FEASIBILITY STUDY
WASHINGTON IRVING MIDDLE SCHOOL
105 CUMMINS HIGHWAY
ROSLINDALE, MA

FINAL REPORT

JULY 21, 2022

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BOSTON PUBLIC SCHOOLS
CITY OF BOSTON
WASHINGTON IRVING SCHOOL RENOVATION/ADDITION PROJECT
ROSLINDALE, MA.

FEASIBILITY STUDY

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FEASIBILTY STUDY

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BOSTON PUBLIC SCHOOLS
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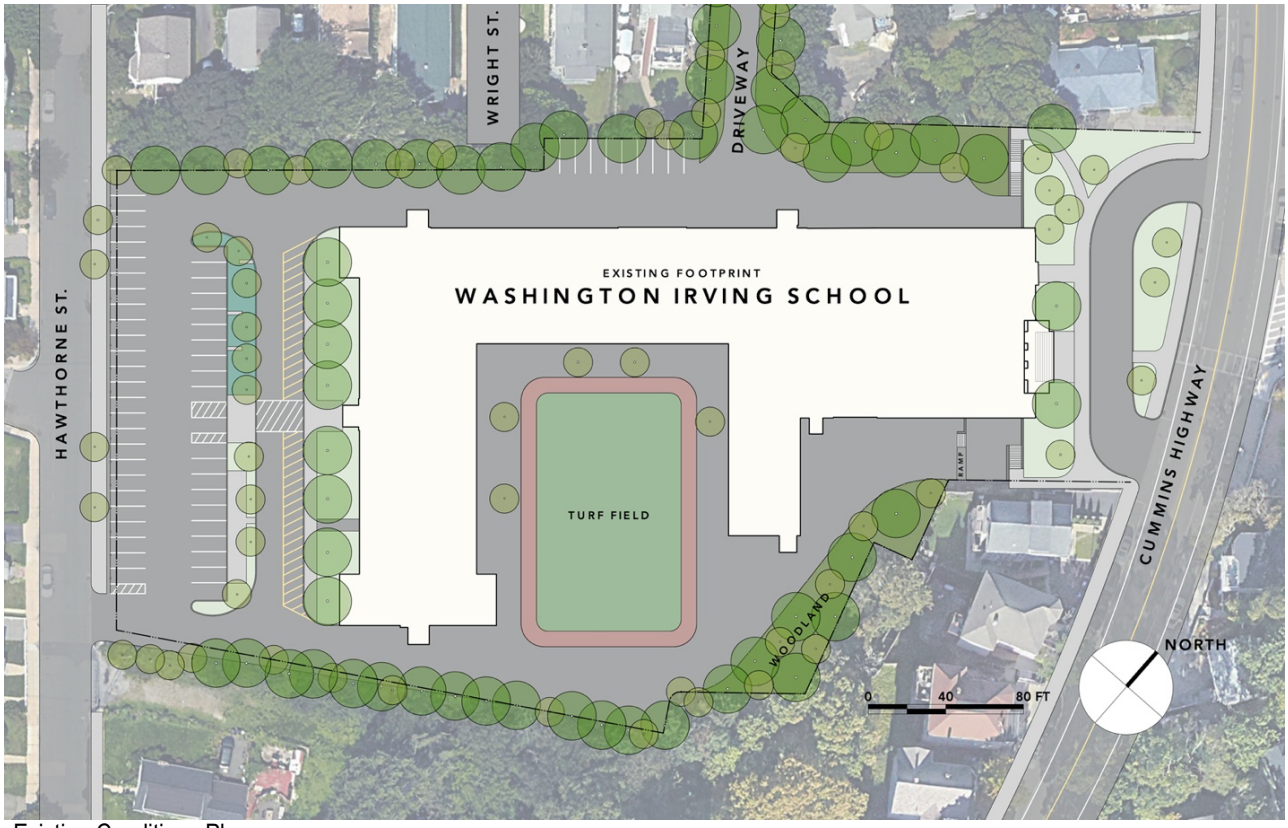
MIDDLE SCHOOL EXISTING BUILDING ASSESSMENT

I. LANDSCAPE DESCRIPTION



Existing Conditions Plan

A. CONTEXT

The Washington Irving School is located at 105 Cummins Highway in Roslindale MA on a 3.17 acre +/- parcel. The site is surrounded by residential neighborhood.

Cummins Highway runs in front of the school on the northeast, and is a large, busy street. On the northwest, the back of the school abuts residential house lots on Sycamore Street. Off Sycamore Street, a paper street, Wright Street, dead-ends at a wall at the school property line. The school lot has one exit onto Sycamore Street, between two houses. This is a school driveway, not a public street. Hawthorne Street bounds the school parking lot on the southwest, and is a small, residential, dead-end street, that is one-way away from the school

beginning at Sycamore Street and running north. To the southeast, there is a large wooded area that is on the interior of a residential block, comprised of several un-built parcels.

Strengths
The school is knit into the neighborhood and is surrounded by trees, offering more access to greenspace than available at many urban schools.

Challenges
Bus access would appear to be challenging, as there is limited frontage and pull off area on Cummins Highway, and access to the back of the school is on small residential streets
Pedestrian access to the school grounds is inaccessible and largely through parking lots.

Information Needed: The ownership of the wooded parcel and any regulated natural resources that may impact the site (wetlands, vernal pools, isolated land subject to flooding) need to be identified.

Opportunities/Recommendations
The school could be a stronger asset for the neighborhood with better/accessible circulation from surrounding streets. Depending on the ownership and resources of the adjacent wooded area, the school could have access to excellent outdoor learning opportunities and improved circulation from Hawthorne Street.

B. GENERAL DESCRIPTION

The school building occupies the center of the site and there are distinct zones on each side of the building. The Cummins Highway Entry on the north east, the play area on the southeast, the Hawthorne Street Entry and Parking lot on the southwest.

Information Needed: For the entire site, a complete and up to date survey is needed to show topography, site structure, utilities, right of ways, buffers etc.

a. CUMMINS HIGHWAY ENTRY

The Cummins Highway Entry is the historic front of the school. The front has been modified so that a bus drop off loop cuts between the grand stair at the Auditorium and the sidewalk along Cummins Highway. This was once an axis that connected the school to the sidewalk. The Auditorium doors are no longer functional, and trees have been planted that obscure the public view of the building.

The Cummins Highway Entry is approximately two stories above the rest of the school site, and the transition is made through a tall wall and stairs on the north and through stairs and terraced landings on the south.


Current Cummins Hgwy View


Historic Cummins Hgwy View

Strengths
The original Architecture of this façade is special and presents an opportunity for identity and placemaking.

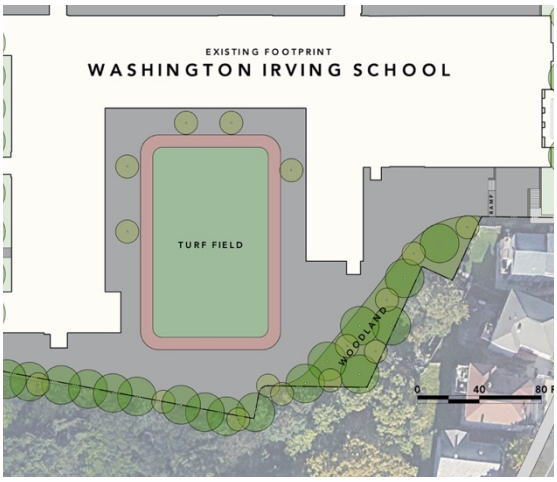
Challenges
Accessibility is a major challenge at this entry, both into the building and to the rest of the site. There is no accessible entry to the building, there is no accessible parking, and there is no way to circulate accessibly to the lower parts of the site. There is limited space to address accessibility through ramps.

Opportunities/Recommendations
The drive loop could be repaved to be a flush plaza re-creating a gathering space at the front of the school, improving accessibility and still accommodating buses.

Accessibility from the front of the school should be managed through an architectural addition that has elevators to each level of the school. Accessible parking spaces should be added off the front loop.

b. PLAY AREA

The play area is on the southeast side of the building.



Strengths
The play area is large, it is away from street and parking lot traffic, it has access to woodlands on the property and potentially off the property. It has a synthetic turf field and track that are in fairly good condition. There are a few trees for shade.

Challenges
Besides the turf and the woodland edge, the area is entirely asphalt and there are no vertical play structures, swings, seats or other playground amenities (there is a temporary basketball hoop.) Despite the fact that the ground level is very close to the floor elevation of the first floor, there are no accessible entries from the building into the play area. The entries that do exist are not onto the main play area, limiting academic use of the space and increasing transition time between lunch and recess.

Opportunities/Recommendations
This entire area should be maximized for play and learning value, through the addition of play structures, natural areas and other playground amenities. There should be access to the play areas, at a minimum, from the cafeteria, the art classrooms on the first floor and the gym. Better circulation should be added to the woodlands so that it is more usable for classes and play.

c. HAWTHORNE STREET ENTRY & PARKING

The Hawthorne Street area contains a parking lot with rain gardens and trees, a driveway that leads to the back play area and to a drop off drive lane around the outside of the parking area. A right turn at the end of the drop off lane leads to the back of the building and to the back driveway.

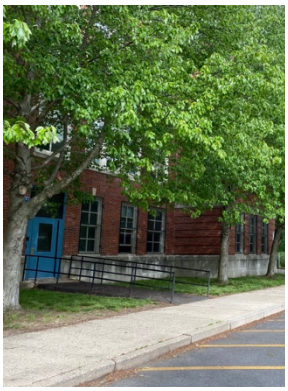
There are currently two entries on the façade, one of which is the only accessible entry to the building. That entry is into a secondary door on the south end of the façade.

Strengths
There is ample teacher parking (57 spaces), the trees are in good health, the rain garden is functioning well (though could be expanded).

Challenges
The accessible entry is not functional as a main entry point for the school, the accessible parking spaces are not proximate to the accessible entry. There is no pedestrian route (sidewalk, crosswalks) from Hawthorne street sidewalk to the school or play yard. The existing main entry is about 6' above grade and gets you to a mezzanine level inside that is only reached by stairs. Street trees on Hawthorne are not thriving.

Opportunities/Recommendations
A sidewalk should be added on the south side of the entry drive to better facilitate access from Hawthorne Street. A new building entry should be added on the north end of the façade that is used as a main entry for the building, with an associated entry plaza. The rain garden should be extended (if possible) through the whole median, and trees added within the Hawthorne street side parking. Accessible parking spaces should be moved to be adjacent to new accessible entry. A new crosswalk should be added to connect accessible spaces to accessible entry.

Current Hawthorne Street View



Current Accessible Entry

Existing Rain Garden

d. BACK OF SCHOOL

The back of the school consists of an asphalt driveway with a wooded edge, the wall and steep stairs descending from the Cummins Entry, additional parking and a driveway to Sycamore St.

Strengths

The area provides an out of the way place for deliveries and could be a location for busses to queue up at pickup and drop off, exiting out the driveway onto Sycamrore St. The wooded edge is a good buffer for the neighbors.

Challenges

The pedestrian circulation in this area is lacking. The topography in the wooded area is quite steep, making adjustments challenging. Left turning radius onto the school driveway is too tight for full size school busses.

Opportunities/Recommendations

The stairs should be re-built to accommodate the elevator shaft that will provide accessibility to the building from the Cummins entry. A path should be cut into the slope from the bottom of the stair and should connect to Sycamore Street. A pedestrian route from the sidewalk to the new entry should be added.

C. STRUCTURES AND FENCES

The site is surrounded by chain-link fence on three sides. There is also stockade fence at the edge of the woodland in the play area.

D. TOPOGRAPHY, SOILS AND DRAINAGE

Survey and testing work is necessary to evaluate the grading, drainage and soils beyond what has been outlined above.

E. ZONING & PERMITS

Information on the resources in the woodland is necessary to determine if any MassDEP permits will be required. Need input from others if there are other zoning or permiting issues.

F. UTILITIES

There is a water and sewer right of way that enters the site at Wright Street that can be seen on old plans. A full survey of the site is needed to better evaluate utilities.

G. CIRCULATION AND PARKING

See above descriptions of areas.

H. ACCESSIBILITY REQUIREMENTS

See above descriptions of areas.

I. EMERGENCY VEHICLE ACCESS

Need input from others.

J. SAFETY AND SECURITY REQUIREMENT

Need input from others.

K. PLAY AREA

See above descriptions of areas.

L. PLANTING

Planting is primarily in wooded areas on the perimeter, in the rain garden, and in trees and shrubs planted at the entry. The trees sometimes obscure the building and should be evaluated for health.

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MIDDLE SCHOOL EXISTING BUILDING ASSESSMENT

I. BUILDING DESCRIPTION

A. GENERAL DESCRIPTION

The Washington Irving Middle School building, which consists of three-stories above grade and a partial boiler room depressed below grade, totals approximately 110,000 square feet. According to the existing original structural drawings, the school building was constructed circa 1935. In the north-south direction, the building is as much as 350' long, and approximately as much as 204' wide in the east-west direction. Based on our structural walk-through of the existing building and our review of the existing original documents, it appears that the 1935 building, in general, consists of two-way reinforced concrete waffle slab construction supported by structural steel framing at the interior spans (at the second / third floor levels and roof level) and by brick bearing walls at the exterior of the building. The first floor level is a structurally reinforced concrete waffle slab supported reinforced concrete piers that extend down to conventional spread footings at a lower bearing elevation. The third floor framing directly above the gymnasium consists of a concrete waffle slab system supported by 36" deep structural steel girders with steel cover plates that clear-span the gymnasium below and are supported by structural steel columns at each end of the steel girders. A similar structural system existing at the roof level above the assembly space.

The exterior of the original school building consists of brick bearing walls with punched windows and some longer span windows where reinforced concrete beams span over the openings.

In general, the existing building is in relatively decent structural condition. The extent of any structural deterioration to any non-exposed structural elements is unknown at this time, since the majority of the existing structural elements were not exposed-to-view during our site walk-through. Substantial deterioration of the existing exterior cast stone base at grade level around the perimeter of the building was observed. Please refer to the photos taken during our site walk-through for observed structural deficiencies.

B. STRUCTURAL SYSTEMS

Existing Conditions:

Based on existing documentation, the northern end of the 1935 building (near the depressed Boiler Room area) is founded on conventional spread footings (at the interior) and continuous strip footings (along the exterior walls) with the bottom of the footing elevation that varies from Elevation 54' to about Elevation 58'. The remainder of the existing building appears to be founded on conventional / isolated spread footings that support concrete piers / columns (at the interior of the building) and by reinforced concrete grade beams and concrete piers (at the perimeter of the building). In some locations, the bottom of existing footing elevations are as deep as Elevation 41' at the middle and southern end of the building (most likely due to unsuitable soil bearing at a higher elevations). Based on existing documentation, the foundations bear on an allowable soil bearing pressure in the range of 3 to 5 tons per square foot at the elevations indicated on the structural drawings with some individual spread footings as large as 7' x 7'x 3'-8" thick. The lowest level slab (at the depressed Boiler Room area) consists of a reinforced concrete slab (on ground) with a depth that varies from 6" to 8" (depending on the span of the slab). Per the drawings, there are several service utility tunnels at the northern end of the building below level 1.

The first floor construction consists of a reinforced concrete waffle slab supported typically by 32" square reinforced concrete piers (below), which in turn are supported by conventional spread footings. It appears that the first floor waffle slab system is topped with an approximate 1 ½" thick non-structural topping slab at the floor finish (which was common during the building construction era).

Construction at the second, third and roof levels consists of a reinforced concrete waffle slab system supported by either structural steel beams that are supported by structural steel columns (at the interior) and by brick masonry bearing walls at the exterior and at portions of the interior of the existing building. In some specific locations, 10" thick solid reinforced concrete slabs were utilized to frame the floors. Loose steel lintels are used to frame over wall openings thru masonry bearing walls.

The third floor framing (at the assembly space), which is directly above the gymnasium on level 1, consists of a concrete waffle slab system supported by 36" deep structural steel girders with steel cover plates that clear-span the gymnasium below and are supported by structural steel columns at each end of the steel girders. The roof construction over the third floor assembly space consists of a waffle slab system supported by 36" deep structural steel beams that clear-span the assembly space below.

The roof framing must be designed and constructed to sustain a design snow load of 30 psf (minimum), while the first and second floor levels must be designed and constructed to withstand a design live load of at least 40 psf (at classrooms), 100 psf (at first floor corridors), and 80 psf at corridors above the first floor.

Currently, the existing roofing system above the waffle slab system consists of a rubber membrane roof with peastone ballast.

Based on existing documentation, it appears that all structural steel framing members are encased in concrete for fire protection purposes, although this was not confirmed at all locations. It is unclear whether the structural steel columns are encased in concrete or wrapped in masonry to achieve the required fire-resistance rating.

Lateral resistance to wind loads appears to consist of the exterior / perimeter masonry walls of the building that act as stiff lateral-resisting shear walls. Seismic loads were not invoked at the time the building was designed / constructed in 1935.

Deficiencies:

At several locations around the perimeter of the building, the exterior steel lintels (over window and door openings) were observed to be moderately to severely rusted with a noticeable downward deflection. In some locations at the bearing ends of

the loose steel lintels, the mortar is dislodged and loose as a result of jacking forces from the rusted steel lintels.

Moderate sized cracks and concrete spalls in the exterior foundation walls (slightly above the exterior grade level) were observed at a few locations at the perimeter of the building. The exterior cast stone (granite in appearance) veneer is severely deteriorated and spalled.

Cracks in, and significant outward bowing of, the exterior brick walls were observed at several locations.

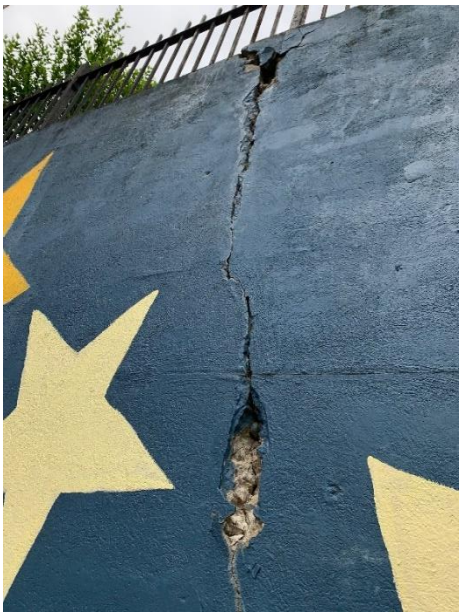
Rusted steel lintels above windows and damaged / weathered brick will require re-bricking and re-pointing.

Delaminated and deteriorated reinforced concrete retaining wall conditions were observed at several locations and will require structural repair or removal and replacement.

All of the above-mentioned structural deficiencies and the items depicted in the photos below will require structural repair.

Spalled cast stone sills and deteriorated brick wall along exterior of building will require repairs / replacement.

Major spalls and corroded relieving angle will require repairs / replacement.



Significant cracks in concrete retaining walls will require structural repairs / replacement.

Spalled cast stone cornices and headers will require structural repairs or replacement.

View of exterior portion of building showing large windows at level 2 where brick above is supported by continuous steel relieving angle. Structural repairs will be required.

Recommendations:

All structural deficiencies will require structural repairs in order to comply with the MSBC.

If alterations are proposed for this building, structural requirements per the MSBC will be triggered (depending upon the level of work and reconfiguration of space for the building). Any existing structural elements resisting lateral loads whose demand-capacity ratio with the alteration considered is more than 10% greater than its demand-capacity ratio with the alteration ignored shall comply with the seismic and wind requirements noted in the IEBC and the MSBC. If modifications or removal of any existing lateral resisting system (such as masonry shear walls or steel X-bracing) are proposed, and the 10% threshold is exceeded, a lateral analysis of the existing building will be required and may result in the need for additional X-bracing elements (or new shear walls) to resist lateral loads. If more than 50% of the floor area of the existing building is re-configured, the proposed alterations will be considered Level 3 Work (the most stringent of building alterations). Alterations with less than 50% of the floor area of the existing building planned to be reconfigured would need to conform to Level 2 Work (which is not as stringent as Level 3 Work). If the building alterations are considered Level 3 Work, specific seismic hazards would need to be addressed / improved, such as roof / floor diaphragm and wall connections in order to brace any existing unreinforced and unbraced masonry walls and unreinforced masonry chimneys / masonry projections above the roof level. The existing building may also need to be investigated for wind uplift forces with respect to IBC level wind forces, which may require structural strengthening (although this would seem unlikely for a concrete roof slab system).

Furthermore, where additional gravity loads are imparted on the structure or where the existing gravity members are reduced in capacity, a gravity load check in accordance to the IEBC and MSBC will be required, including any snow drift loads. Structural reinforcement to the existing roof framing system may be required to accommodate any additional loads from new mechanical rooftop equipment.

For any proposed horizontal additions to the existing building, we

recommend that all new additions be structurally-detached, but contiguous, from the existing building with a 2" +/- wide expansion joint. If the new addition is detached from the existing building, fewer structural upgrades to the existing building would be necessary. If the new addition is structurally-attached to the existing building, all existing lateral force resisting elements within the existing building affected by the new addition would need to comply with full IBC wind forces and full IBC seismic forces, unless the story shear force is not increased by more than 10% as a result of the new horizontally-attached addition.

A vertical addition to the existing building (if proposed) would require the existing building to conform to full IBC wind and seismic forces, which would most likely consist of major structural reinforcement / strengthening to the existing lateral resisting system of the building to negate increased lateral loads.

At this time, we understand that alterations to the existing building will involve less than 50% reconfiguration of space. Therefore, if this is the case, the proposed alterations will be considered Level 2 Work.

With respect to the proposed additions (horizontal or vertical), we understand conceptual plans may include a new elevator, stair, and lobby horizontal addition at the northern end of the existing building (near the existing boiler room). Due to the expected small footprint of the new horizontal addition, preliminary plans are to structurally-attach the new addition to the existing building (since story shear forces are not expected to increase by more than 10% as a result of the new horizontally-attached addition).

Based on preliminary / conceptual architectural drawings, it appears that a significant opening is proposed in the existing west masonry wall of the building to accommodate the new horizontal building addition. New structural steel transfer beams will be required at the underside of the second, third and fourth floor levels to span the new openings. In addition to the new transfer beams, the lateral stiffness of the existing building will be reduced by the new wall openings and may need to be strengthened elsewhere within the existing building. Therefore, perhaps an alternate approach to the new horizontal addition / new wall openings will be considered during the schematic design phase of the project.

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FIRE SUPPRESSION

A. FIRE SUPPRESSION SYSTEM

The existing building and addition do not have any fire suppression systems installed.

It is unknown at this time if the existing public water supply system is of adequate capacity to support the installation of a new fire sprinkler system.

B. RECOMMENDATIONS

Based on the size of the building and addition, any major alterations or renovations, as defined by MGL c.148 s.26G, would require a fire suppression system to be installed to provide complete building coverage.

A new hydrant flow test and hydraulic calculations would be required for the installation of a new fire sprinkler system.

PLUMBING

A. PLUMBING SYSTEMS

Domestic Water

The existing domestic water is supplied underground through a 6" underground main which immediately reduces to 4" once inside the building. The service is reduced further to pass through a 2" Neptune T-10 water meter before returning to 4". The 4" supply splits into 2", 2½", and 3" mains which extend out to serve the building. The 2" provide make-up water for the heating boilers and is equipped with a reduced pressure type backflow preventer.

The service includes isolation and drain valves, but no valved bypass arrangement. The water service piping appears to be in fair to good condition. Piping appears to be a mixture of ductile iron, copper, and either lead or galvanized steel piping.

Photos 1 & 2: Domestic Water Service

Only the exposed piping scattered throughout the building could be observed and evaluated. The domestic water piping appears to be a mixture of either lead or galvanized steel piping and hard drawn copper tube. Piping appears to be in fair to good condition.

There are various signs throughout the building which indicate that this water is not potable, and is to be used for washing only. We suspect that this is due to a high lead content of the water caused by the piping.

A majority of the piping observed throughout the building was not insulated. The insulation that was observed appeared to be fiberglass.

Domestic hot water for the building is provided by a single Rheem PROG50-38N RH60 gas-fired natural draft water heater with a 50-gallon storage capacity and 38,000 btuh gas input. The manufacture date on the water heater is August 2019. The water heater appears to be in good condition.

The single temperature domestic hot water system includes hot water recirculation with a fractional horsepower circulator controlled by an adjustable aquastat. Supply water temperature is controlled by the tank thermostat.

Photo 3: Gas Fired Water Heater

The kitchen has its own Rheem gas-fired natural draft water heater. The nameplate data has been removed. The water heater appears to be in good condition.

Sanitary Drain, Waste and Vent System

What could be seen of the existing sanitary drain, waste and vent system appears to be a combination of drainage pattern copper and cast iron. Cast iron is a mixture of older hub and spigot cast iron with leaded or gasketed joints, and newer no hub cast iron pipe with rubber couplings and stainless steel bands with shields. Visible piping appeared to be in fair to good condition, with various repairs having been made over the years.

There are some fittings in the system which are no longer allowed.

Storm Drain System

What could be seen of the existing storm drain system appears to be cast iron roof drains with cast iron storm drain piping. The cast iron is a mixture of older hub and spigot cast iron with leaded joints, and newer no hub cast

iron pipe with rubber couplings and stainless steel bands with shields. Visible piping appeared to be in good condition. The condition of the roof drains could not be ascertained, but the domes and insides of the drain bodies appeared to be fair to good. The roof does not have a parapet and overflow drains have not been provided. However, the perimeter of the roof is raised such that there is the potential for substantial ponding of water, which should be reviewed by a structural engineer.

Natural Gas System (including combustion air and exhaust vents)

The building is equipped with two separate natural gas services. A 6" service enters the boiler room and is equipped with an isolation valve, meter, and an Eclipse hermetic gas pressure booster system with a valved bypass arrangement. This service serves the heating system boilers only.

The second service appears to be original, and enters the building in an unknown location. This service appears to serve the kitchen and water heater. A portion of the piping is buried below the floor slab in the kitchen area.

The observable gas piping appears to be steel with welded or threaded fittings, and appears to be in good condition.

Photo 5: Gas Pressure Booster System

Combustion air for the building's water heater and heating boilers is provided by a combustion air intake duct connected to an intake louver on

the boiler room exterior wall. The louver is equipped with a motor operated damper. It appears that this damper is interconnected with the heating boilers. There is only one combustion air opening at the top of the duct.

Combustion air for the kitchen's water heater is provided by the room.

Photo 6: Combustion Air Duct

Venting of the building's water heater and heating boilers is through galvanized steel vent connectors and common breeching which extends and connects to a masonry chimney. The water heater vent connector looks to be in good condition, although it is larger than the draft hood of the appliance. The boiler vents are covered with insulation with a protective metal jacket. The heating boilers are also equipped with induced draft fans at the boiler discharge. The condition of the chimney could not be ascertained at this time.

Venting of the kitchen's water heater is through a galvanized steel vent connector which discharges directly into the kitchen hood exhaust duct.

B. PLUMBING FIXTURES

General Use

Sanitary plumbing fixtures throughout the building consist of vitreous china floor mounted water closets, and wall mounted urinals and lavatories. The boy's restroom also includes the original floor mounted urinals, which are no longer allowed to be installed in Massachusetts. Restrooms are equipped with floor drains and hose bibbs. It is doubtful that the floor drains are equipped with trap primers. Some hose bibbs have been retrofitted with vacuum breakers. Faucets and flush valves are the mechanical type. The majority of lavatory faucets have separate handles and spouts for hot and cold water.

Photo 7: Typical Water Closet

Photo 8: Typical Lavatory

Photo 9: Typical Urinals

Photo 10: Floor Mounted Urinals

Drinking fountains have been removed from the premises and the associated piping has been capped.

Mop sinks include fiberglass laundry tubs with deck mounted faucets, or porcelainized cast iron sinks with trap standard and exposed wall mounted faucets with integral vacuum breakers.

Some janitor sinks are equipped with detergent dispensers, but are not protected with reduced pressure type backflow preventers.

Photo 11: Fiberglass Mop Sink

Photo 12: Cast Iron Mop Sink with Detergent Dispenser

General use sinks are single bowl stainless steel type with deck mounted mechanical faucets.

Photo 13: Typical General Use Sink

There are some science and art room sinks which appear to be phenolic. Some are freestanding and some are integral to the countertop. Faucets appear to be equipped with vacuum breakers. Waste and vent piping does not appear to be the high-silicon acid resistant type cast iron, and appears to be connected directly to the sanitary drain and vent system.

Photos 14 & 15: Art and Science Sinks

Kitchen

The kitchen includes a three-bay stainless steel scullery sink, a stainless steel hand sink, floor drains, and two grease interceptors. One interceptor is recessed in the floor, the other sits on the floor and is connected to the scullery sink. The recessed interceptor appears to have been abandoned in place. There are no separate restrooms for the kitchen staff.

Photo 16: Scullery Sink & Grease Interceptor

Gas-fired equipment includes stackable ovens and a ten-burner range with double oven.

All fixtures and appliances appear to be in good condition.

C. RECOMMENDATIONS

Based on the site observations, most of the observable existing plumbing systems and equipment are in fair to good condition. The condition of the concealed and underground piping is questionable.

An acid resistant waste and vent piping system should be provided for any fixtures which encounter acids, bases, or solvents, such as science or art room sinks. In addition, the discharge from these sinks would require collection and treatment prior to being introduced into the sanitary drainage system.

Although there was no observable evidence of such, given the age of the building, the storm and sanitary drainage systems could be combined. The system should be camera inspected to verify. If they are combined, any substantial renovation would require the systems to be segregated within the building, and exit the building separately.

The need for overflow drains on the roof should be reviewed.

There are various signs throughout the building which indicate that this water is not potable, and is to be used for washing only. The cause should be investigated and corrected. We suspect that this is due to a high lead content of the water caused by the piping. If this is the case, all of the existing domestic water piping should be replaced.

We do not believe that the existing piping systems would last for an extended period of time as should be anticipated with a major renovation, and would fail before the renovated building reached its new life expectancy. Any major renovation should consider the replacement of the plumbing systems.

The water heaters are fairly new and in good condition and should last for many years to come, although the venting needs to be corrected. The building water heater should be equipped with a thermostatic mixing valve in order to increase the stored water temperature to prevent Legionella, and to provide tempered water to the building fixtures.

Combustion air provisions should be reviewed and corrected.

The majority of the plumbing fixtures, while dated, are still in good condition and functional. Some fixtures are damaged. A substantial portion of the fixtures do not meet current code requirements and would be affected by renovation. In addition, water closets and urinals may have to be replaced if they cannot function satisfactorily with the newer water conserving flush valves. Whether the project consists of a renovation or addition, all fixtures should be updated or replaced to meet code and efficiency requirements.

Building occupancy, fixture quantities and distribution, travel distance, and accessibility should be reviewed. In addition, provisions should be made for separate student, staff, and kitchen staff restrooms.

Drinking fountains should be provided.

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CITY OF BOSTON
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ROSLINDALE, MA.

FEASIBILITY STUDY

MIDDLE SCHOOL EXISTING BUILDING ASSESSMENT

I. BUILDING DESCRIPTION

A. GENERAL DESCRIPTION

The Washington Irving Middle School (WIMS) Building is a three (3) story construction and consists of classrooms, library/media center, gymnasium, auditorium, kitchen & cafeteria and other support spaces. A central steam heating system was observed to be serving the building. The boiler room is located in a partial basement located on the northwest corner of the building and harbors the heating system which includes boilers, associated accessories and apparatus serving the building. Access to the Boiler Room is from within the building. There are also two (2) doors that provide direct access to the Boiler Room from the outside.

B. BOILER ROOM

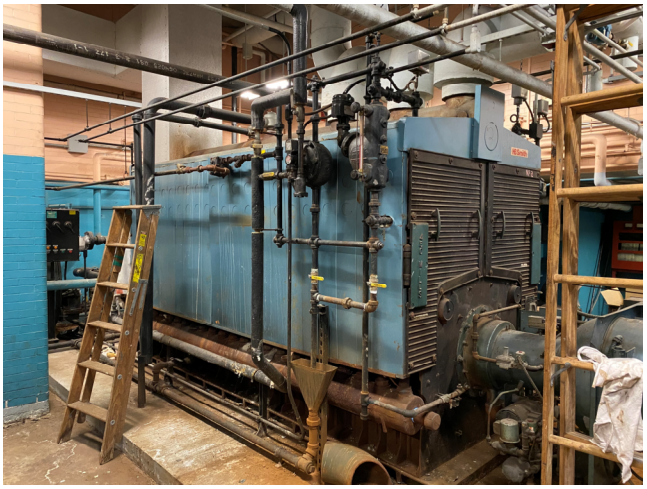
There are two (2) existing steam heating boilers serving the building. The boilers are each HB Smith, 450 Mills standard efficiency cast iron sectional boilers with 22 sections and have a net IBR capacity of 4,394.4 MBH. The boilers include a gas/oil burner (dual fuel), Model #MM-105S as manufactured by Industrial Combustion Inc. It was noted that currently the boiler operates only on natural gas. The sectional boilers and burners seem to be original to the building and were observed to be old but in fair condition. Each boiler was observed to be equipped with a McDonnell & Miller (M&M) low water cut-off (LWCO) and flow controls. The existing return headers under the boiler were observed to be in deteriorating condition with rust and leaks.

Flue gases associated with each boiler rise and connect to an existing boiler breeching main. Each boiler was observed to be equipped with an induced draft fan at the rear of the boiler that exhausts flue gases into the breeching main. The inducer fan and the vertical breeching section were observed to be old but in fair condition. The main boiler breeching extends and connects to a vertical masonry chimney. The chimney was observed to be provided with a clean-out at the bottom. The internal condition of the chimney was not verified. Combustion air (CA) for the boilers is provided by CA intake duct connected to intake louvers on the boiler room exterior wall. There is only one opening at the top of the duct equipped with a motor operated damper.

There is an existing boiler feed system that includes a condensate recovery tank with three pumps and a boiler feed unit with two pumps serving the existing boilers. The condensate recovery tank is located behind the boilers and the

boiler feed unit is located in separate area in the Boiler Room. Condensate from the building is routed back to this system. The condensate recovery tank and associated piping, pumps and accessories were observed to be old but in fair condition. The boiler feed unit was observed to be in deteriorating condition.

The cold-water make-up for the heating system was observed to be provided with a reduced pressure backflow preventer (BFP).



Photos 1 & 2: Existing steam boilers.

Photos 3 & 4: Existing return headers under the boiler.

Photos 5 & 6: Existing boiler flue exhaust inducer fan section.

Photos 7: Existing condensate recovery tank and boiler feed unit.

Steam from the boilers is distributed to the various zones throughout the building using steel piping. The steam piping in the boiler room was observed to be insulated with fiberglass insulation. The condensate return was observed to be uninsulated. The steam is supplied to radiators, heating coils in air handling units etc. There were float and thermostatic steam traps observed throughout the system.

C. GYMNASIUM

There are two (2) air handling units hung from the structure that provide heating to the Gymnasium. These units include a steam coil and a blower fan. The units are recirculation type and there was no outside air

connected to the units. The unit was observed to be in fair condition. There was no mechanical ventilation observed in the gymnasium. During the site visit, it was observed that the exterior doors were opened to provide natural ventilation. The area of operable openings into the gymnasium needs to be evaluated to ensure compliance with mechanical code with regards to natural ventilation requirements. The Locker Rooms are served by steam radiators. The steam radiators were observed to be old and in deteriorating condition. There is no mechanical ventilation observed in the locker rooms.

Photos 8 & 9: Existing gymnasium and Locker Room systems.

D. CLASS ROOMS

It was observed that a typical class room (all floors) is being served by a steam radiator and a floor mounted unit ventilator. There was no mechanical ventilation observed in the classrooms and the classrooms are reliant on natural ventilation. The steam radiator was observed to be provided with a modulating valve that is interlocked with a wall sensor located in the class room. The facilities personnel informed that the floor mounted unit ventilators were added solely to provide air movement in the classrooms. There was no ventilation air or source of heat observed for the unit ventilators. According to the school's facility staff, the floor mounted unit ventilator is also controlled by the wall mounted sensor. The staff informed that there is a town wide building management system (BMS) that interlocks and controls the HVAC systems serving the school. Thus, it is believed that the occupied/unoccupied schedules and temperature setpoints for each classroom are provided by the town BMS.

Photos 10: Typical classroom radiator and unit ventilator.

E. CAFETERIA

It was observed that the cafeteria is served by steam radiators located along the exterior wall. The radiators were observed to be old but in fair condition. The Kitchen is located within the cafeteria and was observed to be served by a ceiling hung steam radiator. There is an existing sheet metal hood construction that encompasses the cooling range and other cooking equipment. The hood structure is not a Type I hood as required per code and was observed to be a field fabricated sheet metal hood. The hood exhaust ductwork routed to the outside of the kitchen and rises up. There is an existing gas fired standard efficiency domestic water heater (DWH) located next to the cooking equipment. Flue vent associated with the DWH was observed to be connected to the kitchen hood exhaust ductwork. This arrangement is not code compliant and is recommended to be corrected immediately.

Photos 11 & 12: Existing Kitchen exhaust and DWH flue.

F. LIBRARY

Library/Media Center located on the first floor and Principal's Office located on the second floor are the two (2) areas where cooling was observed. One to one split systems which include a wall mounted ductless indoor air condition unit and an associated outdoor air-cooled condensing unit (ACCU). The ACCUs are mounted outside on the exterior wall with brackets. The split systems were observed to be in fair condition. These spaces also have steam radiators providing heat. There was no mechanical ventilation observed.

G. AUDITORIUM

Auditorium: There are two (2) existing air handling units serving the Auditorium. The units are located in partial mezzanine spaces on either side of the stage. The AHUs are Johnson Controls York, Model #XTI-045X057-KAHA028A. The AHU included a steam heating coil and was noted to be a 100% OA unit. The unit was observed to be in good condition. Note that there was no exhaust component observed serving the auditorium. This would mean the space is pressurized when the unit is in operation and there is no means of relieving the air.

Photos 13: Existing AHU serving the Auditorium.

Common Bathrooms: The girls and boys restrooms were observed to be served by steam radiators. Exhaust from these spaces is routed to a chase and rises to the roof to connect to a roof mounted exhaust fan. Corridors and stairways in the school are all served with dedicated steam radiators.

Roof: There are four (4) roof mounted upblast exhaust fans observed on the roof. These EFs are all manufactured by Twin City. The EFs serve the restrooms, janitor's closets and kitchen respectively. All the EFs were observed to be in fair condition.

Recommendations:

1. Kitchen - It is recommended to replace the existing kitchen hood with a new Type 1 hood and proper code compliant kitchen exhaust system.
2. It is recommended to provide mechanical ventilation to all occupied zones.
3. Based on the age and condition of the existing central heating system, it is recommended to replace the entire heating system serving the building which includes but is not limited to steam boilers, steam and

condensate piping, radiators, unit ventilators etc. Replacing the existing system with a new and more efficient system would improve the building comfort, operation and maintenance. However, replacing the existing HVAC system with new would require the school committee to decide between different options based on their requirements for the school. The school needs to decide between providing cooling for all zones versus only heating and ventilation.

- Option 1: As part of this option, all the classrooms shall be served by a displacement ventilation system, the special education classes will be served by DX split systems, Auditorium will be served by packaged rooftop units (RTU), Cafeteria and Gymnasiums will be served by heating and ventilation (H&V) units, media and administrative wings will be served by dedicated VRF systems.
    - This option would require a central heating system which would include gas fired high efficiency condensing type boilers that would provide hot water which will be circulated throughout the school to various hot water terminal systems. The hot water circulating pumps would be equipped with variable frequency drives (VFD).
    - Displacement ventilation for the classrooms shall be provided by roof mounted packaged dedicated outside air systems (DOAS) which would supply 100% OA to the classrooms. The DOAS systems shall be equipped with packaged DX cooling component, hot gas re-heat, modulating gas fired furnace, MERV 13 filtration etc. The DOAS units shall supply air at a neutral temperature to the various classrooms. Heating for the classrooms shall be provided by hot water finned tube radiation (FTR) interlocked with a space mounted thermostat.
    - Media Center and Administrative Wings shall be served by dedicated VRF systems that would include outdoor air-cooled heat pump units interlocked with various indoor units serving the different zones.
    - Cafeteria and Gymnasium shall be served by dedicated H&V systems that would include roof mounted air handling units with modulating gas furnace.
    - Kitchen will be served by a gas fired make-up unit located on the roof and an exhaust fan for the kitchen hood exhaust.
    - A new building management system (BMS) shall be provided to monitor and control all the HVAC systems. The BMS systems shall be interfaced with the Town-wide control system.
- Option 2: As part of this option, all the classrooms shall be served by desiccated indoor air conditioning systems, Auditorium will be served by packaged rooftop units (RTU), Cafeteria and Gymnasiums will be served by heating and ventilation (H&V) units, media and administrative wings will be served by dedicated indoor air conditioning systems.
    - This option would require a central cooling and heating systems. The central heating plant would include gas fired high efficiency condensing type boilers that would provide hot water which will be circulated throughout the school to various hot water terminal systems. The hot water circulating pumps would be equipped with VFDs. The central cooling plant would include two (2) or more air-cooled chillers located at grade (or on the roof) that would provide chilled water which will be circulated throughout the school to various indoor air conditioning systems. The chilled water circulating pumps would be equipped with VFDs.
    - Ventilation for the various zones including but not limited to classrooms, administrative wing, media center etc. shall be provided by roof mounted packaged DOAS units which would supply 100% OA to the classrooms. The DOAS systems shall be equipped with packaged DX cooling component, hot gas re-heat, modulating gas fired furnace, MERV 13 filtration etc. The DOAS units shall supply air at a neutral temperature to the various

indoor air handling units or chilled beams that serve the different zones as applicable. The classrooms shall be served by chilled beams hot water FTR interlocked with a space mounted thermostat.

- Media Center and Administrative Wings shall be served by dedicated indoor AHUs or chilled beams as applicable. Ventilation air for these zones shall be provided by the DOAS units.
- Cafeteria and Gymnasium shall be served by dedicated H&V systems that would include roof mounted air handling units with modulating gas furnace.
- Kitchen will be served by a gas fired make-up unit located on the roof and an exhaust fan for the kitchen hood exhaust.
- A new BMS shall be provided to monitor and control all the HVAC systems. The BMS systems shall be interfaced with the Town-wide control system.

BOSTON PUBLIC SCHOOLS
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FEASIBILITY STUDY

MIDDLE SCHOOL EXISTING BUILDING ASSESSMENT - ELECTRICAL

I. BUILDING DESCRIPTION

A. SYSTEMS

The existing school building consists of three floors with a sub-basement. The building was originally constructed in 1935. There have been some renovations over the many years of use.

The existing systems of this facility are a mixture of original to outdated. The main service equipment is in the Electric Room, located on the Ground Level. The switchboard is rated for 800 ampere, 120/208 volt, three phase, four wire and a 600 ampere, 120/240V, single phase three wire, manufactured by Cutler-Hammer Company. The lighting is fluorescent and mostly installed surface-mount and pendant-mount in Classrooms, Corridors and Gymnasium/Auditorium. There are very few receptacles installed in Classrooms and throughout the facility. The fire alarm system is a hard-wired zoned panel. The building is not equipped with a sprinkler system. The addressable system is manufactured by Notifier Company and is equipped with voice notification. The communications systems consist of intercom/clock/sound system, which operates through the new telephone system. Telecommunications system appears to be minimal.

B. ELECTRICAL DISTRIBUTION SYSTEM

The primary service originates from an exterior utility company pad-mount transformer located on the side of the building, on side street off Sycamore Street. The utility primary lines run from a utility pole on Sycamore Street overhead to the pad-mount transformer. The secondary service feeders run underground the side driveway and enter the sub-basement level electrical room directly from the pad-mount utility company transformer and connect into two (2) meters and main switchboards.

Utility Company Pad-mount Transformer

FEASIBILITY STUDY

The secondary service feeders enter the basement electrical room from the pad-mount transformer and connect through a main disconnect switch and two (2) meters. The main switchboard has two services: 800 Amp main circuit breaker, 120/208V, three phase, four wire distribution section with feeder circuit breakers and 600 Amp main circuit breaker, 120/240V, single phase, three wire distribution section. Both boards provide power to sub-panelboards located throughout the building. The utility meters are mounted on the opposite wall to the switchboard.

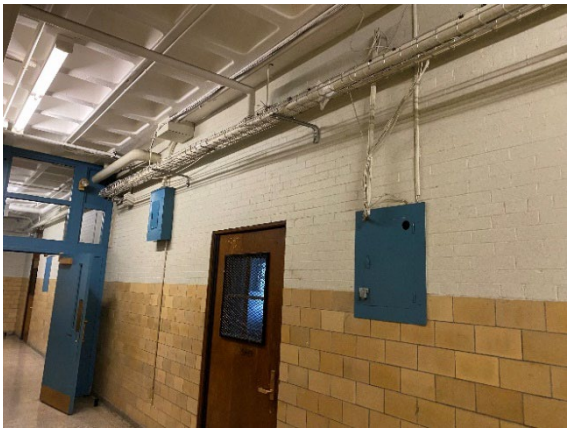
Main Disconnect Switch & Meters

Main Switchboard

The sub-panelboards located throughout the building provide power to lighting, receptacles, mechanical equipment and miscellaneous loads. Most panels appeared to be at capacity. There were little to no spare circuit spaces for future loads. Most of the sub-panels were installed in Corridors and small storage rooms.

There were new sub-panels installed on the First Floor Storage Room and the Second Floor Classroom. These newer panels appeared to be installed to support the mechanical project that was completed to replace the unit ventilators in the classrooms.

Feeder Circuit Breaker Panels

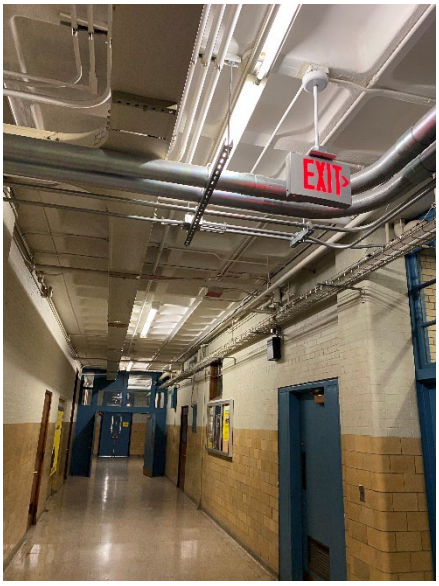


Corridor Feeder Circuit Breaker Panels

The main switchboard and most of the sub-panels appear to be in fair to poor condition. There was a mix of original and upgraded equipment (perhaps upgraded in the 1980's or 1990's). The main board appears to have some spare capacity for additional circuit breakers. Further investigation is required to determine if power capacity is available in the board. The two services in the same framework must be investigated further. It appears that the same neutral is being utilized for both the 800-ampere and 600-ampere services.

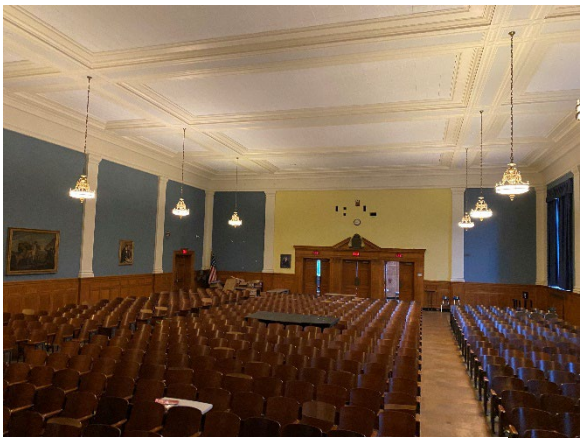
C. INTERIOR LIGHTING

The lighting consists mostly of surface-mount and pendant-mount 2-lamp, surface-mount acrylic lens, fluorescent light fixtures. They appeared to be 32-watt T8 lamps installed. The fixtures throughout appeared to be in poor condition. Classrooms, Corridors and large public areas appeared dim. The lighting does not meet the energy conservation code, as stipulated in Article 13 of the Massachusetts State Building Code, 8th Edition. Local wall mounted switches are used for lighting control. There was minimal occupancy sensor control observed. The corridor lighting is controlled with key switches at each end of the corridors.



Corridor Surface 1'x4' - 1 lamp fixtures

Classroom Pendant 1'x4' - 2 lamp fixtures



Auditorium Pendant – Decorative Fixture

D. EXTERIOR LIGHTING

There is minimal exterior lighting installed on the site. Wall-mount building lights are installed approximately

20'-0" above the finished grade. There are a few pole lights with flood head light fixtures illuminating the back parking lot and side driveway. The exterior light fixtures are controlled via time clocks, located in the main electric room.

E. FIRE ALARM SYSTEM

The fire alarm system consists of anon-addressable (hard-wired), non-voice notification zoned system, manufactured by Simplex Company located in the Main Administration Office. It appears fairly old. Pull stations are installed at egress doors. In most locations, the height of devices does not meet ADA requirements. Horn/strobe devices are on the walls in the corridors, lobbies, Cafetorium and Gymnasium; there are no signal devices or smoke detectors in the classrooms. There were smoke detectors located in the Corridors. Heat detectors are installed in the Kitchen and Cafeteria. There are no signal devices in the small toilet rooms, meeting rooms or conference rooms. There are magnetic door holders at the Gymnasium and Cafetorium doors; it was unknown at the time of the visit whether or not the devices were connected to the fire alarm system. The building is not protected with a sprinkler system.

The fire alarm device coverage and system are inadequate for a school building and is not compliant with current codes for voice evacuation and notification.

Fire Alarm Control Panel and Master Box

F. WIRING DEVICES

On average, there are very few receptacles installed in typical Classrooms. Many of the receptacles were surface or in plug mold raceway. Much of the plug mold appeared to be old and rusted.

G. SECURITY SYSTEM

The intrusion detection system appeared to be fairly new and consists of door contacts on all exterior doors and select motion sensors. A keypad was located at the main entrance to arm and disarm the system. Motion sensors are installed in Corridors, perimeter spaces and Classrooms. Teachers and Staff have Key Cards to enter the locked building.

The CCTV system consisted of cameras monitoring select doors.

H. TELECOMMUNICATIONS

There are patch panel locations within the building. There are a minimum number of devices in each classroom. There are Wireless Access Points in the Classrooms, and major public areas. There are exposed basket style cable tray systems installed exposed down the Corridors for wire management. All cables run to the IT Closet (caged area within First Floor Library).

Select Classrooms have short throw projectors installed at the front of the teacher's work area. Some Classrooms have old-style wall-mounted television sets.

Telecommunications & Wire Cable Management

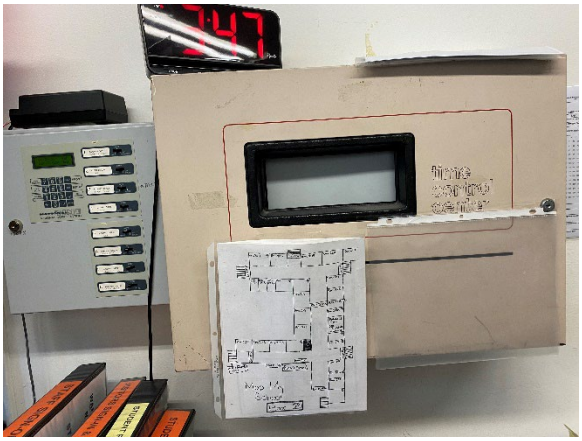
Wireless Access Point Devices

Classroom Projector

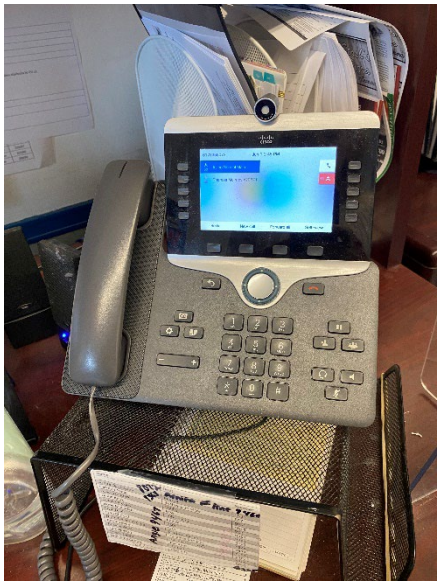
Classroom Television

The intercom/sound system is located at the main reception desk. The main panel is fairly new. All paging is achieved through new telephone system.

The clock system, with bell/chime features, is located at the main reception desk.



Time Clock System with Bell System



New Telephone System

II. Recommendations

A. Overall, the existing systems appear to be in fair to poor condition; many of the existing systems are inadequate and will require updating and or replacement to support a modern style school with the latest technologies, energy efficient opportunities and meet current codes and standards. The following are recommendations if the school were to undertake any type of renovation or addition:

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- Replace the electrical service for more capacity, which would incorporate replacing the main switchboard, the sub-panels and all associated feeders. At a minimum, the main board and branch sub-panels should have an infrared scan performed to ensure that the components are not showing signs of overloading as well as deterioration. Each sub-panel should be properly balanced per phase. It is highly recommended that the distribution system and all associated wiring throughout the building be replaced with new. The existing grounding of all equipment should be reviewed and tested to ensure that the system meets NEC requirements.

- It is recommended that the Exit Signs and remote Emergency Battery Units be replaced with new to meet the requirements of NEC Article 700 Emergency Systems. At a minimum, the emergency system should be tested to ensure proper illumination in the event of a power loss. The batteries in the emergency battery units should be replaced with new if they are more than two-years old. Emergency lighting throughout the means of egress should not be less than one footcandle

- Incorporate occupancy/vacancy sensor controls in all classrooms. Add photo-control sensor controls near perimeter windows for day-light harvesting. Replace all light fixtures with more energy efficient light fixtures to meet the energy conservation code, as stipulated in Article 13 of the Massachusetts State Building Code and the standards of the Illuminating Engineering Society (IES).

- Replace all lighting with LED type light fixtures with new low loss, high efficiency, high power factor drivers with DLC ratings.. Incorporate low voltage lighting system to the public space lighting circuits for optimum energy efficiency. Increase the light levels within the public spaces, and many of the classrooms, for better illumination. The City of Boston should partner with the Utility Company to take advantage of their lighting incentive programs.

- Add receptacles and associated wiring throughout the facility.

- The fire alarm device coverage and system are inadequate for educational use. It is not compliant with current Codes for Voice Evacuation and Notification. Replace the fire alarm system with a code-compliant addressable voice notification ADA system that meets NFPA standards, National Electric Code, Massachusetts State Building Code and local fire department requirements. Install devices to meet ADA, IBC/IFC and NFPA72 requirements and provide better coverage of the facility. If a sprinkler system is not added within the building, additional fire alarm devices should be added in Classrooms and public areas to adequately protect the building from fire. Carbon monoxide detectors should be installed and connected to the fire alarm system.

- Assess the Security system to determine the current condition of equipment and the future needs of the community within the building.

- Replace intrusion detection system with a high-end commercial addressable system.

- Replace the CCTV system with a larger web accessible system that will record for a minimum of 30 days. Add interior and exterior cameras for full visibility of site.

FEASIBILITY STUDY

- Assess the telecommunications system to determine if the current installation can handle an addition/renovation. Reconfigure backbone of system.

- Assess the existing intercom/sound system. it is antiquated and may no longer operate. It appears that all communications is achieved through the telephone system.

END OF ELECTRICAL REPORT

Proposed Space Summary - Middle/Elementary Schools

Washington Irving Existing	Existing Conditions			PROPOSED								
				Existing to Remain/Renovated			New			Total		
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals
z			**32,685**			**0**						**0**
Classroom - General/ 3rd floor	585	23	13,455									0
Classroom - General/ 2nd floor	622	23	14,306									
Classroom - General/ 1st floor	457	3	1,371									
Classroom - W. Roxbury Academy/ 1st floor	482	4	1,928									
Teacher Planning	195	1	195									0
Small Group			-									0
Science Classroom	725	1	725									0
Science Classroom	705	1	705									
												0
SPECIAL EDUCATION			**800**			**0**						**0**
(List classrooms of different sizes separately)												
Self-Contained SPED	200	4	800									0
SPED @ 850 sf			-									0
SPED @ 650 sf			-									0
Resource Room			-									0
Small Group Room			-									0
Re-Regulation Room		1	-									0
ART & MUSIC			**1,411**			**0**						**0**
Art Classroom	675	1	675									0
Storage/Art	85	2	170									
Storage/Art	88	2	176									
Music	320	1	320									
Storage/Music	70	1	70									
VOCATIONS & TECHNOLOGY			**2,615**			**0**						**0**
Wood Shop	970	1	970									0
Storage	455	1	455									
Shop/Classroom	520	1	520									
Photography	405	1	405									
Office/Photography	265	1	265									
Computer Lab	630	1	630									
HEALTH & PHYSICAL EDUCATION			**7,160**			**0**						**0**
Gymnasium	4,715	1	4,715									0
Gym Storeroom	115	2	230									0
Locker Rooms - Boys / Girls	335	2	670									0
Office w/ toilet	120	1	120									0
Office	200	1	200									0
Weight Room	1,035	1	1,035									
PE Storage	190	1	190									
MEDIA CENTER			**950**			**0**						**0**
Library	950	1	950									0
AUDITORIUM / DRAMA			**5,350**			**0**						**0**
Auditorium	4,750	1	4,750									
Stage	495	1	495									
Projection Room	105	1	105									
DINING & FOOD SERVICE			**10,845**			**0**						**0**
Cafeteria	8,955	1	8,955									0
Storage	390	1	390									0
Storage	125	1	125									
Kitchen	530	1	530									0
Staff Lunch Room/Copy	705	1	705									0
Office	140	1	140									
Dry Storage/Dish Wash	110	1	110									
MEDICAL			**230**			**0**						**0**
Nurses' Suite	230	1	230									0
ADMINISTRATION & GUIDANCE			**2,888**			**0**						**0**
Main Admin Office	270	1	270									0
Conference	230	1	230									
General Offices	212	4	848									
W. Roxbury Academy Offices	154	10	1,540									
CUSTODIAL & MAINTENANCE			**1,512**			**0**						**0**
Custodial	360	1	360									0
Book Storage	384	3	1,152									
OTHER			**160**			**0**						**0**
School Store	160	1	160									0
Total Building Net Floor Area (NFA)			**66,606**			**0**						**0**
Proposed Student Capacity / Enrollment												900
NON-PROGRAMMED SPACES					% of GFA	**0**		% of GFA	**0**		% of GFA	**0**
Other Occupied Rooms (list separately)					#DIV/0!			#DIV/0!			#DIV/0!	
					#DIV/0!			#DIV/0!			#DIV/0!	
					#DIV/0!			#DIV/0!			#DIV/0!	
					#DIV/0!			#DIV/0!			#DIV/0!	
Unoccupied MEP/FP Spaces					#DIV/0!			#DIV/0!			#DIV/0!	
Unoccupied Closets, Supply Rooms & Storage Rooms					#DIV/0!			#DIV/0!			#DIV/0!	
Toilet Rooms					#DIV/0!			#DIV/0!			#DIV/0!	
Circulation (corridors, stairs, ramps & elevators)					#DIV/0!			#DIV/0!			#DIV/0!	
Remaining[3]					#DIV/0!	**0**		#DIV/0!	**0**		#DIV/0!	
Total Building Gross Floor Area (GFA)[2]			109,330			0			0			
Grossing factor (GFA/NFA)												

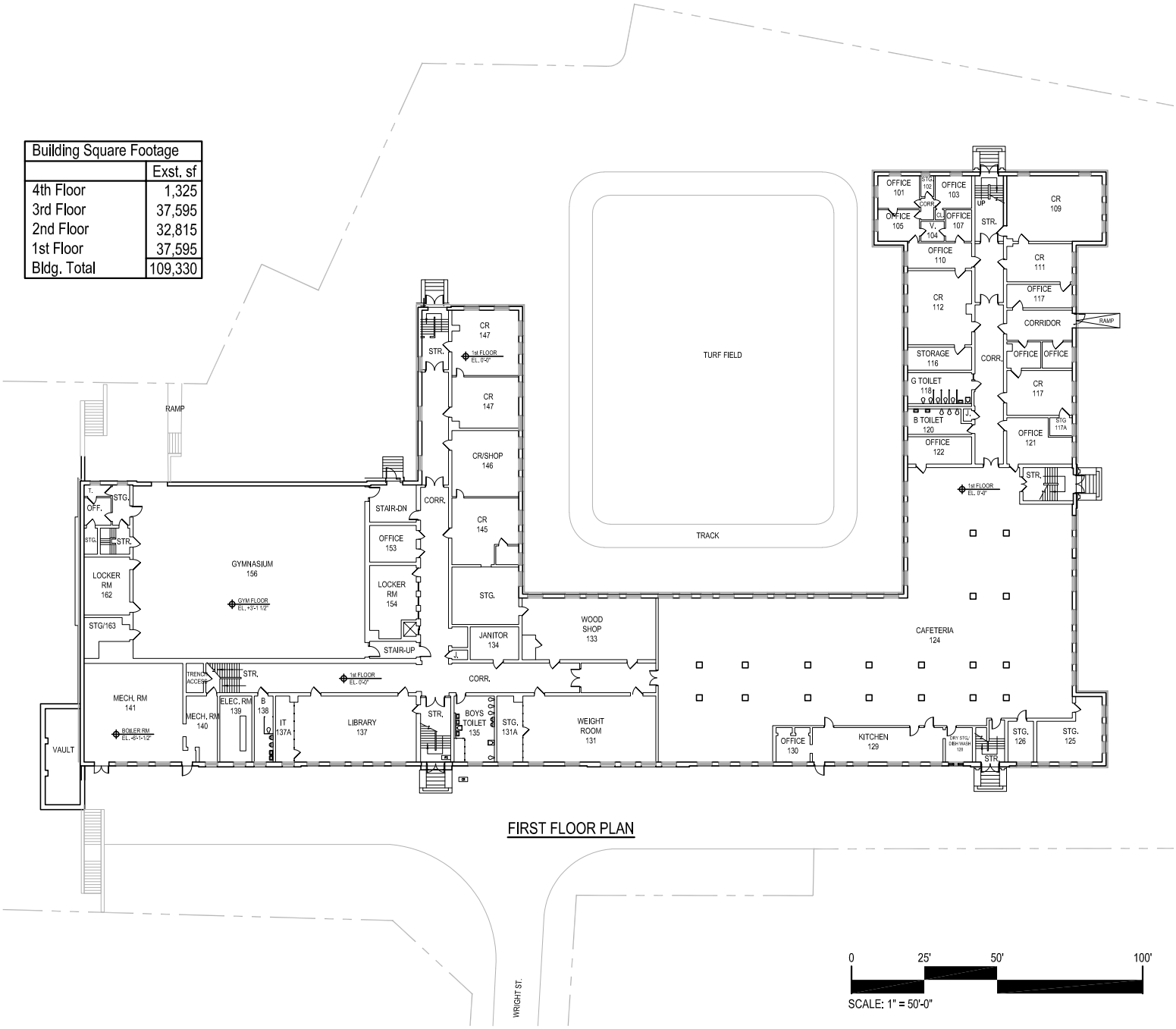
Proposed Space Summary- Elementary Schools

Washington Irving	Existing Conditions			PROPOSED								
				Existing to Remain/Renovated			New			Total		
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals
CORE ACADEMIC SPACES			**0**			**0**			**27,910**			**0**
(List classrooms of different sizes separately)												
Pre-Kindergarten w/ toilet												
Kindergarten w/ toilet							1,020	6	6,120			
General Classrooms - Grade 1-6												
Grade 1							825	4	3,300			
Grade 2							810	4	3,240			
Grade 3							730	4	2,920			
Grade 4							930	4	3,720			
Grade 5							810	4	3,240			
Grade 6							810	4	3,240			
STE Room- Grade 3-6							945	2	1,890			
STE Storage							120	2	240			
SPECIAL EDUCATION			**0**			**0**			**11,085**			**0**
(List rooms of different sizes separately)												
Self-Contained SPED												
Self-Contained SPED - toilet (Grades 1-6)							925	6	5,550			
Resource Room							430	3	1,290			
Small Group Room / Reading							415	8	3,320			
OT/PT							925	1	925			
ART & MUSIC			**0**			**0**			**4,260**			**0**
Art Classroom - 25 seats												
Art Workroom w/ Storage & kiln							1,065	2	2,130			
Music Classroom / Large Group - 25-50 seats							945	2	1,890			
Music Practice / Ensemble							120	2	240			
HEALTH & PHYSICAL EDUCATION			**0**			**0**			**5,550**			**0**
Gymnasium							4,785	1	4,785			
Gym Storeroom							245	2	490			
Health Instructor's Office w/ Shower & Toilet							275	1	275			
MEDIA CENTER			**0**			**0**			**8,535**			**0**
Media Center / Reading Room							3,200	1	3,200			
Auditorium w Stage							5,335	1	5,335			
DINING & FOOD SERVICE			**0**			**0**			**9,190**			**0**
Cafeteria / Dining							6,875	1	6,875			
Stage												
Chair / Table / Equipment Storage												
Kitchen							1,960	1	1,960			
Staff Lunch Room							355	1	355			
MEDICAL			**0**			**0**			**0**			**0**
Medical Suite Toilet												
Nurses' Office / Waiting Room												
Examination Room / Resting												
ADMINISTRATION & GUIDANCE			**0**			**0**			**3,695**			**0**
General Office / Waiting Room / Toilet							2,340	1	2,340			
Teachers' Mail and Time Room												
Duplicating Room												
Records Room												
Principal's Office w/ Conference Area												
Principal's Secretary / Waiting												
Assistant Principal's Office												
Supervisory / Spare Office												
Conference Room												
Guidance Office												
Guidance Storeroom												
Teachers' Work Room												
ECC Admin							1,115	1	1,115			
Security Office							240	1	240			
CUSTODIAL & MAINTENANCE			**0**			**0**			**2,345**			**0**
Custodian's Office							125	1	125			
Custodian's Workshop							295	1	295			
Custodian's Storage							315	1	315			
Recycling Room / Trash							400	1	400			
Receiving and General Supply							200	1	200			
Storeroom							90	9	810			
Network / Telecom Room							200	1	200			
OTHER			**0**			**0**			**0**			**0**
Other *(specify)*												
Total Building Net Floor Area (NFA)			**0**			**0**			**72,570**			**0**
Proposed Student Capacity / Enrollment												
NON-PROGRAMMED SPACES					% of GFA	**0**		% of GFA	**41,655**		% of GFA	**0**
Other Occupied Rooms (list separately)					#DIV/0!			0%			#DIV/0!	
					#DIV/0!			0%			#DIV/0!	
					#DIV/0!			0%			#DIV/0!	
					#DIV/0!			0%			#DIV/0!	
Unoccupied MEP/FP Spaces					#DIV/0!			0%			#DIV/0!	
Unoccupied Closets, Supply Rooms & Storage Rooms					#DIV/0!			0%			#DIV/0!	
Toilet Rooms					#DIV/0!			0%			#DIV/0!	
Circulation (corridors, stairs, ramps & elevators)					#DIV/0!			0%			#DIV/0!	
Remaining[3]					#DIV/0!	0		36%	**41,655**		#DIV/0!	0
Total Building Gross Floor Area (GFA)[2]			**0**						**114,225**			**0**
Grossing factor (GFA/NFA)			**#DIV/0!**			**#DIV/0!**			**1.57**			**#DIV/0!**

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
EXISTING CONDITIONS LAYOUT

Building Square Footage	
	Exst. sf
4th Floor	1,325
3rd Floor	37,595
2nd Floor	32,815
1st Floor	37,595
Bldg. Total	109,330



FIRST FLOOR PLAN

0 25' 50' 100'
SCALE: 1" = 50'-0"

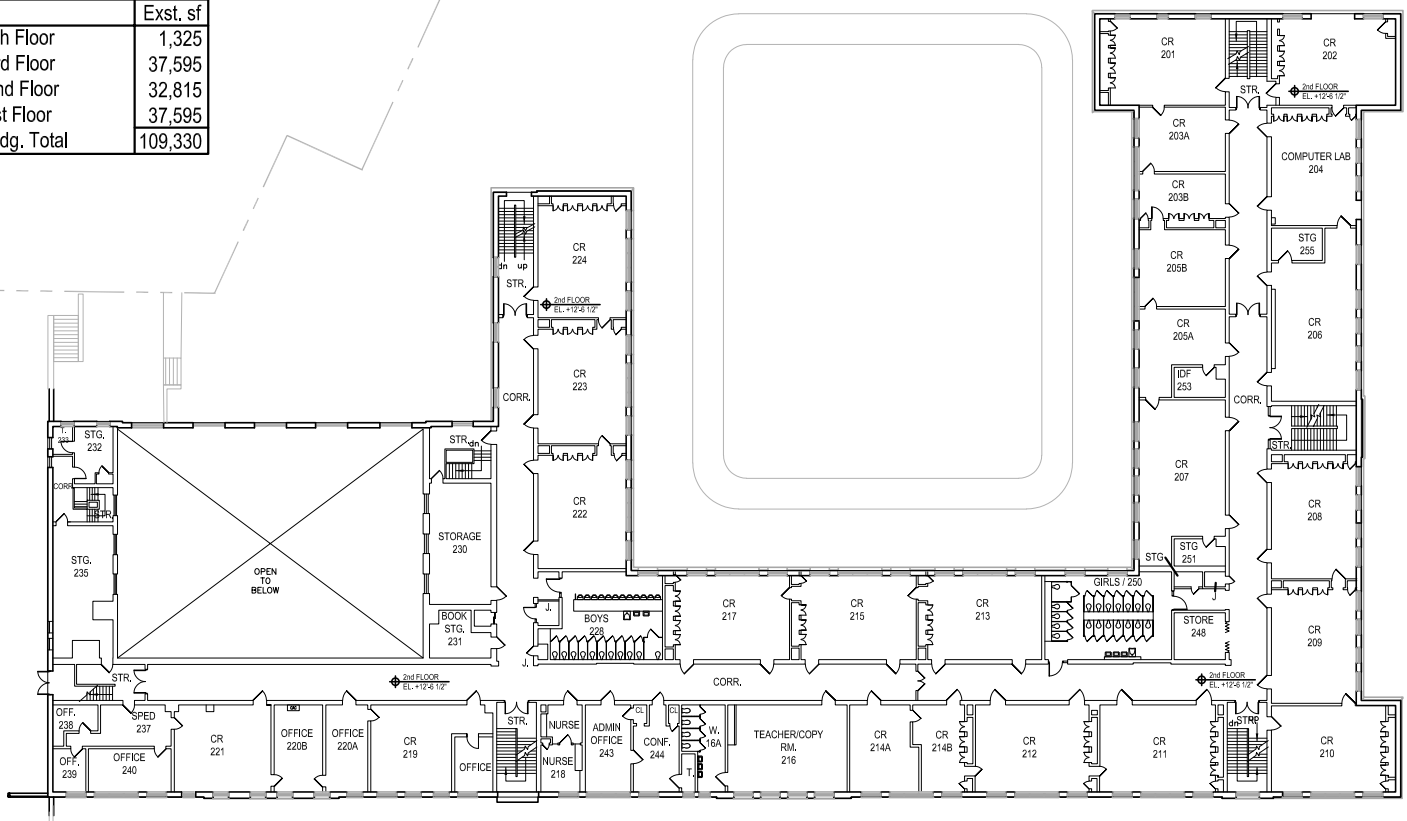
Washington Irving Middle School Location
First Floor
Gr. 7-8, 128 Students
Existing Construction
109,330+/- SF

MOUNT VERNON GROUP ARCHITECTS

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
EXISTING CONDITIONS LAYOUT

Building Square Footage	
	Exst. sf
4th Floor	1,325
3rd Floor	37,595
2nd Floor	32,815
1st Floor	37,595
Bldg. Total	109,330



SECOND FLOOR PLAN

0 25' 50' 100'

SCALE: 1" = 50'-0"

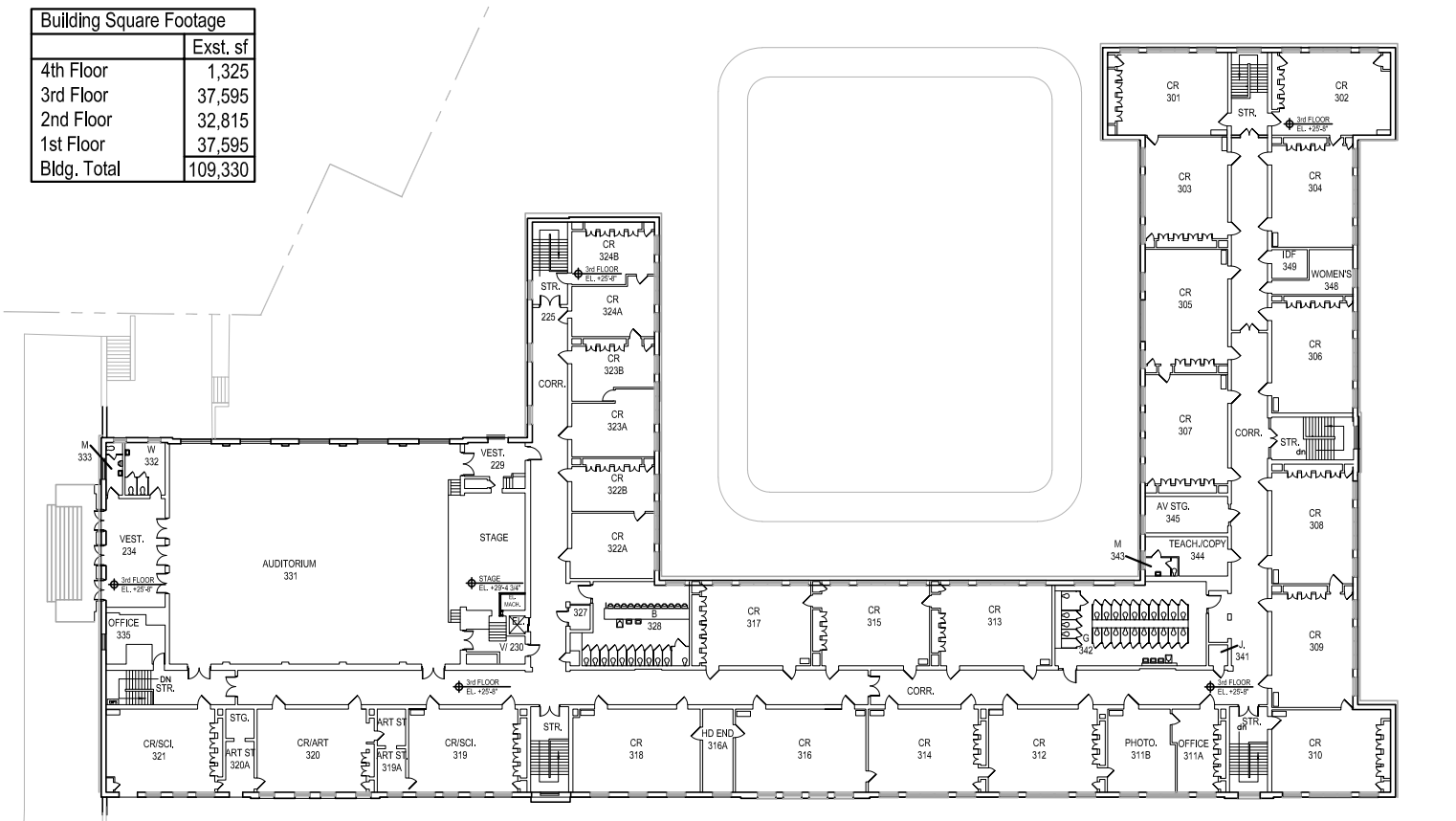
Washington Irving Middle School Location
Second Floor
Gr. 7-8, 128 Students
Existing Construction
109,330+/- SF

MOUNT VERNON GROUP ARCHITECTS

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
EXISTING CONDITIONS LAYOUT

Building Square Footage	
	Exst. sf
4th Floor	1,325
3rd Floor	37,595
2nd Floor	32,815
1st Floor	37,595
Bldg. Total	109,330



THIRD FLOOR PLAN

0 25' 50' 100'

SCALE: 1" = 50'-0"

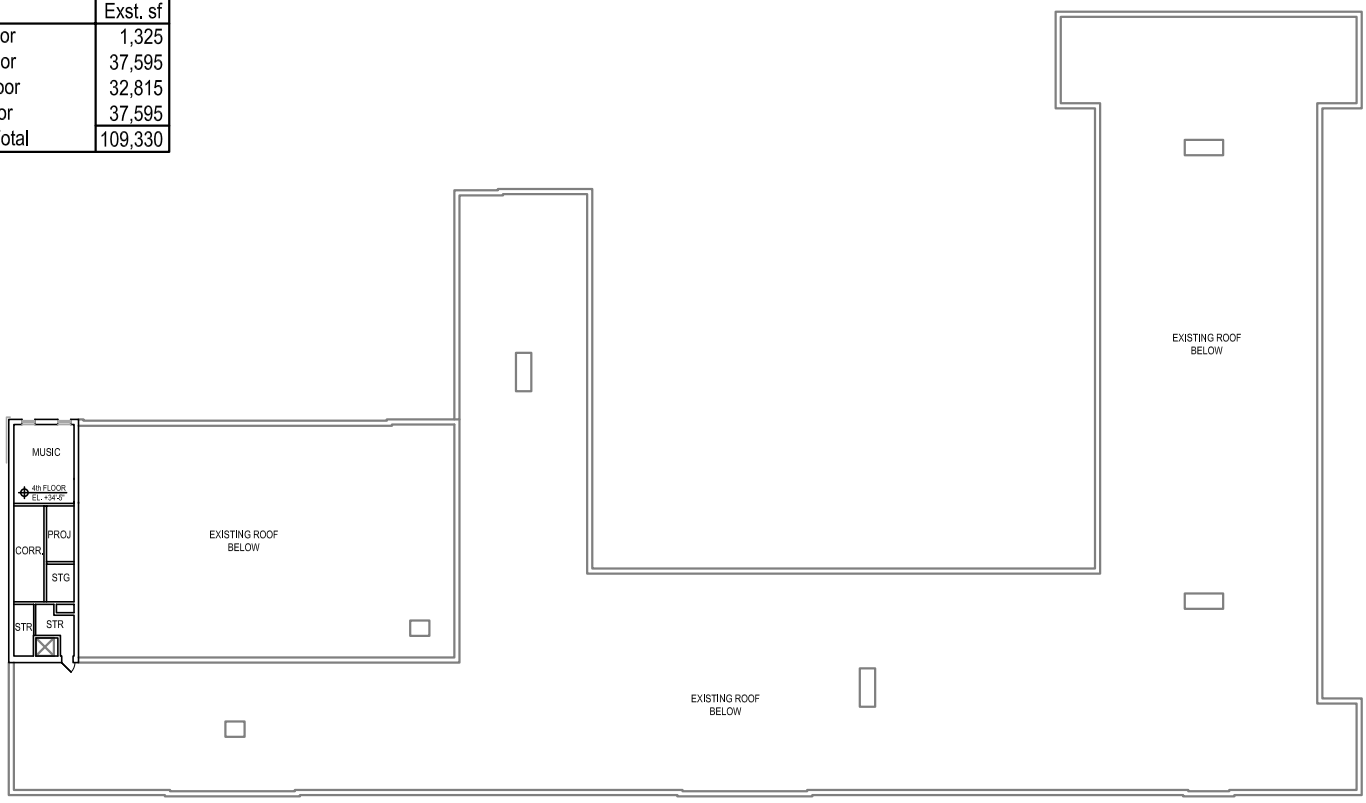
Washington Irving Middle School Location
Third Floor
Gr. 7-8, 128 Students
Existing Construction
109,330+/- SF

MVG
MOUNT VERNON GROUP ARCHITECTS

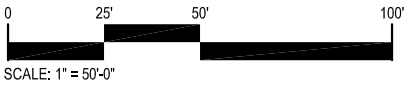
WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
EXISTING CONDITIONS LAYOUT

Building Square Footage	
	Exst. sf
4th Floor	1,325
3rd Floor	37,595
2nd Floor	32,815
1st Floor	37,595
Bldg. Total	109,330



FOURTH FLOOR/ROOF PLAN



SCALE: 1" = 50'-0"

Washington Irving Middle School Location
Fourth Floor/Roof
Gr. 7-8, 128 Students
Existing Construction
109,330+/- SF

MVG
MOUNT VERNON GROUP
ARCHITECTS

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
700 STUDENT PROPOSED LAYOUT

Building Square Footage		
	Exst. sf	New sf
4th Floor	1,325	-
3rd Floor	37,595	2,595
2nd Floor	32,815	1,165
1st Floor	37,595	1,165
Total	109,330	4,925
Bldg. Total	114,255 sf	

Program Category	
	Use
Core Educational	
Community	
Music	
Administration	
SPED	
Toilets	
Service/Storage	
Circulation	

IRVING SCHOOL - FIRST FLOOR PLAN

37,595 sf

WRIGHT ST.

0 25' 50' 100'

SCALE: 1" = 50'-0"

Washington Irving Elementary School Location
Alternative 1, First Floor
Gr. K-6, 700 Students
Renovation/Addition Construction
114,225 SF

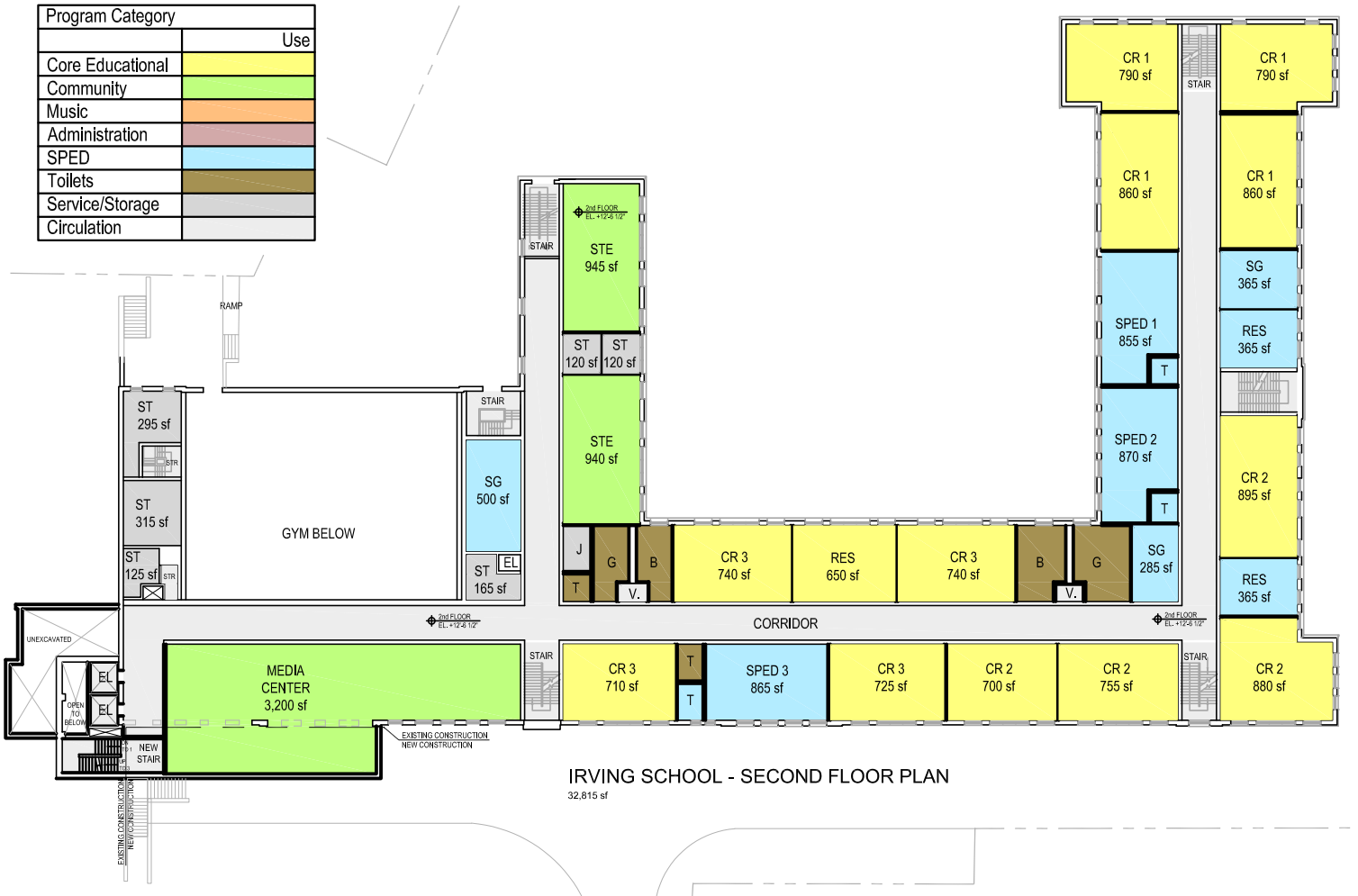
MOUNT VERNON GROUP ARCHITECTS

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
700 STUDENT PROPOSED LAYOUT

Building Square Footage		
	Exst. sf	New sf
4th Floor	1,325	-
3rd Floor	37,595	2,595
2nd Floor	32,815	1,165
1st Floor	37,595	1,165
Total	109,330	4,925
Bldg. Total	114,255 sf	

Program Category	
	Use
Core Educational	
Community	
Music	
Administration	
SPED	
Toilets	
Service/Storage	
Circulation	



IRVING SCHOOL - SECOND FLOOR PLAN
32,815 sf

0 25' 50' 100'
SCALE: 1" = 50'-0"

WRIGHT ST.

Washington Irving Elementary School Location
Alternative 1, Second Floor
Gr. K-6, 700 Students
Renovation/Addition Construction
114,225 SF

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ARCHITECTS

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
700 STUDENT PROPOSED LAYOUT

Building Square Footage		
	Exst. sf	New sf
4th Floor	1,325	-
3rd Floor	37,595	2,595
2nd Floor	32,815	1,165
1st Floor	37,595	1,165
Total	109,330	4,925
Bldg. Total	114,255 sf	

Program Category	
	Use
Core Educational	
Community	
Music	
Administration	
SPED	
Toilets	
Service/Storage	
Circulation	

IRVING SCHOOL - THIRD FLOOR PLAN
37,595 sf

0 25' 50' 100'
SCALE: 1" = 50'-0"

Washington Irving Elementary School Location
Alternative 1, Third Floor
Gr. K-6, 700 Students
Renovation/Addition Construction
114,225 SF

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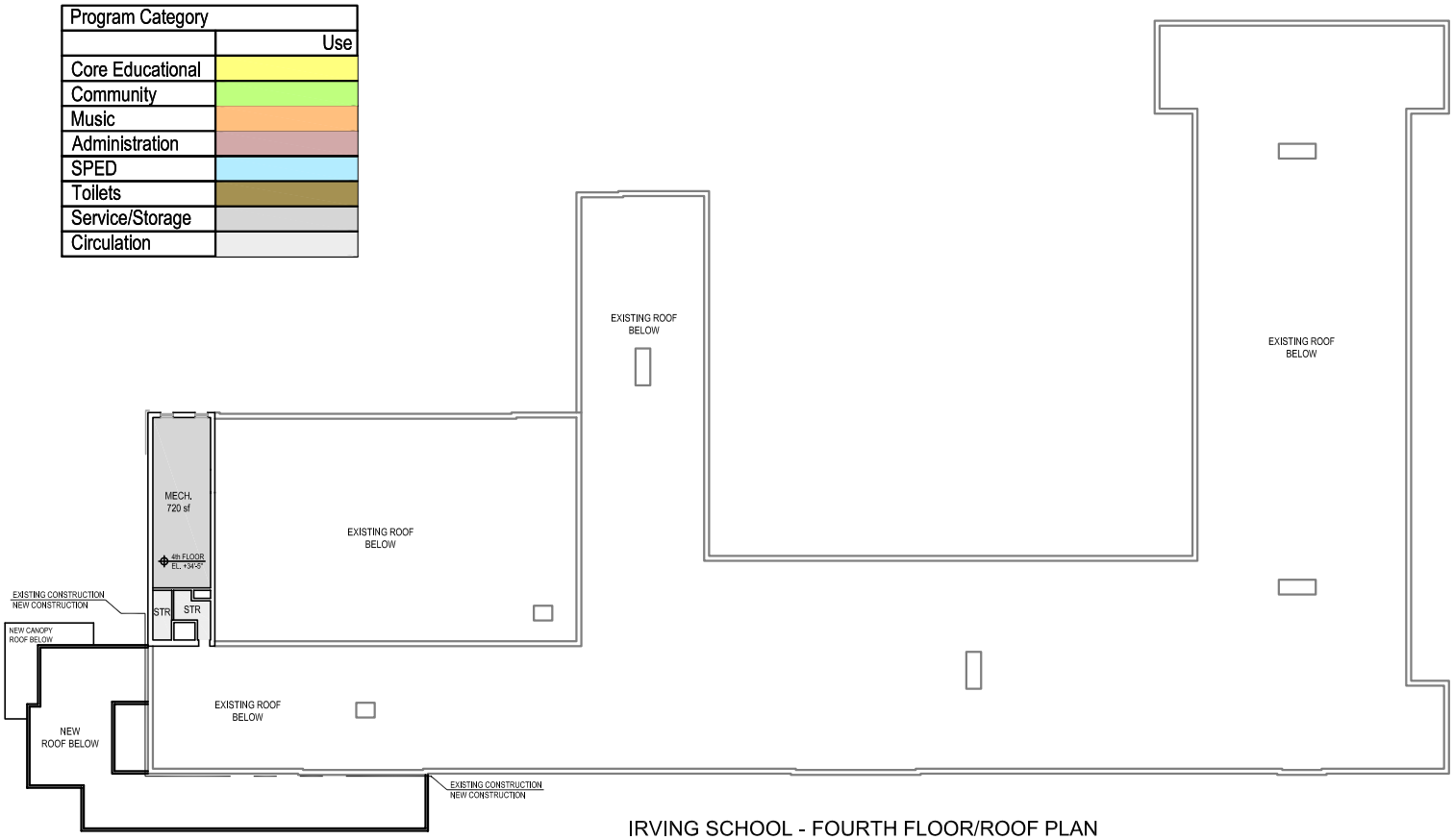
ARCHITECTS

WASHINGTON IRVING SCHOOL PROJECT
Boston Public Schools
City of Boston

FEASIBILITY STUDY
700 STUDENT PROPOSED LAYOUT

Building Square Footage		
	Exst. sf	New sf
4th Floor	1,325	-
3rd Floor	37,595	2,595
2nd Floor	32,815	1,165
1st Floor	37,595	1,165
Total	109,330	4,925
Bldg. Total	114,255 sf	

Program Category	
	Use
Core Educational	
Community	
Music	
Administration	
SPED	
Toilets	
Service/Storage	
Circulation	

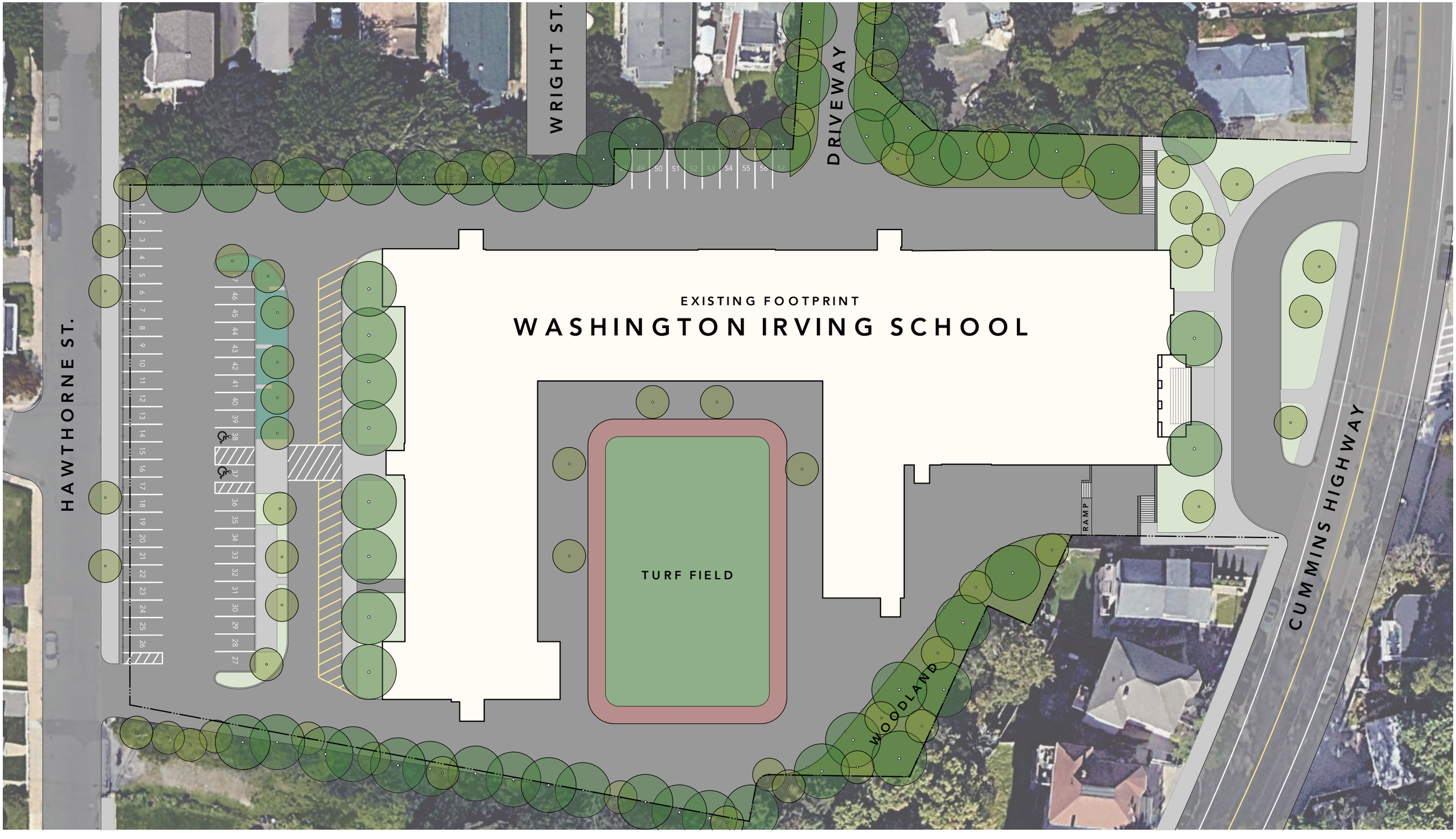


IRVING SCHOOL - FOURTH FLOOR/ROOF PLAN
1,325 sf

0 25' 50' 100'
SCALE: 1" = 50'-0"

Washington Irving Elementary School Location
Alternative 1, Fourth Floor
Gr. K-6, 700 Students
Renovation/Addition Construction
114,225 SF

MVG
MOUNT VERNON GROUP ARCHITECTS



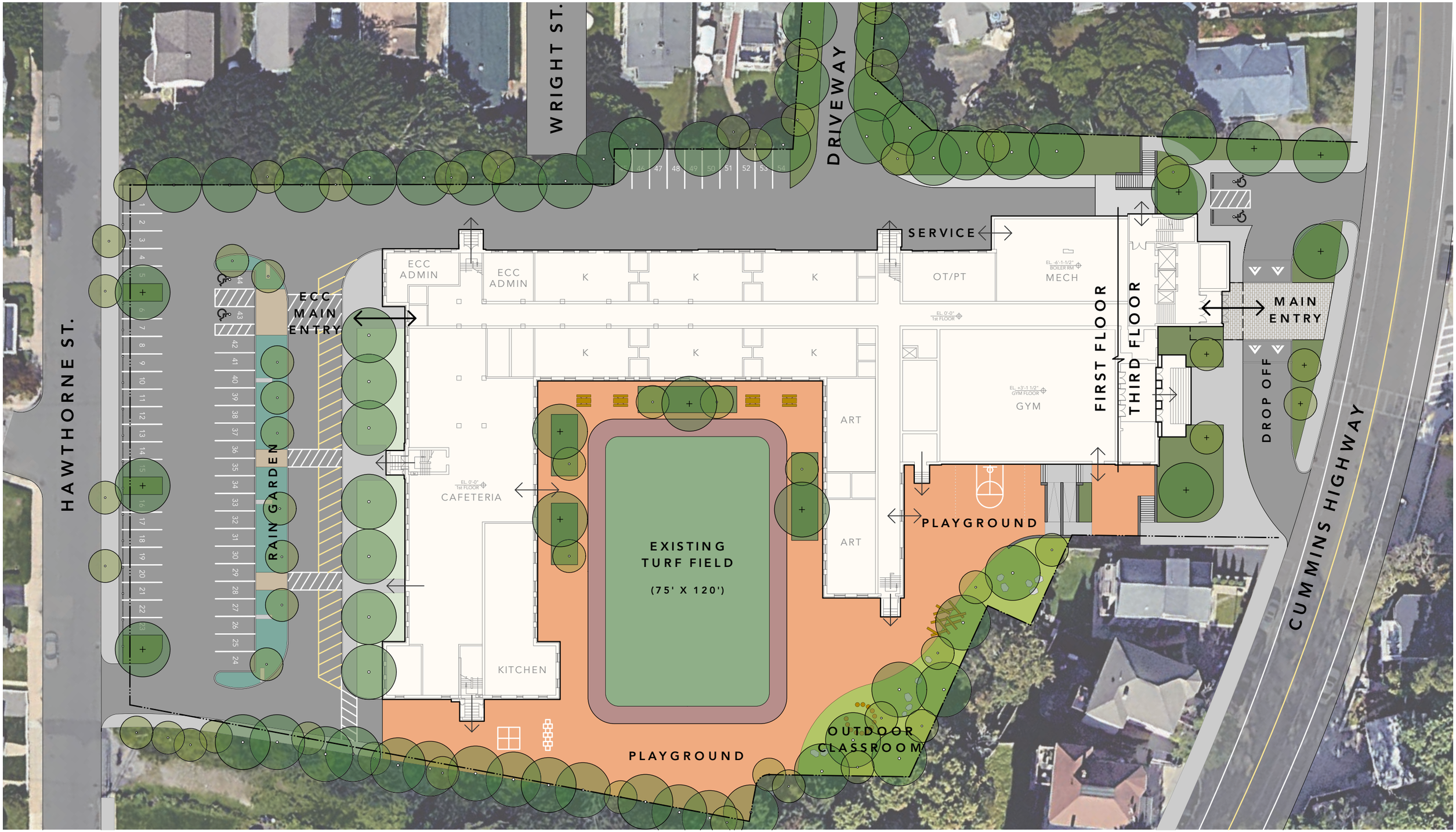
Crowley Cottrell, LLC
171 Milk St, Fl 2
Boston, MA 02109
617.338-8400 crowleycottrell.com

0 20 40 FT
Scale: 1" = 40'-0"

WASHINGTON IRVING SCHOOL

Existing Site Plan

July 21, 2022



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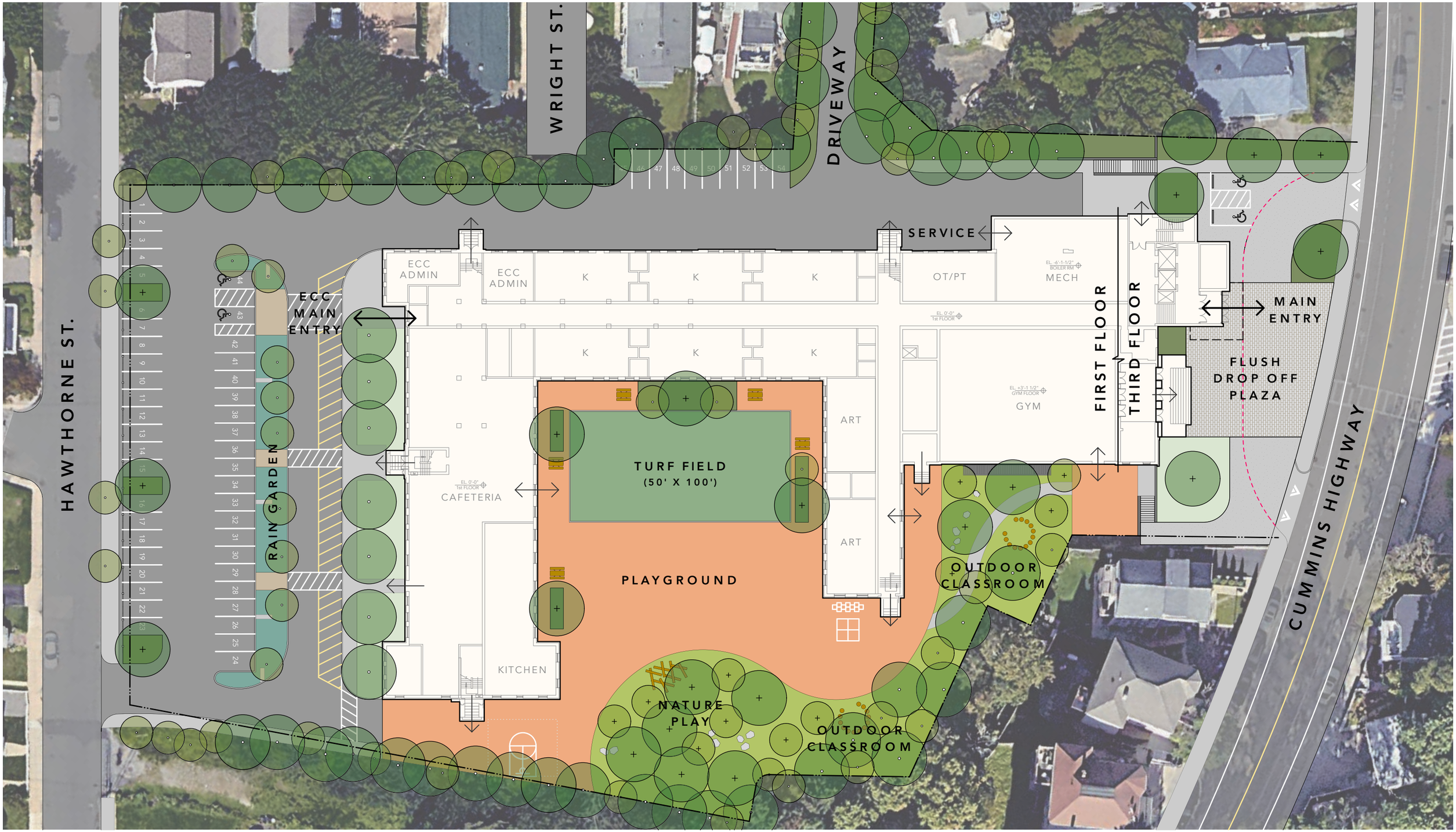
0 20 40 FT

Scale: 1" = 40'-0"

WASHINGTON IRVING SCHOOL

Proposed Site Plan A

July 21, 2022



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Boston, MA 02109
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0 20 40 FT
Scale: 1" = 40'-0"

WASHINGTON IRVING SCHOOL

Proposed Site Plan B

July 21, 2022