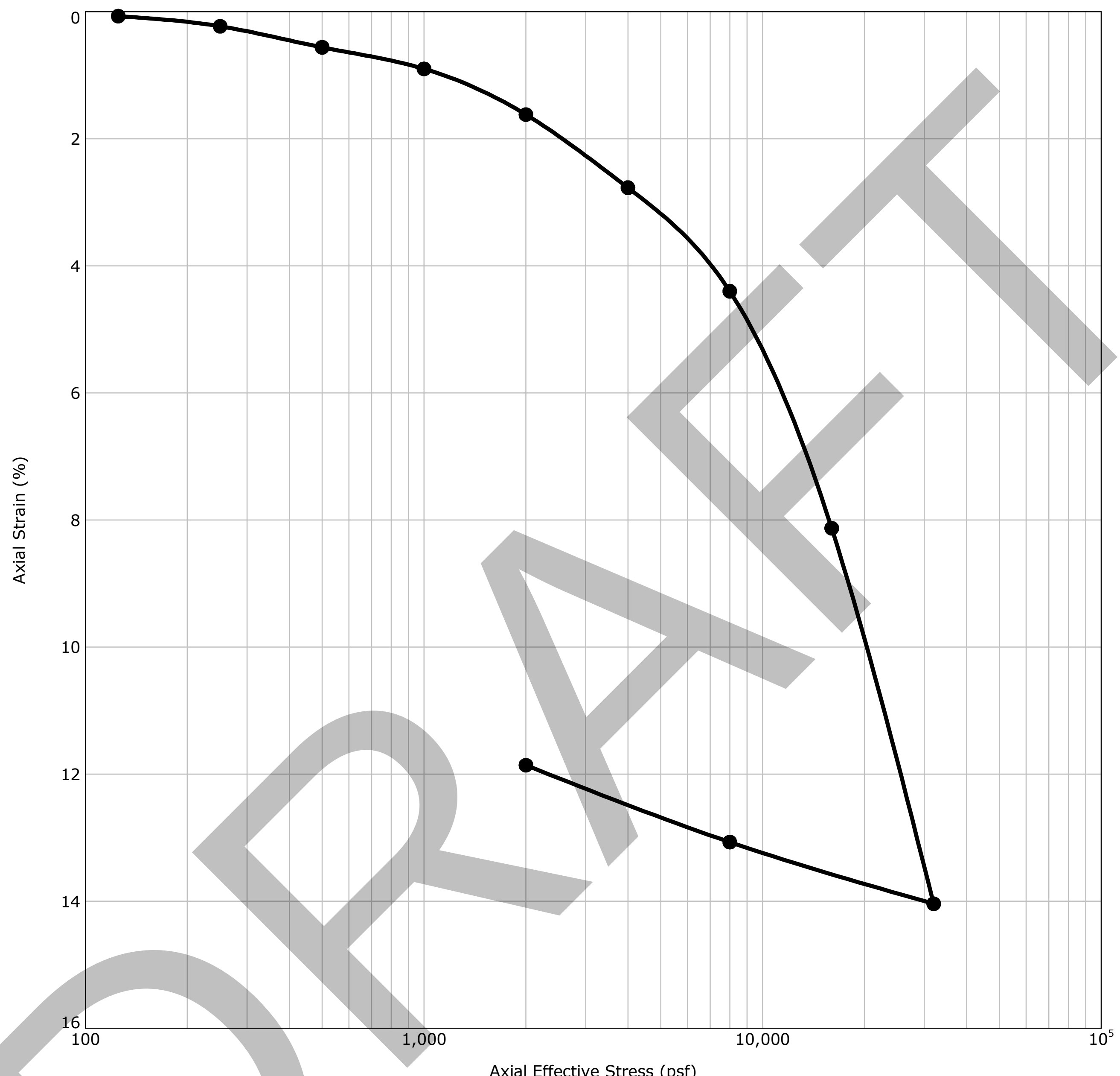
Boring ID	Depth (Ft)	Specimen #	Material Description	USCS	AASHTO
B-10	15 - 17	S-6	Silty Sand	SM	

Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation (%)	Moisture (%)									
73.3	30.4	79.5	NP	NP	2.70	1500	5,254	15.281	0.947	1.121

Notes: Saturation and the initial void ratio are estimated using an assumed specific gravity. The Casagrande Method was used to estimate Pc.
Sample was inundated at 500 psf

One-Dimensional Consolidation Test

ASTM D2435



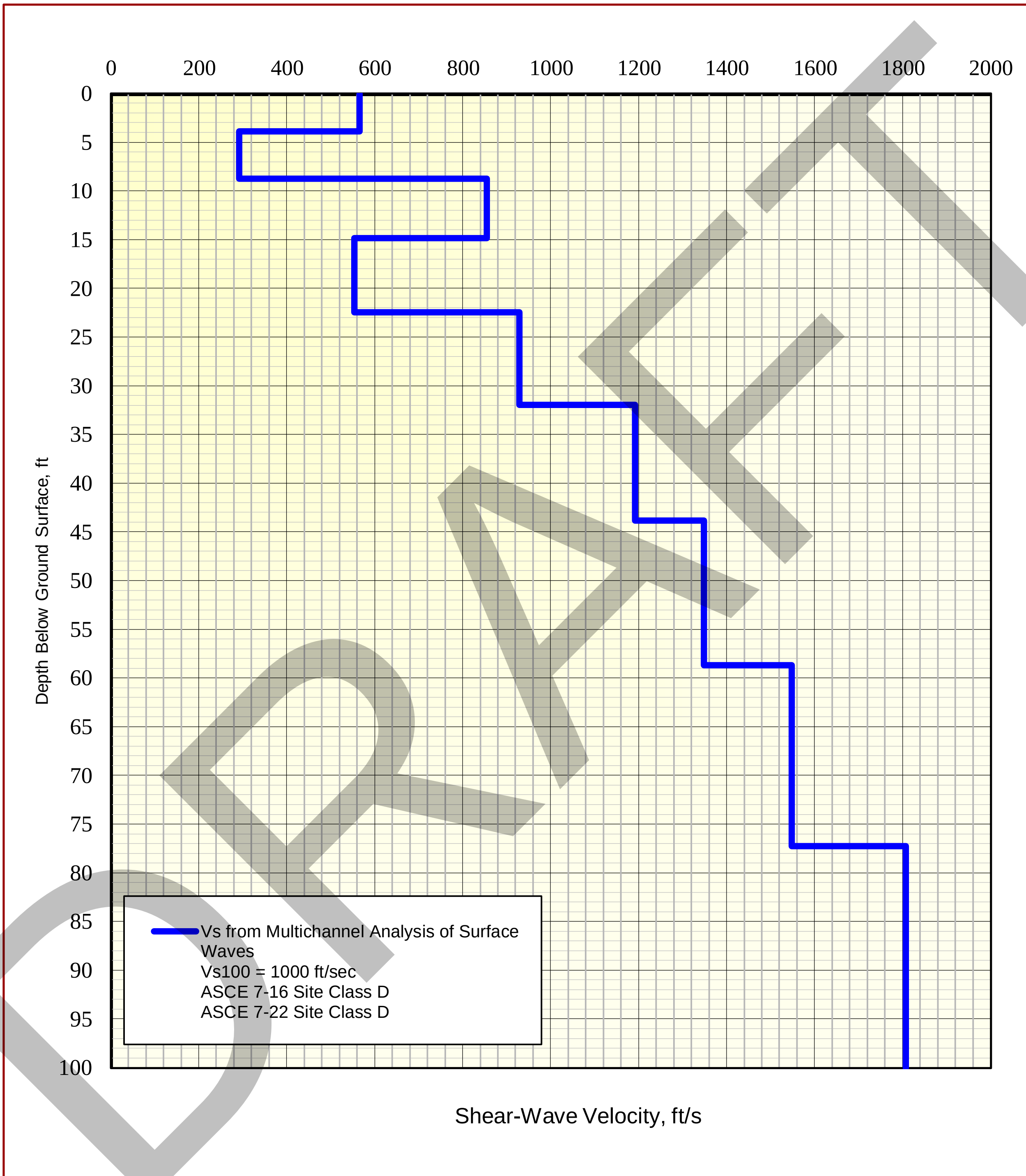
Boring ID	Depth (Ft)	Specimen #	Material Description	USCS	AASHTO
B-14	5 - 7	S3	Fat Clay		

Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation (%)	Moisture (%)									
94.2	39.2	79.4			2.70	500	7,445	19.633	1.810	1.123

Notes: Saturation and the initial void ratio are estimated using an assumed specific gravity. The Casagrande Method was used to estimate Pc. Sample was inundated at 500 psf

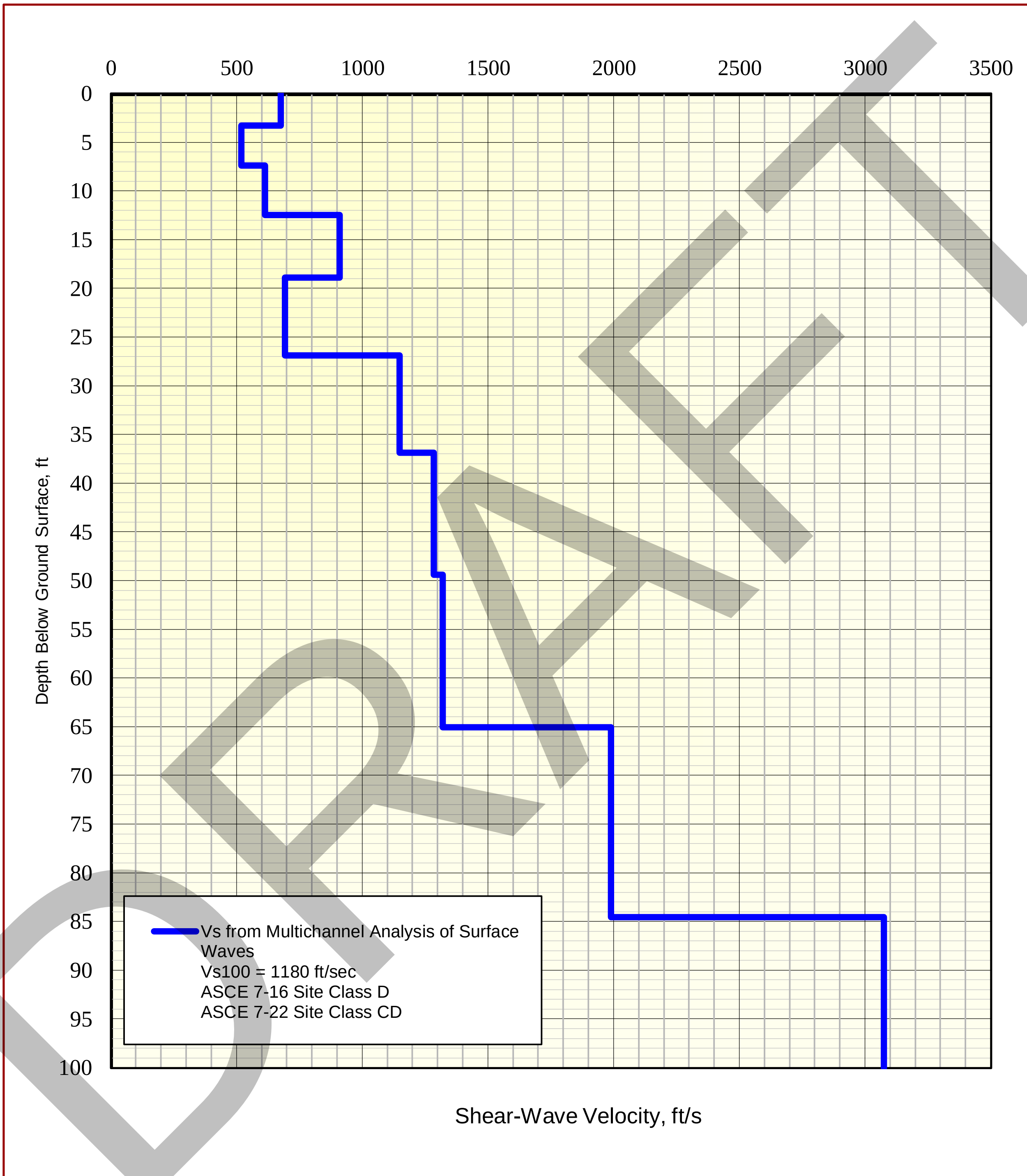
Shear Wave Velocity - Line 1
Cleveland High School Upgrades | Portland, OR
Field Data Collection: March 3, 2024 |Terracon Project No. 82245002

Shear-Wave Velocity Profile from SurfSeis6 MASW Software Analysis



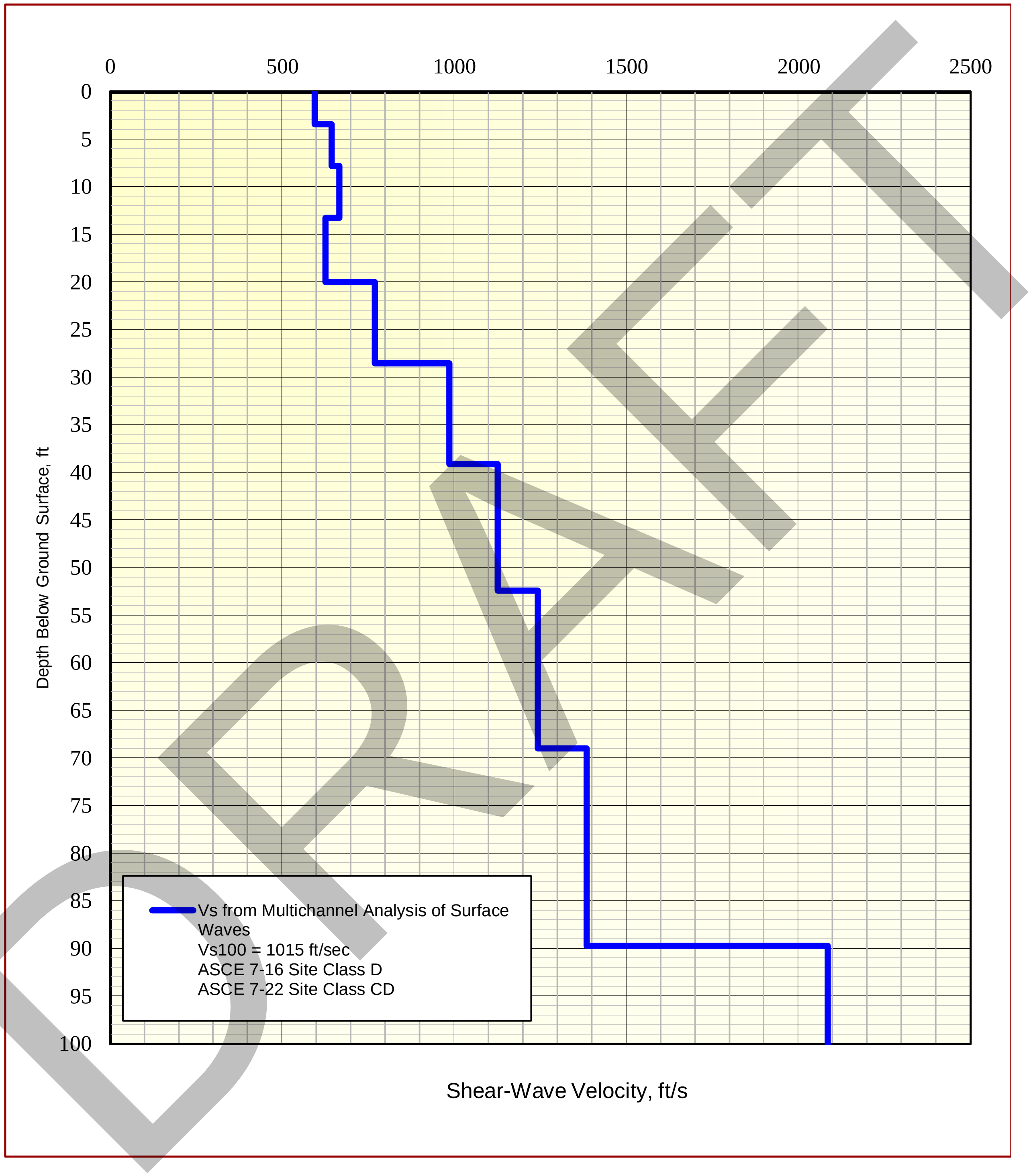
Shear Wave Velocity - Line 2
Cleveland High School Upgrades | Portland, OR
Field Data Collection: February 24, 2024 |Terracon Project No. 82245002

Shear-Wave Velocity Profile from SurfSeis6 MASW Software Analysis



Shear Wave Velocity - Line 3
Cleveland High School Upgrades | Portland, OR
Field Data Collection: February 22, 2024 |Terracon Project No. 82245002

Shear-Wave Velocity Profile from SurfSeis6 MASW Software Analysis



750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Terracon

Client
Portland Public Schools

Project
Cleveland High School Upgrades

Sample Submitted By: Terracon (82) **Date Received:** 3/11/2024 **Lab No.: 24-0097**

Results of Corrosion Analysis

Sample Number	S-2	S-2
Sample Location	B-3	B-9
Sample Depth (ft.)	5.0	2.5
pH Analysis, ASTM G51	6.72	6.84
Water Soluble Sulfate (SO4), ASTM C 1580 (Percent %)	<0.01	0.01
Sulfides, AWWA 4500-S D, (mg/Kg)	Nil	Nil
Chlorides, ASTM D512, (Percent %)	0.01	0.03
Red-Ox, ASTM G200, (mV)	+727	+733
Total Salts, AWWA 2520 B, (mg/Kg)	572	291
Saturated Minimum Resistivity, ASTM G-187, (ohm-cm)	2425	4268
Carbonate Content, ASTM D3042 (percent %)	2.10	1.70

Analyzed By N. Campo
Nathan Campo
Laboratory Coordinator

Terracon
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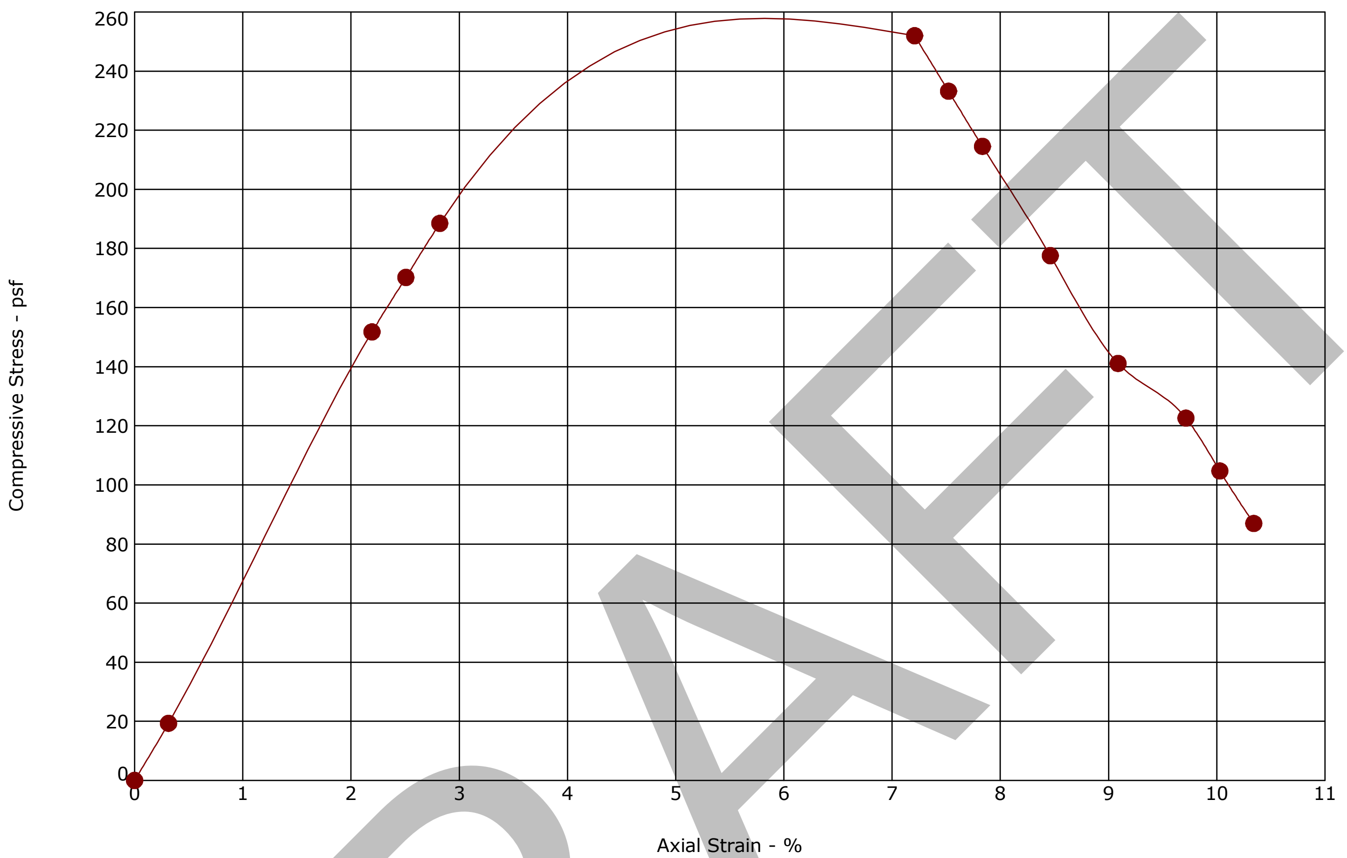
Portland, OR

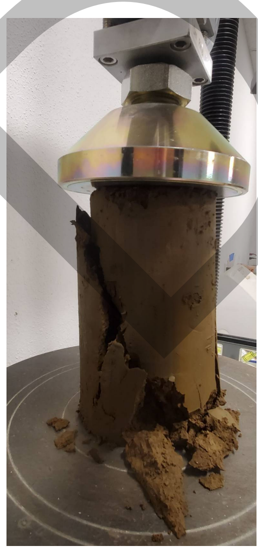
Unconfined Compression Test

ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
B-02	5 - 7	Shelby Tube					Lean Clay

Specimen Failure Mode



Specimen Test Data

Moisture Content (%):	39.4
Dry Density (pcf):	74
Diameter (in.):	2.85
Height (in.):	6.38
Height / Diameter Ratio:	2.24
Calculated Saturation (%):	82.67
Calculated Void Ratio:	1.29
Assumed Specific Gravity:	2.7
Failure Strain (%):	7.21
Unconfined Compressive Strength (psf):	252
Undrained Shear Strength (psf):	126
Strain Rate (in/min):	
Remarks:	

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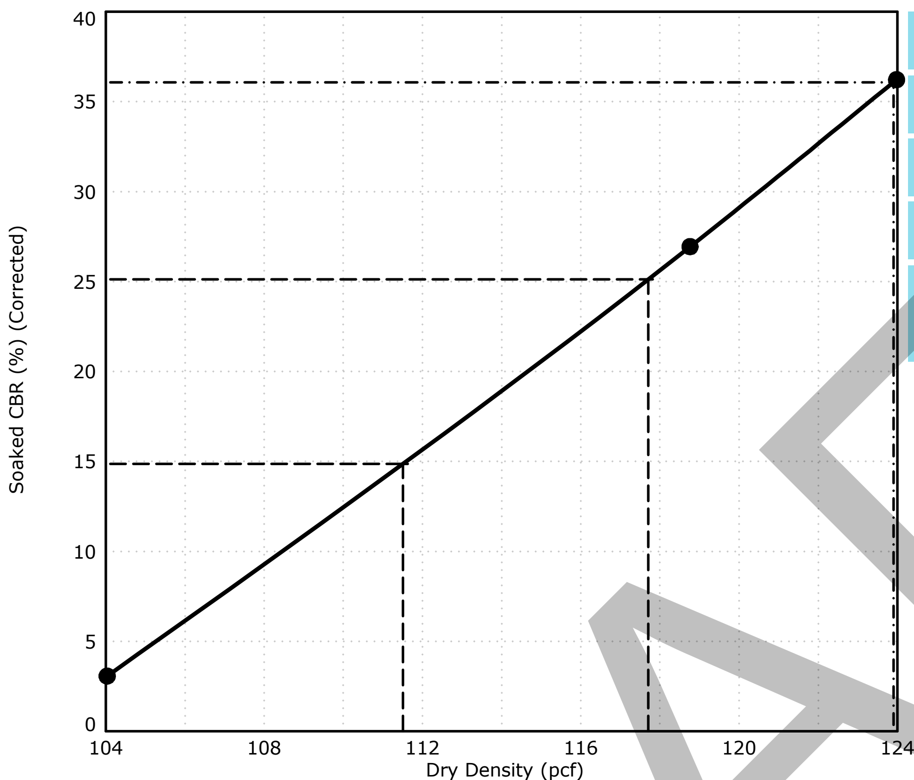
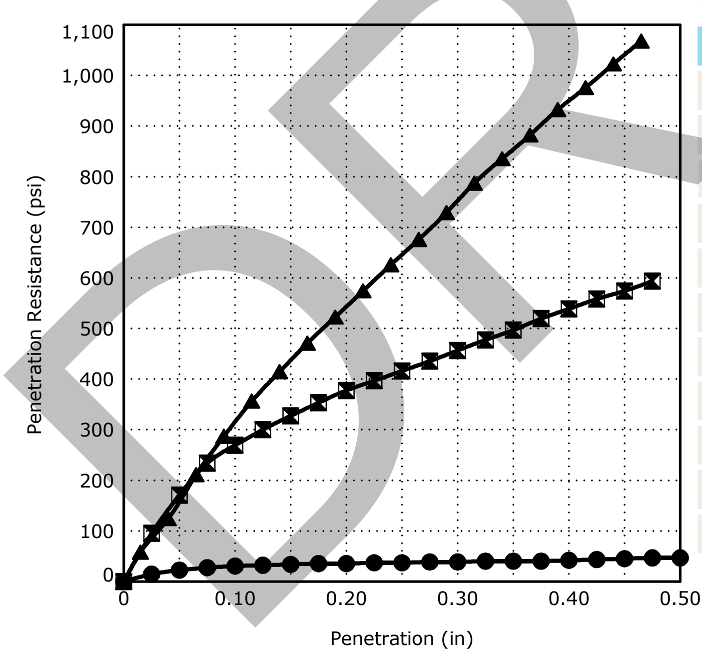
California Bearing Ratio

ASTM D1883-07^{2}



Source of Material	B-01 0.5
Description of Material	Sandy lean clay with gravel
Percent Fines	
Atterberg Limits	LL PL PI
Remarks:	



Sample No.	**1**	**2**	**3**
Sample Condition		Soaked	
Compaction Method		ASTM 1557B	
Corrected Maximum Dry Density (pcf)	123.9	123.9	123.9
Corrected Optimum Moisture Content (%)	11.4	11.4	11.4
Dry Density before Soaking, (pcf)	104.03	118.76	123.98
Moisture Content, (%)			
After Compaction	11.9	11.5	11.2
Top 1" After Soaking	19.3	14.5	12.3
Surcharge, (lbs)	10.00	10.00	10.00
Swell, (%)	0.42	-0.51	-0.64
Bearing Ratio, (%)	2.4	25.2	36.2

Dry Density @ 90% 111.5 pcf
Dry Density @ 95% 117.7 pcf
Dry Density @ 100% 123.9 pcf

CBR @ 90% Density 14.9
CBR @ 95% Density 25.1
CBR @ 100% Density 36.1

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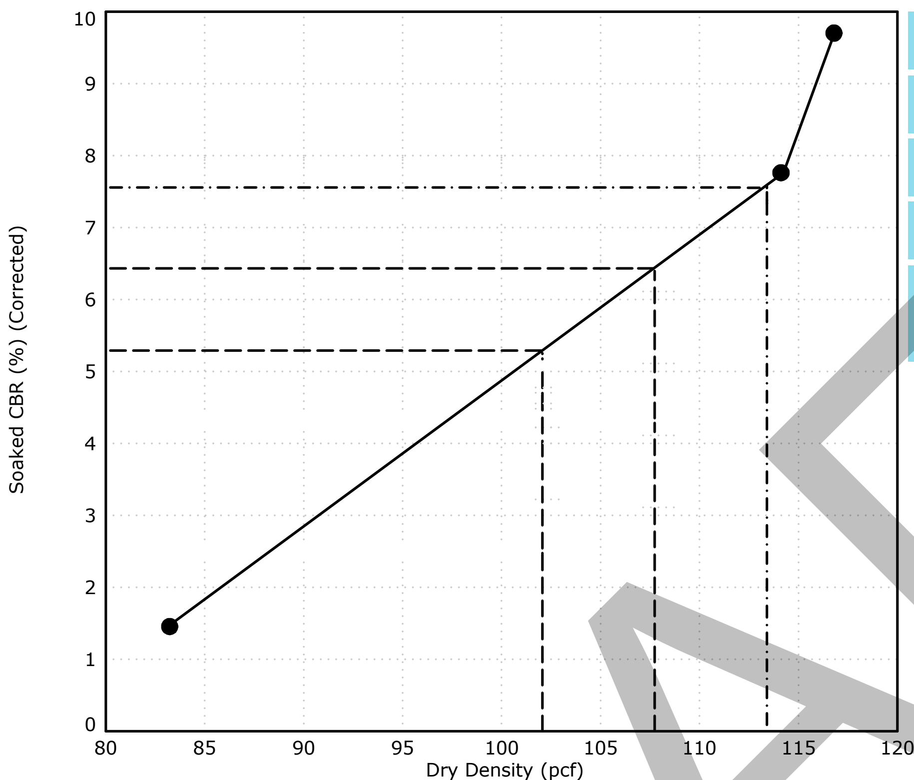
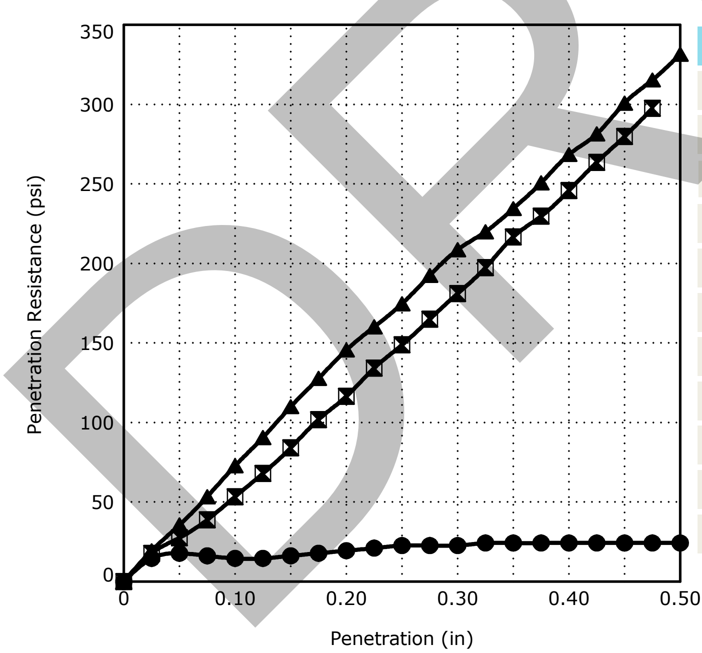
California Bearing Ratio

ASTM D1883-07[2]



Source of Material	B-15 1.0		
Description of Material	Lean Clay Fill		
Percent Fines			
Atterberg Limits	LL	PL	PI
Remarks:			



Sample No.	**1**	**2**	**3**
Sample Condition		Soaked	
Compaction Method		ASTM D1557A	
Maximum Dry Density (pcf)	113.4	113.4	113.4
Optimum Moisture Content (%)	15	15	15
Dry Density before Soaking, (pcf)	83.22	114.12	116.79
Moisture Content, (%)			
After Compaction	16.3	16.2	16.4
Top 1" After Soaking	21.2	18.1	17
Surcharge, (lbs)	10.00	10.00	10.00
Swell, (%)	1.53	0.84	0.67
Bearing Ratio, (%)	1.3	7.8	9.7

Dry Density @ 90%	102.1	pcf	CBR @ 90% Density	2.5
Dry Density @ 95%	107.7	pcf	CBR @ 95% Density	4.3
Dry Density @ 100%	113.4	pcf	CBR @ 100% Density	7.3

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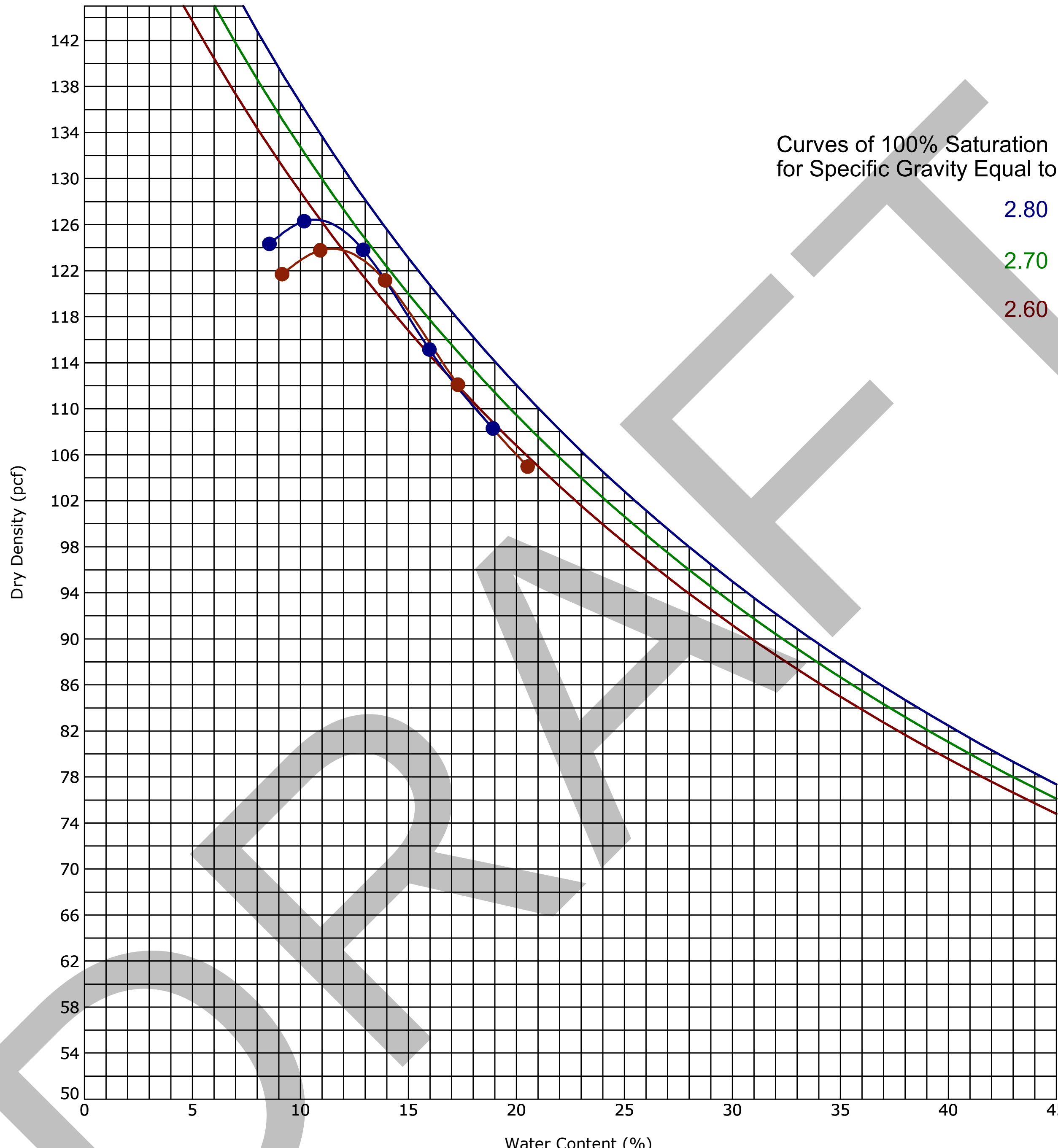
Moisture-Density Relationship

ASTM D1557-Method B



Boring ID	Depth (Ft)	Description of Materials
B-01	0.5 - 2	Sandy lean clay with gravel

						Uncorrected		Corrected	
Fines (%)	Fraction >9.5 mm size	LL	PL	PI	Test Method	Max DD (pcf)	Optimum WC (%)	Max DD (pcf)	Optimum WC (%)
	9.0				ASTM D1557-Method B	123.9	11.4	126.4	10.6

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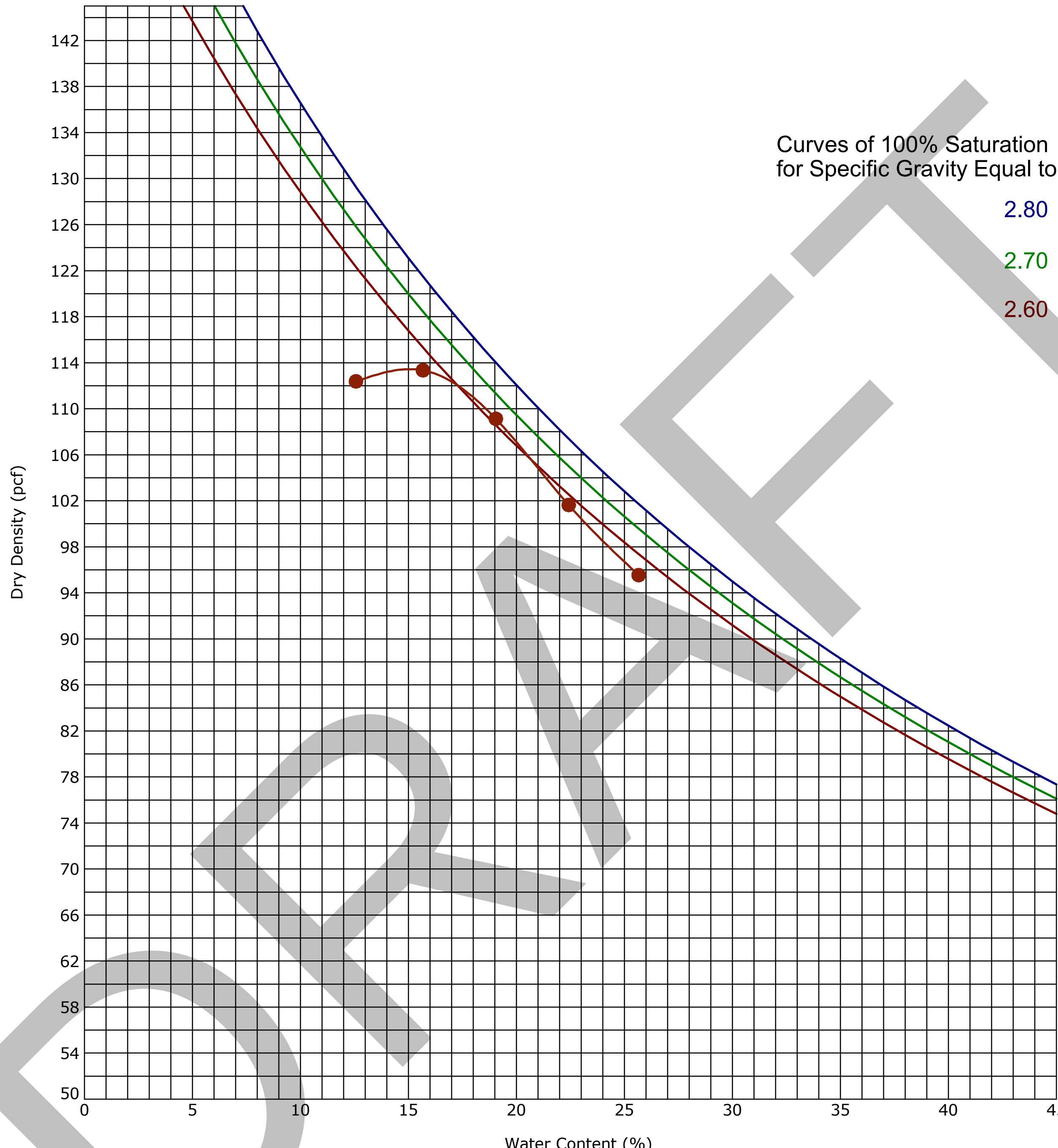
Moisture-Density Relationship

ASTM D1557-Method A



Boring ID	Depth (Ft)	Description of Materials
B-15	1 - 5	Lean Clay Fill

Fines (%)	Fraction > mm size	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)
	0.0				ASTM D1557-Method A	113.4	15.0

Supporting Information

Contents:

Note: All attachments are one page unless noted above.

Terracon
700 NE 55th Ave
Portland, OR

General Notes

Sampling	Water Level	Field Tests
Auger Cuttings Shelby Tube Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**Consistency of Fine-Grained Soils** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Relative Density	**Standard Penetration or N-Value (Blows/Ft.)**	**Consistency**	**Unconfined Compressive Strength Qu (psf)**	**Standard Penetration or N-Value (Blows/Ft.)**
Very Loose	0 - 3	Very Soft	less than 500	0 - 1
Loose	4 - 9	Soft	500 to 1,000	2 - 4
Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8
Dense	30 - 50	Stiff	2,000 to 4,000	8 - 15
Very Dense	> 50	Very Stiff	4,000 to 8,000	15 - 30
		Hard	> 8,000	> 30

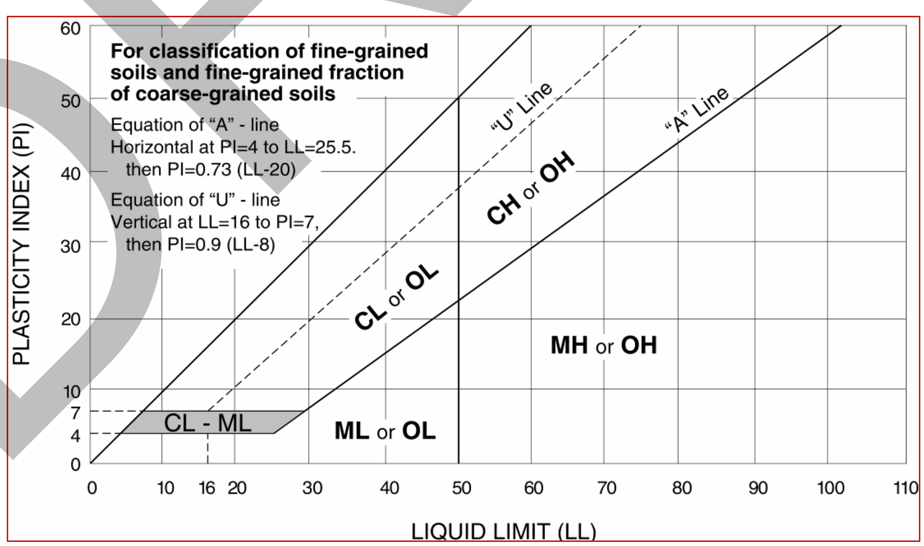
Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



Site Response Analysis

Applicable Codes and Standards

The basis of design is the 2022 Oregon Structural Specialty Code (2022 OSSC), which states that structures shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-16. Per ASCE 7-16, the design earthquake ground motions are two-thirds of the risk-targeted Maximum Considered Earthquake (MCE_R) which is defined as a 1 percent chance of structure collapse in 50 years.

Seismic Setting

Western Oregon is generally subject to earthquakes from three different sources: interface, intraslab, and crustal. All three sources are related to interaction of the Juan de Fuca plate with the North America plate and could cause strong ground shaking at the site. This plate interaction area is referred to as the Cascadia Subduction Zone (CSZ). The fault trace is located approximately 210 kilometers west of the project site. The CSZ is described as a broad, eastward dipping subduction zone whereby the North American plate is overriding the Juan de Fuca plate. A description of each earthquake source is provided below.

Cascadia Subduction Zone (CSZ)

The Cascadia Subduction Zone (CSZ) is located near the coast of Oregon, Washington, and southern British Columbia where the Juan de Fuca Plate is subducting beneath the North American Plate[5]. Two seismogenic zones are attributed directly to the subduction zone:

Interface (megathrust) earthquakes occur along the interface between the two plates at depths generally ranging from 0 to 30 kilometers where the plates become locked together. No earthquakes have been recorded from this source, but geologic evidence strongly supports the occurrence of large megathrust earthquakes up to M9.4 every

5 DeMets, C., Gordon, R.G., Argus, D.F., Stein, S., 1990. Current plate motions: Geophysical Journal International, v. 101, p. 425-478.

300 to 700 years. Geologic evidence indicates the last major event occurred in 1700[6]. The eastern edge of the seismogenic portion of the subduction zone earthquakes is located about 85 kilometers west of the site. For an earthquake return period of 2,475 years, interface sources account for about 12 percent of the strong ground shaking hazard at an oscillator period of 0.2 seconds.

Intraslab earthquakes occur at depths greater than 40 kilometers where the curvature of the subducting plate increases as the advancing edge moves east, resulting in normal (extensional) faults within the plate. CSZ intraslab earthquakes are generally less than magnitude M7.5[7], and do not rupture the ground surface. Given their considerable depth, the ground motions from these earthquakes are relatively low, but are felt over a large area. A M6.8 intraslab earthquake occurred in 2001 near Olympia, Washington, at a depth of 52 kilometers (Nisqually earthquake). The site is located in the seismogenic portion of the intraslab earthquakes, which covers most of the Willamette Valley and portions of the Oregon Coast Range. For an earthquake return period of 2,475 years, intraslab sources account for about 9 percent of the strong ground shaking hazard at an oscillator period of 0.2 seconds.

Crustal Faults

Crustal earthquakes typically occur at depths within 35 kilometers of the surface and commonly rupture the ground surface to form an earthquake fault. The vegetative cover and thick sediment deposits in western Oregon obscure surface faults from being readily identified. The maximum magnitude earthquake that may be generated by one of these crustal earthquake sources is thought to be about 7.0. For an earthquake return period of 2,475 years, crustal sources account for about 79 percent of the strong ground shaking hazard at an oscillator period of 0.2 seconds. The primary crustal faults contributing to strong ground shaking at the site include the Portland Hills fault (No.877), the Oatfield fault (No.875), the Bolton fault (No.874), the Beaverton fault zone (No.715), and the Canby-Molalla fault (No.716). The United States Geological Survey (USGS) maintains the Quaternary Fault and Fold Database of the United States, which contains descriptions of known crustal faults throughout the United States. Published information pertaining to each fault or fault zone is provided in the following table:

6 Atwater, B.F., 1992. Geologic evidence for earthquakes during the past 2,000 years along the Copalis River, southern coastal Washington: Journal of Geophysical Research, v. 97, p. 1901-1919.

7 Cascadia Region Earthquake Workshop, 2008. Cascadia Deep Earthquakes. Washington Division of Geology and Earth Resources, Open File Report 2008-1.

Fault Name	Portland Hills fault	Oatfield fault	Bolton fault	Beaverton fault zone	Canby-Molalla fault
USGS Fault Number	877	875	874	715	716
USGS Fault Class	A	A	B	A	A
Distance and Direction of Fault from the Site	2 mi SW	3 mi SW	6 mi S	8¾ mi W	8 mi SW
Length of Fault	31 miles	18 miles	6 miles	9 miles	31 miles
Strike (degrees)	N37°W	N41W	N53°W	N86°E	N34°W
Sense of Movement	Reverse, Right lateral	Reverse, Right lateral	Reverse	Unspecified	Right lateral, Reverse
Dip Direction	SW	NE	SW	Unknown	Unknown
Slip-rate Category	Less than 0.2 mm/yr	Less than 0.2 mm/yr	Less than 0.2 mm/yr	Less than 0.2 mm/yr	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)	Undifferentiated Quaternary (<1.6 Ma)	Undifferentiated Quaternary (<1.6 Ma)	Middle and late Quaternary (<750 ka)	Late Quaternary (<130 ka)

Field Shear Wave Velocity Testing and Site Class

Terracon performed a Multi-Channel Analysis of Surface Waves (MASW) survey at the site using three separate arrays to determine the Site Class in accordance with Section 20.3 of ASCE 7-16. Site Class is also provided in accordance with ASCE 7-22, which will be referenced in the next edition of the OSSC anticipated in 2025. The time-averaged shear wave velocity values for the upper 100 feet of the subsurface profile (V_{S100}) are presented in the following table:

Geophysical Array	Area of Site	Average Shear Wave Velocity V_{S100} (ft/sec)	ASCE 7-16 Site Class	ASCE 7-22 Site Class
MASW 1	Parking Lot Parcel	1,000	D	D
MASW 2	Primary Site	1,180	D	CD
MASW 3	Athletic Field Parcel	1,015	D	CD

As shown in the table, the V_{S100} values indicate the soils at the site are Site Class D for seismic design per Table 20.3-1 of ASCE 7-16. However, based on the liquefiable soils present at the site (See **Liquefaction** section), the soils are classified as a Site Class F.

Base Ground Motions

Selection and scaling of ground motions to be used as input for site response analysis requires target values of spectral acceleration (S_a) across a range of oscillator periods (T) referred to as a target spectrum. Per Section 21.1 of ASCE 7-16, we selected the target spectrum for the site (latitude 45.4985 degrees north and longitude 122.6388 degrees west) to be the MCE_R response spectrum for Site Class C soils measured at the base of the modeled soil column (as determined from shear wave velocities measured by the geophysical survey) using the National Seismic Hazard Model webtool mapped values. The maximum direction uniform hazard values were adjusted by the risk coefficients. The ground motion values correspond to the base of our site response model where the Troutdale formation sediments have a shear wave velocity exceeding 1,800 feet per second at depths ranging from about 65 to 90 feet at the MASW arrays.

We utilized the USGS Earthquake Hazard Tool disaggregation program to determine the earthquake sources and source parameters that contribute to strong ground shaking at the site for a return period of 2,475 years. The hazard curves and interactive disaggregation data available from the USGS for an oscillator period of 0.2 seconds is attached.

The MCE_R spectrum for the Troutdale formation and USGS disaggregation results were used to select time histories of acceleration. The selected motions are listed in the table below. Given the disaggregation results, we selected one subduction zone interface, one subduction intraslab, and five crustal earthquake recordings.

Year / Earthquake	Earthquake Type	Moment Magnitude	Station	Distance (km)	Component	Scale Factor Before Spectral Matching
2011 / Tohoku	Interface	9.12	ONODA	186	270	0.9
2001 / Nisqually	Intraslab	6.8	2130	54	237	3.2
1987 / Superstition Hills-02	Strike slip	6.54	Westmorland Fire Sta	13.03	090	1.6
1999 / Hector Mine	Strike slip	7.13	Hector	11.66	000	1.6

Year / Earthquake	Earthquake Type	Moment Magnitude	Station	Distance (km)	Component	Scale Factor Before Spectral Matching
2010 / El Mayor-Cucapah_ Mexico	Strike slip	7.2	RIITO	13.71	000	0.8
1979 / Imperial Valley-06	Strike slip	6.53	El Centro Array #5	3.95	140	0.8
2008 / Iwate_ Japan	Reverse	6.9	IWT011	8.44	000	1.9

The structure period was not available at the time of this report. Therefore, we spectrally matched the scaled records to provide a better fit to the target spectrum over the full range of oscillator periods (0.01 to 10 seconds). Figure 1 compares the target spectrum to response spectra computed from the scaled and spectrally matched seed motions.

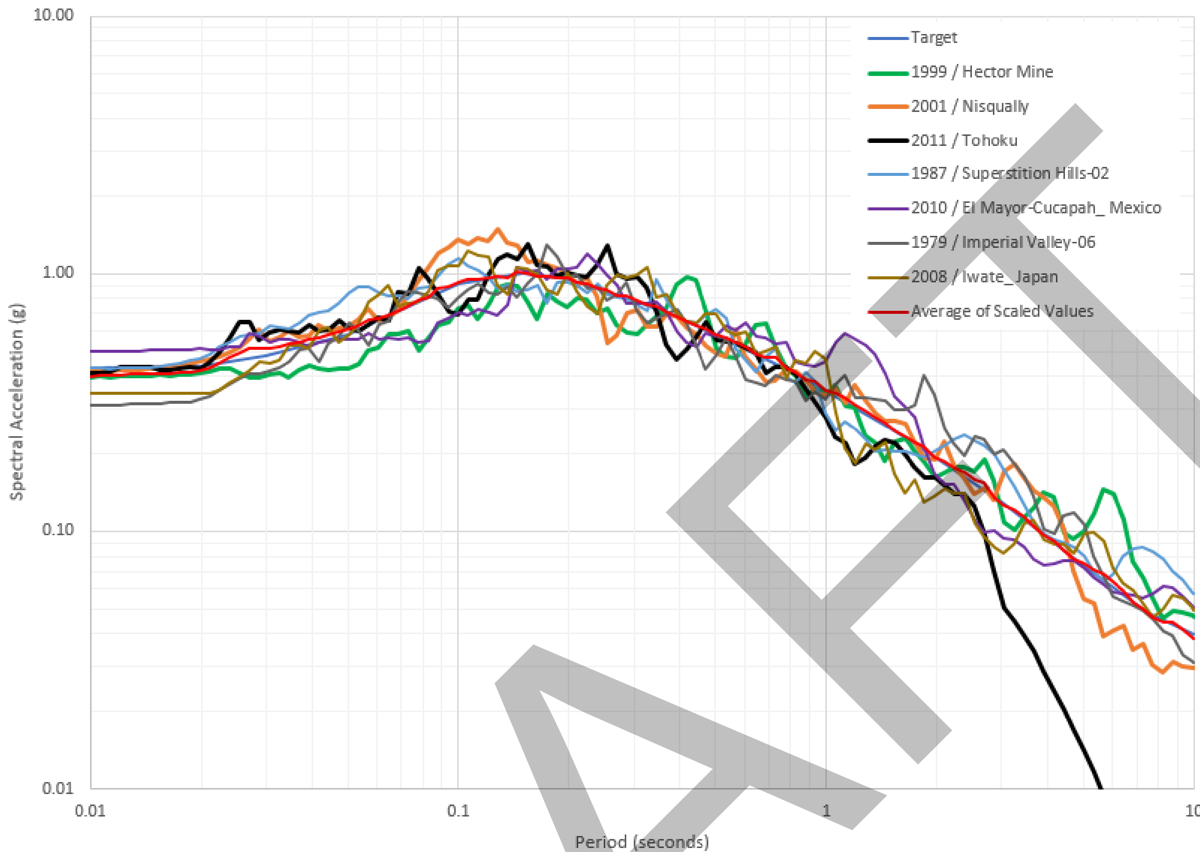


Figure 1. Comparison of Target Spectrum to Computed Response Spectra (5% damping).

Site Response Analysis

We evaluated the one-dimensional, nonlinear, total stress response of the site soils using the computer program DEEPSOIL v.7.0.30.0 (Hashash and others, 2021). We also performed an equivalent linear response analysis as a check on the model parameters and results. We developed soil models based on the data collected from each MASW array and the adjacent borings.

To capture the effect of uncertainty in soil property values on the analytical results, we varied the best estimate shear wave velocity profile at each array location by plus 25 percent (upper bound) and minus 25 percent (lower bound). The three V_S profiles for each MASW array are shown on Figures 2, 3, and 4.

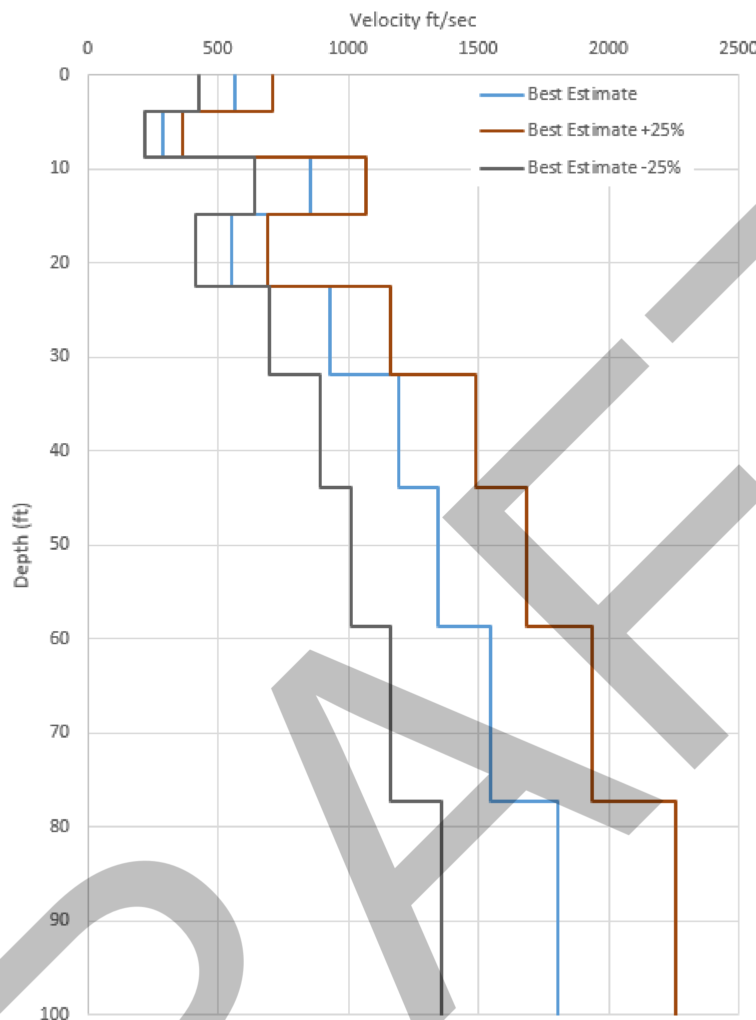


Figure 2. MASW Line 1 Shear Wave Velocity Profiles for Site Response Analysis

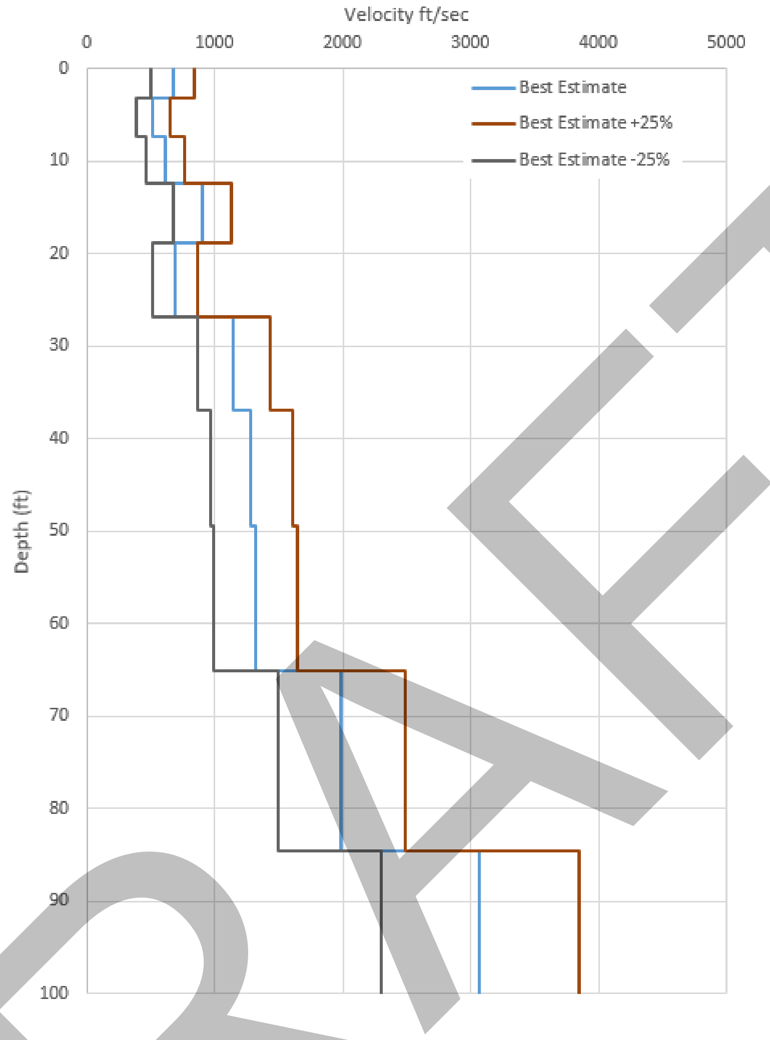


Figure 3. MASW Line 2 Shear Wave Velocity Profiles for Site Response Analysis

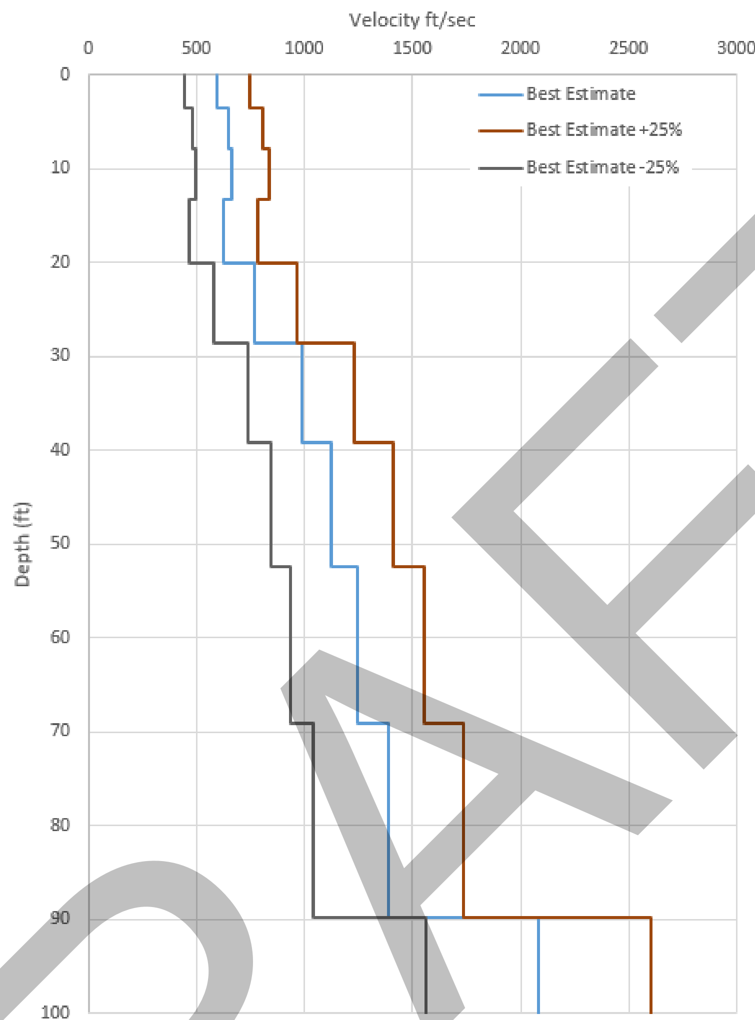


Figure 4. MASW Line 3 Shear Wave Velocity Profiles for Site Response Analysis

The DEEPSOIL program includes a variety of pre-programmed relationships for shear modulus and damping. For existing conditions, we selected the pressure-dependent Darendeli (2001) curves with the high strain values of shear modulus corrected for soil strength (Phillips and Hashash, 2009). The material below the soil model was assumed to be an elastic half-space. In total, we performed 126 (seven input motions, nine soil models, and two methods of analysis) site response analyses.

We followed ASCE 7-16 Chapter 21 procedures to develop the site-specific MCE_R response spectrum at the ground surface. That is, ratios of 5 percent damped response spectra of surface ground motions to input base ground motions were calculated at select periods and the ratio at each period was multiplied by the MCE_R response spectrum of the base motion. We averaged the spectra from all seven input motions for each shear wave velocity profile (e.g., best estimate profile) and then enveloped the spectra from the three profiles to compute the site-specific MCE_R spectrum at the ground surface for each MASW array. Figure 5 shows the site amplification factors from the nonlinear results as a function of oscillator period computed from the site response analysis. The three curves represent the best estimate shear wave velocity (red line), lower bound (-25% shear wave velocity - green line), and upper bound (+25% shear wave velocity - blue line).

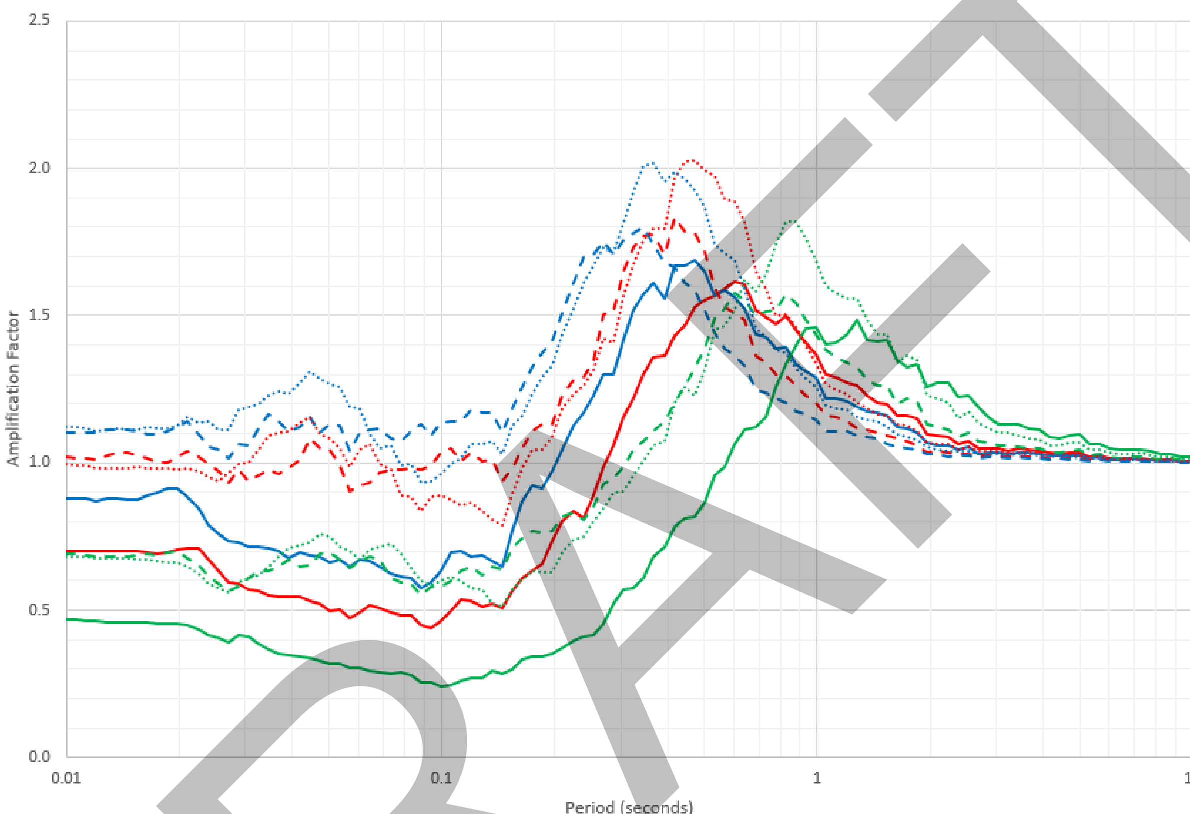


Figure 5. Computed Average Site Amplification Factors (MASW1 - solid lines, MASW2 - dashed lines, MASW3 – dotted lines)

Design Response Spectrum

ASCE 7-16 Section 21.3 states that the design spectral response acceleration at any period shall be determined by reducing the site-specific MCE_R spectral response accelerations by one-third. However, the design spectral response acceleration at any period shall not be taken as less than 80 percent of the spectral acceleration determined in accordance with the general procedure of ASCE 7-16 Section 11.4 where F_a = 1.144 and F_v = 2.5 for Site Class D. The general procedure design ground motion values obtained from the Applied Technology Council (ATC) are attached. Figure 6 compares the general procedure design response spectra and the design response spectrum from the site-specific study.

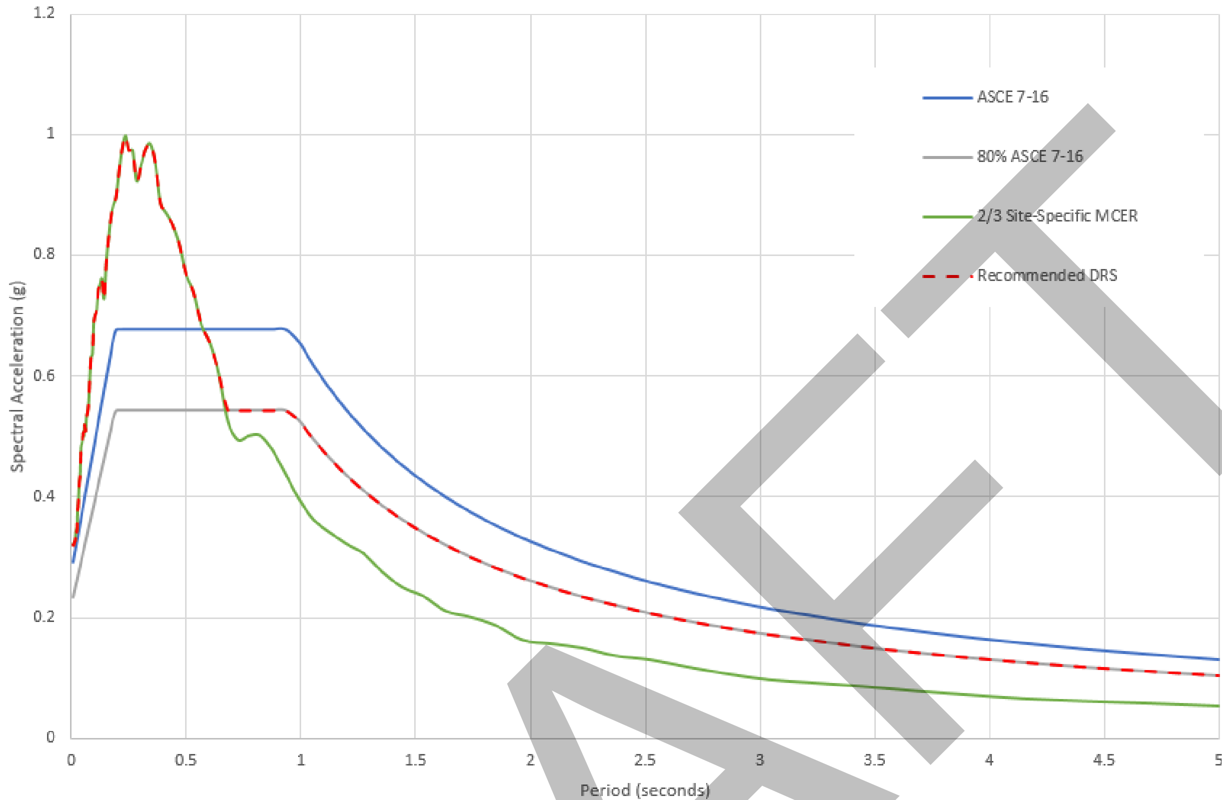


Figure 6. Comparison of Design Response Spectra (5% damping).

The table below lists the acceleration response spectral values (5 percent damping).

Period (sec)	SaM	Sa = 2/3 SaM	ASCE 7-16 Site Class D	80% ASCE 7-16 Site Class D	Recommended DRS
0.01	0.482	0.321	0.482	0.386	0.386
0.02	0.497	0.331	0.314	0.251	0.331
0.03	0.570	0.380	0.335	0.268	0.380
0.05	0.737	0.491	0.377	0.302	0.491
0.075	0.819	0.546	0.430	0.344	0.546
0.1	1.035	0.690	0.483	0.386	0.690
0.15	1.141	0.761	0.588	0.470	0.761
0.2	1.356	0.904	0.677	0.542	0.904
0.25	1.467	0.978	0.678	0.542	0.978
0.3	1.411	0.941	0.678	0.542	0.941
0.4	1.320	0.880	0.678	0.542	0.880
0.5	1.157	0.771	0.678	0.542	0.771
0.75	0.745	0.497	0.678	0.542	0.542
1	0.589	0.393	0.654	0.523	0.523
1.5	0.362	0.241	0.436	0.349	0.349
2	0.242	0.161	0.327	0.262	0.262
3	0.149	0.099	0.218	0.174	0.174
4	0.105	0.070	0.164	0.131	0.131
5	0.080	0.053	0.080	0.064	0.064

Design Acceleration Parameters

ASCE 7-16 Section 21.4 states that the parameter S_{DS} from the site-specific study shall be taken as 90 percent of the maximum spectral acceleration at any period within the range of 0.2 and 5 seconds provided it is not lower than 80% of the ASCE 7-16 design spectrum. It also states that the parameter S_{D1} shall be taken as the maximum value of the product of period and spectral acceleration for periods from 1 to 5 seconds for sites with V_{s100} < 1,200 feet/second provided it is not lower than 80% of the ASCE 7-16 design spectrum. The parameters S_{MS} and S_{M1} shall be taken as 1.5 times S_{DS} and S_{D1}, respectively.

Using ASCE 7-16 Section 21.4, the site-specific seismic design parameters are defined as follows:

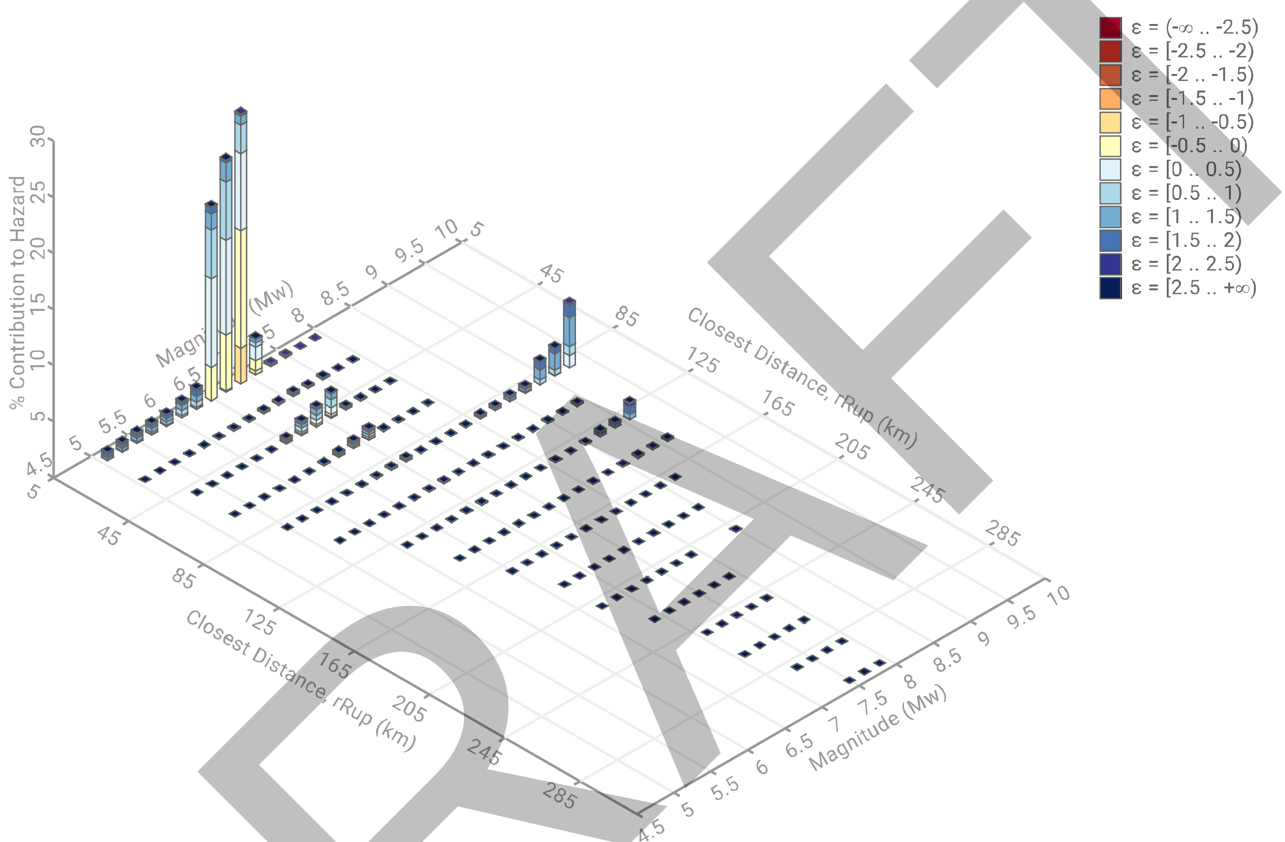
- S_{DS} = 0.880g, based on 90 percent of the spectral acceleration at a period of 0.25 seconds
- S_{D1} = 0.524g, based on the spectral acceleration at a period of 2 seconds
- S_{MS} = 1.320g, based on 1.5 times S_{DS}
- S_{M1} = 0.786g, based on 1.5 times S_{D1}

Site-Specific Maximum Considered Earthquake Geometric Mean (MCE_G) Peak Ground Acceleration

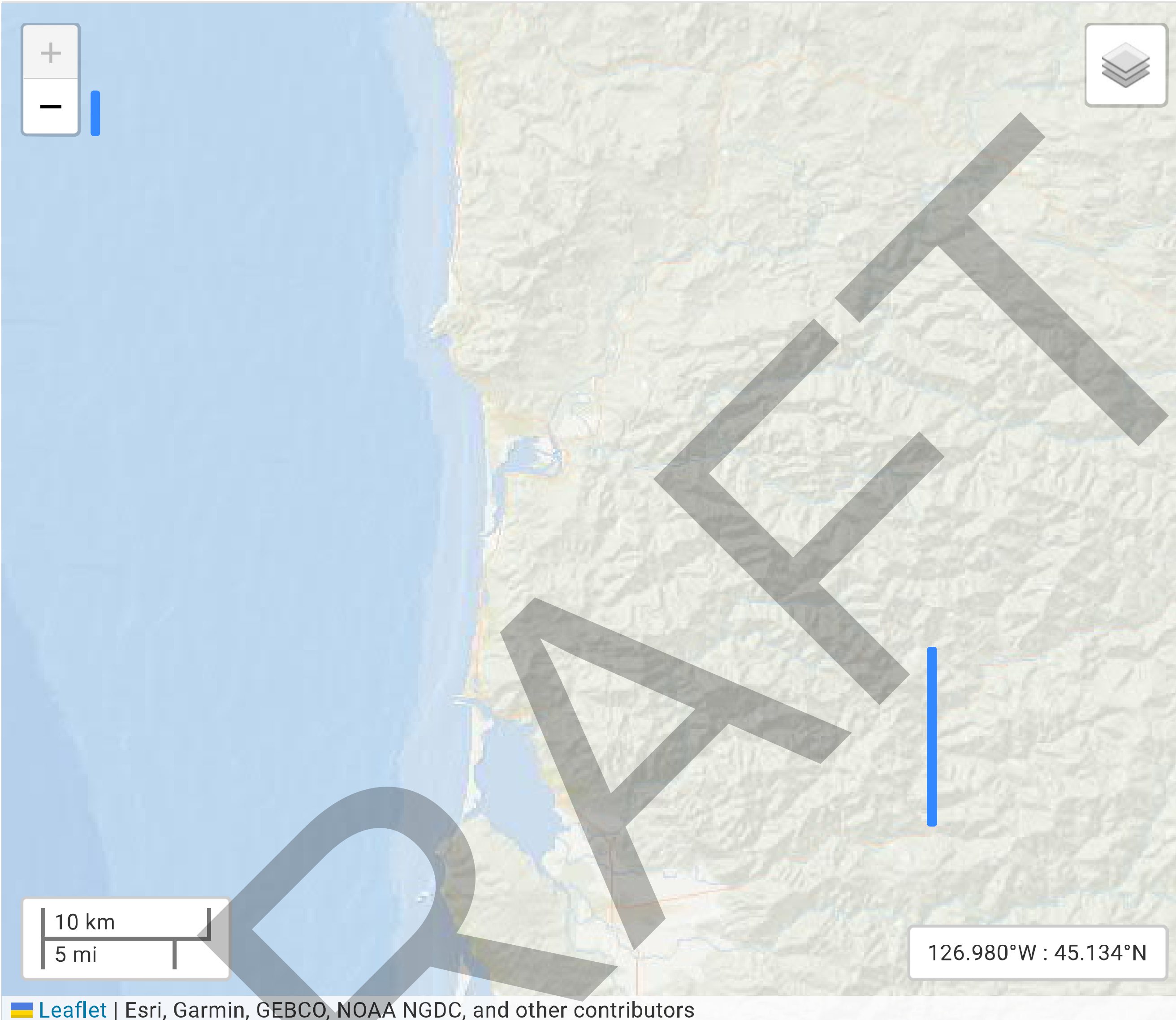
According to ASCE 7-16 Section 21.5, the site-specific MCE_G peak ground acceleration, PGA_M, shall be taken as the geometric mean peak ground acceleration with a 2 percent probability of exceedance within a 50-year period provided it is not less than 80 percent of the PGA_M determined from ASCE 7-16 Equation 11.8-1. The site-specific MCE_G peak ground acceleration was calculated as 0.458g.

Disaggregation Report

Disaggregation



Geographical Disaggregation



Parameter Summary

Model: NSHM Conterminous U.S. 2023 (beta)

Latitude: 45.498458°

Longitude: -122.638759°

Site Class: BC (Vs30 760)

Intensity Measure Type: 0.2 s

Return Period: 2475 (2% in 50)

Component: Total

Disaggregation Summary

Disaggregation targets

Return period : 2475 yrs

Exceedance rate : 4.040e-4 yr^{-1}

0.2 s SA ground motion : 1.185e+0 g

Recovered targets

Return period : 2427.6908 yrs

Exceedance rate : 4.119e-4 yr^{-1}

Totals

Binned : 100 %

Residual : 0 %

Trace : 0.82 %

Mean (over all sources)

m : 7.04

r : 25.48 km

ε_0 : 0.59 σ

Mode (largest m-r bin)

m : 6.92

r : 5.46 km

ε_0 : 0.04 σ

Contribution : 24.04 %

Mode (largest m-r-ε_0 bin)

m : 6.93

r : 4.62 km

ε_0 : -0.17 σ

Contribution : 10.47 %

Discretization

r : min = 0.0, max = 1000.0, Δ = 20.0 km

m : min = 4.4, max = 9.4, Δ = 0.2

ε : min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0 : [-∞ .. -2.5)

ε1 : [-2.5 .. -2.0)

ε2 : [-2.0 .. -1.5)

ε3 : [-1.5 .. -1.0)

ε4 : [-1.0 .. -0.5)

ε5 : [-0.5 .. 0.0)

ε6 : [0.0 .. 0.5)

ε7 : [0.5 .. 1.0)

ε8 : [1.0 .. 1.5)

ε9 : [1.5 .. 2.0)

ε10 : [2.0 .. 2.5)

ε11 : [2.5 .. +∞]

Disaggregation Contributions

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
WUS Branch Average	FaultSystem							64.63
Sylvain - Oatfield (2)		4.65	6.82	-0.10	122.688°W	45.477°N	238.28	26.51
Sylvain - Oatfield (1)		5.07	6.54	0.14	122.677°W	45.463°N	216.87	9.48
Bolton (2)		9.37	6.68	0.49	122.663°W	45.411°N	190.90	9.05
Portland Hills (south) (0)		3.21	6.91	0.13	122.665°W	45.481°N	226.12	7.12
Portland Hills (north) (2)		5.98	6.74	0.57	122.706°W	45.520°N	294.36	3.44
Sylvain - Oatfield (3)		7.53	6.48	0.64	122.732°W	45.512°N	282.02	3.16
Canby (3)		12.71	6.61	1.30	122.772°W	45.434°N	235.68	2.86
Beaverton (3)		13.76	6.87	1.30	122.808°W	45.467°N	255.10	1.2
WUS Branch Average (opt)	Grid							9.76
Cascadia (full, bottom)	Interface							9.71
Cascadia (full, bottom)		81.97	9.14	1.13	123.599°W	45.501°N	270.60	9.71
OR Intraslab	Slab							8.95
Cascadia (full, middle)	Interface							2.25
Cascadia (full, middle)		131.84	8.97	1.84	124.239°W	45.871°N	288.98	2.25

Application Metadata

Application: Disaggregation
URL: https://earthquake.usgs.gov/nshmp/hazard/disagg

Repository: nshmp-apps
Version: 1.1.0
URL: https://code.usgs.gov/ghsc/nshmp/nshmp-apps

Repository : nshmp-haz
Version: 2.4.8
URL: https://code.usgs.gov/ghsc/nshmp/nshmp-haz

Repository : nshmp-lib
Version: 1.4.16
URL: https://code.usgs.gov/ghsc/nshmp/nshmp-lib

Repository : nshmp-utils-java
Version: 0.4.0
URL: https://code.usgs.gov/ghsc/nshmp/nshmp-utils-java

Repository : nshm-conus
Version: 6.b.3
URL: https://code.usgs.gov/ghsc/nshmp/nshms/nshm-conus

March 20, 2024, 01:51 PM

GAMUT PROJECT SOLUTIONS

WARRIORS

Comprehensive Planning
Cost, Schedule, & Equity Analysis

Rev 00_April 8th, 2024

Mahlum + Studio Petretti
Cleveland HS Modernization - Portland Public Schools
Portland, Oregon

Gamut Project Solutions LLC
COBID (ESB) #13543
(971) 777-1784
www.gamutprojectsolutions.com

CHS Modernization: Comprehensive Planning Phase

April 8th, 2024
Property location: 3400 SE 26th Ave., Portland OR 97202
Owner: Portland Public Schools
Architect: Mahlum Architects & Studio Petretti
Design Phase: Comprehensive Planning

Gamut Project Solutions - Cost, Schedule, & Equity Analysis

Introduction: The Cleveland Highschool modernization project (CHS) has many opportunities to create a space that is safe, inclusive, and revitalizing for the community it serves. The in-depth study that Mahlum + Studio Petretti and its team of consultants have completed has created several opportunities to optimize the site and maximize the building program in both Site Approaches 1 (Consolidated) & 2 (Distributed).

Order of magnitude estimates, also known as conceptual or programmatic estimates, are completed with minimal information available. Costs are defined in relation to the usable units that have been designed for the facility. These orders of magnitude are not meant to be exact or guaranteed values for construction. Similarly, conceptual schedules & logistics plans are created with minimal information but generated based on our teams' experience with similar large-scale projects.

The intention of this analysis is to provide preliminary guidance to the project team to assist in decision making early in the project life cycle. We are excited to help facilitate the conversation as it pertains to cost, schedule, equity opportunities and our general opinion from a contractor's perspective.

Our analysis below is organized by Site Approach; **Site Approach 1 – Consolidated** and **Site Approach 2 – Distributed.**

We look forward to the ongoing conversations and feedback loops that allow all of us to grow and provide the best solutions for the CHS project and all of its stakeholders.

SITE APPROACH 1 – CONSOLIDATED SITE

Site Approach & Understanding:

- *Phased Construction of new buildings on the site totaling to approximately 323,700 gsf, primarily building is 5 story structure with Performing Arts & Gymnasium anchored on the south side of the site.*
- *Significant onsite redevelopment & Public ROW work is included in this scope.*
- *Existing high school will be vacated for the duration of construction.*
- *Demolition & abatement of existing buildings on property is required. Some salvage efforts will be taken to preserve historic elements for reuse in the new high school.*

- *Property surrounded by active neighborhoods, businesses, and public transit routes.*
- *Deep foundations system is unknown at this design phase, though some version of structural piers will likely be required.*
- *Mass Timber is being considered as a structural system in order to reduce carbon footprint. A combination of fully grouted CMU and Concrete tilt up panels will be utilized at the Performing Arts and Gymnasium buildings as well.*
- *A significant amount of the larger trees on the main building site are to be preserved during construction.*
- *Property has above grade utility power lines on all sides of the site that will need to be reworked/relocated to allow for construction and the permanent configuration of the new school.*
- *Track & field will undergo upgrades to existing facilities as well as have a new field house, restrooms, and concessions buildings constructed onsite.*
- *The parking lot west of SE 26th Ave will be utilized for staging & craft parking during construction and then receive upgrades at the end of the construction phase.*

1. **Cost Efficiency:** Overall the consolidated option has a lower anticipated project cost vs the distributed option. Working on a single site for the main building has its advantages in productivity and reduction of redundant logistical items such as cranes. The overall building requires some additional ratings to meet code for a 5-story mass timber structure. Superstructure is relatively neutral between the two options due to little variance in structural requirements and the gross sf remaining the same between the 2 options. Exterior enclosure on the consolidated option is less cost than the distributed option due to the larger quantity of façade due to the distributed building. Roofing is a significant difference between the 2 options as the consolidated option has less roofing. Both options have the same improvements on Waverleigh, Right Aways and the Track Site. Anticipated durations for the project between schemes has been accounted for in the General Conditions and Requirements of the various schemes.

2. **Schedule & Logistics: This approach presents the overall shortest schedule path, most efficient construction logistics, and least disruptions to school sports & the surrounding neighborhood during construction. This approach also presents the best opportunity for the new school to be reopened in time for the start of the 2028-2029 school year.**

Site Approach 1 Schedule Analysis:

This approach assumes a baseline constraint of not being able to vacate the school until the end of the spring 2026 term. Additionally, it is assumed that the District's Move-in activity will not begin until construction is complete, and C of O is achieved by the contractor. These two assumptions present an overall allowable construction phase duration of 19 months for completing the new school buildings. At this early point in the design, a 19-month construction duration does not appear adequate for a contractor to safely build this size & type of project. Below we will outline the flow of work, key activities/durations, risks, & opportunities.

The critical path of the schedule currently flows through design completion, permit issuance, move-out/in, deep underground work, and construction of the new building activities. It is assumed in the baseline schedule that the scope at the Track & Field as well as all Public ROW work will occur simultaneously with construction of the new buildings on the main site. These off-site activities will be phased by contractor to minimize impacts to surrounding neighbors and also athletic activities at the Track & Field site.

Site Approach 1 – Baseline Schedule Key Activities & Durations:
Exhibit A.1 presents a conceptual level schedule for this Site Approach. Below is a high-level summary of that conceptual schedule, highlighting key durations and milestones for reference and comparison to Site Approach 2:

- Design and Permitting durations are assumed equal in both Site Approaches.
- Move out of existing High School & Abatement:
  - 43 days
  - Completes 8/17/2026
- Demo, Mass Ex, Deep UG MEP & Foundations:
  - 105 days
  - Completes 1/18/2027
- New high school Construction & Onsite Improvements:
  - 430 days
  - Completes 9/26/2028
- Track & Field Improvements & New Structures:
  - 237 days (Phased to limit disruptions to seasonal athletic activities)
  - Completes 9/26/2028
- Off-site (26th Ave Parking lot) & Public ROW Improvements
  - 196 days (phased to limit disruptions to public & onsite construction activities)
  - Completes 2/12/2029
- Move-in to new High school:

- 65 days (Follows achieving C of O)
- Completes 2/19/2029
- *Note, if the District is willing to begin move-in activities while final construction & close out activities are still taking place, and the contractor is able to achieve an early TCO, then this overall schedule could be pulled forward roughly 4 months. While very aggressive, this would allow for a Fall of 2028 reopening of the school.* ***See Schedule Expediting Opportunities section below.***

- Overall Project Complete: **February 26nd, 2029**
    - *This results in the new school not reopening until Fall of 2029. While this is later than the District desires, this may actually lessen the overall strain and impact on the District when considering that two other new high schools are targeted to reopen for Fall of 2028 school.*

Schedule Expediting Opportunities:
In the high-level key activity summary above the baseline schedule presents a February of 2029 overall project completion (through completion of move-in). We understand this is later than the goal of being ready for school to restart in the Fall of 2028. Below is a list of schedule expediting opportunities for the team to consider and study further in the next design phase:

- **Early Abatement:** Perform as much abatement of existing high school during the Summer of 2025, prior to start of school in Fall of 2025. Not all abatement will be able to be completed during this summer simply due to some of the destructive nature of this activity. **Estimated schedule savings is 1.5 months.**

- **Early Move-in:** Conduct District move-in activities concurrent with completion of construction & close out activities with an early "move-in only" Temporary Certificate of Occupancy. The permitting process will need to be expedited by approximately 2 months in this scenario. As mentioned at the beginning of this narrative, the baseline assumption is that the District will not start its 3 month move-in activity until after construction is complete and C of O is achieved. If the District is willing to start the move-in while construction & closeout activities are still finishing on the project, then there is a stronger chance of being able to reopen the school for the start of 2028-2029 school year. This will be an aggressive schedule and the move-in process will prove much more logistically challenging for the District and the contractor. **Estimated schedule savings is 4 months.**

- **Early Move-out:** Move out of existing high school over winter break of the 2025/2026 school year. While this is likely not desirable, if this option was taken then a start of school in Fall of 2028 is achievable. Permitting process will need to be expedited by approximately 2 months in this scenario. See Alternate Schedule Path narrative later in this report. **Estimated schedule savings is 6 months.**

Summary of Site Approach 1 overall duration from Move-out to Move-in = 2 years and 8 months.

3. **Site Approach 1 – *ALTERNATE* SCHEDULE PATH (EARLY MOVE-OUT):**
    - Design and Permitting durations are assumed equal in both Site Approaches.
        - Note that for this Alternate schedule path to be achieved, the permitting submission & approval process would need to be expedited by approximately 2 months. The baseline schedule assumes 4 months for the Demo/Abatement/Deep UG MEP & Foundations permit and 6 months for the remaining Building Permit, this would need to be reduced to an overall duration of approximately 8 months.
    - Move out of existing High School & Abatement:
        - ***ALTERNATE PATH: Vacate existing high school would start over the 2025/2026 winter break.***
        - 43 days
        - Completes 2/12/2026
    - Demo, Mass Ex, Deep UG MEP & Foundations:
        - 105 days
        - Completes 7/13/2026
    - New high school Construction & Onsite Improvements:
        - 430 days
        - Completes 3/24/2028
    - Track & Field Improvements & New Structures:
        - 237 days (Phased to limit disruptions to seasonal athletic activities)
        - Completes 3/24/2028
    - Off-site (26th Ave Parking lot) & Public ROW Improvements
        - 196 days (phased to limit disruptions to public & onsite construction activities)
        - Completes 3/28/2028
    - Move-in to new High school:
        - 65 days (after C of O is achieved)
        - Completes 8/16/2028

- Overall Project Complete: **August 23rd, 2028**

Summary of Site Approach 1 overall duration from Move-out to Move-in: 2 years and 8 months.

   a. ***Completes 6 months earlier than baseline schedule.***
      i. ***Does not include early abatement or early move-in schedule expediting options noted above.***

Site Approach 1 Logistics Analysis:

Several assumptions have been made with construction logistics in this analysis. In the Schematic Design phase of the project, we anticipate vetting and fine tuning these assumptions to best fit the District's and community's needs.

Site Approach 1 presents the most simplistic & efficient logistical approach for the contractor. The parking lot west of SE 26th Ave is an ideal location for craft parking, material laydown, and contractor office trailers. With a peak craft worker count of 400+ anticipated on this project, that will bring several hundred vehicles to the project site on a daily basis for an extended period of time. Being able to utilize the parking lot will mitigate the majority of the craft vehicle parking impact on the surrounding neighborhood and businesses. See **Exhibit B.1** to this report for a visual representation of the construction zone footprint in Site Approach 1.

There is a substantial amount of scope at the Track & Field site as well as in the Public Right of Way. The contractor will have to strategically phase all this work to minimize impacts to the neighborhood, public transit, athletic activities at the Track & Field, and construction on the main building site. While some material storage/staging may occur at the Track & Field, the parking lot on SE 26th Ave will serve as the main laydown area to allow for maximum schedule & logistical flexibility at the Track & Field.

Below is a high-level summary of logistical Risks & Opportunities presented in Site Approach 1 beyond the utilization of the SE 26th Ave parking lot.

Logistical Risks & Opportunities:

- **Hoisting (Opportunity):** On a consolidated site, a single electric hammer head tower crane can be utilized to service the project and keep the swing radius within the property footprint. A mobile assist crane may be required for a brief time (1 to 2 weeks) to set heaviest structural members at the Gymnasium. See **Exhibit B.1** for anticipated tower crane location and site coverage.

- **Utility Power Lines (Risk):** On all sides of the site, there are above grade utility power & communication lines. Some of these lines are within a few feet of where the new building will be constructed. Both for safety during construction and for the long-term durability (and safety) of the building we have assumed that during early phases of construction these utilities will be relocated underground. These costs have been included in our conceptual estimate.

- **Trees (Risk):** In the landscaping narrative a significant amount of the larger trees on the property have been identified to be preserved. Some of these trees are within feet of the new building footprint and will present challenges with constructing the new building (structurally and the façade installation for example).

4. **Equity Opportunities:** This Site Approach likely provides more flexibility for the prime contractor to maximize right-sized scopes for certified Small Business Participation versus Site Approach 2. This is primarily because it is less challenging from a logistics & schedule perspective, and it does not have a highly specialized scope like the sky bridge considered in Site Approach 2 which likely would not be performed by a small business. The less challenging & complex logistics in Site Approach 1 should result in lower General Conditions cost for the primer Contractor which should allow them to distribute more project funds to small businesses for Cost of Work scopes on the project rather than their own GC/GR costs.

   This is a preliminary analysis of equity opportunities based on design information available. As the architectural elements of the project develop, a more detailed analysis of scope opportunities & challenges will be provided.

5. **Site Approach 1 - Analysis Summary:** **Site Approach 1 will garner interest from several qualified prime Contractors.** It presents the most simplistic approach from a construction perspective, however, with assumed baseline constraint of not being able to vacate the building until the Spring 2026 term ends, the new school would not be ready to reopen until Fall term of 2029. We've presented preliminary schedule expediting measures that have both risks & opportunities for the project team to consider and further analyze in the next design phase.

------- End of Site Approach 1 Analysis -------

SITE APPROACH 2 – DISTRIBUTED SITE

Site Approach & Understanding:

- *Phased Construction of new buildings on the site totaling to approximately 263,700 gsf, primarily building is 4 story structure with Performing Arts & Gymnasium anchored on the south side of the site. An additional 4 story 60,000 gsf Academic building would be located on the north side of the parking lot on SE 26th Ave connected to main campus with a skybridge.*
- *Significant onsite redevelopment & Public ROW work is included in this scope.*
- *Existing high school will be vacated for the duration of construction.*
- *Demolition & abatement of existing buildings on property is required. Some salvage efforts will be taken to preserve historic elements for reuse in the new high school.*
- *Property surrounded by active neighborhoods, businesses, and public transit routes.*
- *Deep foundations system is unknown at this design phase, though some version of structural piers will likely be required.*
- *Mass Timber is being considered as a structural system in order to reduce carbon footprint. A combination of fully grouted CMU and Concrete tilt up panels will be utilized at the Performing Arts and Gymnasium buildings as well.*
- *A significant amount of the larger trees on the main building site are to be preserved during construction.*
- *Property has above grade utility power lines on all sides of the site that will need to be reworked/relocated to allow for construction and the permanent configuration of the new school and sky bridge.*
- *Track & field will undergo upgrades to existing facilities as well as have a new field house, restrooms, and concessions buildings constructed onsite.*
- *The parking lot west of SE 26th Ave will be utilized for staging & craft parking for a significant portion of construction, however, will not be able to be utilized for the duration of construction due to the Academic building on the north end of the parking lot. Staging & craft parking will need to be relocated at some point during the course of construction to allow for the Academic building to be constructed.*

1. **Cost Efficiency:** Overall the distributed option has a higher anticipated project cost vs the consolidated option. Breaking the project up between two sites with a very busy road between them presents numerous challenges logistically. By pulling programmatic sf out of the main building there is savings in the main structure by being able to down grade the rating requirements. Yet the addition of a skybridge and added roofing and façade due to a separate building are creating cost increases above the consolidated option. Both options have the same improvements on Waverleigh, Right Aways and the Track Site. Anticipated durations for the

project between schemes has been accounted for in the General Conditions and Requirements of the various schemes.

2. **Schedule: This approach presents the overall longest schedule path, least efficient construction logistics, and most disruptions to the surrounding neighborhood during construction. In this approach, without expending significant funds or causing significant disruptions to surrounding neighborhood, it is highly unlikely that the new school will be completed in time for the start of the 2028-2029 school year.**

    Site Approach 2 Schedule Analysis:
    Just as in Site Approach 1, this approach assumes a baseline constraint of not being able to vacate the school until the end of the spring 2026 term. Additionally, it is assumed that the Districts Move-in activity will not begin until construction is complete, and C of O is achieved by the contractor. These two assumptions present an overall allowable construction duration of 19 months for completing the new school buildings. At this phase of design, a 19-month construction duration does not appear adequate for a contractor to safely build this size & type of project. Below we will outline the flow of work, key activities/durations, risks, & opportunities.

    The critical path of the schedule currently flows through design completion, permit issuance, move-out/in, deep underground work, and construction of the new Main building & Academic building activities. It is assumed in the baseline schedule that the scope at the Track & Field as well as all Public ROW work will occur simultaneously with construction of the new buildings on the main site. These off-site activities will be phased by contractor to minimize impacts to surrounding neighbors and also athletic activities at the Track & Field site.

    It is assumed that the Academic building construction will start with approximately 5 months remaining in construction of the Main buildings. Phasing the Academic building to start later allows for the contractor to utilize the parking lot west of SE 26th Ave for as long as possible to limit craft vehicle impacts on the surrounding neighborhood and allow for craft workers to park within the required distance of the jobsite (without incurring significant unproductive cost premiums from subcontractors).

    As described in the Cost Efficiency section above, we anticipate Site Approach 2 will also have significantly higher GC/GR costs in comparison to Site Approach 1 as a result of building on two sites in this Site Approach. Whether the Academic building on the parking lot is built concurrently or in a subsequent phase to the main building, the Contractor will need to provide either more concurrent GC/GRs or extended GC/GRs to manage the larger construction zone footprint.

Site Approach 2 – Baseline Schedule Key Activities & Durations:
Exhibit A.2 presents a conceptual level schedule for this Site Approach. Below is a high-level summary of that conceptual schedule, highlighting key durations and milestones for reference and comparison to Site Approach 1:

- Design and Permitting durations are assumed equal in both Site Approaches.
- Move out of existing High School & Abatement:
    - 43 days
    - Completes 8/17/2026
- Demo, Mass Ex, Deep UG MEP & Foundations:
    - 105 days
    - Completes 1/18/2027
- New high school Construction & Onsite Improvements:
    - 386 days
    - Completes 7/26/2028 (TCO achieved on main site)
- Academic Building on SE 26th Ave parking lot & parking lot improvements:
    - Begins 5 months before completion of New high school on main site to allow for maximum use of parking lot for staging & craft parking during the most complex phases of construction on main site when peek craft worker count will be reached.
    - 258 days
    - Completes 3/27/2029 (C of O on all buildings/site achieved)
- Track & Field Improvements & New Structures:
    - 237 days (Phased to limit disruptions to seasonal athletic activities)
    - Completes 7/26/2028
- Public ROW Improvements
    - 228 days (phased to limit disruptions to public & onsite construction activities). Completion to SE 26th Ave parking lot is delayed due to Academic building construction.
    - Completes 3/27/2029
- Move-in to new High school on Main site:
    - 40 days
    - Completes 9/28/2029
- Move-in to new Academic Building on parking lot site:
    - 25 days
    - Completes 5/22/2029
- Overall Project Complete: **May 30th, 2029**

- *This results in the new school not reopening until Fall of 2029. While this is later than the District desires, this may actually lessen the overall strain and impact on the District when considering that two other new high schools are targeted to reopen for Fall of 2028 school.*

Summary of Site Approach 2 overall duration from Move-out to Move-in: 3 years.

Schedule Expediting Opportunities:

In the high-level key activity summary above the baseline schedule presents an end of May of 2029 overall project completion (through completion of move-in). We understand this is later than the goal of being ready for school to restart in the Fall of 2028. Below is a list of schedule expediting opportunities for the team to consider and study further in the next design phase. *Note that in this Site Approach it appears that all expediting options noted below must be taken in order to allow for the opportunity for school to restart by Fall of 2028:*

- **Off-site Material Staging & Craft Parking:** In order to allow for the Academic building on the parking lot site to be built concurrently with the buildings on the main site, the parking lot at SE 26th Ave can only be utilized for the contractor field office trailers and minimal craft parking or material staging. An off-site material staging & craft parking location will need to be utilized by the contractor. A potential location is the north side of the Fred Meyer parking lot located south of the main building site. While this location has ample space, it puts craft workers outside the required distance that they are supposed to be able to park adjacent to the project. We anticipate this will result in significantly higher GC/GR costs for the contractor and multi-million-dollar inefficiencies costs for subcontractors. We've included a high-level ROM alternate price for this option in our cost estimate attached to this report.

- **Early Abatement:** Perform as much abatement of existing high school during the Summer of 2025, prior to start of school in Fall of 2025. Not all abatement will be able to be completed during this summer simply due to some of the destructive nature of this activity. **Estimated schedule savings is 1.5 months.**

- **Early Move-in:** Conduct District move-in activities concurrent with completion of construction & close out activities with an early "move-in only" Temporary Certificate of Occupancy. The permitting process will need to be expedited by approximately 2 months in this scenario. As mentioned at the beginning of this narrative, the baseline assumption is that the District will not start its 3 month move-in activity until after construction is complete and C of O is achieved. If the District is willing to start the move-in while construction & closeout activities are still finishing on the project, then there is a stronger chance of being able to reopen the school for the start of 2028-2029 school year. This will be an aggressive schedule and the move-in process will prove much more logistically challenging for the District and the contractor. **Estimated schedule savings is 4 months.**

- **Early Move-out:** Move out of existing high school over winter break of the 2025/2026 school year. While this is likely not desirable, if this option was taken then a start of school in Fall of 2028 is achievable. The permitting process will need to be expedited by approximately 2 months in this scenario. See Alternate Schedule Path narrative described in Site Option 1 section of this report. **Estimated schedule savings is 6 months.**

Site Approach 2 Logistics Analysis:

Several assumptions have been made with construction logistics in this analysis. In the Schematic Design phase of the project, we anticipate vetting and fine tuning these assumptions to best fit the District's and community's needs.

Site Approach 2 presents the most complex & least efficient logistical approach for the contractor of the two options analyzed. As noted above under the Schedule Expediting Options section, whether the Academic building is phased later than the main buildings or if it is built concurrently with the Main buildings, additional risks & costs are apparent in this approach. See **Exhibit B.2** to this report for a visual representation of the construction zone footprint in Site Approach 2.

There is a substantial amount of scope at the Track & Field site as well as in the Public Right of Way. The contractor will have to strategically phase all of this work to minimize impacts to the neighborhood, public transit, athletic activities at the Track & Field, and construction on the main building site. In this site approach, the contractor will need to either store more material completely offsite and bring in just in time or find more creative ways to store material at the Track & Field site as the parking lot at SE 26th Ave will have a reduced usable footprint for the contractor.

Below is a high-level summary of logistical Risks & Opportunities presented in Site Approach 1 beyond the complexities of constructing the Academic building on SE 26th Ave parking lot.

Logistical Risks & Opportunities:

- **Sky Bridge (Risk):** The sky bridge crossing over SE 26th Ave presents several risks & impacts to the project. There will be more than one time when SE 26th Ave will need to be closed for construction of the bridge. While the contractor will likely elect to prefabricate the bulk of the structure that crosses the road and set in one piece, the façade will be installed on the bridge once the structure is in place. The façade installation will likely need to occur on several weekends, with the road closed in order to limit risks to the public. The sky bridge will also either be very close to or in direct conflict with existing above grade power lines, this risk is discussed below.

- **Hoisting (Risk):** On a distributed site, in addition to a single electric hammer head tower crane can being utilized to service the main site. An additional mobile crane will be required for several months and at various phases of construction at the Academic building on the parking lot site. See **Exhibit B.2** for anticipated crane locations and site coverage.

- **Utility Power Lines (Risk):** On all sides of the site, there are above grade utility power & communication lines. Some of these lines are within a few feet of where the new building will be constructed. Both for safety during construction and for the long-term durability (and safety) of the building we have assumed that during early phases of construction these utilities will be relocated underground. These costs have been included in our conceptual estimate.

- **Trees (Risk):** In the landscaping narrative a significant amount of the larger trees on the property have been identified to be preserved. Some of these trees are within feet of the new building footprint and will present challenges with constructing the new building (structurally and the façade installation for example).

3. **Equity Opportunities:** This Site Approach likely provides less flexibility for the prime contractor to maximize right-sized scopes for certified Small Business Participation versus Site Approach 1. This is primarily because it is more challenging from a logistics & schedule perspective. It also has the added complexity of the specialized higher risk scopes for the Sky Bridge that likely will not be performed by a small business. The more challenging

& complex logistics in Site Approach 2 will likely result in higher General Conditions cost for the prime contractor which add more GC/GR costs for them that could otherwise be utilized for Cost of Work scope items that small businesses could perform.

This is a preliminary analysis of equity opportunities based on design information available. As the architectural elements of the project develop, a more detailed analysis of scope opportunities & challenges will be provided.

4. **Site Approach 1 - Analysis Summary: Site Approach 2 will garner interest from several qualified prime Contractors.** However, it presents a longer schedule path, more risks, and higher complexity than Site Approach 1. With the assumed baseline constraint of not being able to vacate the building until the Spring 2026 term ends and having to phase construction of the Academic building later, the new school would not be ready to reopen until Fall term of 2029. We've presented preliminary schedule expediting measures that have both risks & opportunities for the project team to consider and further analyze in the next design phase.

ATTACHMENTS:

- ***EXHIBIT A.1 – PROPOSED CONCEPT SCHEDULE_SITE APPROACH 1***
- ***EXHIBIT A.2 – PROPOSED CONCEPT SCHEDULE_SITE APPROACH 2***
- ***EXHIBIT B.1 – 3D CONCEPTUAL LOGISTIC_SITE APPROACH 1***
- ***EXHIBIT B.2 – 3D CONCEPTUAL LOGISTIC_SITE APPROACH 1***
- ***EXHIBIT C – CONCEPTUAL ESTIMATE***

----------------------- End of Cost, Schedule, & Equity Analysis Narrative ------------------------

Pull any of these color-coded columns down to see how these seasonal athletic activities overlay with construction.

Cleveland High School - Consolidated Site Approach | CHS WBS | Data Date: 06-Dec-23 | Printed: 05-Apr-24

#	Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
1		**Cleveland High School - Consolidated Site Approach**	1325	06-Dec-23	26-Feb-29	0
2		**Cleveland High School - Consolidated Site Approach**	1325	06-Dec-23	26-Feb-29	0
3		**Milestones**	1325	06-Dec-23	26-Feb-29	0
4	A1360	Design Begin (Comprehensive Planning Phase)	0	06-Dec-23		1325
5	A1340	Demo/Early Construction Begin	0	17-Jun-26		683
6	A1370	Project Turnover to PPS	0		26-Feb-29	0
7		**Pre-Construction**	837	06-Dec-23	24-Mar-27	489
8		**Design**	642	06-Dec-23	16-Jun-26	684
9	A1070	Schematic Design Planning Phase	83	06-Dec-23	01-Apr-24	21
10	A1000	Schematic Design	129	01-May-24*	31-Oct-24	0
11	A1050	50% SD Estimate	0	01-Aug-24		1157
12	A1010	Design Development	172	01-Nov-24	08-Jul-25	0
13	A1080	50% DD Estimate	0	07-Mar-25		10
14	A1020	Construction Documents	237	09-Jul-25	16-Jun-26	0
15	A1110	50% CD Estimate	0	03-Nov-25		0
16		**Permitting & County Bond Process**	467	05-Nov-24	10-Sep-26	623
17	A1320	Bond Funding Measure - 2024 Ballot	1	05-Nov-24*	05-Nov-24	230
18	A1330	Bond Funding Expected Approval - 2024 Ballot	1	06-Dec-24	06-Dec-24	230
19	A1390	CM/GC Procurement & Board Approval	90	09-Dec-24	15-Apr-25	978
20	A1120	Public Works Permit	215	07-Mar-25	14-Jan-26	10
21	A1030	Demo /Abatement / UG MEP / Footings / Structure Permit(s)	86	03-Nov-25	10-Mar-26	0
22	A1040	Remainder of Building Permit(s)	129	11-Mar-26	10-Sep-26	73
23		**Submittals & Procurement**	195	16-Jun-26	24-Mar-27	384
24		**Submittals Submitted**	45	16-Jun-26	19-Aug-26	444
25	A1150	Submittal Submitted - long lead material (1)	45	16-Jun-26	19-Aug-26	384
26	A1160	Submittal Submitted - long lead material (2)	45	16-Jun-26	19-Aug-26	424
27	A1170	Submittal Submitted - long lead material (3)	45	16-Jun-26	19-Aug-26	444
28		**Submittals Approved**	30	19-Aug-26	01-Oct-26	444
29	A1180	Submittal Approved - long lead material (1)	30	19-Aug-26	01-Oct-26	384
30	A1190	Submittal Approved - long lead material (2)	30	19-Aug-26	01-Oct-26	424
31	A1200	Submittal Approved - long lead material (3)	30	19-Aug-26	01-Oct-26	444
32		**Procurement**	120	01-Oct-26	24-Mar-27	384
33	A1210	Procurement - long lead material (1)	120	01-Oct-26	24-Mar-27	384
34	A1220	Procurement - long lead material (2)	80	01-Oct-26	27-Jan-27	424
35	A1230	Procurement - long lead material (3)	60	01-Oct-26	29-Dec-26	444
36		**Construction**	683	17-Jun-26	26-Feb-29	0
37		**Mobilization & Demo**	88	17-Jun-26	20-Oct-26	60
38	A1090	Move Out, Mobilize, Abate	43	17-Jun-26	17-Aug-26	0
39	A1240	Demo / Haul Off All Existing Structures	45	18-Aug-26	20-Oct-26	0
40	A1260	Establish laydown area & parking on site / off site	10	11-Sep-26	24-Sep-26	73
41	A1100	Site Mobilization post Demo for Remainder Construction	5	25-Sep-26	01-Oct-26	73
42		**Construction - Consolidated Site Approach**	590	21-Oct-26	19-Feb-29	5
43		**Main Site**	590	21-Oct-26	19-Feb-29	0
44	A1430	Mass Excavations & Deep UG MEP	60	21-Oct-26	18-Jan-27	0
45	A1280	Construction of New Buildings & Onsite Improvements	430	19-Jan-27	26-Sep-28	0
46	A1380	Close Out Activities & Commissioning of New Buildings	60	27-Sep-28	21-Dec-28	40
47	A1440	Certificate of Occupancy	5	27-Sep-28	03-Oct-28	0

Actual Level of Effort | Remaining Work | Milestone
Actual Work | Critical Remaining Work | summary

Page 1 of 2

GAMUT PROJECT SOLUTIONS

TASK filter: All Activities

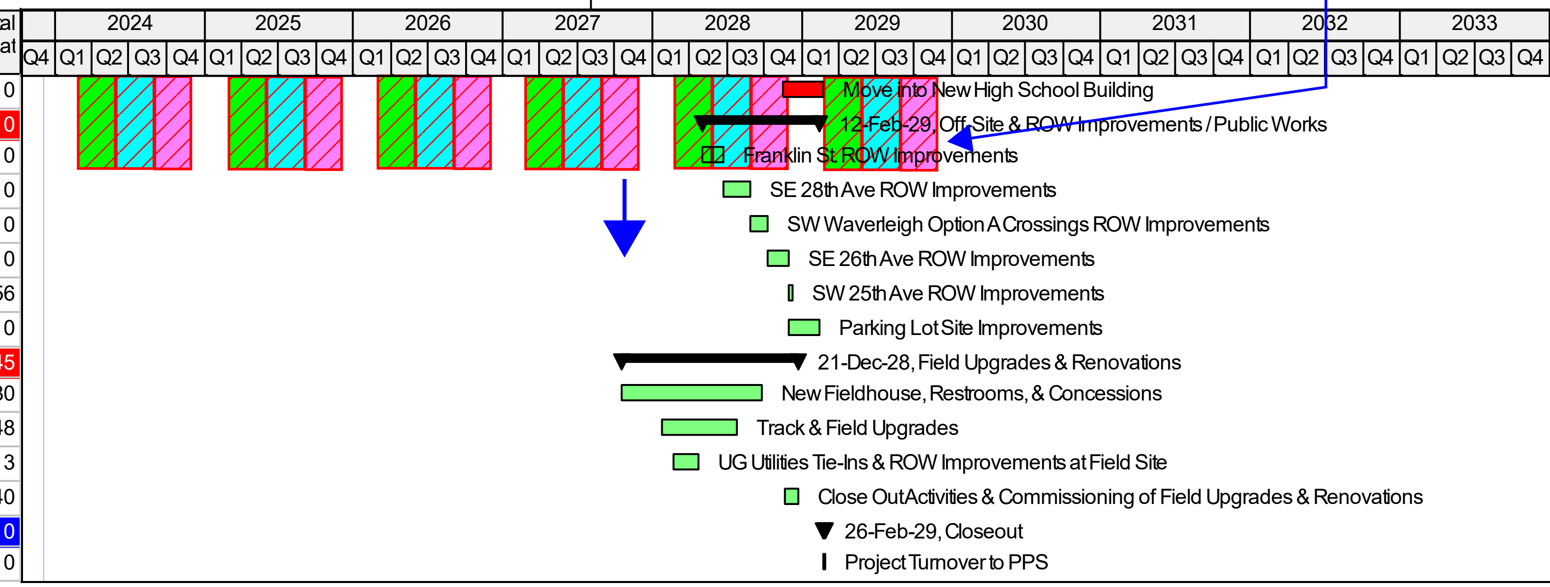
EXHIBIT A.1 - CONCEPT SCHEDULE - OPTION 01_CONSOLIDATED SITE

Spring Sports: March to May | Summer Sports: June to August | Fall Sports: Sept. to November

Pull any of these color-coded columns down to see how these seasonal athletic activities overlay with construction.

Cleveland High School - Consolidated Site Approach | CHS WBS | Data Date: 06-Dec-23 | Printed: 05-Apr-24

#	Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
48	A1450	Move into New High School Building	65	15-Nov-28	19-Feb-29	0
49	Off-Site & ROW Improvements / Public Works		196	03-May-28	12-Feb-29	10
50	A1460	Franklin St. ROW Improvements	35	03-May-28	21-Jun-28	10
51	A1470	SE 28th Ave ROW Improvements	45	22-Jun-28	25-Aug-28	10
52	A1480	SW Waverleigh Option A Crossings ROW Improvements	30	28-Aug-28	09-Oct-28	10
53	A1490	SE 26th Ave ROW Improvements	35	10-Oct-28	29-Nov-28	10
54	A1500	SW 25th Ave ROW Improvements	5	30-Nov-28	06-Dec-28	56
55	A1510	Parking Lot Site Improvements	51	30-Nov-28	12-Feb-29	10
56	Field Upgrades & Renovations		297	20-Oct-27	21-Dec-28	45
57	A1410	New Fieldhouse, Restrooms, & Concessions	237	20-Oct-27	26-Sep-28	80
58	A1520	Track & Field Upgrades	129	25-Jan-28	26-Jul-28	148
59	A1530	UG Utilities Tie-Ins & ROW Improvements at Field Site	43	23-Feb-28	24-Apr-28	213
60	A1420	Close Out Activities & Commissioning of Field Upgrades & Renovations	20	22-Nov-28	21-Dec-28	40
61	Closeout		5	20-Feb-29	26-Feb-29	0
62	A1400	Project Turnover to PPS	5	20-Feb-29	26-Feb-29	0



Actual Level of Effort | Remaining Work | Milestone
Actual Work | Critical Remaining Work | summary

GAMUT PROJECT SOLUTIONS

TASK filter: All Activities

EXHIBIT A.1 - CONCEPT SCHEDULE - OPTION 01_CONSOLIDATED SITE

Spring Sports: March to May | Summer Sports: June to August | Fall Sports: Sept. to November

Pull any of these color-coded columns down to see how these seasonal athletic activities overlay with construction.

Cleveland High School - Distributed Site Approach | CHS WBS | Data Date: 06-Dec-23 | Printed: 05-Apr-24

#	Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
1		**Cleveland High School - Distributed Site Approach**	1391	06-Dec-23	30-May-29	0
2		**Cleveland High School - Distributed Site Approach**	1391	06-Dec-23	30-May-29	0
3		**Milestones**	1391	06-Dec-23	30-May-29	0
4	A1360	Design Begin (Comprehensive Planning Phase)	0	06-Dec-23		1391
5	A1340	Demo/Early Construction Begin	0	17-Jun-26		749
6	A1370	Project Turnover to PPS	0		30-May-29	0
7		**Pre-Construction**	837	06-Dec-23	24-Mar-27	555
8		**Design**	642	06-Dec-23	16-Jun-26	750
9	A1070	Comprehensive Planning Phase	83	06-Dec-23	01-Apr-24	21
10	A1000	Schematic Design	129	01-May-24*	31-Oct-24	0
11	A1050	50% SD Estimate	0	01-Aug-24		1223
12	A1010	Design Development	172	01-Nov-24	08-Jul-25	0
13	A1080	50% DD Estimate	0	07-Mar-25		163
14	A1020	Construction Documents	237	09-Jul-25	16-Jun-26	0
15	A1110	50% CD Estimate	0	03-Nov-25		0
16		**Permitting & County Bond Process**	467	05-Nov-24	10-Sep-26	689
17	A1320	Bond Funding Measure - 2024 Ballot	1	05-Nov-24*	05-Nov-24	230
18	A1330	Bond Funding Expected Approval - 2024 Ballot	1	06-Dec-24	06-Dec-24	230
19	A1390	CM/GC Procurement & Board Approval	90	09-Dec-24	15-Apr-25	1044
20	A1120	Public Works Permit	215	07-Mar-25	14-Jan-26	163
21	A1030	Demo /Abatement / UG MEP / Footings / Structure Permit(s)	86	03-Nov-25	10-Mar-26	0
22	A1040	Remainder of Building Permit(s)	129	11-Mar-26	10-Sep-26	73
23		**Submittals & Procurement**	195	16-Jun-26	24-Mar-27	341
24		**Submittals Submitted**	45	16-Jun-26	19-Aug-26	401
25	A1150	Submittal Submitted - long lead material (1)	45	16-Jun-26	19-Aug-26	341
26	A1160	Submittal Submitted - long lead material (2)	45	16-Jun-26	19-Aug-26	381
27	A1170	Submittal Submitted - long lead material (3)	45	16-Jun-26	19-Aug-26	401
28		**Submittals Approved**	30	19-Aug-26	01-Oct-26	401
29	A1180	Submittal Approved - long lead material (1)	30	19-Aug-26	01-Oct-26	341
30	A1190	Submittal Approved - long lead material (2)	30	19-Aug-26	01-Oct-26	381
31	A1200	Submittal Approved - long lead material (3)	30	19-Aug-26	01-Oct-26	401
32		**Procurement**	120	01-Oct-26	24-Mar-27	341
33	A1210	Procurement - long lead material (1)	120	01-Oct-26	24-Mar-27	341
34	A1220	Procurement - long lead material (2)	80	01-Oct-26	27-Jan-27	381
35	A1230	Procurement - long lead material (3)	60	01-Oct-26	29-Dec-26	401
36		**Construction**	749	17-Jun-26	30-May-29	0
37		**Mobilization & Demo**	88	17-Jun-26	20-Oct-26	60
38	A1090	Move Out, Mobilize, Abate	43	17-Jun-26	17-Aug-26	0
39	A1240	Demo / Haul Off All Existing Structures	45	18-Aug-26	20-Oct-26	0
40	A1260	Establish laydown area & parking on site / off site	10	11-Sep-26	24-Sep-26	73
41	A1100	Site Mobilization post Demo for Remainder Construction	5	25-Sep-26	01-Oct-26	73
42		**Construction - Distributed Site Approach**	656	21-Oct-26	22-May-29	5
43		**Main Site**	656	21-Oct-26	22-May-29	5
44	A1430	Mass Excavations & Deep UG MEP	60	21-Oct-26	18-Jan-27	0
45	A1280	Construction of New Buildings & Onsite Improvements	387	19-Jan-27	26-Jul-28	0
46	A1540	Relocate Craft Parking & Laydown Yard from 26th Ave Parking Lot	10	25-Jan-28	07-Feb-28	0
47	A1550	Excavation & UG MEP	30	08-Feb-28	20-Mar-28	0

Actual Level of Effort | Remaining Work | Milestone
Actual Work | Critical Remaining Work | summary

GAMUT PROJECT SOLUTIONS

TASK filter: All Activities

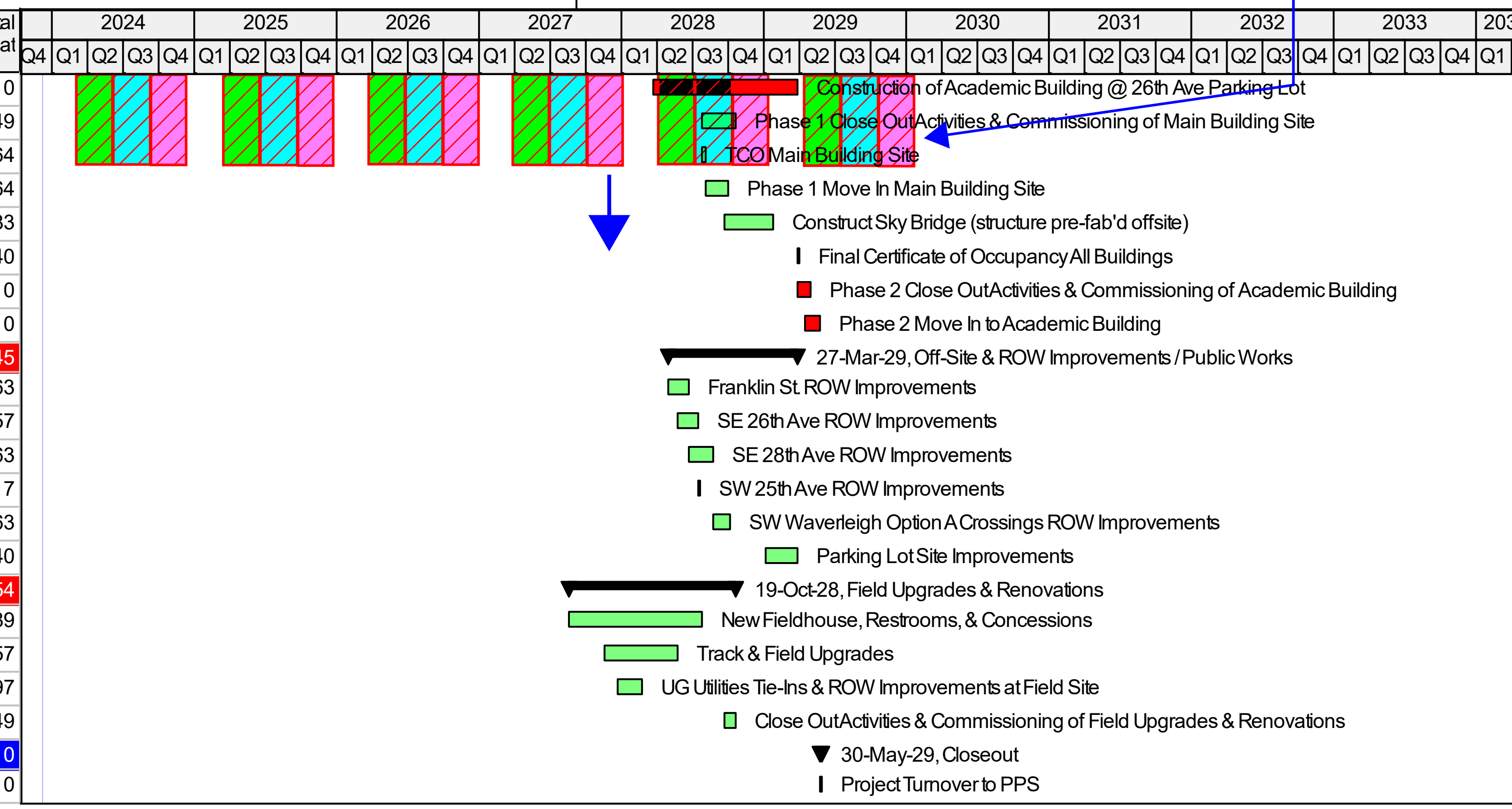
EXHIBIT A.2 - CONCEPT SCHEDULE - OPTION 02_DISTRIBUTED SITE

Spring Sports: March to May | Summer Sports: June to August | Fall Sports: Sept. to November

Pull any of these color-coded columns down to see how these seasonal athletic activities overlay with construction.

Cleveland High School - Distributed Site Approach | CHS WBS | Data Date: 06-Dec-23 | Printed: 05-Apr-24

#	Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
48	A1560	Construction of Academic Building @ 26th Ave Parking Lot	258	21-Mar-28	27-Mar-29	0
49	A1380	Phase 1 Close OutActivities & Commissioning of Main Building Site	60	27-Jul-28	19-Oct-28	149
50	A1290	TCO Main Building Site	5	27-Jul-28	02-Aug-28	164
51	A1450	Phase 1 Move In Main Building Site	40	03-Aug-28	28-Sep-28	164
52	A1570	Construct Sky Bridge (structure pre-fab'd offsite)	86	22-Sep-28	25-Jan-29	83
53	A1440	Final Certificate of Occupancy All Buildings	5	28-Mar-29	03-Apr-29	40
54	A1580	Phase 2 Close OutActivities & Commissioning of Academic Building	25	28-Mar-29	01-May-29	0
55	A1590	Phase 2 Move In to Academic Building	25	18-Apr-29	22-May-29	0
56		**Off-Site & ROW Improvements / Public Works**	228	02-May-28	27-Mar-29	45
57	A1460	Franklin St. ROW Improvements	35	02-May-28	20-Jun-28	163
58	A1490	SE 26th Ave ROW Improvements	35	24-May-28	14-Jul-28	157
59	A1470	SE 28th Ave ROW Improvements	45	21-Jun-28	24-Aug-28	163
60	A1500	SW 25th Ave ROW Improvements	5	17-Jul-28	21-Jul-28	217
61	A1480	SW Waverleigh Option A Crossings ROW Improvements	30	25-Aug-28	06-Oct-28	163
62	A1510	Parking Lot Site Improvements	60	03-Jan-29	27-Mar-29	40
63		**Field Upgrades & Renovations**	297	19-Aug-27	19-Oct-28	154
64	A1410	New Fieldhouse, Restrooms, & Concessions	237	19-Aug-27	26-Jul-28	189
65	A1520	Track & Field Upgrades	129	19-Nov-27	23-May-28	257
66	A1530	UG Utilities Tie-Ins & ROW Improvements at Field Site	43	22-Dec-27	23-Feb-28	297
67	A1420	Close OutActivities & Commissioning of Field Upgrades & Renovations	20	22-Sep-28	19-Oct-28	149
68		**Closeout**	5	23-May-29	30-May-29	0
69	A1400	Project Turnover to PPS	5	23-May-29	30-May-29	0



Actual Level of Effort | Remaining Work | Milestone
Actual Work | Critical Remaining Work | summary

Page 2 of 2

GAMUT PROJECT SOLUTIONS

TASK filter: All Activities

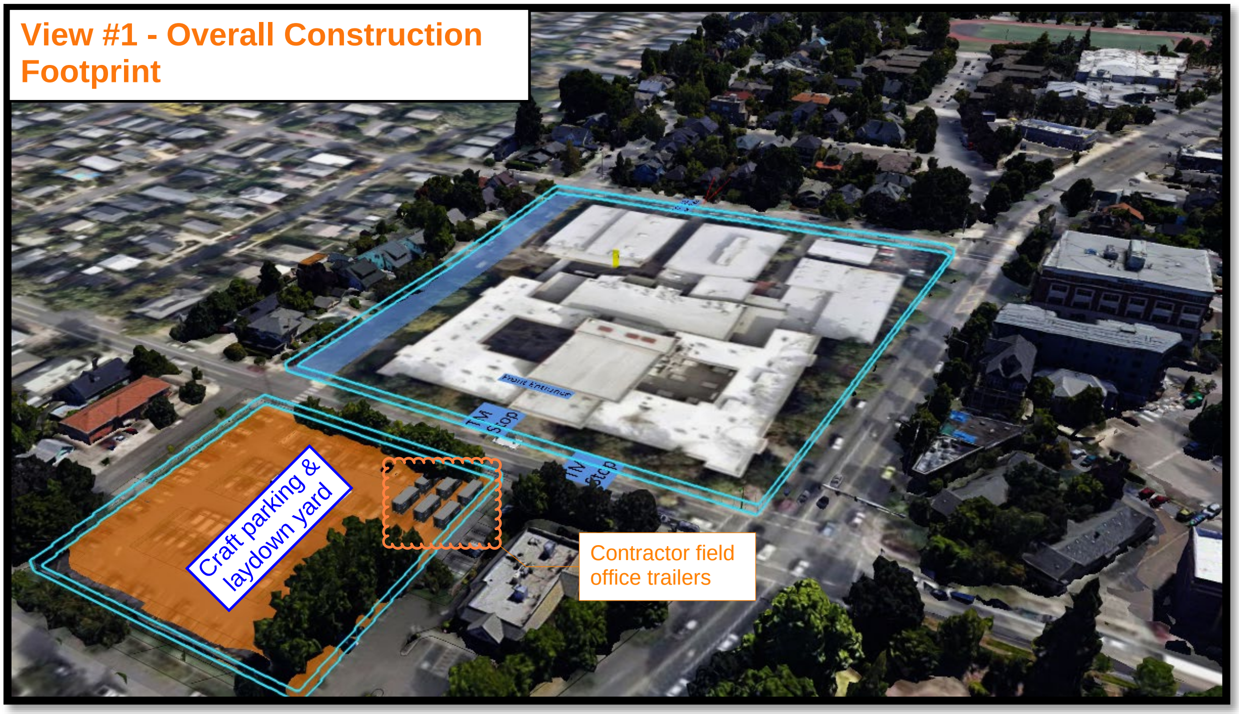
EXHIBIT A.2 - CONCEPT SCHEDULE - OPTION 02_DISTRIBUTED SITE

Spring Sports: March to May | Summer Sports: June to August | Fall Sports: Sept. to November

CHS Modernization: Comprehensive Planning Phase
April 8th, 2024

Gamut Project Solutions - Cost, Schedule, & Equity Analysis
EXHIBIT B.1 – 3D CONCEPTUAL LOGISTICS_*CONSOLIDATED SITE*

Introduction: This exhibit is intended only to demonstrate a conceptual approach to constructing the building(s). The model used to generate these 3D Logistic views is preliminary and in no way intended to be definitive in either design, schedule, phasing or logistical approach at this point of analysis and design. These visual aids, however, will help the project team interpret the conceptual schedule provided (EXHIBIT A) and will aid the teams in decisions related to cost, schedule, phasing, and logistics.



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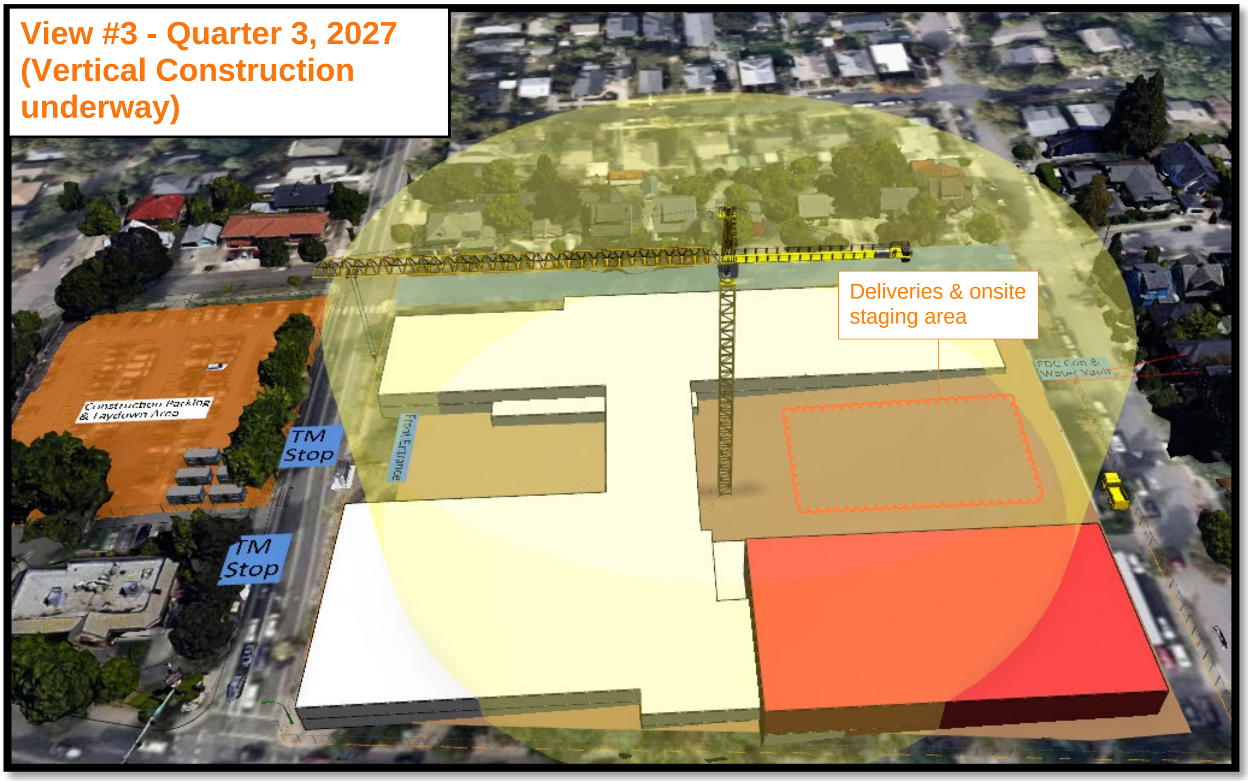
View #2 - Quarter 4, 2026 (Mass ex & Deep UG & Foundations underway



View #3 - Quarter 3, 2027 (Vertical Construction underway)

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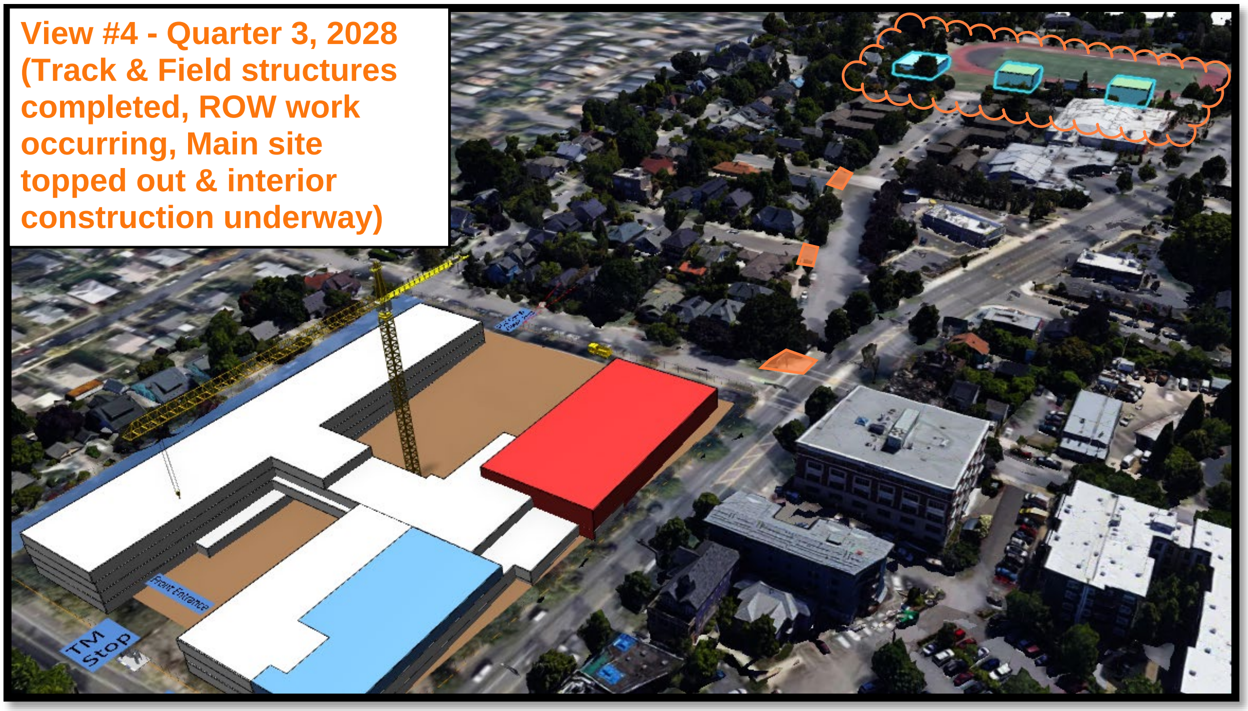
View #4 - Quarter 3, 2028 (Track & Field structures completed, ROW work occurring, Main site topped out & interior construction underway)



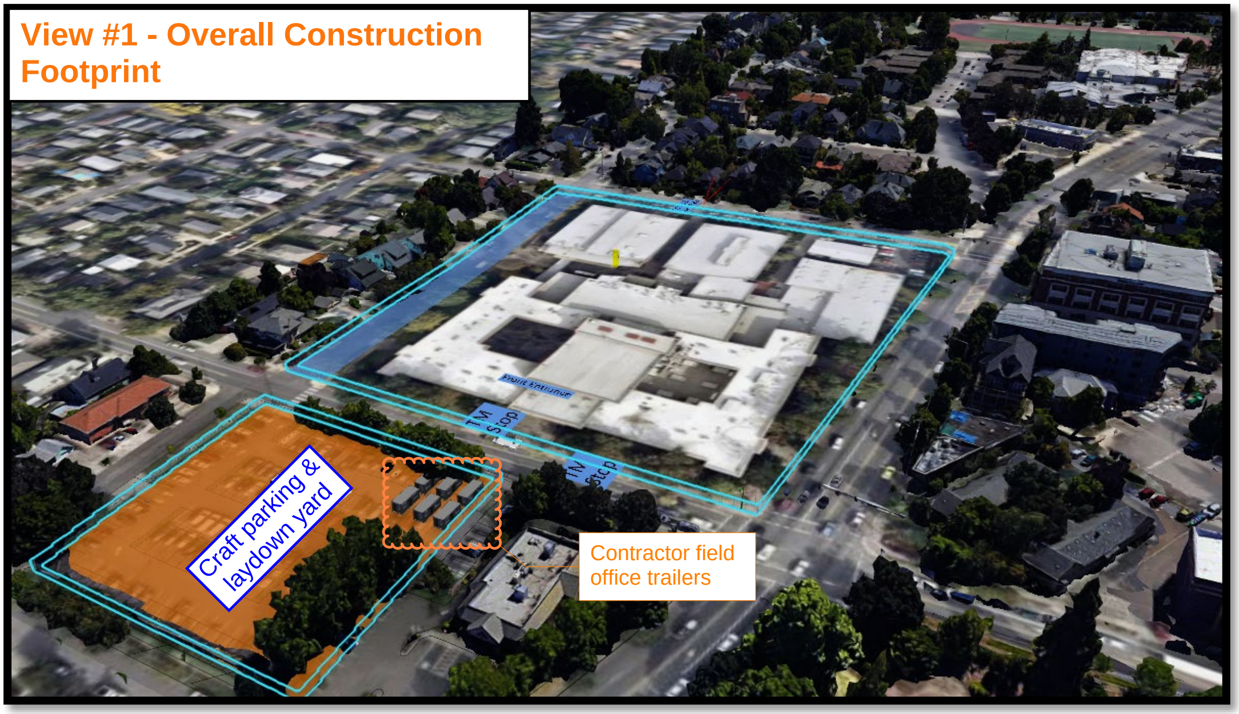
View #4 - Quarter 1, 2029 (All phases complete)

----------------------------END OF EXHIBIT B.1----------------------------

CHS Modernization: Comprehensive Planning Phase
April 8th, 2024

Gamut Project Solutions - Cost, Schedule, & Equity Analysis
EXHIBIT B.2 – 3D CONCEPTUAL LOGISTICS_*DISTRIBUTED SITE*

Introduction: This exhibit is intended only to demonstrate a conceptual approach to constructing the building(s). The model used to generate these 3D Logistic views is preliminary and in no way intended to be definitive in either design, schedule, phasing or logistical approach at this point of analysis and design. These visual aids, however, will help the project team interpret the conceptual schedule provided (EXHIBIT A) and will aid the teams in decisions related to cost, schedule, phasing, and logistics.



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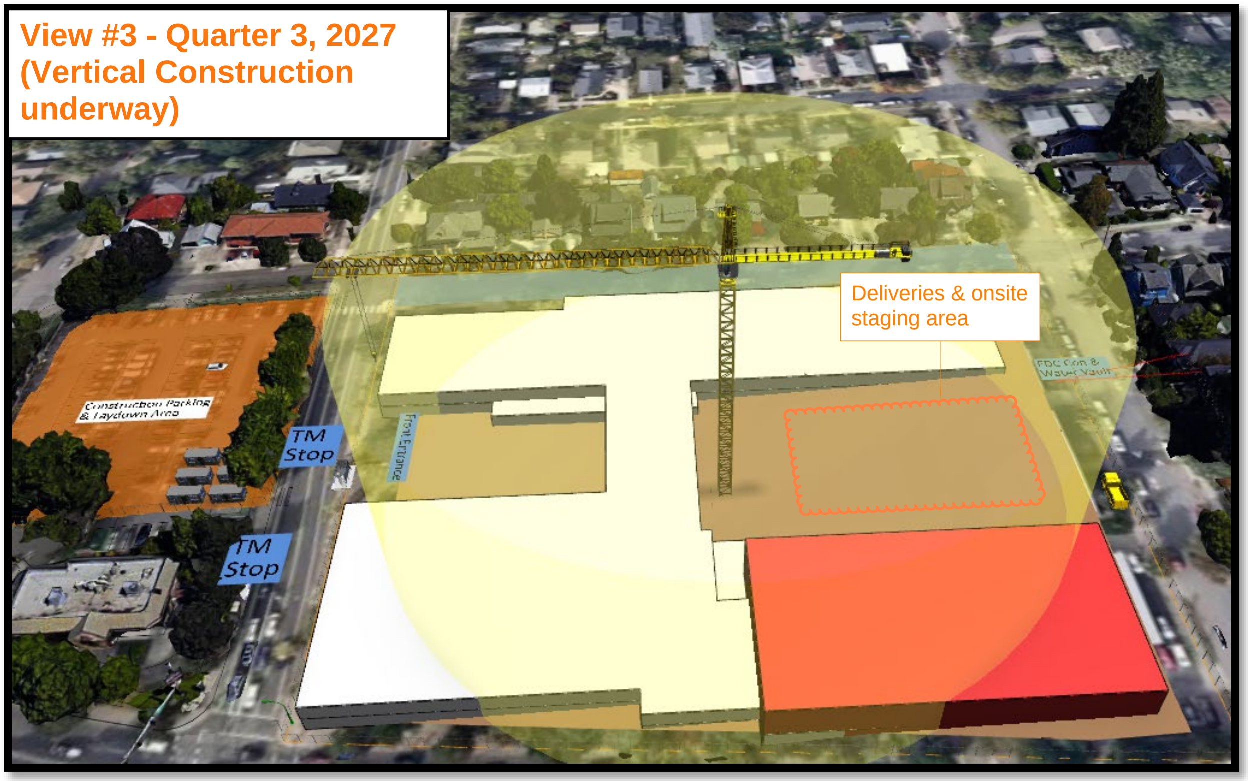

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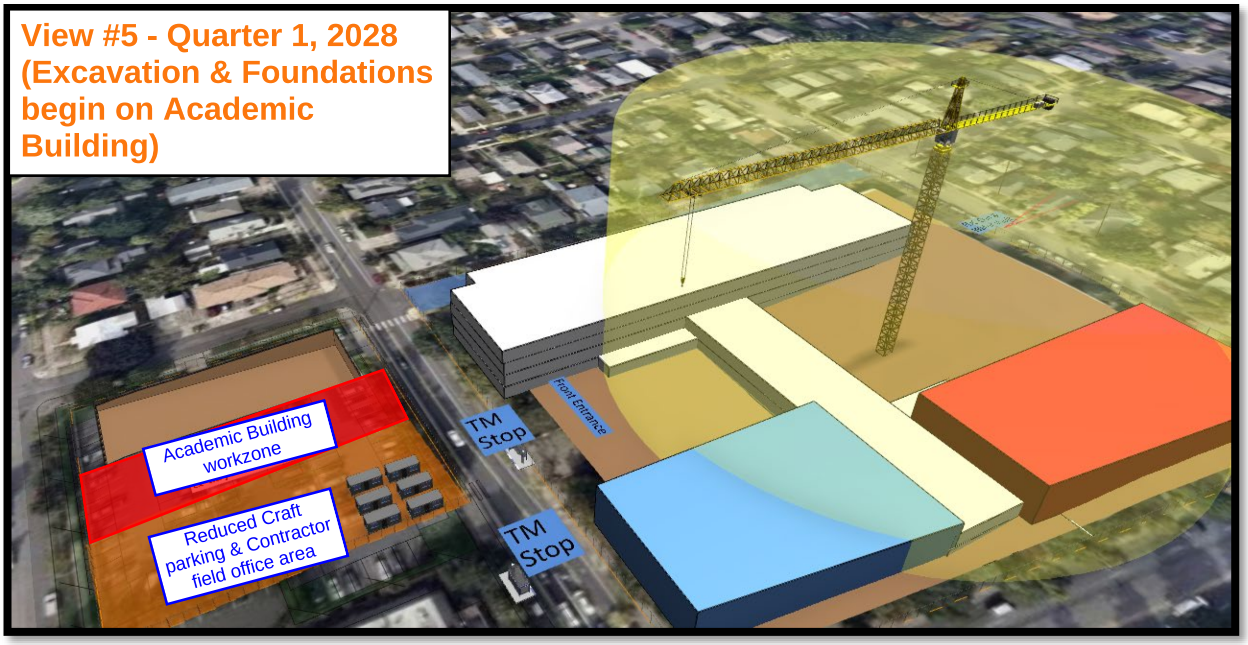

View #5 - Quarter 1, 2028 (Excavation & Foundations begin on Academic Building)

View #6 - Quarter 2, 2028 (Track & Field structures completed, ROW work occurring, Main building nearing completion, Academic building well underway)

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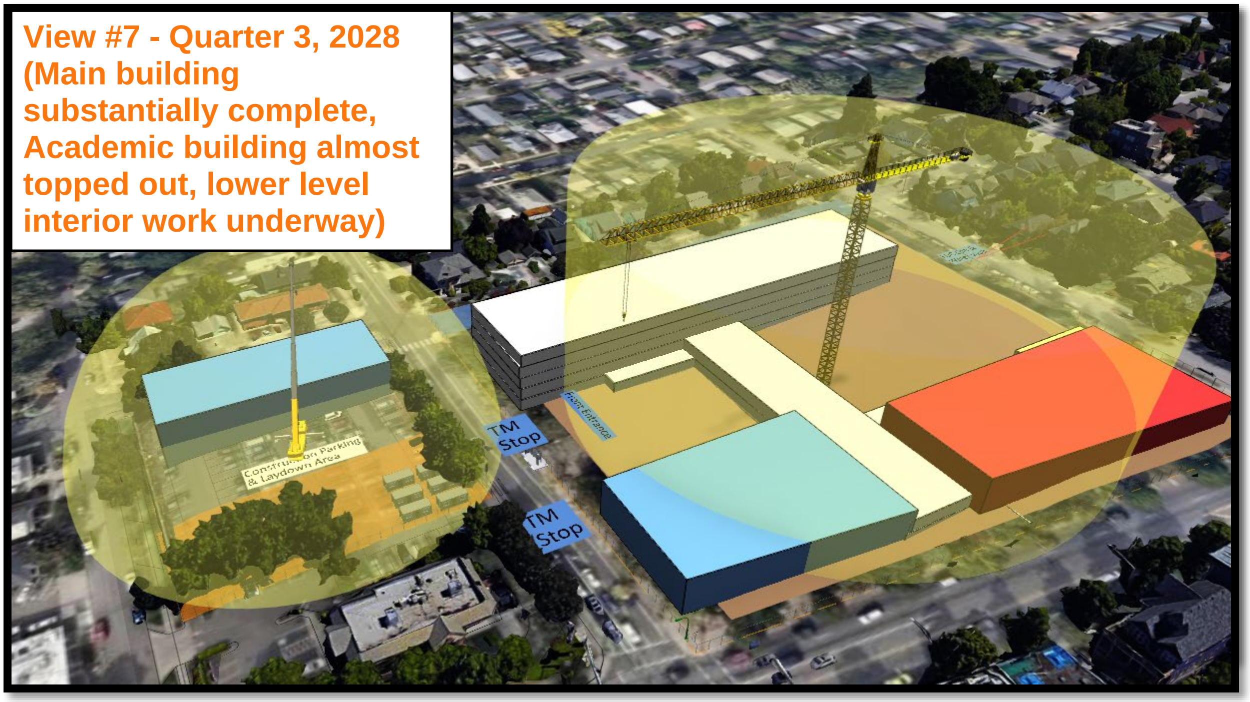
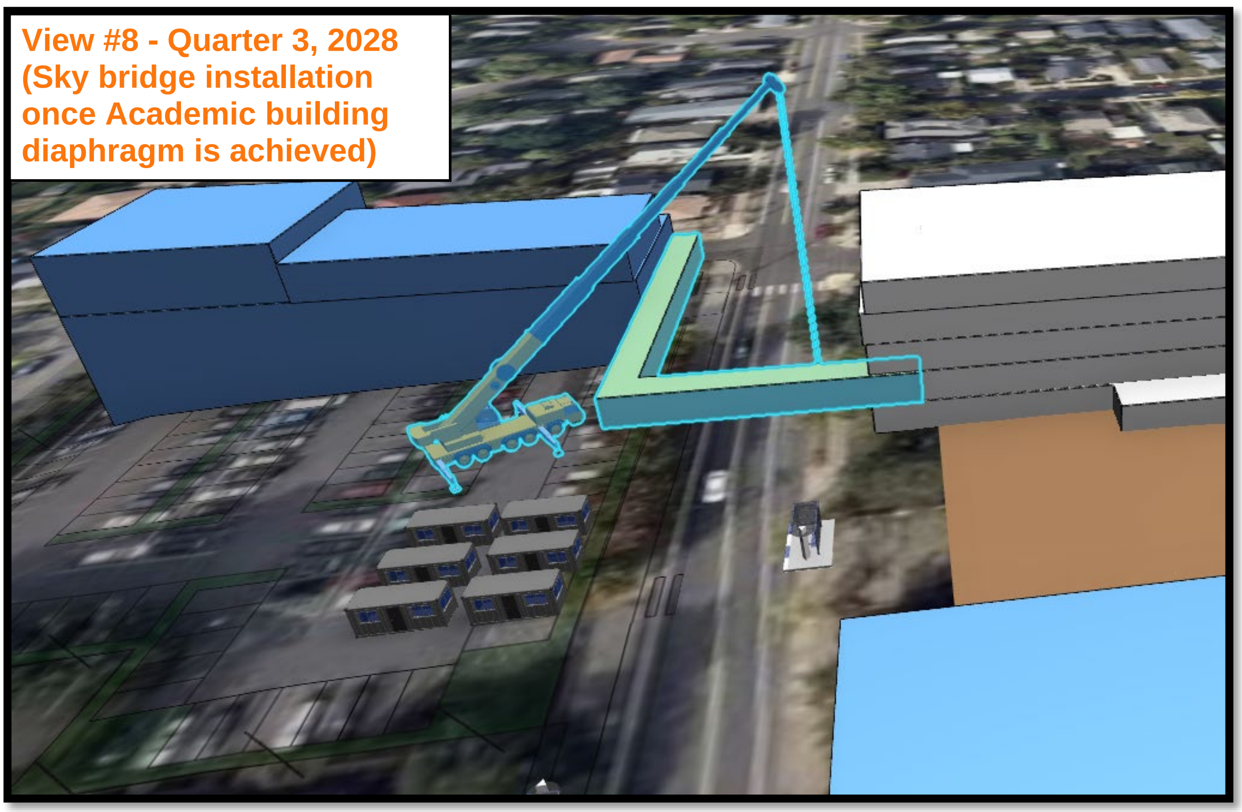
View #7 - Quarter 3, 2028 (Main building substantially complete, Academic building almost topped out, lower level interior work underway)



View #8 - Quarter 3, 2028 (Sky bridge installation once Academic building diaphragm is achieved)



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----------------------------END OF EXHIBIT B.2----------------------------

Cleveland High School

Pre-Design

3400 SE 26th Ave
Portland, OR 97202

April 8th, 2024

Prepared For: Mahlum/Studio Petretti
Cost Estimate Revision - 0.0

Internal Reference: KJF2436-0.0

Table of Contents

01 - Project Details

Basis of Estimate

The Estimate Phase

Order of magnitude estimate, also known as a conceptual estimate, is completed with minimal information. Costs are defined in relation to the usable units that have been designed for the facility. These are orders of magnitude are not meant to be exact or guaranteed values for construction. The intention of the conceptual estimate is to provide preliminary guidance to the owner to assist in decision making early in the project life cycle.

The Project

Cleveland High School is located at 3400 SE 26th Ave. in Portland. The campus is bordered by SW Powell St to the south, 26th Ave to the west, and residential development to the north and east. Replacement of an existing high school with a new comprehensive high school with associated improvements to the nearby track and field and parking lot sites, including replacement of existing field house with new. Currently, there are (2) conceptual options for Cleveland High School. Consolidated - In this option the new high school is oriented on a single site. Distributed - In this scheme the new high school is oriented on the main site, with an 60k sf building located on the current parking lot at 26th and Franklin. All facilities are to be vacant and construction shall occur concurrently.

Assumptions of the Estimate:

Schedule & Phasing

Assumed Schedule start of 08/2026

Construction Duration of 27 Months for the consolidated option and 34 Months for Distributed.

All work will be carried out during normal working hours

Escalation has been figured as 4.25% per year to the midpoint of the overall project duration.

Rates & Wages

Wages have been figured as Davis Bacon/Prevailing Wage Rates.

Equipment Costs are included in unit rates.

SubContractor Overheads and Profits are included in the unit rates.

No Mockups are included within the estimate.

The scope of work for some items currently is not quantifiable. These items have been indicated as "allow" or have rates applied at a unit applicable to the "gsf" of the building or floor.

General/Contract Method

Contractor will be procured through a qualifications & fee based evaluation with atleast 3 bidders.

Project will be competitively bid amongst sub contractors, at least 3 bids for each scope.

Subcontractors will be contracted to work that they specialize in.

Preconstruction costs are included for the CM/GC, Mechanical, Electrical & Plumbing Contractors.

All resources are available semi-locally and compensated travel is not required.

The general contract will be CM/GC.

Portland Public Schools contracting requirements have been included.

Con'td on Next Page

Basis of Estimate (Cont'd)

Clarifications of Construction

A - Substructure

All excavation and backfill associated with footings/gradebeams and basement construction is incl.
Soil improvments are based upon aggregate piers.
Slab on grade costs account for perimeter curbs and varying slab thicknesses indicated.
Equipment pad and base costs is intended to cover pads and bases throughout the building.
All below grade walls have been figured to be Pile and Lagging shoring w/ tiebacks.

B - Shell

Consolidated option uses the following construction types for structure:
* Classroom Tower - Type IV-B Mass Timber
* Connector and Areas Outside of Auditorium and Gymnasium - Tpe III-B Mass Timber
* Auditorium Balcony and Stage Abutments - Structural Steel, With Metal Deck and Concrete Top
* Auditorium Roof - Heavy GluLam Beams & CLT Decking
* Gynasium Floor - Structural Stee, With Metal Deck and Concrete Topping
* Gynasium Roof - Bidder Designed OWJ, Acoustic Metal Decking.

Distributed option uses the following construction types for structure:
* Classroom Tower - Type III-A Mass Timber
* Connector and Areas Outside of Auditorium and Gymnasium - Tpe III-B Mass Timber
* Auditorium Balcony and Stage Abutments - Structural Steel, With Metal Deck and Concrete Top
* Auditorium Roof - Heavy GluLam Beams & CLT Decking
* Gynasium Floor - Structural Stee, With Metal Deck and Concrete Topping
* Gynasium Roof - Bidder Designed OWJ, Acoustic Metal Decking.
* Distributed Building - Type III-A Mass Timber

Canopies have been included as a complete assembly.
Fully grouted CMU walls have been included around gymnasium and auditorium.
Windows have been figured to be 30% of façade sf.
Cementitious fireproofing has been figured at structural steel floors.
Vegatated roofs have been included for some roofing. See estimate for detail.
Skylights have been included over the gymnasium.
Allowances have been made for exterior finishes where not noted, see estimate.

C - Interiors

See estimate detail for allowances and further assumptions.

D - Services

See estimate detail for allowances and further assumptions.

E - Equipment & Furnishings

See estimate detail for allowances and futher assumptions

G - SiteWork

See estimate detail for allowances and futher assumptions

Con'td on Next Page

Basis of Estimate (Cont'd)

Z - General

General Conditions and staffing are assumed as a percentage of the cost of work.
Provisions have been made for TradePartner participation for specific trades only. See detail.

Project Specific Exclusions

Items noted as "Excl" in the estimate detail are not included.
The affects of unfair contract conditions which may affect bid pricing.
Implications of proposed legislation which may occur during the construction period. (not aware of any)
Lack of competition amongst subcontractors bidding the project
Uncompetitive bidding due to the complexity of the project and or subcontractor work loads
Abnormal changes in market conditions affecting our assessment of escalation
Owners contingencies, insurances, building permits or administrative costs.
Development Soft costs including, land, financing, legal costs, design fees.
Escalation Beyond mid point of construction.
Abatement of any type or removal of hazardous materials/soils from site or buildings.
Any information in a geotech report that would affect the cost of this estimate.
Loose Furn, FF&E.

Documents Used for Development of Estimate

This estimate utilized the following documents to measure quantities and apply built up rates:

240307_Plans + Massing
240402 Design Package
Attachment 02_Track Site Plan and Field House
Attachment 03_Powell Park Plan
CHS CP Working Program 2023_Fieldhouse_To Consultants 240307
CHS CP Working Program 2023_To consultants_240307
CHS Preliminary Project Description and Narratives MP_240318
COC05.02_ENGACT_Parking
COC05.03_ENGACT_Concept Approach
240321 Pricing Question - Through 04/8/2024
240322 Alternate Pricing Memo

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

GAMUT PROJECT SOLUTIONS

KJF COST STUDIO

Consolidated **4/8/2024**

DESCRIPTION	QUANTITY		UNIT	TOTAL
01 - Building	323,700	GSF	$1,004.87	$325,276,425
02 - Site Improvements	196,698	GSF	$116.13	$22,841,967
03 - Waverleigh Improvements	74,428	GSF	$31.20	$2,322,195
04 - Field House	12,450	GSF	$975.62	$12,146,480
05 - Track Site Improvements	92,738	GSF	$151.61	$14,059,637
06 - 26th Parking Improvements	46,511	GSF	$21.66	$1,007,475
Estimated Cost of Work	**323,700**	**GSF**	**$1,166.68**	**$377,654,178**
1.5% For Green Energy	1.50%			$5,664,813
Total	**323,700**	**GSF**	**$1,184.18**	**$383,318,991**

Distributed

DESCRIPTION	QUANTITY		UNIT	TOTAL
01 - Main Building	263,700	GSF	$1,056.95	$278,717,512
01a - Distributed Building	60,000	GSF	$1,172.20	$70,332,233
02 - Site Improvements	196,698	GSF	$118.96	$23,398,260
02a - Distributed Site Improvements	20,954	GSF	$91.55	$1,918,274
03 - Waverleigh Improvements	74,428	GSF	$31.96	$2,378,749
04 - Field House	12,450	GSF	$999.38	$12,442,295
05 - Track Site Improvments	92,738	GSF	$155.30	$14,402,045
06 - 26th Parking Improvements	25,561	GSF	$18.90	$483,045
Estimated Cost of Work	**323,700**	**GSF**	**$1,248.29**	**$404,072,415**
1.5% For Green Energy	1.50%			$6,061,086
Total	**323,700**	**GSF**	**$1,267.02**	**$410,133,501**

02 - Estimate Summary & Detail

Consolidated Option

Cleveland High School
Pre-Design

Work Breakdown Areas

01 - Building
Inclusive of all work within the building footprint.

02 - Site Improvement
Inclusive of all work outside the building footprint to the property lines of the main building site. Including adjacent right of way improvements not accounted for elsewhere.

03 - Waverleigh Improvements
Inclusive of Option C along Waverleigh as indicated within the civil narrative and confirmed within pre pricing questions.

04 - Field House
Inclusive of all work to construct a new single story field house on the track site.

05 - Track Site Improvements
Improvements to the existing track site. Inclulding right of way improvements around the track site.

06 - 26th Ave Parking Lot Improvements
Improvements to the existing parking lot site located at 26th and Franklin

Building + Sitework Areas

Consolidated Building

Enclosed Areas			
Level 01	98,480		
Level 02	98,305		
Level 03	69,945		
Level 04	37,445		
Level 05	35,855		
Adjustment to Achieve 323,700k gsf	(16,330)		
SubTotal, Enclosed Areas	323,700	sf	
Covered Areas			
Canopies	1,200	sf	Allow
SubTotal, Covered Area @ 1/2 Value	600	sf	
TOTAL GROSS FLOOR AREA	**324,300**	**sf**	

*All Area Measurements made per AIA D101 GFA Rules

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Consolidated **4/8/2024**

DESCRIPTION	QUANTITY		UNIT	TOTAL
01 - Building	323,700	GSF	$565.05	$182,905,102
02 - Site Improvements	196,698	GSF	$65.30	$12,844,190
03 - Waverleigh Improvements	74,428	GSF	$17.54	$1,305,785
04 - Field House	12,450	GSF	$548.60	$6,830,047
05 - Track Site Improvments	92,738	GSF	$85.25	$7,905,828
06 - 26th Parking Improvements	46,511	GSF	$12.18	$566,510
Estimated Cost of Work	**323,700**	**GSF**	**$656.03**	**$212,357,462**
Design Contingency	15.00%			$31,853,619
Escalation to Midpoint - (September 2027)	15.60%			$38,096,929
Construction Contingency	5.00%			$14,115,401
General Conditions/General Requirements	16.00%			$45,169,282
Insurance & Bond	2.00%			$7,553,084
PreConstruction - Struct & MEP - TradePartners Only	3.00%			$8,469,240
Metro SHS Tax	1.00%			$3,776,542
Fee	4.50%			$16,262,620
1.5% For Green Energy	1.50%			$5,664,813
Total	**323,700**	**GSF**	**$1,184.18**	**$383,318,991**

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Consolidated 4/8/2024

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
01 - Building			$565.05	$182,905,102
A - SubStructure			$49.24	$15,938,229
A10 - Foundations			$22.39	$7,247,446
A20 - Basement Construction			$26.85	$8,690,784
B - Shell			$182.48	$59,067,608
B10 - Superstructure			$107.82	$34,901,372
B20 - Exterior Enclosure			$60.05	$19,438,079
B30 - Roofing			$14.61	$4,728,156
C - Interiors			$102.54	$33,193,646
C10 - Interior Construction			$62.08	$20,096,744
C20 - Stairs			$4.95	$1,602,315
C30 - Interior Finishes			$35.51	$11,494,587
D - Services			$206.49	$66,841,153
D10 - Conveying			$4.31	$1,394,338
D20 - Plumbing			$24.55	$7,946,835
D30 - HVAC			$85.15	$27,563,175
D40 - Fire Protection			$6.48	$2,098,125
D50 - Electrical			$86.00	$27,838,680
E - Equipment & Furnishings			$24.30	$7,864,466
E10 - Equipment			$12.20	$3,949,120
E20 - Furnishings			$12.10	$3,915,346
02 - Site Improvements			$39.68	$12,844,190
G - Building Sitework			$39.68	$12,844,190
G10 - Site Preparation			$19.56	$6,330,930
G20 - Site Improvements			$12.17	$3,938,260
G30 - Site Mechanical Utilities			$2.01	$650,000
G40 - Site Electrical Utilities			$5.95	$1,925,000
03 - Waverleigh Improvements			$4.03	$1,305,785
G - Building Sitework			$4.03	$1,305,785
G10 - Site Preparation			$0.87	$280,898
G20 - Site Improvements			$2.67	$864,887
G30 - Site Mechanical Utilities			$0.23	$75,000
G40 - Site Electrical Utilities			$0.26	$85,000
04 - Field House			$21.10	$6,830,047
A - SubStructure			$3.63	$1,173,538
A10 - Foundations			$1.64	$531,395
A20 - Basement Construction			$1.98	$642,142
B - Shell			$7.39	$2,392,985
B10 - Superstructure			$4.19	$1,355,183
B20 - Exterior Enclosure			$1.77	$574,040
B30 - Roofing			$1.43	$463,763

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Consolidated 4/8/2024

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
C - Interiors			$2.44	$790,824
C10 - Interior Construction			$1.51	$488,912
C30 - Interior Finishes			$0.93	$301,913
D - Services			$7.19	$2,328,150
D20 - Plumbing			$2.12	$684,750
D30 - HVAC			$1.54	$498,000
D40 - Fire Protection			$0.27	$87,150
D50 - Electrical			$3.27	$1,058,250
E - Equipment & Furnishings			$0.34	$109,550
E10 - Equipment			$0.18	$58,710
E20 - Furnishings			$0.16	$50,840
G - Building Sitework			$0.11	$35,000
G30 - Site Mechanical Utilities			$0.00	$0
G40 - Site Electrical Utilities			$0.11	$35,000
05 - Track Site Improvments			$24.42	$7,905,828
G - Building Sitework			$24.42	$7,905,828
G10 - Site Preparation			$2.47	$800,297
G20 - Site Improvements			$19.07	$6,173,030
G30 - Site Mechanical Utilities			$0.34	$110,000
G40 - Site Electrical Utilities			$2.54	$822,500
06 - 26th Parking Improvements			$1.75	$566,510
G - Building Sitework			$1.75	$566,510
G10 - Site Preparation			$0.52	$168,126
G20 - Site Improvements			$1.23	$398,384

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Consolidated **4/8/2024**

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
01 - Building				**$565.05**	**$182,905,102**
A - SubStructure				**$49.24**	**$15,938,229**
A1010 - Standard Foundations				**$11.27**	**$3,647,619**
Standard Foundations					
-	Base Courses & Vapor Barrier	98,480.00	sf	$3.57	$351,746
-	Excavation & Backfill - Footings, Pits, Incl Backfill	98,480.00	sf	$8.85	$871,548
-	Foundation Drain	2,372.00	lf	$27.23	$64,590
-	Misc Steel - Cast in Embeds and Anchors	98,480.00	sf	$2.19	$215,395
-	Spread Footings & Grade Beams	98,480.00	sf	$21.77	$2,144,340
A1020 - Special Foundations				**$4.84**	**$1,567,200**
Special Foundations					
-	Dewatering - Allow	1.00	allow	$45,000.00	$45,000
-	Elevator Pit & Waterproofing	3.00	ea	$15,000.00	$45,000
-	Soil Improvements - EAP	98,480.00	sf	$15.00	$1,477,200
A1030 - Slab on Grade				**$6.28**	**$2,032,627**
Slabs on Grade					
-	Equipment Pads/Bases	98,480.00	sf	$2.35	$231,428
-	Firewater Storage Tank - Excluded	0.00	excluded	$0.00	$0
-	Radon Mitigation - In Mechanical	0.00	included	$0.00	$0
-	Slabs on Grade	98,480.00	sf	$18.29	$1,801,199
-	Underslab Drainage - Excluded	0.00	excluded	$0.00	$0
-	Underslab Insulation - Excluded	0.00	excluded	$0.00	$0
A2010 - Basement Excavation				**$15.09**	**$4,884,446**
Basement Excavation					
	Soldier Pile w/Lagging and Tiebacks	29,627.00	sf	$105.00	$3,110,835
-	Mass Excavation - Cut for Basement	43,685.00	cy	$40.60	$1,773,611
A2020 - Basement Walls				**$11.76**	**$3,806,338**
Basement Walls					
-	Concrete Wall	29,627.00	sf	$90.36	$2,677,096
-	Concrete Wall Footing	632.00	cy	$950.00	$600,400
-	Waterproofing & Insulation	29,627.00	sf	$17.85	$528,842
B - Shell				**$182.48**	**$59,067,608**
B1010 - Floor Construction				**$77.95**	**$25,230,948**
Structural Steel Floor					
-	Decking - Steel Floor Decking, 3"	22,598.00	sf	$8.51	$192,309
-	Misc Steel - Catwalks, Hangers & Grating	38.00	tons	$6,500.00	$247,000
-	Misc Steel - Grid Iron at Auditorium	9.46	tons	$6,500.00	$61,490
-	Spray Applied Fireproofing - Floors	25,289.00	sf	$7.75	$195,990
-	Structural Steel - Beams, Floors, Auditorium and Gym	152.00	tons	$6,500.00	$988,000
-	Topping Slab - 3.5"	25,289.00	sf	$10.12	$255,925
Type 1V-B MT Floor Const					
-	Beams & Columns - GluLam	60,204.00	cf	$121.50	$7,314,786
-	Beams & Columns - GluLam Connections	154,367.00	sf	$6.85	$1,057,414
-	Decking - 5 Ply CLT	154,367.00	sf	$46.25	$7,139,474
-	Fireproofing - 2 Layers On Underside of CLT Deck	96,450.00	sf	$3.84	$370,368
-	Fireproofing - 3 Layer Wrap on Columns	18,215.00	sf	$11.36	$206,922
-	Mass Timber Construction Weather Repairs and Protection - Allow	154,367.00	sf	$0.75	$115,775

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Structural Steel - BRB Lateral Frames, Floors	80.00	ea	$12,500.00	$1,000,000
-	Topping - 2" Gypcrete w/ AcoustiMat	154,367.00	sf	$3.25	$501,693
	Type III-B MT Floor Const				
-	Beams & Columns - GluLam	18,567.00	cf	$121.50	$2,255,891
-	Beams & Columns - GluLam Connections	61,890.00	sf	$6.85	$423,947
-	Decking - 3 Ply CLT	61,890.00	sf	$38.68	$2,393,905
-	Mass Timber Construction Weather Repairs and Protection - Allow	61,890.00	sf	$0.75	$46,418
-	Structural Steel - BRB Lateral Frames, Floor	21.00	ea	$12,500.00	$262,500
-	Topping - 2" Gypcrete w/ AcoustiMat	61,890.00	sf	$3.25	$201,143
	B1020 - Roof Construction			**$29.87**	**$9,670,425**
	Canopies				
-	Canopies - Complete	1,200.00	sf	$155.00	$186,000
	Hvy Timber Roof - Auditorium				
-	Beams - GluLam, Auditorium	5,434.00	cf	$142.00	$771,628
-	Decking - 3 Ply CLT Roof at Auditorium	11,285.00	sf	$38.68	$436,504
-	Topping - 2" Gypcrete, Excluded at Roof	0.00	excluded	$0.00	$0
	Structural Steel Roof Gym				
-	Decking - Acoustical Metal Decking at Gymnasium	22,915.00	sf	$11.20	$256,648
-	Misc Steel - Solar Supports, To be part of 1.5% GET	0.00	included	$0.00	$0
-	Structural Steel - Beams, Roofs, Gymnasium	63.00	tons	$8,250.00	$519,750
-	Structural Steel - Mechanical Screens	25.00	tons	$7,450.00	$186,250
-	Topping Slab - Excluded at Roof	0.00	excluded	$0.00	$0
	Type 1V-B MT Roof Const				
-	Beams & Columns - GluLam	16,742.00	cf	$121.50	$2,034,153
-	Beams & Columns - GluLam Connections	42,924.00	sf	$6.85	$294,029
-	Decking - 5 Ply CLT	42,924.00	sf	$46.25	$1,985,235
-	Fireproofing - 2 Layers On Underside of CLT Deck	21,290.00	sf	$3.84	$81,754
-	Fireproofing - 3 Layer Wrap on Columns	5,065.00	sf	$11.36	$57,538
-	Mass Timber Construction Weather Repairs and Protection - Allow	42,924.00	sf	$0.75	$32,193
-	Structural Steel - BRB Lateral Frames, Roof	12.00	ea	$12,500.00	$150,000
-	Topping - 2" Gypcrete, Excluded at Roof	0.00	excluded	$0.00	$0
	Type III-B MT Roof Const				
-	Beams & Columns - GluLam	9,396.00	cf	$121.50	$1,141,614
-	Beams & Columns - GluLam Connections	31,323.00	sf	$6.85	$214,563
-	Decking - 3 Ply CLT	31,323.00	sf	$38.68	$1,211,574
-	Mass Timber Construction Weather Repairs and Protection - Allow	31,323.00	sf	$0.75	$23,492
-	Structural Steel - BRB Lateral Frames, Roof	7.00	ea	$12,500.00	$87,500
-	Topping - 2" Gypcrete, Excluded at Roof	0.00	excluded	$0.00	$0
	B2010 - Exterior Walls			**$40.13**	**$12,991,346**
	Exterior Walls				
-	Cladding - Mechanical Screens	10,000.00	sf	$55.00	$550,000
-	Claddings - Incl Rainscreen support	99,365.00	sf	$70.00	$6,955,550
-	Claddings - Overhangs/Exterior Soffits, Complete	7,858.00	sf	$95.00	$746,510
-	Exterior Façade Flashings & Sheetmetal	141,950.00	sf	$2.50	$354,875
-	Exterior Wall - CMU Fully Grouted	19,315.00	sf	$65.26	$1,260,497
-	Exterior Wall - Framing, Ins, WB	80,050.00	sf	$25.00	$2,001,250
-	Misc Metals - Façade Support Steel	133.00	tons	$7,500.00	$997,500

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Consolidated — **4/8/2024**

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Misc Metals - Support at Parapets	3.36	tons	$7,500.00	$25,164
-	Mockups	1.00	ls	$100,000.00	$100,000
B2020 - Exterior Windows				**$19.08**	**$6,174,825**
Exterior Windows					
-	Exterior Glazing - Various, Incl Operables, Figured 30%	42,585.00	sf	$145.00	$6,174,825
B2030 - Exterior Doors				**$0.84**	**$271,908**
Exterior Doors					
-	Exterior Doors - Incl OHD, Alum & HM Openings	323,700.00	gsf	$0.84	$271,908
B3010 - Roof Coverings				**$12.03**	**$3,893,019**
Roofing					
-	Roof Sheetmetal	108,448.00	sf	$0.85	$92,181
-	Roofing - Mod Bit. Protected Membrane	102,887.00	sf	$33.36	$3,432,310
-	Roofing - Vegetated Green Roof System	5,561.00	sf	$66.27	$368,527
B3020 - Roof Openings				**$2.58**	**$835,138**
Roof Accessories & Openings					
-	Roof Accessories - Safety Tie Offs Anchors	1.00	ls	$85,000.00	$85,000
-	Roof Accessories - Vents, Hatches, Catwalks	108,448.00	ea	$1.20	$130,138
-	Skylights in Gym	4,000.00	sf	$155.00	$620,000
-	Window Washing Davit Bases & Arms - Excluded	0.00	excluded	$0.00	$0
C - Interiors				**$102.54**	**$33,193,646**
C1010 - Partitions				**$42.88**	**$13,879,860**
Partitions					
-	Backing & Blocking	323,700.00	gsf	$0.36	$116,532
-	Caulking & Firestopping	323,700.00	gsf	$1.40	$453,180
-	Interior CMU Walls	25,985.00	gsf	$49.15	$1,277,163
-	Interior Walls	323,700.00	gsf	$30.05	$9,727,185
-	Mockups	1.00	ls	$50,000.00	$50,000
-	Plastering	323,700.00	gsf	$2.45	$793,065
-	Transoms/Sidelites	323,700.00	gsf	$4.52	$1,462,736
C1020 - Interior Doors				**$5.43**	**$1,758,986**
Interior Doors					
-	Access Doors - Incl with Doors	0.00	included	$0.00	$0
-	Interior Doors	323,700.00	gsf	$4.66	$1,509,025
-	Specialty Interior Doors	323,700.00	gsf	$0.77	$249,961
C1030 - Fittings				**$13.77**	**$4,457,898**
Interior Fittings					
-	Amenities and Convenience Items	323,700.00	gsf	$0.55	$178,035
-	EGD Allowance	1.00	allow	$75,000.00	$75,000
-	FEC's	323,700.00	gsf	$0.18	$58,266
-	HDS	323,700.00	gsf	$0.53	$171,270
-	Lockers	323,700.00	gsf	$3.97	$1,285,089
-	Misc Interior Metals - Railings outside stairs, ladders, grate	323,700.00	gsf	$3.13	$1,013,181
-	Signage	323,700.00	gsf	$1.00	$323,700
-	Toilet Partitions & Accessories	323,700.00	gsf	$1.40	$453,180
-	Visual Display Systems	323,700.00	gsf	$2.33	$754,512
-	Wall Protections and Cornerguards	323,700.00	gsf	$0.45	$145,665
C2010 - Stair Construction				**$4.95**	**$1,602,315**
Stairs					

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	C2010 - Stair Construction	323,700.00	gsf	$4.95	$1,602,315
	C3010 - Wall Finishes			**$8.95**	**$2,897,115**
	Interior Finishes				
-	C3010 - Wall Finishes	323,700.00	gsf	$8.95	$2,897,115
	C3020 - Floor Finishes			**$11.72**	**$3,793,764**
	Interior Finishes				
-	C3020 - Floor Finishes	323,700.00	gsf	$11.72	$3,793,764
	C3030 - Ceiling Finishes			**$14.84**	**$4,803,708**
	Interior Finishes				
-	C3030 - Ceiling Finishes	323,700.00	gsf	$14.84	$4,803,708
D - Services				**$206.49**	**$66,841,153**
	D1010 - Elevator & Lifts			**$3.95**	**$1,278,615**
	Conveying				
-	Passanger Elevators	323,700.00	gsf	$3.95	$1,278,615
	D1090 - Other Coonveying Systems			**$0.36**	**$115,723**
	Conveying				
-	Hydraulic Lifts	323,700.00	gsf	$0.36	$115,723
	D2010 - Plumbing Fixtures			**$5.20**	**$1,683,240**
	Plumbing				
-	Plumbing Fixtures	323,700.00	gsf	$5.20	$1,683,240
	D2020 - Domestic Water Distribution			**$6.50**	**$2,104,050**
	Plumbing				
-	Domestic Water Distribution	323,700.00	gsf	$6.50	$2,104,050
	D2030 - Sanitary Waste			**$6.50**	**$2,104,050**
	Plumbing				
-	Sanitary Waste Systems	323,700.00	gsf	$6.50	$2,104,050
	D2040 - Rain Water Drainage			**$3.50**	**$1,132,950**
	Plumbing				
-	Rain Water Drainage	323,700.00	gsf	$3.50	$1,132,950
	D2090 - Other Plumbing Systems			**$2.85**	**$922,545**
	Plumbing				
-	Acid Waste Systems	323,700.00	gsf	$0.85	$275,145
-	Compressed Air Systems	323,700.00	gsf	$0.50	$161,850
-	Seismic	323,700.00	gsf	$1.00	$323,700
-	Testing	323,700.00	gsf	$0.50	$161,850
	D3090 - Other HVAC Systems & Equipment			**$85.15**	**$27,563,175**
	HVAC				
-	Air Distribution	323,700.00	gsf	$17.70	$5,729,490
-	Air Handling Equipment	323,700.00	gsf	$16.35	$5,292,495
-	Chilled Beams	323,700.00	gsf	$1.00	$323,700
-	Controls	323,700.00	gsf	$10.00	$3,237,000
-	Exhaust Systems	323,700.00	gsf	$5.00	$1,618,500
-	GRDS and Louvers	323,700.00	gsf	$3.00	$971,100
-	Heat Generation and Cooling	323,700.00	gsf	$11.25	$3,641,625
-	Piping Distribution	323,700.00	gsf	$14.00	$4,531,800
-	Radon Exhaust	102,545.00	gsf	$3.00	$307,635

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Seismic	323,700.00	gsf	$1.00	$323,700
-	Supplemental Heating and Cooling	323,700.00	gsf	$0.80	$258,960
-	Testing, Adjusting and Balancing	323,700.00	gsf	$1.60	$517,920
-	Thermal Storage and Circulation Pumps	323,700.00	gsf	$2.50	$809,250
	D4010 - Sprinklers			**$6.48**	**$2,098,125**
	Fire Sprinklers				
-	Fire Sprinklers, Incl Firepump	323,700.00	gsf	$6.48	$2,098,125
	D5010 - Electrical Service & Distribution			**$29.15**	**$9,437,300**
	Service & Distribution				
-	Emergency Power Systems	323,700.00	gsf	$7.00	$2,265,900
-	Machine and Equipment Power	323,700.00	gsf	$5.50	$1,780,350
-	Main Service and Distribution	323,700.00	gsf	$10.00	$3,237,000
-	PV Systems, Rough In Only	1.00	ls	$50,000.00	$50,000
-	Receptacle Controls	323,700.00	gsf	$0.50	$161,850
-	User Convenience Power	323,700.00	gsf	$6.00	$1,942,200
	D5020 - Lighting and Branch Wiring			**$27.65**	**$8,950,300**
	Lighting & Controls				
-	Lighting Controls	323,700.00	gsf	$4.00	$1,294,800
-	Lighting Fixtures	323,700.00	gsf	$20.00	$6,474,000
-	Theater Lighting - Black Box	1.00	ls	$121,500.00	$121,500
-	Theater Lighting Including House Lighting	1.00	ls	$1,060,000.00	$1,060,000
	D5030 - Communications & Security			**$27.30**	**$8,836,050**
	Low Voltage				
-	Access Control/Intruder Detection	323,700.00	gsf	$2.50	$809,250
-	AV Systems - Equipment, Install and Cabling	1.00	ls	$1,833,500.00	$1,833,500
-	AV Systems - Rough In	1.00	ls	$366,700.00	$366,700
-	CCTV	323,700.00	gsf	$2.50	$809,250
-	Clock/Paging Systems	323,700.00	gsf	$3.00	$971,100
-	Distributed Antenna System	323,700.00	gsf	$1.00	$323,700
-	Fire Alarm System	323,700.00	gsf	$3.50	$1,132,950
-	Telephone and Data Systems	323,700.00	gsf	$8.00	$2,589,600
	D5090 - Other Electrical Systems			**$1.90**	**$615,030**
	Other Electrical				
-	Grouding	323,700.00	gsf	$0.35	$113,295
-	Testing	323,700.00	gsf	$1.55	$501,735
E - Equipment & Furnishings				**$24.30**	**$7,864,466**
	E1010 - Commercial Equipment			**$5.19**	**$1,678,567**
	Commercial Equipment				
-	Coordination For Unforeseen FFE Requirements	1.00	ls	$50,000.00	$50,000
-	Foor Service Equipment	323,700.00	gsf	$4.68	$1,513,654
-	Library Stack Shelving and Book Drops	323,700.00	gsf	$0.29	$92,255
-	Residential Appliances - OFCI	323,700.00	gsf	$0.07	$22,659
	E1020 - Institutional Equipment			**$1.35**	**$435,377**
	Institutional Equipment				
-	Athletic Equipment	323,700.00	gsf	$1.06	$343,122
-	Lab Equipment	323,700.00	gsf	$0.24	$77,688
-	Monitor Support Brackets	323,700.00	gsf	$0.05	$14,567
-	Projector/AV Screens - Included in D5030	0.00	included	$0.00	$0

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	E1023 - Theatrical Equipment			**$5.61**	**$1,815,755**
	Theatrical Equipment				
-	Production/AV Equipment - Included in D5030	0.00	included	$0.00	$0
-	Theatrical Equipment	323,700.00	gsf	$5.61	$1,815,755
-	Theatrical/Production Lighting - Included in D5030	0.00	included	$0.00	$0
	E1030 - Vehicular Equipment			**$0.06**	**$19,422**
	Vehicle Equipment				
-	Loading Dock Equipment	323,700.00	gsf	$0.06	$19,422
	E2010 - Fixed Furnishings			**$12.10**	**$3,915,346**
	Furnishings				
-	Bleachers	323,700.00	gsf	$1.06	$342,539
-	Casework & Counters	323,700.00	gsf	$9.35	$3,026,595
-	Curtains and Drapes	323,700.00	gsf	$0.01	$4,629
-	Window Shades	323,700.00	gsf	$1.67	$541,582
	E2020 - Movable Furnishings			**$0.00**	**$0**
	Movable Furnishings				
-	Movable Furnishings - Excluded, Assumed as FFE	0.00	excluded	$0.00	$0
02 - Site Improvements				**$39.68**	**$12,844,190**
	G - Building Sitework			**$39.68**	**$12,844,190**
	G1010 - Site Clearing			**$1.56**	**$503,389**
	Site Readiness				
-	Construction Fencing	1,780.00	lf	$18.00	$32,040
-	Temp Erosion & Sediment Control, Incl Maintenance	196,698.00	sf	$0.50	$98,349
-	Temporary Construction Aids	28.00	mo	$12,250.00	$343,000
-	Tree Protection	30.00	ea	$1,000.00	$30,000
	G1020 - Site Demolition and Relocations			**$17.45**	**$5,647,008**
	Site Demo & Prep				
-	Demo Existing School	270,952.00	sf	$12.45	$3,373,352
-	Demo Roads/Parking & Hardscapes	42,552.00	sf	$1.42	$60,424
-	Demo ROW for Utility Connections	1.00	allow	$35,000.00	$35,000
-	Demo Trees	31.00	ea	$750.00	$23,250
-	Haz Material Abatement of Existing School	270,952.00	sf	$4.05	$1,097,356
-	Salvage Allowance from Existing School	270,952.00	sf	$3.50	$948,332
-	Site Clear & Grub - Demo Misc Site Items	37,276.00	sf	$0.92	$34,294
-	Utility Relocations	1.00	ls	$75,000.00	$75,000
	G1030 - Site Earthwork			**$0.56**	**$180,533**
	Site Earthwork				
-	Site Earthwork, Incl Rough Grade	98,116.00	sf	$1.84	$180,533
	G1040 - Hazardous Waste Remediation			**$0.00**	**$0**
	Site Remediation				
-	Site Materials Hazardous Waste Remediation - Excluded	0.00	excluded	$0.00	$0
	G2010 - Roadways			**$1.56**	**$504,745**
	Right of Way Improvements				
-	Right of Way Improvements - 26th Ave	380.00	lf	$526.00	$199,880
-	Right of Way Improvements - 28th Ave	430.00	lf	$255.00	$109,650
	Roadway Work				

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Demo Existing Striping and Restripe 26th	1.00	ls	$15,000.00	$15,000
-	Roadways - Asphalt Patch Back	1,767.00	sf	$7.25	$12,811
-	Roadways - Concrete Paving	4,243.00	sf	$18.25	$77,435
-	Roadways - Curbs	1,767.00	lf	$26.00	$45,942
-	Roadways - Fine Grade	4,243.00	sf	$0.36	$1,527
-	Roadways - Patch Back at Utility Connections	1.00	allow	$35,000.00	$35,000
-	Roadways - Signage & Striping	1.00	allow	$7,500.00	$7,500
G2030 - Pedestrian Paving				**$3.42**	**$1,107,062**
Pedestrian Paving					
-	Pedestrian Paving - Aggregate, Courtyard	2,166.00	sf	$0.75	$1,625
-	Pedestrian Paving - Base Courses	842.00	cy	$48.00	$40,416
-	Pedestrian Paving - Concrete Stairs	1,006.00	lf	$108.36	$109,010
-	Pedestrian Paving - Concrete, Courtyard	27,131.00	sf	$16.50	$447,662
-	Pedestrian Paving - Concrete, Ramps, Courtyard	2,190.00	sf	$18.25	$39,968
-	Pedestrian Paving - Concrete, Sidewalks	12,640.00	sf	$12.36	$156,230
-	Pedestrian Paving - Fine Grade	45,562.00	sf	$0.36	$16,402
ROW Improvements					
-	Pedestrian Paving - Concrete, ADA Sidewalk Corner Mods	2.00	ea	$6,500.00	$13,000
Site Handrails & Guardrails					
-	Site Guardrails	392.00	lf	$225.00	$88,200
-	Site Guardrails w/ Handrail	462.00	lf	$275.00	$127,050
-	Site Handrails	540.00	lf	$125.00	$67,500
G2040 - Site Development				**$5.62**	**$1,818,272**
Fields & Athletics					
-	Outdoor Play Equipment	1.00	ls	$50,000.00	$50,000
-	Synthetic Turf - Incl Base, Courtyard and Play Area	11,105.00	sf	$18.36	$203,888
Furnishings & Enhancements					
-	Courtyard Improvements/Furniture	27,131.00	sf	$8.00	$217,048
-	Site Furnishings - Incl, Boulders & Conc Twig Bench	98,116.00	sf	$0.92	$90,267
Site Buildings					
-	Covered Bike Parking	2,009.00	sf	$125.00	$251,125
-	Trash Enclosure - Roof	681.00	sf	$85.00	$57,885
Site Concrete Work					
-	Site Retaining Walls - Varied Heights	7,616.00	sf	$95.00	$723,520
-	Site Wall 24" Wide x 18" High	493.00	lf	$115.00	$56,695
-	Stadium Seating - 15" Rise	112.00	lf	$87.50	$9,800
-	Stadium Seating - 18" Rise	83.00	lf	$103.25	$8,570
Site Fencing					
-	Field Fence - Practice Field	1,800.00	sf	$10.75	$19,350
-	Site Fence - Gates	16.00	ea	$2,250.00	$36,000
-	Site Fence - Secure Perimter	477.00	lf	$175.00	$83,475
-	Site Fence - Trash Enclosure	18.00	lf	$175.00	$3,150
-	Site Fence - Trash Enclosure Gate	1.00	ea	$7,500.00	$7,500
G2050 - Landscaping				**$1.57**	**$508,180**
Landscaping					
-	Irigation	44,529.00	sf	$1.78	$79,262
-	Planting/Soil Improvements	39,194.00	sf	$8.15	$319,431
-	Planting/Soil Improvements - Stormwater Planters	5,335.00	sf	$12.65	$67,488
-	Trees	56.00	ea	$750.00	$42,000

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	G3010 - Water Supply			**$0.46**	**$150,000**
	Water Supply				
-	Water Supply - Upgrade Existing incoming water services including addition of new backflow prevention	1.00	ls	$150,000.00	$150,000
	G3020 - Sanitary Sewer			**$0.77**	**$250,000**
	Sanitary Sewer				
-	Sanitary Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$250,000.00	$250,000
	G3030 - Storm Sewer			**$0.77**	**$250,000**
	Storm Sewer				
-	Storm Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$250,000.00	$250,000
	G4010 - Electrical Distribution			**$4.02**	**$1,300,000**
	Service & Distribution				
-	Relocate Power Lines on School Side of 26th Below Grade	1.00	ls	$550,000.00	$550,000
-	Site Electrical Distribtuion, EV Charging, Etc.	1.00	ls	$750,000.00	$750,000
	G4020 - Site Lighting			**$1.24**	**$400,000**
	Site Lighting				
-	Field Lighting - Multi Use	0.00	ls	$0.00	$0
-	Field Lighting - Tennis	0.00	ls	$0.00	$0
-	Off Site - Street Lighting, Allowance	1.00	allow	$150,000.00	$150,000
-	Site Lighting	1.00	ls	$250,000.00	$250,000
	G4030 - Site Communications & Security			**$0.70**	**$225,000**
	Communications & Safety				
-	Incoming Telecom - Cabling By Service Provider, Excluded	0.00	excluded	$0.00	$0
-	Incoming Telecom - Conduit	1.00	ls	$75,000.00	$75,000
-	Site Communication & Security	1.00	ls	$150,000.00	$150,000
03 - Waverleigh Improvements				**$4.03**	**$1,305,785**
	G - Building Sitework			**$4.03**	**$1,305,785**
	G1010 - Site Clearing			**$0.23**	**$74,714**
	Site Readiness				
-	Temp Erosion & Sediment Control, Incl Maintenance	74,428.00	sf	$0.50	$37,214
-	Temporary Construction Aids	5.00	mo	$7,500.00	$37,500
	G1020 - Site Demolition and Relocations			**$0.44**	**$142,921**
	Site Demo & Prep				
-	Demo ROW for Utility Connections	1.00	allow	$35,000.00	$35,000
-	Site Clearing /Demolition	74,428.00	sf	$1.45	$107,921
	G1030 - Site Earthwork			**$0.20**	**$63,264**
-	Regrading	74,428.00	sf	$0.85	$63,264
	G2010 - Roadways			**$1.49**	**$483,666**
	Roadway Work				
-	Extruded Curbs	2,559.00	lf	$26.00	$66,534
-	New Asphalt & Base Course	46,025.00	sf	$8.50	$391,213
-	Roadways - Asphalt Patch Back	1,767.00	sf	$7.25	$12,811
-	Striping - Parking Lines	1,058.00	lf	$4.20	$4,444
-	Striping - Standard Crossing	1,265.00	sf	$6.85	$8,665

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
	G2030 - Pedestrian Paving			**$0.71**	**$228,211**
	Pedestrian Paving				
-	Elevated CrossWalk	90.00	sf	$38.00	$3,420
-	Pedestrian Paving - Concrete, ADA Sidewalk Mods	985.00	sf	$34.00	$33,490
-	Pedestrian Paving - Concrete, Sidwalk, Premium Finish	11,594.00	sf	$16.50	$191,301
	G2050 - Landscaping			**$0.47**	**$153,010**
	Landscaping				
-	Irigation	13,143.00	sf	$1.78	$23,395
-	Planting/Soil Improvements	13,143.00	sf	$8.15	$107,115
-	Treees	30.00	ea	$750.00	$22,500
	G3030 - Storm Sewer			**$0.23**	**$75,000**
	Storm Sewer				
-	Storm Sewer Improvements	1.00	ls	$75,000.00	$75,000
	G4020 - Site Lighting			**$0.26**	**$85,000**
	Site Lighting				
-	Off Site - Street Lighting, Allowance	1.00	allow	$85,000.00	$85,000
	04 - Field House			**$21.10**	**$6,830,047**
	A - SubStructure			**$3.63**	**$1,173,538**
	A1010 - Standard Foundations			**$1.05**	**$338,420**
	Standard Foundations				
-	Base Courses & Vapor Barrier	12,450.00	sf	$4.08	$50,796
-	Excavation for Foundations	12,450.00	sf	$5.48	$68,226
-	Foundation Drain	408.00	lf	$27.23	$11,110
-	Misc Steel - Cast in Embeds and Anchors	12,450.00	sf	$2.48	$30,876
-	Spread Footings & Grade Beams	12,450.00	sf	$14.25	$177,413
	A1020 - Special Foundations			**$0.13**	**$40,463**
	Special Foundations				
-	Soil Improvements - EAP	12,450.00	sf	$3.25	$40,463
	A1030 - Slab on Grade			**$0.47**	**$152,513**
	Slabs on Grade				
-	Slab on Grade	12,450.00	sf	$12.25	$152,513
-	Underslab Drainage - Excluded	0.00	excluded	$0.00	$0
-	Underslab Insulation - Excluded	0.00	excluded	$0.00	$0
	A2010 - Basement Excavation			**$0.99**	**$321,483**
	Basement Excavation				
	Soldier Pile w/Lagging and Tiebacks	2,300.00	sf	$108.50	$249,550
-	Mass Excavation - Cut for Basement	1,383.33	cy	$52.00	$71,933
	A2020 - Basement Walls			**$0.99**	**$320,659**
	Basement Walls				
-	Concrete Wall	2,300.00	sf	$93.48	$215,004
-	Concrete Wall Footing	68.00	cy	$950.00	$64,600
-	Waterproofing & Insulation	2,300.00	sf	$17.85	$41,055
	B - Shell			**$7.39**	**$2,392,985**
	B1020 - Roof Construction			**$4.19**	**$1,355,183**
	Mass Timber Structure				
-	Beams, Columns & CLT Deck Mass Timber	12,450.00	sf	$105.00	$1,307,250

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Misc Steel & Connections	12,450.00	sf	$3.85	$47,933
B2010 - Exterior Walls				**$1.13**	**$365,210**
Exterior Walls					
-	Cladding - Incl Rainscreen support	3,265.00	sf	$70.00	$228,550
-	Exterior Façade Flashings & Sheetmetal	4,080.00	sf	$7.25	$29,580
-	Exterior Wall Framing, Ins, WB	3,265.00	sf	$28.00	$91,420
-	Misc Metals Façade	4,080.00	sf	$2.00	$8,160
-	Mockups	1.00	ls	$7,500.00	$7,500
B2020 - Exterior Windows				**$0.33**	**$106,080**
Exterior Windows					
-	Exterior Glazing - Figured 20%	816.00	sf	$130.00	$106,080
B2030 - Exterior Doors				**$0.32**	**$102,750**
Exterior Doors					
-	Exterior Double Man Doors	3.00	ea	$4,500.00	$13,500
-	Exterior Man Doors	6.00	ea	$2,500.00	$15,000
-	Exterior Overhead Coiling Doors	550.00	sf	$135.00	$74,250
B3010 - Roof Coverings				**$1.43**	**$463,763**
Roofing					
-	Roof Sheetmetal	12,450.00	sf	$2.25	$28,013
-	Roofing - Mod Bit. Protected Membrane	12,450.00	sf	$35.00	$435,750
C - Interiors				**$2.44**	**$790,824**
C1010 - Partitions				**$0.94**	**$304,403**
Partitions					
-	Allowance for CMU Premiums	12,450.00	gsf	$12.50	$155,625
-	Backing & Blocking	12,450.00	gsf	$0.25	$3,113
-	Interior Walls	12,450.00	gsf	$10.50	$130,725
-	Transoms/Sidelites	12,450.00	gsf	$1.20	$14,940
C1020 - Interior Doors				**$0.06**	**$18,675**
Interior Doors					
-	Interior Doors	12,450.00	gsf	$1.50	$18,675
C1030 - Fittings				**$0.51**	**$165,834**
Interior Fittings					
-	Amenities and Convenience Items	12,450.00	gsf	$0.85	$10,583
-	FEC's	12,450.00	gsf	$0.40	$4,980
-	Lockers	12,450.00	gsf	$6.85	$85,283
-	Protective Guards, Barriers and Bumpers	12,450.00	gsf	$2.00	$24,900
-	Signage	12,450.00	gsf	$0.77	$9,587
-	Toilet Partitions	12,450.00	gsf	$2.05	$25,523
-	Visual Display Systems	12,450.00	gsf	$0.40	$4,980
C3010 - Wall Finishes				**$0.35**	**$112,673**
Interior Finishes					
-	C3010 - Wall Finishes	12,450.00	sf	$9.05	$112,673
C3020 - Floor Finishes				**$0.31**	**$99,600**
Interior Finishes					
-	C3020 - Floor Finishes	12,450.00	sf	$8.00	$99,600
C3030 - Ceiling Finishes				**$0.28**	**$89,640**

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	Interior Finishes				
-	C3030 - Ceiling Finishes	12,450.00	sf	$7.20	$89,640
	D - Services			**$7.19**	**$2,328,150**
	D2090 - Other Plumbing Systems			**$2.12**	**$684,750**
	Plumbing				
-	Plumbing Systems	12,450.00	gsf	$55.00	$684,750
	D3090 - Other HVAC Systems & Equipment			**$1.54**	**$498,000**
	HVAC				
-	HVAC Systems	12,450.00	gsf	$40.00	$498,000
	D4010 - Sprinklers			**$0.27**	**$87,150**
	Fire Sprinklers				
-	Fire Sprinklers	12,450.00	gsf	$7.00	$87,150
	D5010 - Electrical Service & Distribution			**$3.27**	**$1,058,250**
	Electrical				
-	Electrical Systems	12,450.00	gsf	$85.00	$1,058,250
	E - Equipment & Furnishings			**$0.34**	**$109,550**
	E1020 - Institutional Equipment			**$0.14**	**$43,710**
	Institutional Equipment				
-	Batting Cages, Nets & Equipment	3,015.00	sf	$14.00	$42,210
-	Projector/AV Screens, Some OFCI	1.00	ea	$1,500.00	$1,500
	E1090 - Other Equipment			**$0.05**	**$15,000**
	AV Equipment				
-	AV Equipment	1.00	allow	$15,000.00	$15,000
	E2010 - Fixed Furnishings			**$0.16**	**$50,840**
	Furnishings				
-	Casework & Counters	12,400.00	gsf	$3.85	$47,740
-	Window Shades	12,400.00	gsf	$0.25	$3,100
	G - Building Sitework			**$0.11**	**$35,000**
	G3010 - Water Supply			**$0.00**	**$0**
	Water Supply				
-	Water Supply - Included with Track Site Improvements	0.00	included	$0.00	$0
	G3020 - Sanitary Sewer			**$0.00**	**$0**
	Sanitary Sewer				
-	Sanitary Sewer - Included with Track Site Improvements	0.00	included	$0.00	$0
	G3030 - Storm Sewer			**$0.00**	**$0**
	Storm Sewer				
-	Storm Sewer - Included with Track Site Improvements	0.00	included	$0.00	$0
	G4010 - Electrical Distribution			**$0.11**	**$35,000**
	Service & Distribution				
-	Electrical Distribution	1.00	ls	$35,000.00	$35,000
05 - Track Site Improvments				**$24.42**	**$7,905,828**
	G - Building Sitework			**$24.42**	**$7,905,828**
	G1010 - Site Clearing			**$0.89**	**$288,369**
	Site Readiness				

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Construction Fencing - Use Existing	0.00	excluded	$0.00	$0
-	Temp Erosion & Sediment Control, Incl Maintenance	92,738.00	sf	$0.50	$46,369
-	Temporary Construction Aids	8.00	mo	$5,500.00	$44,000
-	Track Protection	64,000.00	sf	$3.00	$192,000
-	Tree Protection	6.00	ea	$1,000.00	$6,000
G1020 - Site Demolition and Relocations				**$0.42**	**$136,339**
Site Demo & Prep					
-	Building - Haz Material Abatement	2,375.00	sf	$2.00	$4,750
-	Demo ROW for Utility Connections	1.00	allow	$12,500.00	$12,500
-	Demolition - Existing Building	2,375.00	sf	$15.00	$35,625
-	Site Clearing	92,738.00	sf	$0.90	$83,464
G1030 - Site Earthwork				**$1.16**	**$375,589**
-	Site Earthwork	92,738.00	sf	$4.05	$375,589
G2010 - Roadways				**$0.28**	**$91,533**
Roadway Work					
-	Roadways - Concrete Patch Back	400.00	sf	$25.00	$10,000
-	Roadways - Concrete Paving, Driveway	2,365.00	sf	$19.35	$45,763
-	Roadways - Curbs, Modification	375.00	lf	$38.00	$14,250
-	Roadways - Fine Grade, Incl Base	2,365.00	sf	$1.70	$4,021
-	Roadways - Patch Back at Utility Connections	1.00	allow	$10,000.00	$10,000
-	Roadways - Signage & Striping	1.00	allow	$7,500.00	$7,500
G2020 - Parking Lots				**$0.13**	**$41,353**
Parking Lots					
-	Parking - Asphalt Paving	3,808.00	sf	$6.48	$24,676
-	Parking - Base Courses	70.00	cy	$62.00	$4,340
-	Parking - Curbs	350.00	lf	$26.00	$9,100
-	Parking Signage & Striping	3,808.00	sf	$0.85	$3,237
G2030 - Pedestrian Paving				**$1.44**	**$467,315**
Pedestrian Paving					
-	Pedestrian Paving - Base Courses	842.00	cy	$48.00	$40,416
-	Pedestrian Paving - Concrete Stairs, Allow	500.00	sf	$25.00	$12,500
-	Pedestrian Paving - Concrete, ADA Sidewalk Corner Mods	3.00	ea	$6,500.00	$19,500
-	Pedestrian Paving - Concrete, Plaza	25,050.00	sf	$15.25	$382,013
-	Pedestrian Paving - Concrete, Shot Put Pads	208.00	sf	$18.60	$3,869
-	Pedestrian Paving - Fine Grade	25,050.00	sf	$0.36	$9,018
G2040 - Site Development				**$15.84**	**$5,128,427**
Fields & Athletics					
-	New Bleachers - Adding 950 seats	2,320.00	sf	$115.00	$266,800
-	New Bleachers - Small on East Side of Field	1.00	ls	$25,000.00	$25,000
-	New Football Field Turf - Over Existing Base	94,000.00	sf	$11.15	$1,048,100
-	New Practice Field	13,655.00	sf	$18.48	$252,344
-	Repairs to Existing Grandstands	1.00	allow	$50,000.00	$50,000
-	Shot Put Pit - Incl Base Course	2,400.00	sf	$3.75	$9,000
Furnishings & Enhancements					
-	Plaza Improvements/Furniture - Premium	25,050.00	sf	$8.00	$200,400
-	Site Furnishings	92,738.00	sf	$0.52	$48,224
Site Buildings					

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Concessions Building - Complete	250.00	sf	$505.00	$126,250
-	Restroom Buildings - Complete	3,265.00	sf	$575.00	$1,877,375
-	Ticketing Building - Complete	200.00	sf	$195.00	$39,000
Site Concrete Work					
-	Site Retaining Walls - Allow	10,167.00	sf	$87.63	$890,934
Site Equipment					
-	Athletic Equipment	1.00	ls	$250,000.00	$250,000
Site Fencing					
-	Site Fence - Modifications/Repair - Allow	1.00	allow	$45,000.00	$45,000
G2050 - Landscaping				**$1.37**	**$444,402**
Landscaping					
-	Irrigation	52,049.00	sf	$1.78	$92,647
-	Lawn Seeding/Soil Improvements	21,581.00	sf	$1.68	$36,256
-	Planting/Soil Improvements	26,202.00	sf	$8.15	$213,546
-	Planting/Soil Improvements - Stormwater Planters	4,265.00	sf	$12.65	$53,952
-	Trees	64.00	ea	$750.00	$48,000
G3010 - Water Supply				**$0.15**	**$50,000**
Water Supply					
-	Water Supply - New Fire Service, Track Site	1.00	ls	$25,000.00	$25,000
-	Water Supply - Upgrade Existing incoming water services including addition of new backflow prevention	1.00	ls	$25,000.00	$25,000
G3020 - Sanitary Sewer				**$0.08**	**$25,000**
Sanitary Sewer					
-	Sanitary Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$25,000.00	$25,000
G3030 - Storm Sewer				**$0.11**	**$35,000**
Storm Sewer					
-	Storm Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$35,000.00	$35,000
G4010 - Electrical Distribution				**$0.46**	**$150,000**
Service & Distribution					
-	Site Electrical Distribtuion, EV Charging, Etc.	1.00	ls	$150,000.00	$150,000
G4020 - Site Lighting				**$1.73**	**$560,000**
Site Lighting					
-	Field Lighting - Football/Track, Upgrade Existing	1.00	ls	$300,000.00	$300,000
-	Field Lighting - Practice Field	1.00	ls	$185,000.00	$185,000
-	Site Lighting	1.00	ls	$75,000.00	$75,000
G4030 - Site Communications & Security				**$0.35**	**$112,500**
Communications & Safety					
-	Stadium AV System	1.00	ls	$112,500.00	$112,500
06 - 26th Parking Improvements				**$1.75**	**$566,510**
G - Building Sitework				**$1.75**	**$566,510**
G1010 - Site Clearing				**$0.19**	**$61,256**
Site Readiness					
-	Construction Fencing	1,000.00	lf	$22.00	$22,000
-	Temp Erosion & Sediment Control, Incl Maintenance	46,511.00	sf	$0.50	$23,256
-	Tree Protection	16.00	ea	$1,000.00	$16,000

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Consolidated **4/8/2024**

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
	G1020 - Site Demolition and Relocations			**$0.24**	**$76,639**
	Site Demo & Prep				
-	Demo ROW for Utility Connections	1.00	allow	$12,500.00	$12,500
-	Demo Trees	8.00	ea	$750.00	$6,000
-	Site Clearing	46,511.00	sf	$1.25	$58,139
	G1030 - Site Earthwork			**$0.09**	**$30,232**
-	Rough Grading	46,511.00	sf	$0.65	$30,232
	G1040 - Hazardous Waste Remediation			**$0.00**	**$0**
	Site Demo & Prep				
-	Site Hazardous Waste Remediation - Excluded	0.00	excluded	$0.00	$0
	G2020 - Parking Lots			**$0.63**	**$203,938**
	Parking Lots				
-	Parking - Asphalt Paving	32,265.00	sf	$4.08	$131,641
-	Parking - Base Courses, Regrade Existing	32,265.00	sf	$0.76	$24,521
-	Parking - Curbs	925.00	lf	$22.00	$20,350
-	Parking Signage & Striping	32,265.00	sf	$0.85	$27,425
	G2030 - Pedestrian Paving			**$0.02**	**$7,393**
	Pedestrian Paving				
-	Pedestrian Paving - Base Courses	9.35	cy	$48.00	$449
-	Pedestrian Paving - Concrete, Sidewalks	505.00	sf	$12.25	$6,186
-	Pedestrian Paving - Fine Grade	505.00	sf	$1.50	$758
	G2040 - Site Development			**$0.04**	**$12,500**
	Site Fencing				
-	Site Fence - Modifications/Repair - Allow	1.00	allow	$12,500.00	$12,500
	G2050 - Landscaping			**$0.54**	**$174,553**
	Landscaping				
-	Irigation	14,240.00	sf	$1.78	$25,347
-	Planting/Soil Improvements	12,040.00	sf	$8.15	$98,126
-	Planting/Soil Improvements - Stormwater Planters	2,200.00	sf	$12.65	$27,830
-	Trees	31.00	ea	$750.00	$23,250

03 - Estimate Summary & Detail

Distributed Option

Cleveland High School

Pre-Design

Work Breakdown Areas

01 - Main Building

Inclusive of all work within the main building footprint.

01a - Distributed Building

Inclusive of all work within the building footprint of the distributed building.

02 - Site Improvement

Inclusive of all work outside the building footprint to the property lines of the main building site. Including adjacent right of way improvements not accounted for elsewhere.

02a - Distributed Site Improvement

Inclusive of all work outside the building footprint to the property lines of the main building site.

03 - Waverleigh Improvements

Inclusive of Option C along Waverleigh as indicated within the civil narrative and confirmed within pre pricing questions.

04 - Field House

Inclusive of all work to construct a new single story field house on the track site.

05 - Track Site Improvements

Improvements to the existing track site. Inclulding right of way improvements around the track site.

06 - 26th Ave Parking Lot Improvements

Improvements to the existing parking lot site located at 26th and Franklin not occupied with the building.

Building + Sitework Areas

Distributed

Enclosed Areas			
Level 01	107,444		
Level 02	107,269		
Level 03	78,906		
Level 04	46,407		
Level 05 - Deleted	-		
Adjustment to Achieve 323,700k gsf	(16,326)		
SubTotal, Enclosed Areas	323,700	sf	
Covered Areas			
Skybridge	2,205	sf	
Canopies	325	sf	Allow
SubTotal, Covered Area @ 1/2 Value	1,265	sf	
TOTAL GROSS FLOOR AREA	**324,965**	**sf**	

*All Area Measurements made per AIA D101 GFA Rules

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Distributed 4/8/2024

DESCRIPTION	QUANTITY		UNIT	TOTAL
01 - Main Building	263,700	GSF	$580.20	$152,998,588
01a - Distributed Building	60,000	GSF	$643.47	$38,608,024
02 - Site Improvements	196,698	GSF	$65.30	$12,844,190
02a - Distributed Site Improvements	20,954	GSF	$50.25	$1,053,013
03 - Waverleigh Improvements	74,428	GSF	$17.54	$1,305,785
04 - Field House	12,450	GSF	$548.60	$6,830,047
05 - Track Site Improvments	92,738	GSF	$85.25	$7,905,828
06 - 26th Parking Improvements	25,561	GSF	$10.37	$265,162
Estimated Cost of Work	**323,700**	**GSF**	**$685.24**	**$221,810,636**
Design Contingency	15.00%			$33,271,595
Escalation to Midpoint - (January 2028)	17.00%			$43,363,979
Construction Contingency	5.00%			$14,922,311
General Conditions/General Requirements	17.50%			$52,228,087
Insurance & Bond	2.00%			$8,081,448
PreConstruction - Struct & MEP - TradePartners Only	3.00%			$8,953,386
Metro SHS Tax	1.00%			$4,040,724
Fee	4.50%			$17,400,248
1.5% For Green Energy	1.50%			$6,061,086
Total	**323,700**	**GSF**	**$1,267.02**	**$410,133,501**

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Distributed 4/8/2024

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
01 - Main Building			$472.66	$152,998,588
A - SubStructure			$46.75	$15,131,928
A10 - Foundations			$19.90	$6,441,145
A20 - Basement Construction			$26.85	$8,690,784
B - Shell			$149.72	$48,464,708
B10 - Superstructure			$81.86	$26,498,812
B20 - Exterior Enclosure			$53.25	$17,237,739
B30 - Roofing			$14.61	$4,728,156
C - Interiors			$84.34	$27,300,878
C10 - Interior Construction			$51.38	$16,631,576
C20 - Stairs			$4.03	$1,305,315
C30 - Interior Finishes			$28.93	$9,363,987
D - Services			$170.99	$55,348,509
D10 - Conveying			$4.14	$1,339,596
D20 - Plumbing			$20.00	$6,473,835
D30 - HVAC			$69.54	$22,511,175
D40 - Fire Protection			$5.28	$1,709,223
D50 - Electrical			$72.03	$23,314,680
E - Equipment & Furnishings			$20.86	$6,752,564
E10 - Equipment			$11.01	$3,562,954
E20 - Furnishings			$9.85	$3,189,610
01a - Distributed Building			$119.27	$38,608,024
A - SubStructure			$3.63	$1,174,939
A10 - Foundations			$3.63	$1,174,939
A20 - Basement Construction			$0.00	$0
B - Shell			$33.48	$10,836,538
B10 - Superstructure			$19.17	$6,206,425
B20 - Exterior Enclosure			$12.64	$4,090,713
B30 - Roofing			$1.67	$539,400
C - Interiors			$18.74	$6,064,793
C10 - Interior Construction			$11.24	$3,637,193
C20 - Stairs			$0.92	$297,000
C30 - Interior Finishes			$6.58	$2,130,600
D - Services			$37.40	$12,107,352
D10 - Conveying			$0.96	$309,450
D20 - Plumbing			$4.55	$1,473,000
D30 - HVAC			$16.67	$5,397,000
D40 - Fire Protection			$1.20	$388,902
D50 - Electrical			$14.02	$4,539,000
E - Equipment & Furnishings			$3.43	$1,111,902
E10 - Equipment			$1.19	$386,166

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Distributed 4/8/2024

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
E20 - Furnishings			$2.24	$725,736
F - Special Construction & Demolition			$22.59	$7,312,500
F10 - Special Construction			$22.59	$7,312,500
02 - Site Improvements			$39.68	$12,844,190
G - Building Sitework			$39.68	$12,844,190
G10 - Site Preparation			$19.56	$6,330,930
G20 - Site Improvements			$12.17	$3,938,260
G30 - Site Mechanical Utilities			$2.01	$650,000
G40 - Site Electrical Utilities			$5.95	$1,925,000
02a - Distributed Site Improvements			$3.25	$1,053,013
G - Building Sitework			$3.25	$1,053,013
G10 - Site Preparation			$0.81	$262,307
G20 - Site Improvements			$1.04	$335,706
G30 - Site Mechanical Utilities			$0.48	$155,000
G40 - Site Electrical Utilities			$0.93	$300,000
03 - Waverleigh Improvements			$4.03	$1,305,785
G - Building Sitework			$4.03	$1,305,785
G10 - Site Preparation			$0.87	$280,898
G20 - Site Improvements			$2.67	$864,887
G30 - Site Mechanical Utilities			$0.23	$75,000
G40 - Site Electrical Utilities			$0.26	$85,000
04 - Field House			$21.10	$6,830,047
A - SubStructure			$3.63	$1,173,538
A10 - Foundations			$1.64	$531,395
A20 - Basement Construction			$1.98	$642,142
B - Shell			$7.39	$2,392,985
B10 - Superstructure			$4.19	$1,355,183
B20 - Exterior Enclosure			$1.77	$574,040
B30 - Roofing			$1.43	$463,763
C - Interiors			$2.44	$790,824
C10 - Interior Construction			$1.51	$488,912
C30 - Interior Finishes			$0.93	$301,913
D - Services			$7.19	$2,328,150
D20 - Plumbing			$2.12	$684,750
D30 - HVAC			$1.54	$498,000
D40 - Fire Protection			$0.27	$87,150
D50 - Electrical			$3.27	$1,058,250
E - Equipment & Furnishings			$0.34	$109,550
E10 - Equipment			$0.18	$58,710
E20 - Furnishings			$0.16	$50,840
G - Building Sitework			$0.11	$35,000

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
G30 - Site Mechanical Utilities			$0.00	$0
G40 - Site Electrical Utilities			$0.11	$35,000
05 - Track Site Improvments			$24.42	$7,905,828
G - Building Sitework			$24.42	$7,905,828
G10 - Site Preparation			$2.47	$800,297
G20 - Site Improvements			$19.07	$6,173,030
G30 - Site Mechanical Utilities			$0.34	$110,000
G40 - Site Electrical Utilities			$2.54	$822,500
06 - 26th Parking Improvements			$0.82	$265,162
G - Building Sitework			$0.82	$265,162
G10 - Site Preparation			$0.30	$95,846
G20 - Site Improvements			$0.52	$169,315

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

Distributed **4/8/2024**

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
	01 - Main Building			**$472.66**	**$152,998,588**
	A - SubStructure			**$46.75**	**$15,131,928**
	A1010 - Standard Foundations			**$10.01**	**$3,240,307**
	Standard Foundations				
-	Base Courses & Vapor Barrier	87,285.00	sf	$3.57	$311,760
-	Excavation & Backfill - Footings, Pits, Incl Backfill	87,285.00	sf	$8.85	$772,472
-	Foundation Drain	2,372.00	lf	$27.23	$64,590
-	Misc Steel - Cast in Embeds and Anchors	87,285.00	sf	$2.19	$190,909
-	Spread Footings & Grade Beams	87,285.00	sf	$21.77	$1,900,576
	A1020 - Special Foundations			**$4.32**	**$1,399,275**
	Special Foundations				
-	Dewatering - Allow	1.00	allow	$45,000.00	$45,000
-	Elevator Pit & Waterproofing	3.00	ea	$15,000.00	$45,000
-	Soil Improvements - EAP	87,285.00	sf	$15.00	$1,309,275
	A1030 - Slab on Grade			**$5.57**	**$1,801,562**
	Slabs on Grade				
-	Equipment Pads/Bases	87,285.00	sf	$2.35	$205,120
-	Firewater Storage Tank - Excluded	0.00	excluded	$0.00	$0
-	Radon Mitigation - In Mechanical	0.00	included	$0.00	$0
-	Slabs on Grade	87,285.00	sf	$18.29	$1,596,443
-	Underslab Drainage - Excluded	0.00	excluded	$0.00	$0
-	Underslab Insulation - Excluded	0.00	excluded	$0.00	$0
	A2010 - Basement Excavation			**$15.09**	**$4,884,446**
	Basement Excavation				
	Soldier Pile w/Lagging and Tiebacks	29,627.00	sf	$105.00	$3,110,835
-	Mass Excavation - Cut for Basement	43,685.00	cy	$40.60	$1,773,611
	A2020 - Basement Walls			**$11.76**	**$3,806,338**
	Basement Walls				
-	Concrete Wall	29,627.00	sf	$90.36	$2,677,096
-	Concrete Wall Footing	632.00	cy	$950.00	$600,400
-	Waterproofing & Insulation	29,627.00	sf	$17.85	$528,842
	B - Shell			**$149.72**	**$48,464,708**
	B1010 - Floor Construction			**$54.38**	**$17,604,014**
	Structural Steel Floor				
-	Decking - Steel Floor Decking, 3"	22,598.00	sf	$8.51	$192,309
-	Misc Steel - Catwalks, Hangers & Grating	38.00	tons	$6,500.00	$247,000
-	Misc Steel - Grid Iron at Auditorium	9.46	tons	$6,500.00	$61,490
-	Spray Applied Fireproofing - Floors	25,289.00	sf	$7.75	$195,990
-	Structural Steel - Beams, Floors, Auditorium and Gym	152.00	tons	$6,500.00	$988,000
-	Topping Slab - 3.5"	25,289.00	sf	$10.12	$255,925
	Type III-A MT Floor Const - Classrooms				
-	Beams & Columns - GluLam	28,310.00	cf	$121.50	$3,439,665
-	Beams & Columns - GluLam Connections	94,367.00	sf	$6.85	$646,414
-	Decking - 3 Ply CLT	94,367.00	sf	$38.68	$3,650,116
-	Mass Timber Construction Weather Repairs and Protection - Allow	94,367.00	sf	$0.75	$70,775
-	Structural Steel - BRB Lateral Frames, Floor	80.00	ea	$12,500.00	$1,000,000
-	Topping - 3.5" Concrete Topping Slab	94,367.00	sf	$9.50	$896,487

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
	Type III-B MT Floor Const				
-	Beams & Columns - GluLam	21,662.00	cf	$121.50	$2,631,933
-	Beams & Columns - GluLam Connections	61,890.00	sf	$6.85	$423,947
-	Decking - 3 Ply CLT	61,890.00	sf	$38.68	$2,393,905
-	Mass Timber Construction Weather Repairs and Protection - Allow	61,890.00	sf	$0.75	$46,418
-	Structural Steel - BRB Lateral Frames, Floor	21.00	ea	$12,500.00	$262,500
-	Topping - 2" Gypcrete w/ AcoustiMat	61,890.00	sf	$3.25	$201,143
	B1020 - Roof Construction			**$27.48**	**$8,894,798**
	Canopies				
-	Canopies - Complete	1,200.00	sf	$155.00	$186,000
	Hvy Timber Roof - Auditorium				
-	Beams - GluLam, Auditorium	5,434.00	cf	$142.00	$771,628
-	Decking - 3 Ply CLT Roof at Auditorium	11,285.00	sf	$38.68	$436,504
-	Topping - 2" Gypcrete, Excluded at Roof	0.00	excluded	$0.00	$0
	Structural Steel Roof Gym				
-	Decking - Acoustical Metal Decking at Gymnasium	22,915.00	sf	$11.20	$256,648
-	Misc Steel - Solar Supports, To be part of 1.5% GET	0.00	included	$0.00	$0
-	Structural Steel - Beams, Roofs, Gymnasium	63.00	tons	$8,250.00	$519,750
-	Structural Steel - Mechanical Screens	25.00	tons	$7,450.00	$186,250
-	Topping Slab - Excluded at Roof	0.00	excluded	$0.00	$0
	Type III-A MT Roof Const - Classrooms				
-	Beams & Columns - GluLam	12,877.00	cf	$121.50	$1,564,556
-	Beams & Columns - GluLam Connections	42,924.00	sf	$6.85	$294,029
-	Decking - 3 Ply CLT	42,924.00	sf	$38.68	$1,660,300
-	Mass Timber Construction Weather Repairs and Protection - Allow	0.00	sf	$0.00	$0
-	Structural Steel - BRB Lateral Frames, Roof	12.00	ea	$12,500.00	$150,000
-	Topping - 3.5" Concrete, Excluded at Roof	0.00	excluded	$0.00	$0
	Type III-B MT Roof Const				
-	Beams & Columns - GluLam	10,963.00	cf	$121.50	$1,332,005
-	Beams & Columns - GluLam Connections	31,323.00	sf	$6.85	$214,563
-	Decking - 3 Ply CLT	31,323.00	sf	$38.68	$1,211,574
-	Mass Timber Construction Weather Repairs and Protection - Allow	31,323.00	sf	$0.75	$23,492
-	Structural Steel - BRB Lateral Frames, Roof	7.00	ea	$12,500.00	$87,500
-	Topping - 2" Gypcrete, Excluded at Roof	0.00	excluded	$0.00	$0
	B2010 - Exterior Walls			**$35.96**	**$11,641,371**
	Exterior Walls				
-	Cladding - Mechanical Screens	10,000.00	sf	$55.00	$550,000
-	Claddings - Incl Rainscreen support	86,490.00	sf	$70.00	$6,054,300
-	Claddings - Overhangs/Exterior Soffits, Complete	7,858.00	sf	$95.00	$746,510
-	Exterior Façade Flashings & Sheetmetal	129,075.00	sf	$2.50	$322,688
-	Exterior Wall - CMU Fully Grouted	19,315.00	sf	$65.26	$1,260,497
-	Exterior Wall - Framing, Ins, WB	67,176.00	sf	$25.00	$1,679,400
-	Misc Metals - Façade Support Steel	120.38	tons	$7,500.00	$902,813
-	Misc Metals - Support at Parapets	3.36	tons	$7,500.00	$25,164
-	Mockups	1.00	ls	$100,000.00	$100,000
	B2020 - Exterior Windows			**$16.60**	**$5,374,860**
	Exterior Windows				

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Exterior Glazing - Various, Incl Operables, Figured 30%	37,068.00	sf	$145.00	$5,374,860
B2030 - Exterior Doors				**$0.68**	**$221,508**
Exterior Doors					
-	Exterior Doors - Incl OHD, Alum & HM Openings	263,700.00	gsf	$0.84	$221,508
B3010 - Roof Coverings				**$12.03**	**$3,893,019**
Roofing					
-	Roof Sheetmetal	108,448.00	sf	$0.85	$92,181
-	Roofing - Mod Bit. Protected Membrane	102,887.00	sf	$33.36	$3,432,310
-	Roofing - Vegetated Green Roof System	5,561.00	sf	$66.27	$368,527
B3020 - Roof Openings				**$2.58**	**$835,138**
Roof Accessories & Openings					
-	Roof Accessories - Safety Tie Offs Anchors	1.00	ls	$85,000.00	$85,000
-	Roof Accessories - Vents, Hatches, Catwalks	108,448.00	sf	$1.20	$130,138
-	Skylights in Gym	4,000.00	sf	$155.00	$620,000
-	Window Washing Davit Bases & Arms - Excluded	0.00	excluded	$0.00	$0
C - Interiors				**$84.34**	**$27,300,878**
C1010 - Partitions				**$35.69**	**$11,553,132**
Partitions					
-	Backing & Blocking	263,700.00	gsf	$0.36	$94,932
-	Caulking & Firestopping	263,700.00	gsf	$1.40	$369,180
-	Interior CMU Walls	25,985.00	gsf	$49.15	$1,277,163
-	Interior Walls	263,700.00	gsf	$30.05	$7,924,185
-	Mockups	1.00	ls	$50,000.00	$50,000
-	Plastering	263,700.00	gsf	$2.45	$646,065
-	Transoms/Sidelites	263,700.00	gsf	$4.52	$1,191,608
C1020 - Interior Doors				**$4.43**	**$1,432,946**
Interior Doors					
-	Access Doors - Incl with Doors	0.00	included	$0.00	$0
-	Interior Doors	263,700.00	gsf	$4.66	$1,229,317
-	Specialty Interior Doors	263,700.00	gsf	$0.77	$203,629
C1030 - Fittings				**$11.26**	**$3,645,498**
Interior Fittings					
-	Amenities and Convenience Items	263,700.00	gsf	$0.55	$145,035
-	EGD Allowance	1.00	allow	$75,000.00	$75,000
-	FEC's	263,700.00	gsf	$0.18	$47,466
-	HDS	263,700.00	gsf	$0.53	$139,524
-	Lockers	263,700.00	gsf	$3.97	$1,046,889
-	Misc Interior Metals - Railings outside stairs, ladders, grate	263,700.00	gsf	$3.13	$825,381
-	Signage	263,700.00	gsf	$1.00	$263,700
-	Toilet Partitions & Accessories	263,700.00	gsf	$1.40	$369,180
-	Visual Display Systems	263,700.00	gsf	$2.33	$614,658
-	Wall Protections and Cornerguards	263,700.00	gsf	$0.45	$118,665
C2010 - Stair Construction				**$4.03**	**$1,305,315**
Stairs					
-	C2010 - Stair Construction	263,700.00	gsf	$4.95	$1,305,315
C3010 - Wall Finishes				**$7.29**	**$2,360,115**
Interior Finishes					
-	C3010 - Wall Finishes	263,700.00	gsf	$8.95	$2,360,115

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	C3020 - Floor Finishes			**$9.55**	**$3,090,564**
	Interior Finishes				
-	C3020 - Floor Finishes	263,700.00	gsf	$11.72	$3,090,564
	C3030 - Ceiling Finishes			**$12.09**	**$3,913,308**
	Interior Finishes				
-	C3030 - Ceiling Finishes	263,700.00	gsf	$14.84	$3,913,308
D - Services				**$170.99**	**$55,348,509**
	D1010 - Elevator & Lifts			**$3.75**	**$1,213,020**
	Conveying				
-	Passanger Elevators	263,700.00	gsf	$4.60	$1,213,020
	D1090 - Other Coonveying Systems			**$0.39**	**$126,576**
	Conveying				
-	Hydraulic Lifts	263,700.00	gsf	$0.48	$126,576
	D2010 - Plumbing Fixtures			**$4.24**	**$1,371,240**
	Plumbing				
-	Plumbing Fixtures	263,700.00	gsf	$5.20	$1,371,240
	D2020 - Domestic Water Distribution			**$5.30**	**$1,714,050**
	Plumbing				
-	Domestic Water Distribution	263,700.00	gsf	$6.50	$1,714,050
	D2030 - Sanitary Waste			**$5.30**	**$1,714,050**
	Plumbing				
-	Sanitary Waste Systems	263,700.00	gsf	$6.50	$1,714,050
	D2040 - Rain Water Drainage			**$2.85**	**$922,950**
	Plumbing				
-	Rain Water Drainage	263,700.00	gsf	$3.50	$922,950
	D2090 - Other Plumbing Systems			**$2.32**	**$751,545**
	Plumbing				
-	Acid Waste Systems	263,700.00	gsf	$0.85	$224,145
-	Compressed Air Systems	263,700.00	gsf	$0.50	$131,850
-	Seismic	263,700.00	gsf	$1.00	$263,700
-	Testing	263,700.00	gsf	$0.50	$131,850
	D3090 - Other HVAC Systems & Equipment			**$69.54**	**$22,511,175**
	HVAC				
-	Air Distribution	263,700.00	gsf	$17.70	$4,667,490
-	Air Handling Equipment	263,700.00	gsf	$16.35	$4,311,495
-	Chilled Beams	263,700.00	gsf	$1.00	$263,700
-	Controls	263,700.00	gsf	$10.00	$2,637,000
-	Exhaust Systems	263,700.00	gsf	$5.00	$1,318,500
-	GRDS and Louvers	263,700.00	gsf	$3.00	$791,100
-	Heat Generation and Cooling	263,700.00	gsf	$11.25	$2,966,625
-	Piping Distribution	263,700.00	gsf	$14.00	$3,691,800
-	Radon Exhaust	102,545.00	gsf	$3.00	$307,635
-	Seismic	263,700.00	gsf	$1.00	$263,700
-	Supplemental Heating and Cooling	263,700.00	gsf	$0.80	$210,960
-	Testing, Adjusting and Balancing	263,700.00	gsf	$1.60	$421,920
-	Thermal Storage and Circulation Pumps	263,700.00	gsf	$2.50	$659,250

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
D4010 - Sprinklers			**$5.28**	**$1,709,223**
Fire Sprinklers				
- Fire Sprinklers, Incl Firepump	263,700.00	gsf	$6.48	$1,709,223
D5010 - Electrical Service & Distribution			**$23.78**	**$7,697,300**
Service & Distribution				
- Emergency Power Systems	263,700.00	gsf	$7.00	$1,845,900
- Machine and Equipment Power	263,700.00	gsf	$5.50	$1,450,350
- Main Service and Distribution	263,700.00	gsf	$10.00	$2,637,000
- PV Systems, Rough In Only	1.00	ls	$50,000.00	$50,000
- Receptacle Controls	263,700.00	gsf	$0.50	$131,850
- User Convenience Power	263,700.00	gsf	$6.00	$1,582,200
D5020 - Lighting and Branch Wiring			**$23.20**	**$7,510,300**
Lighting & Controls				
- Lighting Controls	263,700.00	gsf	$4.00	$1,054,800
- Lighting Fixtures	263,700.00	gsf	$20.00	$5,274,000
- Theater Lighting - Black Box	1.00	ls	$121,500.00	$121,500
- Theater Lighting Including House Lighting	1.00	ls	$1,060,000.00	$1,060,000
D5030 - Communications & Security			**$23.50**	**$7,606,050**
Low Voltage				
- Access Control/Intruder Detection	263,700.00	gsf	$2.50	$659,250
- AV Systems - Equipment, Install and Cabling	1.00	ls	$1,833,500.00	$1,833,500
- AV Systems - Rough In	1.00	ls	$366,700.00	$366,700
- CCTV	263,700.00	gsf	$2.50	$659,250
- Clock/Paging Systems	263,700.00	gsf	$3.00	$791,100
- Distributed Antenna System	263,700.00	gsf	$1.00	$263,700
- Fire Alarm System	263,700.00	gsf	$3.50	$922,950
- Telephone and Data Systems	263,700.00	gsf	$8.00	$2,109,600
D5090 - Other Electrical Systems			**$1.55**	**$501,030**
Other Electrical				
- Grouding	263,700.00	gsf	$0.35	$92,295
- Testing	263,700.00	gsf	$1.55	$408,735
E - Equipment & Furnishings			**$20.86**	**$6,752,564**
E1010 - Commercial Equipment			**$4.25**	**$1,376,701**
Commercial Equipment				
- Coordination For Unforeseen FFE Requirements	1.00	ls	$50,000.00	$50,000
- Foor Service Equipment	263,700.00	gsf	$4.68	$1,233,088
- Library Stack Shelving and Book Drops	263,700.00	gsf	$0.29	$75,155
- Residential Appliances - OFCI	263,700.00	gsf	$0.07	$18,459
E1020 - Institutional Equipment			**$1.10**	**$354,677**
Institutional Equipment				
- Athletic Equipment	263,700.00	gsf	$1.06	$279,522
- Lab Equipment	263,700.00	gsf	$0.24	$63,288
- Monitor Support Brackets	263,700.00	gsf	$0.05	$11,867
- Projector/AV Screens - Included in D5030	0.00	included	$0.00	$0
E1023 - Theatrical Equipment			**$5.61**	**$1,815,755**
Theatrical Equipment				
- Production/AV Equipment - Included in D5030	0.00	included	$0.00	$0
- Theatrical Equipment	323,700.00	gsf	$5.61	$1,815,755

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Theatrical/Production Lighting - Included in D5030	0.00	included	$0.00	$0
	E1030 - Vehicular Equipment			**$0.05**	**$15,822**
	Vehicle Equipment				
-	Loading Dock Equipment	263,700.00	gsf	$0.06	$15,822
	E2010 - Fixed Furnishings			**$9.85**	**$3,189,610**
	Furnishings				
-	Bleachers	263,700.00	gsf	$1.06	$279,047
-	Casework & Counters	263,700.00	gsf	$9.35	$2,465,595
-	Curtains and Drapes	263,700.00	gsf	$0.01	$3,771
-	Window Shades	263,700.00	gsf	$1.67	$441,196
	E2020 - Movable Furnishings			**$0.00**	**$0**
	Movable Furnishings				
-	Movable Furnishings - Excluded, Assumed as FFE	0.00	excluded	$0.00	$0
01a - Distributed Building				**$119.27**	**$38,608,024**
A - SubStructure				**$3.63**	**$1,174,939**
	A1010 - Standard Foundations			**$1.89**	**$610,339**
	Standard Foundations				
-	Base Courses & Vapor Barrier	15,000.00	sf	$3.57	$53,576
-	Excavation & Backfill - Footings, Pits, Incl Backfill	15,000.00	sf	$8.85	$132,750
-	Foundation Drain	2,372.00	lf	$27.23	$64,590
-	Misc Steel - Cast in Embeds and Anchors	15,000.00	sf	$2.19	$32,808
-	Spread Footings & Grade Beams	15,000.00	sf	$21.77	$326,616
	A1020 - Special Foundations			**$0.79**	**$255,000**
	Special Foundations				
-	Dewatering - Allow	1.00	allow	$15,000.00	$15,000
-	Elevator Pit & Waterproofing	1.00	ea	$15,000.00	$15,000
-	Soil Improvements - EAP	15,000.00	sf	$15.00	$225,000
	A1030 - Slab on Grade			**$0.96**	**$309,600**
	Slabs on Grade				
-	Equipment Pads/Bases	15,000.00	sf	$2.35	$35,250
-	Firewater Storage Tank - Excluded	0.00	excluded	$0.00	$0
-	Radon Mitigation - In Mechanical	0.00	included	$0.00	$0
-	Slabs on Grade	15,000.00	sf	$18.29	$274,350
-	Underslab Drainage - Excluded	0.00	excluded	$0.00	$0
-	Underslab Insulation - Excluded	0.00	excluded	$0.00	$0
	A2010 - Basement Excavation			**$0.00**	**$0**
	Basement Excavation				
	Soldier Pile w/Lagging and Tiebacks - Excluded	0.00	excluded	$0.00	$0
-	Mass Excavation - Cut for Basement - Excluded	0.00	excluded	$0.00	$0
B - Shell				**$33.48**	**$10,836,538**
	B1010 - Floor Construction			**$14.71**	**$4,760,225**
	Type III-A MT Floor Const - Classrooms				
-	Beams & Columns - GluLam	15,750.00	cf	$121.50	$1,913,625
-	Beams & Columns - GluLam Connections	45,000.00	sf	$6.85	$308,250
-	Decking - 3 Ply CLT	45,000.00	sf	$38.68	$1,740,600
-	Mass Timber Construction Weather Repairs and Protection - Allow	45,000.00	sf	$0.75	$33,750

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Structural Steel - BRB Lateral Frames, Floor	28.00	ea	$12,500.00	$350,000
-	Topping - 3.5" Concrete Topping Slab	45,000.00	sf	$9.20	$414,000
B1020 - Roof Construction				**$4.47**	**$1,446,200**
Canopies					
-	Canopies - Complete	325.00	sf	$155.00	$50,375
Type III-A MT Roof Const - Classrooms					
-	Beams & Columns - GluLam	5,250.00	cf	$121.50	$637,875
-	Beams & Columns - GluLam Connections	15,000.00	sf	$6.85	$102,750
-	Decking - 3 Ply CLT	15,000.00	sf	$38.68	$580,200
-	Mass Timber Construction Weather Repairs and Protection - Allow	0.00	sf	$0.00	$0
-	Structural Steel - BRB Lateral Frames, Roof	6.00	ea	$12,500.00	$75,000
-	Topping - 3.5" Concrete, Excluded at Roof	0.00	excluded	$0.00	$0
B2010 - Exterior Walls				**$8.84**	**$2,862,188**
Exterior Walls					
-	Claddings - Incl Rainscreen support	24,750.00	sf	$70.00	$1,732,500
-	Claddings - Overhangs/Exterior Soffits, Complete	2,500.00	sf	$95.00	$237,500
-	Exterior Façade Flashings & Sheetmetal	32,875.00	sf	$2.50	$82,188
-	Exterior Wall - CMU Fully Grouted - Excluded	0.00	sf	$0.00	$0
-	Exterior Wall - Framing, Ins, WB	24,750.00	sf	$25.00	$618,750
-	Misc Metals - Façade Support Steel	25.00	tons	$7,500.00	$187,500
-	Misc Metals - Support at Parapets	0.50	tons	$7,500.00	$3,750
-	Mockups - In Main Bldg	0.00	included	$0.00	$0
B2020 - Exterior Windows				**$3.64**	**$1,178,125**
Exterior Windows					
-	Exterior Glazing - Various, Incl Operables, Figured 30%	8,125.00	sf	$145.00	$1,178,125
B2030 - Exterior Doors				**$0.16**	**$50,400**
Exterior Doors					
-	Exterior Doors - Incl OHD, Alum & HM Openings	60,000.00	gsf	$0.84	$50,400
B3010 - Roof Coverings				**$1.59**	**$513,150**
Roofing					
-	Roof Sheetmetal	15,000.00	sf	$0.85	$12,750
-	Roofing - Mod Bit. Protected Membrane	15,000.00	sf	$33.36	$500,400
B3020 - Roof Openings				**$0.08**	**$26,250**
Roof Accessories & Openings					
-	Roof Accessories - Safety Tie Offs Anchors	1.00	ls	$15,000.00	$15,000
-	Roof Accessories - Vents, Hatches, Catwalks	15,000.00	sf	$0.75	$11,250
-	Window Washing Davit Bases & Arms - Excluded	0.00	excluded	$0.00	$0
C - Interiors				**$18.74**	**$6,064,793**
C1010 - Partitions				**$7.72**	**$2,498,753**
Partitions					
-	Backing & Blocking	60,000.00	gsf	$0.36	$21,600
-	Caulking & Firestopping	60,000.00	gsf	$1.40	$84,000
-	Interior CMU Walls	3,500.00	gsf	$49.15	$172,025
-	Interior Walls	60,000.00	gsf	$30.05	$1,803,000
-	Mockups - In Main Building	0.00	included	$0.00	$0
-	Plastering	60,000.00	gsf	$2.45	$147,000
-	Transoms/Sidelites	60,000.00	gsf	$4.52	$271,128

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	C1020 - Interior Doors			**$1.01**	**$326,040**
	Interior Doors				
-	Access Doors - Incl with Doors	0.00	included	$0.00	$0
-	Interior Doors	60,000.00	gsf	$4.66	$279,708
-	Specialty Interior Doors	60,000.00	gsf	$0.77	$46,332
	C1030 - Fittings			**$2.51**	**$812,400**
	Interior Fittings				
-	Amenities and Convenience Items	60,000.00	gsf	$0.55	$33,000
-	EGD Allowance - In Main Building	0.00	included	$0.00	$0
-	FEC's	60,000.00	gsf	$0.18	$10,800
-	HDS	60,000.00	gsf	$0.53	$31,746
-	Lockers	60,000.00	gsf	$3.97	$238,200
-	Misc Interior Metals - Railings outside stairs, ladders, grate	60,000.00	gsf	$3.13	$187,800
-	Signage	60,000.00	gsf	$1.00	$60,000
-	Toilet Partitions & Accessories	60,000.00	gsf	$1.40	$84,000
-	Visual Display Systems	60,000.00	gsf	$2.33	$139,854
-	Wall Protections and Cornerguards	60,000.00	gsf	$0.45	$27,000
	C2010 - Stair Construction			**$0.92**	**$297,000**
	Stairs				
-	C2010 - Stair Construction	60,000.00	gsf	$4.95	$297,000
	C3010 - Wall Finishes			**$1.66**	**$537,000**
	Interior Finishes				
-	C3010 - Wall Finishes	60,000.00	gsf	$8.95	$537,000
	C3020 - Floor Finishes			**$2.17**	**$703,200**
	Interior Finishes				
-	C3020 - Floor Finishes	60,000.00	gsf	$11.72	$703,200
	C3030 - Ceiling Finishes			**$2.75**	**$890,400**
	Interior Finishes				
-	C3030 - Ceiling Finishes	60,000.00	gsf	$14.84	$890,400
D - Services				**$37.40**	**$12,107,352**
	D1010 - Elevator & Lifts			**$0.89**	**$288,000**
	Conveying				
-	Passanger Elevators	60,000.00	gsf	$4.80	$288,000
	D1090 - Other Coonveying Systems			**$0.07**	**$21,450**
	Conveying				
-	Hydraulic Lifts	60,000.00	gsf	$0.36	$21,450
	D2010 - Plumbing Fixtures			**$0.96**	**$312,000**
	Plumbing				
-	Plumbing Fixtures	60,000.00	gsf	$5.20	$312,000
	D2020 - Domestic Water Distribution			**$1.20**	**$390,000**
	Plumbing				
-	Domestic Water Distribution	60,000.00	gsf	$6.50	$390,000
	D2030 - Sanitary Waste			**$1.20**	**$390,000**
	Plumbing				
-	Sanitary Waste Systems	60,000.00	gsf	$6.50	$390,000
	D2040 - Rain Water Drainage			**$0.65**	**$210,000**

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
Plumbing				
- Rain Water Drainage	60,000.00	gsf	$3.50	$210,000
D2090 - Other Plumbing Systems			**$0.53**	**$171,000**
Plumbing				
- Acid Waste Systems	60,000.00	gsf	$0.85	$51,000
- Compressed Air Systems	60,000.00	gsf	$0.50	$30,000
- Seismic	60,000.00	gsf	$1.00	$60,000
- Testing	60,000.00	gsf	$0.50	$30,000
D3090 - Other HVAC Systems & Equipment			**$16.67**	**$5,397,000**
HVAC				
- Air Distribution	60,000.00	gsf	$17.70	$1,062,000
- Air Handling Equipment	60,000.00	gsf	$16.35	$981,000
- Chilled Beams	60,000.00	gsf	$1.00	$60,000
- Controls	60,000.00	gsf	$10.00	$600,000
- Exhaust Systems	60,000.00	gsf	$5.00	$300,000
- GRDS and Louvers	60,000.00	gsf	$3.00	$180,000
- Heat Generation and Cooling	60,000.00	gsf	$11.25	$675,000
- Heating and Chilled Water From Central Plant	1.00	ls	$300,000.00	$300,000
- Piping Distribution	60,000.00	gsf	$14.00	$840,000
- Radon Exhaust	15,000.00	gsf	$3.00	$45,000
- Seismic	60,000.00	gsf	$1.00	$60,000
- Supplemental Heating and Cooling	60,000.00	gsf	$0.80	$48,000
- Testing, Adjusting and Balancing	60,000.00	gsf	$1.60	$96,000
- Thermal Storage and Circulation Pumps	60,000.00	gsf	$2.50	$150,000
D4010 - Sprinklers			**$1.20**	**$388,902**
Fire Sprinklers				
- Fire Sprinklers, Incl Firepump	60,000.00	gsf	$6.48	$388,902
D5010 - Electrical Service & Distribution			**$5.42**	**$1,755,000**
Service & Distribution				
- Emergency Power Systems	60,000.00	gsf	$7.00	$420,000
- Machine and Equipment Power	60,000.00	gsf	$5.50	$330,000
- Main Service and Distribution	60,000.00	gsf	$10.00	$600,000
- PV Systems, Rough In Only	1.00	ls	$15,000.00	$15,000
- Receptacle Controls	60,000.00	gsf	$0.50	$30,000
- User Convenience Power	60,000.00	gsf	$6.00	$360,000
D5020 - Lighting and Branch Wiring			**$4.45**	**$1,440,000**
Lighting & Controls				
- Lighting Controls	60,000.00	gsf	$4.00	$240,000
- Lighting Fixtures	60,000.00	gsf	$20.00	$1,200,000
D5030 - Communications & Security			**$3.80**	**$1,230,000**
Low Voltage				
- Access Control/Intruder Detection	60,000.00	gsf	$2.50	$150,000
- CCTV	60,000.00	gsf	$2.50	$150,000
- Clock/Paging Systems	60,000.00	gsf	$3.00	$180,000
- Distributed Antenna System	60,000.00	gsf	$1.00	$60,000
- Fire Alarm System	60,000.00	gsf	$3.50	$210,000
- Telephone and Data Systems	60,000.00	gsf	$8.00	$480,000
D5090 - Other Electrical Systems			**$0.35**	**$114,000**

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

GAMUT PROJECT SOLUTIONS

KJF COST STUDIO

Distributed **4/8/2024**

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
	Other Electrical				
-	Grouding	60,000.00	gsf	$0.35	$21,000
-	Testing	60,000.00	gsf	$1.55	$93,000
	E - Equipment & Furnishings			**$3.43**	**$1,111,902**
	E1010 - Commercial Equipment			**$0.93**	**$301,866**
	Commercial Equipment				
-	Foor Service Equipment	60,000.00	gsf	$4.68	$280,566
-	Library Stack Shelving and Book Drops	60,000.00	gsf	$0.29	$17,100
-	Residential Appliances - OFCI	60,000.00	gsf	$0.07	$4,200
	E1020 - Institutional Equipment			**$0.25**	**$80,700**
	Institutional Equipment				
-	Athletic Equipment	60,000.00	gsf	$1.06	$63,600
-	Lab Equipment	60,000.00	gsf	$0.24	$14,400
-	Monitor Support Brackets	60,000.00	gsf	$0.05	$2,700
-	Projector/AV Screens - Included in D5030	0.00	included	$0.00	$0
	E1030 - Vehicular Equipment			**$0.01**	**$3,600**
	Vehicle Equipment				
-	Loading Dock Equipment	60,000.00	gsf	$0.06	$3,600
	E2010 - Fixed Furnishings			**$2.24**	**$725,736**
	Furnishings				
-	Bleachers	60,000.00	gsf	$1.06	$63,492
-	Casework & Counters	60,000.00	gsf	$9.35	$561,000
-	Curtains and Drapes	60,000.00	gsf	$0.01	$858
-	Window Shades	60,000.00	gsf	$1.67	$100,386
	E2020 - Movable Furnishings			**$0.00**	**$0**
	Movable Furnishings				
-	Movable Furnishings - Excluded, Assumed as FFE	0.00	excluded	$0.00	$0
	F - Special Construction & Demolition			**$22.59**	**$7,312,500**
	F1010 - Special Structures			**$22.59**	**$7,312,500**
-	SkyBridge - Complete	2,250.00	sf	$3,250.00	$7,312,500
	02 - Site Improvements			**$39.68**	**$12,844,190**
	G - Building Sitework			**$39.68**	**$12,844,190**
	G1010 - Site Clearing			**$1.56**	**$503,389**
	Site Readiness				
-	Construction Fencing	1,780.00	lf	$18.00	$32,040
-	Temp Erosion & Sediment Control, Incl Maintenance	196,698.00	sf	$0.50	$98,349
-	Temporary Construction Aids	28.00	mo	$12,250.00	$343,000
-	Tree Protection	30.00	ea	$1,000.00	$30,000
	G1020 - Site Demolition and Relocations			**$17.45**	**$5,647,008**
	Site Demo & Prep				
-	Demo Existing School	270,952.00	sf	$12.45	$3,373,352
-	Demo Roads/Parking & Hardscapes	42,552.00	sf	$1.42	$60,424
-	Demo ROW for Utility Connections	1.00	allow	$35,000.00	$35,000
-	Demo Trees	31.00	ea	$750.00	$23,250
-	Haz Material Abatement of Existing School	270,952.00	sf	$4.05	$1,097,356

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
-	Salvage Allowance from Existing School	270,952.00	sf	$3.50	$948,332
-	Site Clear & Grub - Demo Misc Site Items	37,276.00	sf	$0.92	$34,294
-	Utility Relocations	1.00	ls	$75,000.00	$75,000
	G1030 - Site Earthwork			**$0.56**	**$180,533**
	Site Earthwork				
-	Site Earthwork, Incl Rough Grade	98,116.00	sf	$1.84	$180,533
	G1040 - Hazardous Waste Remediation			**$0.00**	**$0**
	Site Remediation				
-	Site Materials Hazardous Waste Remediation - Excluded	0.00	excluded	$0.00	$0
	G2010 - Roadways			**$1.56**	**$504,745**
	Right of Way Improvements				
-	Right of Way Improvements - 26th Ave	380.00	lf	$526.00	$199,880
-	Right of Way Improvements - 28th Ave	430.00	lf	$255.00	$109,650
	Roadway Work				
-	Demo Existing Striping and Restripe 26th	1.00	ls	$15,000.00	$15,000
-	Roadways - Asphalt Patch Back	1,767.00	sf	$7.25	$12,811
-	Roadways - Concrete Paving	4,243.00	sf	$18.25	$77,435
-	Roadways - Curbs	1,767.00	lf	$26.00	$45,942
-	Roadways - Fine Grade	4,243.00	sf	$0.36	$1,527
-	Roadways - Patch Back at Utility Connections	1.00	allow	$35,000.00	$35,000
-	Roadways - Signage & Striping	1.00	allow	$7,500.00	$7,500
	G2030 - Pedestrian Paving			**$3.42**	**$1,107,062**
	Pedestrian Paving				
-	Pedestrian Paving - Aggregate, Courtyard	2,166.00	sf	$0.75	$1,625
-	Pedestrian Paving - Base Courses	842.00	cy	$48.00	$40,416
-	Pedestrian Paving - Concrete Stairs	1,006.00	lf	$108.36	$109,010
-	Pedestrian Paving - Concrete, Courtyard	27,131.00	sf	$16.50	$447,662
-	Pedestrian Paving - Concrete, Ramps, Courtyard	2,190.00	sf	$18.25	$39,968
-	Pedestrian Paving - Concrete, Sidewalks	12,640.00	sf	$12.36	$156,230
-	Pedestrian Paving - Fine Grade	45,562.00	sf	$0.36	$16,402
	ROW Improvements				
-	Pedestrian Paving - Concrete, ADA Sidewalk Corner Mods	2.00	ea	$6,500.00	$13,000
	Site Handrails & Guardrails				
-	Site Guardrails	392.00	lf	$225.00	$88,200
-	Site Guardrails w/ Handrail	462.00	lf	$275.00	$127,050
-	Site Handrails	540.00	lf	$125.00	$67,500
	G2040 - Site Development			**$5.62**	**$1,818,272**
	Fields & Athletics				
-	Outdoor Play Equipment	1.00	ls	$50,000.00	$50,000
-	Synthetic Turf - Incl Base, Courtyard and Play Area	11,105.00	sf	$18.36	$203,888
	Furnishings & Enhancements				
-	Courtyard Improvements/Furniture	27,131.00	sf	$8.00	$217,048
-	Site Furnishings - Incl, Boulders & Conc Twig Bench	98,116.00	sf	$0.92	$90,267
	Site Buildings				
-	Covered Bike Parking	2,009.00	sf	$125.00	$251,125
-	Trash Enclosure - Roof	681.00	sf	$85.00	$57,885
	Site Concrete Work				
-	Site Retaining Walls - Varied Heights	7,616.00	sf	$95.00	$723,520

DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
- Site Wall 24" Wide x 18" High	493.00	lf	$115.00	$56,695
- Stadium Seating - 15" Rise	112.00	lf	$87.50	$9,800
- Stadium Seating - 18" Rise	83.00	lf	$103.25	$8,570
Site Fencing				
- Field Fence - Practice Field	1,800.00	sf	$10.75	$19,350
- Site Fence - Gates	16.00	ea	$2,250.00	$36,000
- Site Fence - Secure Perimter	477.00	lf	$175.00	$83,475
- Site Fence - Trash Enclosure	18.00	lf	$175.00	$3,150
- Site Fence - Trash Enclosure Gate	1.00	ea	$7,500.00	$7,500
G2050 - Landscaping			**$1.57**	**$508,180**
Landscaping				
- Irigation	44,529.00	sf	$1.78	$79,262
- Planting/Soil Improvements	39,194.00	sf	$8.15	$319,431
- Planting/Soil Improvements - Stormwater Planters	5,335.00	sf	$12.65	$67,488
- Trees	56.00	ea	$750.00	$42,000
G3010 - Water Supply			**$0.46**	**$150,000**
Water Supply				
- Water Supply - Upgrade Existing incoming water services including addition of new backflow prevention	1.00	ls	$150,000.00	$150,000
G3020 - Sanitary Sewer			**$0.77**	**$250,000**
Sanitary Sewer				
- Sanitary Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$250,000.00	$250,000
G3030 - Storm Sewer			**$0.77**	**$250,000**
Storm Sewer				
- Storm Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$250,000.00	$250,000
G4010 - Electrical Distribution			**$4.02**	**$1,300,000**
Service & Distribution				
- Relocate Power Lines on School Side of 26th Below Grade	1.00	ls	$550,000.00	$550,000
- Site Electrical Distribtuion, EV Charging, Etc.	1.00	ls	$750,000.00	$750,000
G4020 - Site Lighting			**$1.24**	**$400,000**
Site Lighting				
- Field Lighting - Multi Use	0.00	ls	$0.00	$0
- Field Lighting - Tennis	0.00	ls	$0.00	$0
- Off Site - Street Lighting, Allowance	1.00	allow	$150,000.00	$150,000
- Site Lighting	1.00	ls	$250,000.00	$250,000
G4030 - Site Communications & Security			**$0.70**	**$225,000**
Communications & Safety				
- Incoming Telecom - Cabling By Service Provider, Excluded	0.00	excluded	$0.00	$0
- Incoming Telecom - Conduit	1.00	ls	$75,000.00	$75,000
- Site Communication & Security	1.00	ls	$150,000.00	$150,000
02a - Distributed Site Improvements			**$3.25**	**$1,053,013**
G - Building Sitework			**$3.25**	**$1,053,013**
G1010 - Site Clearing			**$0.31**	**$99,497**
Site Readiness				
- Construction Fencing	640.00	lf	$18.00	$11,520

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Temp Erosion & Sediment Control, Incl Maintenance	20,954.00	sf	$0.50	$10,477
-	Temporary Construction Aids	6.00	mo	$12,250.00	$73,500
-	Tree Protection	4.00	ea	$1,000.00	$4,000
G1020 - Site Demolition and Relocations				**$0.38**	**$124,255**
Site Demo & Prep					
-	Demo Roads/Parking & Hardscapes	20,954.00	sf	$1.42	$29,755
-	Demo ROW for Utility Connections	1.00	allow	$15,000.00	$15,000
-	Demo Trees	6.00	ea	$750.00	$4,500
-	Utility Relocations	1.00	ls	$75,000.00	$75,000
G1030 - Site Earthwork				**$0.12**	**$38,555**
Site Earthwork					
-	Site Earthwork, Incl Rough Grade	20,954.00	sf	$1.84	$38,555
G1040 - Hazardous Waste Remediation				**$0.00**	**$0**
Site Remediation					
-	Site Materials Hazardous Waste Remediation - Excluded	0.00	excluded	$0.00	$0
G2030 - Pedestrian Paving				**$0.05**	**$17,601**
Pedestrian Paving					
-	Pedestrian Paving - Allow	20,954.00	sf	$0.84	$17,601
G2040 - Site Development				**$0.78**	**$251,025**
Furnishings & Enhancements					
-	Courtyard Improvements/Furniture	6,000.00	sf	$8.00	$48,000
Site Buildings					
-	Trash Enclosure - Roof	225.00	sf	$85.00	$19,125
Site Concrete Work					
-	Site Retaining Walls - Varied Heights	1,500.00	sf	$95.00	$142,500
Site Fencing					
-	Site Fence - Secure Perimter - Allow	150.00	lf	$205.00	$30,750
-	Site Fence - Trash Enclosure	18.00	lf	$175.00	$3,150
-	Site Fence - Trash Enclosure Gate	1.00	ea	$7,500.00	$7,500
G2050 - Landscaping				**$0.21**	**$67,080**
Landscaping					
-	Irigation	6,000.00	sf	$1.78	$10,680
-	Planting/Soil Improvements	6,000.00	sf	$8.15	$48,900
-	Trees	10.00	ea	$750.00	$7,500
G3010 - Water Supply				**$0.15**	**$50,000**
Water Supply					
-	Water Supply - New Water Mains & Fire Service	1.00	ls	$50,000.00	$50,000
G3020 - Sanitary Sewer				**$0.23**	**$75,000**
Sanitary Sewer					
-	Sanitary Sewer - Upsize Combined Sewer System	1.00	ls	$75,000.00	$75,000
G3030 - Storm Sewer				**$0.09**	**$30,000**
Storm Sewer					
-	Storm Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$30,000.00	$30,000
G4010 - Electrical Distribution				**$0.93**	**$300,000**
Service & Distribution					

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Electrical; Services From Main Building	1.00	ls	$300,000.00	$300,000
03 - Waverleigh Improvements				**$4.03**	**$1,305,785**
G - Building Sitework				**$4.03**	**$1,305,785**
G1010 - Site Clearing				**$0.23**	**$74,714**
Site Readiness					
-	Temp Erosion & Sediment Control, Incl Maintenance	74,428.00	sf	$0.50	$37,214
-	Temporary Construction Aids	5.00	mo	$7,500.00	$37,500
G1020 - Site Demolition and Relocations				**$0.44**	**$142,921**
Site Demo & Prep					
-	Demo ROW for Utility Connections	1.00	allow	$35,000.00	$35,000
-	Site Clearing /Demolition	74,428.00	sf	$1.45	$107,921
G1030 - Site Earthwork				**$0.20**	**$63,264**
-	Regrading	74,428.00	sf	$0.85	$63,264
G2010 - Roadways				**$1.49**	**$483,666**
Roadway Work					
-	Extruded Curbs	2,559.00	lf	$26.00	$66,534
-	New Asphalt & Base Course	46,025.00	sf	$8.50	$391,213
-	Roadways - Asphalt Patch Back	1,767.00	sf	$7.25	$12,811
-	Striping - Parking Lines	1,058.00	lf	$4.20	$4,444
-	Striping - Standard Crossing	1,265.00	sf	$6.85	$8,665
G2030 - Pedestrian Paving				**$0.71**	**$228,211**
Pedestrian Paving					
-	Elevated CrossWalk	90.00	sf	$38.00	$3,420
-	Pedestrian Paving - Concrete, ADA Sidewalk Mods	985.00	sf	$34.00	$33,490
-	Pedestrian Paving - Concrete, Sidwalk, Premium Finish	11,594.00	sf	$16.50	$191,301
G2050 - Landscaping				**$0.47**	**$153,010**
Landscaping					
-	Irigation	13,143.00	sf	$1.78	$23,395
-	Planting/Soil Improvements	13,143.00	sf	$8.15	$107,115
-	Treees	30.00	ea	$750.00	$22,500
G3030 - Storm Sewer				**$0.23**	**$75,000**
Storm Sewer					
-	Storm Sewer Improvements	1.00	ls	$75,000.00	$75,000
G4020 - Site Lighting				**$0.26**	**$85,000**
Site Lighting					
-	Off Site - Street Lighting, Allowance	1.00	allow	$85,000.00	$85,000
04 - Field House				**$21.10**	**$6,830,047**
A - SubStructure				**$3.63**	**$1,173,538**
A1010 - Standard Foundations				**$1.05**	**$338,420**
Standard Foundations					
-	Base Courses & Vapor Barrier	12,450.00	sf	$4.08	$50,796
-	Excavation for Foundations	12,450.00	sf	$5.48	$68,226
-	Foundation Drain	408.00	lf	$27.23	$11,110
-	Misc Steel - Cast in Embeds and Anchors	12,450.00	sf	$2.48	$30,876
-	Spread Footings & Grade Beams	12,450.00	sf	$14.25	$177,413

Cleveland High School

Mahlum/Studio Petretti

Pre-Design Pricing R0.0

Total Building Area (GSF): 323,700

GAMUT PROJECT SOLUTIONS

KJF COST STUDIO

Distributed 4/8/2024

	DESCRIPTION	QUANTITY	UOM	Cost/Unit	TOTAL
	A1020 - Special Foundations			**$0.13**	**$40,463**
	Special Foundations				
-	Soil Improvements - EAP	12,450.00	sf	$3.25	$40,463
	A1030 - Slab on Grade			**$0.47**	**$152,513**
	Slabs on Grade				
-	Slab on Grade	12,450.00	sf	$12.25	$152,513
-	Underslab Drainage - Excluded	0.00	excluded	$0.00	$0
-	Underslab Insulation - Excluded	0.00	excluded	$0.00	$0
	A2010 - Basement Excavation			**$0.99**	**$321,483**
	Basement Excavation				
	Soldier Pile w/Lagging and Tiebacks	2,300.00	sf	$108.50	$249,550
-	Mass Excavation - Cut for Basement	1,383.33	cy	$52.00	$71,933
	A2020 - Basement Walls			**$0.99**	**$320,659**
	Basement Walls				
-	Concrete Wall	2,300.00	sf	$93.48	$215,004
-	Concrete Wall Footing	68.00	cy	$950.00	$64,600
-	Waterproofing & Insulation	2,300.00	sf	$17.85	$41,055
	B - Shell			**$7.39**	**$2,392,985**
	B1020 - Roof Construction			**$4.19**	**$1,355,183**
	Mass Timber Structure				
-	Beams, Columns & CLT Deck Mass Timber	12,450.00	sf	$105.00	$1,307,250
-	Misc Steel & Connections	12,450.00	sf	$3.85	$47,933
	B2010 - Exterior Walls			**$1.13**	**$365,210**
	Exterior Walls				
-	Cladding - Incl Rainscreen support	3,265.00	sf	$70.00	$228,550
-	Exterior Façade Flashings & Sheetmetal	4,080.00	sf	$7.25	$29,580
-	Exterior Wall Framing, Ins, WB	3,265.00	sf	$28.00	$91,420
-	Misc Metals Façade	4,080.00	sf	$2.00	$8,160
-	Mockups	1.00	ls	$7,500.00	$7,500
	B2020 - Exterior Windows			**$0.33**	**$106,080**
	Exterior Windows				
-	Exterior Glazing - Figured 20%	816.00	sf	$130.00	$106,080
	B2030 - Exterior Doors			**$0.32**	**$102,750**
	Exterior Doors				
-	Exterior Double Man Doors	3.00	ea	$4,500.00	$13,500
-	Exterior Man Doors	6.00	ea	$2,500.00	$15,000
-	Exterior Overhead Coiling Doors	550.00	sf	$135.00	$74,250
	B3010 - Roof Coverings			**$1.43**	**$463,763**
	Roofing				
-	Roof Sheetmetal	12,450.00	sf	$2.25	$28,013
-	Roofing - Mod Bit. Protected Membrane	12,450.00	sf	$35.00	$435,750
	C - Interiors			**$2.44**	**$790,824**
	C1010 - Partitions			**$0.94**	**$304,403**
	Partitions				
-	Allowance for CMU Premiums	12,450.00	gsf	$12.50	$155,625
-	Backing & Blocking	12,450.00	gsf	$0.25	$3,113

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Interior Walls	12,450.00	gsf	$10.50	$130,725
-	Transoms/Sidelites	12,450.00	gsf	$1.20	$14,940
C1020 - Interior Doors				**$0.06**	**$18,675**
Interior Doors					
-	Interior Doors	12,450.00	gsf	$1.50	$18,675
C1030 - Fittings				**$0.51**	**$165,834**
Interior Fittings					
-	Amenities and Convenience Items	12,450.00	gsf	$0.85	$10,583
-	FEC's	12,450.00	gsf	$0.40	$4,980
-	Lockers	12,450.00	gsf	$6.85	$85,283
-	Protective Guards, Barriers and Bumpers	12,450.00	gsf	$2.00	$24,900
-	Signage	12,450.00	gsf	$0.77	$9,587
-	Toilet Partitions	12,450.00	gsf	$2.05	$25,523
-	Visual Display Systems	12,450.00	gsf	$0.40	$4,980
C3010 - Wall Finishes				**$0.35**	**$112,673**
Interior Finishes					
-	C3010 - Wall Finishes	12,450.00	sf	$9.05	$112,673
C3020 - Floor Finishes				**$0.31**	**$99,600**
Interior Finishes					
-	C3020 - Floor Finishes	12,450.00	sf	$8.00	$99,600
C3030 - Ceiling Finishes				**$0.28**	**$89,640**
Interior Finishes					
-	C3030 - Ceiling Finishes	12,450.00	sf	$7.20	$89,640
D - Services				**$7.19**	**$2,328,150**
D2090 - Other Plumbing Systems				**$2.12**	**$684,750**
Plumbing					
-	Plumbing Systems	12,450.00	gsf	$55.00	$684,750
D3090 - Other HVAC Systems & Equipment				**$1.54**	**$498,000**
HVAC					
-	HVAC Systems	12,450.00	gsf	$40.00	$498,000
D4010 - Sprinklers				**$0.27**	**$87,150**
Fire Sprinklers					
-	Fire Sprinklers	12,450.00	gsf	$7.00	$87,150
D5010 - Electrical Service & Distribution				**$3.27**	**$1,058,250**
Electrical					
-	Electrical Systems	12,450.00	gsf	$85.00	$1,058,250
E - Equipment & Furnishings				**$0.34**	**$109,550**
E1020 - Institutional Equipment				**$0.14**	**$43,710**
Institutional Equipment					
-	Batting Cages, Nets & Equipment	3,015.00	sf	$14.00	$42,210
-	Projector/AV Screens, Some OFCI	1.00	ea	$1,500.00	$1,500
E1090 - Other Equipment				**$0.05**	**$15,000**
AV Equipment					
-	AV Equipment	1.00	allow	$15,000.00	$15,000
E2010 - Fixed Furnishings				**$0.16**	**$50,840**

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	Furnishings				
-	Casework & Counters	12,400.00	gsf	$3.85	$47,740
-	Window Shades	12,400.00	gsf	$0.25	$3,100
G - Building Sitework				**$0.11**	**$35,000**
G3010 - Water Supply				**$0.00**	**$0**
	Water Supply				
-	Water Supply - Included with Track Site Improvements	0.00	included	$0.00	$0
G3020 - Sanitary Sewer				**$0.00**	**$0**
	Sanitary Sewer				
-	Sanitary Sewer - Included with Track Site Improvements	0.00	included	$0.00	$0
G3030 - Storm Sewer				**$0.00**	**$0**
	Storm Sewer				
-	Storm Sewer - Included with Track Site Improvements	0.00	included	$0.00	$0
G4010 - Electrical Distribution				**$0.11**	**$35,000**
	Service & Distribution				
-	Electrical Distribution	1.00	ls	$35,000.00	$35,000
05 - Track Site Improvments				**$24.42**	**$7,905,828**
G - Building Sitework				**$24.42**	**$7,905,828**
G1010 - Site Clearing				**$0.89**	**$288,369**
	Site Readiness				
-	Construction Fencing - Use Existing	0.00	excluded	$0.00	$0
-	Temp Erosion & Sediment Control, Incl Maintenance	92,738.00	sf	$0.50	$46,369
-	Temporary Construction Aids	8.00	mo	$5,500.00	$44,000
-	Track Protection	64,000.00	sf	$3.00	$192,000
-	Tree Protection	6.00	ea	$1,000.00	$6,000
G1020 - Site Demolition and Relocations				**$0.42**	**$136,339**
	Site Demo & Prep				
-	Building - Haz Material Abatement	2,375.00	sf	$2.00	$4,750
-	Demo ROW for Utility Connections	1.00	allow	$12,500.00	$12,500
-	Demolition - Existing Building	2,375.00	sf	$15.00	$35,625
-	Site Clearing	92,738.00	sf	$0.90	$83,464
G1030 - Site Earthwork				**$1.16**	**$375,589**
-	Site Earthwork	92,738.00	sf	$4.05	$375,589
G2010 - Roadways				**$0.28**	**$91,533**
	Roadway Work				
-	Roadways - Concrete Patch Back	400.00	sf	$25.00	$10,000
-	Roadways - Concrete Paving, Driveway	2,365.00	sf	$19.35	$45,763
-	Roadways - Curbs, Modification	375.00	lf	$38.00	$14,250
-	Roadways - Fine Grade, Incl Base	2,365.00	sf	$1.70	$4,021
-	Roadways - Patch Back at Utility Connections	1.00	allow	$10,000.00	$10,000
-	Roadways - Signage & Striping	1.00	allow	$7,500.00	$7,500
G2020 - Parking Lots				**$0.13**	**$41,353**
	Parking Lots				
-	Parking - Asphalt Paving	3,808.00	sf	$6.48	$24,676
-	Parking - Base Courses	70.00	cy	$62.00	$4,340

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
-	Parking - Curbs	350.00	lf	$26.00	$9,100
-	Parking Signage & Striping	3,808.00	sf	$0.85	$3,237
	G2030 - Pedestrian Paving			**$1.44**	**$467,315**
	Pedestrian Paving				
-	Pedestrian Paving - Base Courses	842.00	cy	$48.00	$40,416
-	Pedestrian Paving - Concrete Stairs, Allow	500.00	sf	$25.00	$12,500
-	Pedestrian Paving - Concrete, ADA Sidewalk Corner Mods	3.00	ea	$6,500.00	$19,500
-	Pedestrian Paving - Concrete, Plaza	25,050.00	sf	$15.25	$382,013
-	Pedestrian Paving - Concrete, Shot Put Pads	208.00	sf	$18.60	$3,869
-	Pedestrian Paving - Fine Grade	25,050.00	sf	$0.36	$9,018
	G2040 - Site Development			**$15.84**	**$5,128,427**
	Fields & Athletics				
-	New Bleachers - Adding 950 seats	2,320.00	sf	$115.00	$266,800
-	New Bleachers - Small on East Side of Field	1.00	ls	$25,000.00	$25,000
-	New Football Field Turf - Over Existing Base	94,000.00	sf	$11.15	$1,048,100
-	New Practice Field	13,655.00	sf	$18.48	$252,344
-	Repairs to Existing Grandstands	1.00	allow	$50,000.00	$50,000
-	Shot Put Pit - Incl Base Course	2,400.00	sf	$3.75	$9,000
	Furnishings & Enhancements				
-	Plaza Improvements/Furniture - Premium	25,050.00	sf	$8.00	$200,400
-	Site Furnishings	92,738.00	sf	$0.52	$48,224
	Site Buildings				
-	Concessions Building - Complete	250.00	sf	$505.00	$126,250
-	Restroom Buildings - Complete	3,265.00	sf	$575.00	$1,877,375
-	Ticketing Building - Complete	200.00	sf	$195.00	$39,000
	Site Concrete Work				
-	Site Retaining Walls - Allow	10,167.00	sf	$87.63	$890,934
	Site Equipment				
-	Athletic Equipment	1.00	ls	$250,000.00	$250,000
	Site Fencing				
-	Site Fence - Modifications/Repair - Allow	1.00	allow	$45,000.00	$45,000
	G2050 - Landscaping			**$1.37**	**$444,402**
	Landscaping				
-	Irigation	52,049.00	sf	$1.78	$92,647
-	Lawn Seeding/Soil Improvements	21,581.00	sf	$1.68	$36,256
-	Planting/Soil Improvements	26,202.00	sf	$8.15	$213,546
-	Planting/Soil Improvements - Stormwater Planters	4,265.00	sf	$12.65	$53,952
-	Trees	64.00	ea	$750.00	$48,000
	G3010 - Water Supply			**$0.15**	**$50,000**
	Water Supply				
-	Water Supply - New Fire Service, Track Site	1.00	ls	$25,000.00	$25,000
-	Water Supply - Upgrade Existing incoming water services including addition of new backflow prevention	1.00	ls	$25,000.00	$25,000
	G3020 - Sanitary Sewer			**$0.08**	**$25,000**
	Sanitary Sewer				
-	Sanitary Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$25,000.00	$25,000
	G3030 - Storm Sewer			**$0.11**	**$35,000**

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	Storm Sewer				
-	Storm Sewer - Piping and Structures to Existing Combined Sewer Mains	1.00	ls	$35,000.00	$35,000
	G4010 - Electrical Distribution			**$0.46**	**$150,000**
	Service & Distribution				
-	Site Electrical Distribtuion, EV Charging, Etc.	1.00	ls	$150,000.00	$150,000
	G4020 - Site Lighting			**$1.73**	**$560,000**
	Site Lighting				
-	Field Lighting - Football/Track, Upgrade Existing	1.00	ls	$300,000.00	$300,000
-	Field Lighting - Practice Field	1.00	ls	$185,000.00	$185,000
-	Site Lighting	1.00	ls	$75,000.00	$75,000
	G4030 - Site Communications & Security			**$0.35**	**$112,500**
	Communications & Safety				
-	Stadium AV System	1.00	ls	$112,500.00	$112,500
06 - 26th Parking Improvements				**$0.82**	**$265,162**
	G - Building Sitework			**$0.82**	**$265,162**
	G1010 - Site Clearing			**$0.11**	**$35,781**
	Site Readiness				
-	Construction Fencing	500.00	lf	$22.00	$11,000
-	Temp Erosion & Sediment Control, Incl Maintenance	25,561.00	sf	$0.50	$12,781
-	Tree Protection	12.00	ea	$1,000.00	$12,000
	G1020 - Site Demolition and Relocations			**$0.13**	**$43,451**
	Site Demo & Prep				
-	Demo ROW for Utility Connections	1.00	allow	$5,500.00	$5,500
-	Demo Trees	8.00	ea	$750.00	$6,000
-	Site Clearing	25,561.00	sf	$1.25	$31,951
	G1030 - Site Earthwork			**$0.05**	**$16,615**
-	Rough Grading	25,561.00	sf	$0.65	$16,615
	G1040 - Hazardous Waste Remediation			**$0.00**	**$0**
	Site Demo & Prep				
-	Site Hazardous Waste Remediation - Excluded	0.00	excluded	$0.00	$0
	G2020 - Parking Lots			**$0.35**	**$112,471**
	Parking Lots				
-	Parking - Asphalt Paving	17,292.00	sf	$4.08	$70,551
-	Parking - Base Courses, Regrade Existing	17,292.00	sf	$0.76	$13,142
-	Parking - Curbs	640.00	lf	$22.00	$14,080
-	Parking Signage & Striping	17,292.00	sf	$0.85	$14,698
	G2030 - Pedestrian Paving			**$0.01**	**$4,099**
	Pedestrian Paving				
-	Pedestrian Paving - Base Courses	5.19	cy	$48.00	$249
-	Pedestrian Paving - Concrete, Sidewalks	280.00	sf	$12.25	$3,430
-	Pedestrian Paving - Fine Grade	280.00	sf	$1.50	$420
	G2040 - Site Development			**$0.04**	**$12,500**
	Site Fencing				
-	Site Fence - Modifications/Repair - Allow	1.00	allow	$12,500.00	$12,500

DESCRIPTION		QUANTITY	UOM	Cost/Unit	TOTAL
	G2050 - Landscaping			**$0.12**	**$40,245**
	Landscaping				
-	Irigation	1,895.00	sf	$1.78	$3,373
-	Planting/Soil Improvements	800.00	sf	$8.15	$6,520
-	Planting/Soil Improvements - Stormwater Planters	1,095.00	sf	$12.65	$13,852
-	Trees	22.00	ea	$750.00	$16,500

Cleveland High School

Pre-Design

Alternate/Option/Breakout Pricing

No.	Description	Type	Value
1a	All new fencing around track & field site	Add	$750,000
1b1	Waverleigh Option A, ILO Option C in Base	Deduct	($2,015,000)
1b2	Waverleigh Option B, ILO Option C in Base	Deduct	($1,625,000)
1c	All new bleachers (1700 Capacity)	Add	$2,000,000
1d	Updates to Powell Park	Add	$11,000,000
1e	Construct 2 Story Field House ILO Single	Add	TBD
2a	Tuck Under Parking 34 spots	Add	$1,915,000
2b	Reduce surface parking to 53 spots	Incl	See Distributed Option
2c	Four Story Building - See full esitmate	Incl	See Distributed Option
2d	Retain 5 story bar and reduce 1 bay on east	Add	TBD
3a	Rooftop PH in lieu of GF mechanical	Add	$2,500,000
3b	Ground Source heat pump field	Add	$5,800,000
3c	Mixed Mode Ventilation	Add	$450,000
3d	Battery Back up ILO Gas powered Generator	Add	$1,300,000
3e	Add for solar panels prep over parking lot	Add	$90,000
3f	CLT Floor Structure w/ Suspended Clouds		TBD
3g	Concrete Topping Slab ILO Gypcrete	Add	$250,000

* Note All Alternates are inclusive of all fees, contingencies, escalation.
They are a net impact to the project

Portland Public Schools
Cleveland High School

Portland Public Schools
Cleveland High School

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Portland Public Schools

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Scope of Work

Project Scope Description

The project comprises of the cost planning for the Grover Cleveland High School located in Portland, OR. The scope of work consists of construction of a new 5 story structure with associated site and ROW work. Sitework is anticipated to involve parking and site options that include various sports fields, new landscape, landscape improvements, and right of way improvements.

Project Design

The report is based on the following design documents:

* CHS 240318 Drawings
* CHS 240318 Narratives, pricing memos and options

Procurement

It is anticipated that the project be delivered via GC/CM with a minimum of (3) qualified subcontractors to assure competitive market pricing.

Portland Public Schools

Cleveland High School

Basis of Estimate

Assumptions and Clarifications

This estimate is based on the following assumptions and clarifications:

- Acquisition costs are not included.
- Owner soft costs are not included.
- Prevailing wage labor rates are included.
- Cost assumes utilities are available, accessible, and functional for the proposed areas of work.
- The project will be performed during regular business hours.
- Phasing and construction of occupied structures has an applied additive markup for the complexity of construction and impact to construction schedule.

Portland Public Schools

Cleveland High School

Overall Summary

	SF	$/SF	TOTAL
Building -New construction	323,700	1053.03	340,864,506
Sitework	316,037	169.98	53,719,625
GET - 1.5%	316,037	18.73	5,918,762
RECOMMENDED BASE BUDGET	323,700	1,237.27	400,502,893

ALTERNATES	
Alternate 1: Powell Park	6,914,815
Alternate 2: Sports field fencing	238,296

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Building -New construction Summary

			%	$/SF	TOTAL
			Gross Area:	323,700 SF	
A10	Foundations		2%	18.06	5,845,373
A20	Basement Construction		1%	9.19	2,975,000
A	Substructure		3%	27.25	8,820,373
B10	Superstructure		14%	146.06	47,281,229
B20	Exterior Enclosure		5%	47.98	15,532,417
B30	Roofing		2%	19.94	6,454,586
B	Shell		20%	213.99	69,268,232
C10	Interior Construction		5%	47.98	15,529,978
C20	Stairways		0%	1.31	425,000
C30	Interior Finishes		3%	34.38	11,127,328
C	Interiors		8%	83.66	27,082,307
D10	Conveying Systems		0%	3.83	1,240,000
D20	Plumbing Systems		3%	28.32	9,167,184
D30	Heating, Ventilation & Air Conditioning		8%	80.85	26,169,713
D40	Fire Protection		1%	7.01	2,269,137
D50	Electrical Lighting, Power & Communications		8%	89.19	28,870,109
D	Services		20%	209.19	67,716,143
E10	Equipment		3%	28.98	9,380,500
E20	Furnishings		2%	17.12	5,542,495
E	Equipment & Furnishings		4%	46.10	14,922,995
F10	Special Construction		0%	0.00	0
F20	Selective Demolition		0%	0.00	0
F	Special Construction & Demolition		0%	0.00	0
BUILDING ELEMENTAL COST BEFORE CONTINGENCIES			55%	580.20	187,810,050
	Contingency - design	15.00%	8%	87.03	28,171,508
	Contingency - construction	5.00%	3%	33.36	10,799,078
	General Requirements	8.00%	5%	56.05	18,142,451
	General Conditions	8.50%	6%	64.31	20,818,462
	Fee	5.00%	4%	41.05	13,287,077
	Metro SHS Tax	1.00%	1%	8.62	2,790,286
	Bonds & Insurance	2.00%	2%	17.41	5,636,378
	Permits & Fees - by Owner	0.00%	0%		*NIC*
BUILDING CONSTRUCTION COST BEFORE ESCALATION			84%	888.03	287,455,291
	Escalation to mid-point (Q3 2027)	16.67%	14%	148.00	47,909,215
	Pre-construction				5,500,000
RECOMMENDED BUDGET			100%	1,053.03	340,864,506

Portland Public Schools
Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
Enclosed Floor Areas				
Floors				
Main level	103,023	SF		
Level 2	92,034	SF		
Level 3	56,292	SF		
Level 4	36,614	SF		
Level 5	35,737	SF		
Building Height	70	LF		
Perimeter				
Main level	2,394	SF		
Level 2	2,582	SF		
Level 3	1,880	SF		
Level 4	1,020	SF		
Level 5	1,016	SF		
Roof Area	**110,000**	**SF**		
TPO	103,000	SF		
Green roof	7,000	SF		
Program Area	**324,460**	**SF**		
Gym	18,600	SF		
Theatre	20,560	SF		
Classroom	227,648	SF		
Circulation and services	49,972	SF		
Administration	7,680	SF		
Footprint	103,023	SF		
TOTAL GROSS FLOOR AREA	323,700	SF		
Program Areas				
A10 Foundations	323,700	SF	18.06	5,845,373
A1010 Standard Foundations	323,700	SF	9.78	3,164,897
Continuous footings	710	CY	950.00	674,500
Grade beams	206	CY	950.00	195,630
Spread footings - 30' grid	123	EA	8,800.00	1,082,400
Base aggregates	1908	CY	55.00	104,940
Retaining wall - 16' ht.	7,440	SF	80.00	595,200
Temp shoring	465	LF	150.00	69,750
Waterproofing	7,440	SF	15.00	111,600
Anchor bolts/plates	103,023	SF	2.50	257,558
Perimeter drainage and bedding	2,444	LF	30.00	73,320

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Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
A1020 Special Foundations	323,700	SF	0.53	170,000
Pits - elevator incl. sump pump	2	EA	20,000.00	40,000
Soil improvement and thickened foundations - allow	1	LS	100,000.00	100,000
Dewatering - allow	1	LS	30,000.00	30,000
A1030 Slab On Grade	323,700	SF	7.76	2,510,476
Slab on grade - 4" thk.	82,463	SF	14.25	1,175,098
Slab on grade - 6" thk.	20,560	SF	16.50	339,240
Bases, stairs	500	SF	20.00	10,000
Curb wall - 1.5' ht.	3,784	SF	85.00	321,640
Under-slab drainage	103,023	SF	2.20	226,651
Under-slab insulation and vapor barrier	103,023	SF	4.25	437,848
A20 Basement Construction	323,700	SF	9.19	2,975,000
A2010 Basement Excavation	323,700	SF		
Additional excavation required for construction of basement				
Backfill and compaction				
Excavation support system				
A2020 Basement Walls	323,700	SF	9.19	2,975,000
Shear walls	35,000	SF	85.00	2,975,000
B10 Superstructure	323,700	SF	146.06	47,281,229
B1010 Floor Construction	323,700	SF	123.03	39,823,519
Mass timber construction - columns and beams				
Wood timber package				
CLT panels, spline ends and side joints	220,677	SF	26.00	5,737,602
Glu-lam beams	24,571	LF	168.00	4,128,000
Glu-lam rafters	55,169	LF	180.00	9,930,465
Glu-lam blocking	1	LS	109,500.00	109,500
Glu-lam columns	15,750	LF	218.00	3,433,500
Layout/installation	29,530	SF	22.00	649,660
Lifting system	1	LS	624,500.00	624,500
Hardware	1	LS	438,000.00	438,000
Shop drawings	1	LS	40,000.00	40,000
Transport	1	LS	180,000.00	180,000
Decking				
Mass plywood panels - see "Wood timber package"				
Acoustic mat	220,677	SF	5.00	1,103,385

Portland Public Schools
Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
2" gypcrete	220,677	SF	5.00	1,103,385
Firestopping	220,677	SF	0.75	165,508
Sealants	220,677	SF	0.55	121,372
Channels and angles	1	LS	4,500.00	4,500
Structural steel				
Elevator hoist beams	18.50	TNs	16,500.00	305,250
Misc. steel angles and connections	1	LS	104,000.00	104,000
Rough carpentry	323,700	SF	6.89	2,230,293
Columns and beams - vertical construction				*incl. above,*
CMU -Arts, 12" thk.	24,300	SF	83.00	2,016,900
CMU - gym, 12" thk.	25,625	SF	83.00	2,126,875
Shear walls - CMU	36,148	SF	83.00	3,000,284
Misc. plates and connections	220,677	SF	2.50	551,693
Seismic category III - allow	323,700	SF	5.00	1,618,500
B1020 Roof Construction	323,700	SF	23.04	7,457,711
Mass timber construction - beams and decking included above				
Beams - glu-lam				*Incl. Above,*
CLT decking				*Incl. Above,*
Hardware				*Incl. Above,*
Soffit, overhang	9,683	SF	45.00	435,713
Strapping, blocking and connections, add	110,000	SF	25.00	2,750,000
Roof framing - 10lb/SF (Arts and Gym)	195.80	TN	10,800.00	2,114,640
Metal deck - incl. topping slab	39,160	SF	22.50	881,100
Roof framing - solar panel substructure	39.16	TN	10,800.00	422,928
Canopies - allow	4,500	SF	115.00	517,500
Elevator and stair overrun	2	EA	15,000.00	30,000
Parapet	3,598	LF	85.00	305,830
B20 Exterior Enclosure	323,700	SF	47.98	15,532,417
B2010 Exterior Walls	323,700	SF	29.94	9,693,183
Exterior framing	127,244	SF	28.25	3,594,643
Exterior cladding	83,981	SF		
Brick veneer	33,592	SF	56.00	1,881,175
Metal panel	33,592	SF	75.00	2,519,431
Fiber cement panel	16,796	SF	42.00	705,441
WRB	83,981	SF	7.00	587,867
Caulking and sealants	323,700	SF	1.25	404,625

Portland Public Schools

Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
B2020 Exterior Windows	323,700	SF	17.37	5,624,185
Exterior glazing, composite/various	43,263	SF	130.00	5,624,185
B2030 Exterior Doors	323,700	SF	0.66	215,050
HM - single	12	EA	3,000.00	36,000
HM - double	8	EA	5,250.00	42,000
Roll up door	4	EA	18,500.00	74,000
Storefront - single	6	EA	4,850.00	29,100
Storefront - double	4	EA	8,487.50	33,950
B30 Roofing	323,700	SF	19.94	6,454,586
B3010 Roof Coverings	323,700	SF	17.91	5,798,586
Membrane roof system	103,000	SF	38.00	3,914,000
Green roof system	7,000	SF	55.00	385,000
Vapor barrier	110,000	SF	4.50	495,000
Insulation	110,000	SF	6.50	715,000
Flashing and trim	7,196	LF	28.50	205,086
Mechanical screen	100	LF	150.00	15,000
Walking pads	500	SF	28.00	14,000
Roof drains	30	EA	1,850.00	55,500
B3020 Roof Openings	323,700	SF	2.03	656,000
Roof hatch	2	EA	5,500.00	11,000
Access ladder	2	EA	12,500.00	25,000
Skylight - allow	4,000	SF	155.00	620,000
C10 Interior Construction	323,700	SF	47.98	15,529,978
C1010 Partitions	323,700	SF	32.01	10,362,997
Interior partition - metal stud	309,840	SF	21.50	6,661,560
Interior of exterior - GWB	83,981	SF	9.00	755,829
Operable partition - allow	250	LF	1,000.00	250,000
Shaft walls	30,984	SF	15.00	464,760
Interior glazing	24,787	SF	90.00	2,230,848
C1020 Interior Doors	323,700	SF	5.70	1,846,500
HM - single	60	EA	3,000.00	180,000
HM - double	30	EA	5,250.00	157,500
Roll up door	10	EA	18,500.00	185,000
Wood - single	289	EA	4,000.00	1,156,000
Wood - double	24	EA	7,000.00	168,000

Portland Public Schools

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Building -New construction

	Quantity	Unit	Rate	Total
C1030 Fittings	323,700	SF	10.26	3,320,481
Classroom fittings - white boards, tack boards, etc.	1	LS	1,200,000.00	1,200,000
Lockers	1	LS	323,703.25	323,703
Restroom - bath accessories	1	LS	98,300.00	98,300
Corner guards	1	LS	70,000.00	70,000
Misc. accessories	1	LS	250,000.00	250,000
Window blinds and shades	68,050	SF	15.50	1,054,777
Wayfinding	323,700	SF	1.00	323,700
C20 Stairways	323,700	SF	1.31	425,000
C2010 Stair Construction	323,700	SF	1.31	425,000
Egress stair	15	FLT	22,000.00	330,000
Feature stair, forum	1	FLT	95,000.00	95,000
C30 Interior Finishes	323,700	SF	34.38	11,127,328
C3010 Wall Finishes	323,700	SF	13.87	4,490,633
Tile	39,411	SF	20.00	788,224
Paint	688,169	SF	1.85	1,273,113
Specialty finish - allow	172,042	SF	7.00	1,204,296
Acoustic wall treatment - allow	35,000	SF	35.00	1,225,000
C3020 Floor Finishes	323,700	SF	10.04	3,250,134
Polished concrete	84,514	SF	8.50	718,369
Sealed concrete	29,400	SF	4.25	124,950
Resilient flooring	36,700	SF	9.50	348,650
Tile	12,216	SF	25.00	305,400
Wood floor	45,620	SF	22.00	1,003,640
Carpet - classroom and office space	115,250	SF	6.50	749,125
C3030 Ceiling Finishes	323,700	SF	10.46	3,386,562
GWB	48,555	SF	11.50	558,383
Open to structure	113,914	SF	2.10	239,219
ACT cloud system	45,981	SF	35.00	1,609,335
ACT	115,250	SF	8.50	979,625

Portland Public Schools

Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
D10 Conveying Systems	323,700	SF	3.83	1,240,000
D1010 Elevators & Lifts	323,700	SF	3.83	1,240,000
Traction elevator - #3500	20	ST	58,500.00	1,170,000
ADA lift	2	EA	35,000.00	70,000
D20 Plumbing Systems	323,700	SF	28.32	9,167,184
D2010 Plumbing Fixtures	323,700	SF	28.32	9,167,184
Plumbing system complete - allow	323,700	SF	28.32	9,167,184
D30 Heating, Ventilation & Air Conditioning	323,700	SF	80.85	26,169,713
D3010 Energy Supply	323,700	SF	80.85	26,169,713
Central Air Source Heat Pump system, complete	323,700	SF	39.21	12,692,277
Heat pump - 180 TN	5	EA		*incl. above,*
ASHP - buffer tank, 2,000 gal.	2	EA		*incl. above,*
HR Chiller 25 TN	3	EA		*incl. above,*
Boiler - electric, 1320 kW	2	EA		*incl. above,*
Chilled water pump - 50 HP	3	EA		*incl. above,*
Heating water pump - 25 HP	3	EA		*incl. above,*
Valves and appurtenances	1	LS		*incl. above,*
Boiler pump - 300 GPM	2	EA		*incl. above,*
AHU Ventilation and exhaust systems	323,700	SF	26.70	8,642,790
Heater water expansion tank - 200 gal.	3	EA		*incl. above,*
Chilled water expansion tank - 200 gal.	3	EA		*incl. above,*
Glycol make-up package - 100 gal.	1	EA		*incl. above,*
Buffer tank - CW, 3,000 gal.	1	EA		*incl. above,*
Buffer tank - HW, 3,000 gal.	1	EA		*incl. above,*
Heat pump - split system, BOH	1	LS	50,000.00	50,000
Commercial/lab equipment - see E10 equipment				*incl. below,*
DDC Controls	323,700	SF	14.00	4,531,800
Testing and balancing	360	HR	130.00	46,800
Radon system - SOG	103,023	SF	2.00	206,046
D40 Fire Protection	323,700	SF	7.01	2,269,137
D4010 Sprinklers	323,700	SF	6.82	2,207,634
Standpipe, valves, pumps and main distribution	323,700	SF	6.82	2,207,634

Portland Public Schools

Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
D4030 Fire Protection Specialties	323,700	SF	0.19	61,503
Fire extinguishers, incl. cabinets	129	EA	475.00	61,503
D4090 Other Fire Protection Specialties	323,700	SF		
No work anticipated				*NIC*
D50 Electrical Lighting, Power & Communications	323,700	SF	89.19	28,870,109
D5010 Electrical Service & Distribution	323,700	SF	35.00	11,329,500
Electrical service and distribution - allow	323,700	SF	35.00	11,329,500
D5020 Lighting & Branch Wiring	323,700	SF	25.00	8,092,500
Lighting & Branch Wiring - allow	323,700	SF	25.00	8,092,500
D5030 Communications & Security	323,700	SF	28.27	9,150,305
Fire alarm systems	323,700	SF	3.00	971,100
CO/smoke detection system	323,700	SF	2.50	809,250
Clock system	323,700	SF	2.10	679,770
DAS	1	LS	200,000.00	200,000
Voice/data	323,700	SF	8.00	2,589,600
AV equipment -Rough in	323,700	SF	3.80	1,230,060
PA/Intercom	323,700	SF	3.00	971,100
CCTV	323,700	SF	5.25	1,699,425
D5090 Other Electrical Systems	323,700	SF	0.92	297,804
Connection to mechanical equipment	323,700	SF	0.92	297,804
Emergency generator - see sitework				*incl. ,*
PV system				*NIC,*
E10 Equipment	323,700	SF	28.98	9,380,500
E1010 Commercial Equipment	323,700	SF	15.00	4,855,500
Commercial and Institutional equipment - allow	323,700	SF	15.00	4,855,500
E1090 Other Equipment	323,700	SF	13.98	4,525,000
Equipment and AV				
Theatre and Black box equipment				
Variable acoustics	1	LS	50,000.00	50,000
Rigging system	1	LS	675,000.00	675,000
Stage draperies	1	LS	90,000.00	90,000
Orchestra shell	1	LS	450,000.00	450,000
Orchestra pit/platforms	1	LS	90,000.00	90,000

Portland Public Schools
Cleveland High School

Building -New construction

	Quantity	Unit	Rate	Total
Production lighting control	1	LS	240,000.00	240,000
Production lighting fixtures	1	LS	350,000.00	350,000
Fixed theatre seating	500	EA	650.00	325,000
Production - AV system	1	LS	550,000.00	550,000
Drama/Black Box equipment				
Stage rigging	1	LS	115,000.00	115,000
Stage draperies	1	LS	20,000.00	20,000
Production lighting control	1	LS	90,000.00	90,000
Production - AV system	1	LS	125,000.00	125,000
Band and choir classrooms				
Variable acoustics	1	LS	15,000.00	15,000
AV system	2	EA	55,000.00	110,000
Classrooms including lab	88	EA	6,000.00	528,000
Computer lab	4	EA	30,000.00	120,000
Conference Rooms	2	EA	5,000.00	10,000
Video Conference	2	EA	6,500.00	13,000
Lobby signage	4	EA	1,000.00	4,000
Student Center	1	LS	115,000.00	115,000
Athletics	1	LS	440,000.00	440,000
E20 Furnishings	323,700	SF	17.12	5,542,495
E2010 Fixed Furnishings	323,700	SF	17.12	5,542,495
Casework - allow	323,700	SF	16.35	5,292,495
Casework - theatre	1	LS	250,000.00	250,000
E2020 Movable Furnishings	323,700	SF		
By Owner				*NIC*
F10 Special Construction	323,700	SF		
F1010 Special Structures	323,700	SF		
No work anticipated				*NIC*
F20 Selective Demolition	323,700	SF		
F2010 Building Elements Demolition	323,700	SF		
See Sitework				*NIC*
F2020 Hazardous Components Abatement	323,700	SF		
See Sitework				*incl.*

Portland Public Schools

Cleveland High School

Sitework Summary

			%	$/SF	TOTAL
			Gross Area:	316,037 SF	
G10	Site Preparation		38%	65.02	20,547,258
G20	Site Improvements		9%	15.49	4,896,022
G30	Site Mechanical Utilities		3%	4.52	1,429,559
G40	Site Electrical Utilities		6%	10.16	3,211,100
G	Building Sitework		56%	95.19	30,083,939
SITE ELEMENTAL COST BEFORE CONTINGENCIES			56%	95.19	30,083,939
	Contingency - design	15.00%	0%	14.28	4,512,591
	Contingency - construction	5.00%	0%	5.47	1,729,827
	General Requirements	8.00%	0%	9.20	2,906,109
	General Conditions	8.50%	0%	10.55	3,334,760
	Fee	5.00%	0%	6.73	2,128,361
	Metro SHS Tax	1.00%	0%	1.41	446,956
	Bonds & Insurance	2.00%	0%	2.86	902,851
	Permits & Fees - by Owner	0.00%	0%		*NIC*
SITE CONSTRUCTION COST BEFORE ESCALATION			86%	145.70	46,045,393
	Escalation to mid-point (Q3 2027)	16.67%	14%	24.28	7,674,232
RECOMMENDED BUDGET			100%	169.98	53,719,625

Portland Public Schools
Cleveland High School

Sitework

	Quantity	Unit	Rate	Total
Net Site Areas				
Building Footprint	**103,023**	**SF**		
Roadwork	**16,500**	**SF**		
Roadway - ROW	12,000	SF		
Crossing upgrade	4,500	SF		
Parking Lots	**41,215**	**SF**		
Parking lot - asphalt	37,875	SF		
Event parking	3,340	SF		
Ped Paving	**76,194**	**SF**		
Sidewalk - concrete, city	31,229	SF		
Sidewalk - concrete, ramp	3,515	SF		
Plaza - concrete	41,450	SF		
Site Structure	**15,060**	**SF**		
Bike parking canopy	2,215	SF		
Field House	12,000	SF		
Restroom building, addition	845	SF		
Site Features	**16,420**	**SF**		
Practice field	14,965	SF		
Shot put	1,455	SF		
Landscaping and Softscape	**47,625**	**SF**		
Landscape - Lawn	7,205	SF		
Landscape - Planting	40,420	SF		
TOTAL SITE AREA	316,037	SF		
G10 Site Preparation	316,037	SF	65.02	20,547,258
G1010 Site Clearing	316,037	SF	1.29	407,116
Construction entrance	4	EA	6,500.00	26,000
Construction fencing	2,500	LF	12.50	31,250
Erosion control	316,037	SF	0.17	53,726
Temp facilities	26	MO	1,640.00	42,640
Street cleaning	26	MO	1,500.00	39,000
Temp street closure and flagging	26	MO	1,250.00	32,500
Site protection	1	LS	62,000.00	62,000
Tree protection	1	LS	25,000.00	25,000
Utility protection	1	LS	45,000.00	45,000
Construction layout and survey	1	LS	50,000.00	50,000

Portland Public Schools
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Sitework

	Quantity	Unit	Rate	Total
G1020 Site Demolition and Relocations	316,037	SF	56.61	17,890,264
Clear and grub - see earthwork	316,037	SF	0.35	110,613
Abate and Demo - Existing School	254,200	SF	64.30	16,345,060
Demo - site	213,014	SF	6.50	1,384,591
Demo - misc. obstructions	1	LS	50,000.00	50,000
G1030 Site Earthwork	316,037	SF	3.95	1,249,878
Excavation - building	8,747	CY	22.50	196,805
Site cut - 1' depth	2,958	CY	22.50	66,559
Site fill - stockpile	9,364	CY	15.00	140,461
Haul and dispose	2,341	CY	30.00	70,230
Grading and compaction	316,037	SF	0.82	259,150
Base aggregates				
Site buildings- 12" depth	8,747	CY	45.00	393,610
Parking lots - 8" depth	1,018	CY	45.00	45,817
Ped paving - 6" depth	1,411	CY	45.00	63,495
ROW - 6" depth	306	CY	45.00	13,750
G1040 Hazardous Waste Remediation	316,037	SF	3.16	1,000,000
Mitigation - allowance	1	LS	1,000,000	1,000,000
G20 Site Improvements	316,037	SF	15.49	4,896,022
G2010 Roadways	316,037	SF	1.34	422,025
Demo - hardscape	16,500	SF	3.00	49,500
Roadway - grind and overlay, incl. striping	12,000	SF	3.10	37,200
Curbs - CIP concrete	1,650	LF	30.50	50,325
Retaining wall	3,800	SF	75.00	285,000
G2020 Parking Lots	316,037	SF	1.26	398,811
Parking lot - asphalt	37,875	SF	4.50	170,438
Striping	37,875	SF	0.17	6,439
ADA curb ramps	8	EA	1,550.00	12,400
Curbs - CIP concrete	6,870	LF	30.50	209,535
Wheel stops - not required				*NIC*
G2030 Pedestrian Paving	316,037	SF	3.42	1,081,209
Sidewalk - concrete, city	31,229	SF	11.50	359,134
Sidewalk - concrete, ramp	2,500	SF	35.00	87,500
Plaza - concrete	41,450	SF	13.50	559,575
Retaining wall	1,000	SF	75.00	75,000

Portland Public Schools

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Sitework

	Quantity	Unit	Rate	Total
G2040 Site Development	316,037	SF	6.97	2,201,434
Site Structure				
Bike parking canopy	2,215	SF	120.00	265,800
Site Features	16,420	SF		
Football field & track - existing				*NIC*
Field - resurface, synthetic	68,195	SF	7.75	528,511
Track - resurface	78,475	SF	4.44	348,429
Home stand - renovation, allow	-	SF	125.00	
AV system				*W/Bldg.*
Practice Field	14,965	SF		
Field - synthetic	14,965	SF	7.75	115,979
Base aggregates	277	CY	65.00	18,013
Drainage	14,965	SF	3.25	48,636
Fence - 10' ht.	872	LF	125.00	108,953
Fence - 20' ht.	80	LF	275.00	21,988
Gate - single	6	EA	2,500.00	15,000
Gate - double	2	EA	4,500.00	9,000
Dugout	2	EA	10,000.00	20,000
Stands and dugout	1	LS	35,000.00	35,000
Softball field - see alt 1	-	SF		
Multi-use field - see alt 1	-	SF		
Monument sign	1	LS	50,000.00	50,000
Site furnishings				
Fencing - secure	1,935	LF	175.00	338,625
Ped gate	4	EA	3,500.00	14,000
Misc. furnishings (benches, seat walls, trash receptacles, etc.)	1	LS	250,000.00	250,000
Flagpoles	3	EA	4,500.00	13,500
G2050 Landscaping	316,037	SF	2.51	792,543
Landscape - Lawn	7,205	SF	8.50	61,243
Landscape - Planting	40,420	SF	15.00	606,300
Landscape - restoration	1	LS	125,000.00	125,000
G30 Site Mechanical Utilities	316,037	SF	4.52	1,429,559
G3010 Water Supply	316,037	SF	0.56	176,700
Connection to existing	1	LS	20,000.00	20,000
WS - 4" DI pipe, incl. trenching and backfill	380	LF	90.00	34,200
FS - 8" DI pipe, incl. trenching and backfill	380	LF	125.00	47,500
Vaults, devices and controls	1	LS	75,000.00	75,000

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Sitework

	Quantity	Unit	Rate	Total
G3020 Sanitary Sewer	316,037	SF	0.76	238,750
Connection to existing	1	LS	20,000.00	20,000
SS - 8" pipe, incl. trenching and backfill	625	LF	110.00	68,750
Devices and controls	1	LS	150,000.00	150,000
G3030 Storm Sewer	316,037	SF	3.21	1,014,109
Connection to existing	1	LS	20,000.00	20,000
SW - detention	510,920	GAL	1.75	894,109
SW - pipe and structures	1	LS	100,000.00	100,000
G40 Site Electrical Utilities	316,037	SF	10.16	3,211,100
G4010 Electrical Distribution	316,037	SF	0.47	150,000
Power distribution - allow	1	LS	150,000.00	150,000
Transformer - by franchise utility				*NIC*
G4020 Site Lighting	316,037	SF	6.34	2,005,000
Parking lot - lighting	1	LS	75,000.00	75,000
Circulation - lighting	1	LS	35,000.00	35,000
Landscape - lighting	1	LS	25,000.00	25,000
Sports field - lighting	1	LS	##########	1,850,000
Site lighting controls	1	LS	20,000.00	20,000
G4030 Site Communications & Security	316,037	SF	-	
No work anticipated				*NIC*
G4090 Other Site Electrical Utilities	316,037	SF	3.34	1,056,100
EV charging	6	EA	6,850.00	41,100
Emergency power - 750 kW	1	EA	900,000.00	900,000
ATS	1	EA	65,000.00	65,000
Enclosure	1	LS	50,000.00	50,000

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Alternates

Item Description	Quantity	Unit	Rate	Total
Alternate 1: Powell Park				
Site prep	129,435	SF	7.50	970,763
Softball field	25,000	SF		
Synthetic turf	25,000	SF	7.75	193,750
Base aggregates	463	CY	65.00	30,095
Drainage	25,000	SF	3.25	81,250
Fence - 10' ht.	700	LF	125.00	87,500
Fence - 20' ht.	80	LF	275.00	22,000
Gate - single	2	EA	2,500.00	5,000
Gate - double	2	EA	4,500.00	9,000
Dugout	2	EA	10,000.00	20,000
Stands and dugout	1	LS	35,000.00	35,000
Multi-use field - see alt 1	104,435	SF		
Synthetic turf, incl. pad	104,435	SF	12.50	1,305,438
Base aggregates	1,934	CY	65.00	125,710
Drainage	104,435	SF	3.25	339,414
Sport equipment	1	LS	50,000.00	50,000
Bleachers, restored	1	LS	125,000.00	125,000
Bleachers, new	1,350	EA	350.00	472,500
Alternate Cost Before Markups				3,872,419
Contingency - design	15.00%			580,863
Contingency - construction	5.00%			222,664
General Requirements	8.00%			374,076
General Conditions	8.50%			429,252
Fee	5.00%			273,964
Metro SHS Tax	1.00%			57,532
Bonds & Insurance	2.00%			116,215
Permits & Fees - by Owner	0.00%			
Escalation to mid-point (Q3 2027)	16.67%			987,831
				6,914,815

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Alternates

Item Description	Quantity	Unit	Rate	Total
Alternate 2: Sports field fencing				
Fence - 10' ht.	803	LF	125.00	100,375
Fence - 20' ht.	33	LF	275.00	9,075
Gate - single	6	EA	2,500.00	15,000
Gate - double	2	EA	4,500.00	9,000
Alternate Cost Before Markups				133,450
Contingency - design	15.00%			20,018
Contingency - construction	5.00%			7,673
General Requirements	8.00%			12,891
General Conditions	8.50%			14,793
Fee	5.00%			9,441
Metro SHS Tax	1.00%			1,983
Bonds & Insurance	2.00%			4,005
Permits & Fees - by Owner	0.00%			
Escalation to mid-point (Q3 2027)	16.67%			34,042
				238,296

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Comparative

		Cost Comparative									
		GAMUT				DCW				Delta	
		Gross Area (SF):		323,700		Gross Area (SF):		323,700			
			Total		$/SF		Total		$/SF	Delta	%
A	Substructure	$	7,247,446	$	22.39	$	8,820,373	$	27.25	$ 1,572,927	22%
A10	Foundations	$	7,247,446	$	22.39	$	8,820,373	$	27.25	$ (1,572,927)	-22%
A20	Basement Construction			*incl. above*				*incl. above*			
B	Shell	$	67,758,391	$	209.32	$	69,268,232	$	213.99	$ 1,509,841	2%
B10	Superstructure	$	43,592,156	$	134.67	$	47,281,229	$	146.06	$ (3,689,073)	-8%
B20	Exterior Enclosure	$	19,438,079	$	60.05	$	15,532,417	$	47.98	$ 3,905,662	20%
B30	Roofing	$	4,728,156	$	14.61	$	6,454,586	$	19.94	$ (1,726,430)	-37%
C	Interiors	$	33,193,646	$	102.54	$	27,082,307	$	83.66	$ (6,111,339)	-18%
C10	Interior Construction	$	20,096,744	$	62.08	$	15,529,978	$	47.98	$ 4,566,766	23%
C20	Stairways	$	1,602,315	$	4.95	$	425,000	$	1.31	$ 1,177,315	73%
C30	Interior Finishes	$	11,494,587	$	35.51	$	11,127,328	$	34.38	$ 367,259	3%

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Comparative												
D	Services	$	66,841,153	$	206.49	$	67,716,143	$	209.19	$	874,990	1%
D10	Conveying Systems	$	1,394,338	$	4.31	$	1,240,000	$	3.83	$	154,338	11%
D20	Plumbing Systems	$	7,946,835	$	24.55	$	9,167,184	$	28.32	$	(1,220,349)	-15%
D30	Heating, Ventilation & Air Conditioning	$	27,563,175	$	85.15	$	26,169,713	$	80.85	$	1,393,462	5%
D40	Fire Protection	$	2,098,125	$	6.48	$	2,269,137	$	7.01	$	(171,012)	-8%
D50	Electrical Lighting, Power & Communications	$	27,838,680	$	86.00	$	28,870,109	$	89.19	$	(1,031,429)	-4%
E	Equipment & Furnishings	$	7,864,466	$	24.30	$	14,922,995	$	46.10	$	7,058,529	90%
E10	Equipment	$	3,949,120	$	12.20	$	9,380,500	$	28.98	$	(5,431,380)	-138%
E20	Furnishings	$	3,915,346	$	12.10	$	5,542,495	$	17.12	$	(1,627,149)	-42%
F	Special Construction & Demoli	$	-	$	-	$	-	$	-	$	-	
F10	Special Construction											
F20	Selective Demolition											
G	Building Sitework	$	29,452,360	$	90.99	$	30,083,939	$	92.94	$	631,579	2%
	SUBTOTAL	$	212,357,462	$	656.03	$	217,893,989	$	673.14	$	(5,536,527)	0.97%