



**RENOVATIONS TO
INDEPENDENCE MIDDLE SCHOOL - PHASE 2
BETHEL PARK SCHOOL DISTRICT**

**SCHEMATIC DESIGN
SCOPE OF WORK NARRATIVE**



Renovations to Independence Middle School – Phase 2 Bethel Park School District

April 12, 2021

Schematic Design Scope of Work Summary

Below is a summary of the major scope of work items for the Phase 2 Renovations at Independence Middle School. The following scope of work items were developed by HDG and its consultant engineers and reviewed with District Administration over the past 2 months.

Refer to the following pages for more detailed descriptions of the proposed scope of work.

1. **Renovate the Second Floor General Instruction Areas.** This includes replacing all finishes, lockers, visual display boards, doors & hardware, ceilings, flooring, casework, and MEPFP (mechanical, electrical, plumbing, fire protection) systems. Existing operable walls will be replaced with new operable walls. The majority of existing walls and the overall configuration of spaces will remain as they are currently constructed.
2. **Fully renovate and reconfigure the Unified Arts Area to improve circulation and use of spaces.** This includes demolition of all existing walls and new CMU partitions, finishes, visual display boards, doors, casework, ramps, and MEPFP systems.
3. **Renovate the Music Suite.** The Music Suite will be slightly reconfigured including relocating the group toilet rooms to create a larger Choral Room and improve circulation. Existing walls that remain will be extended to the roof deck to provide better acoustics. All spaces in the Music Suite will receive new finishes, visual display boards, doors & hardware, casework, electrical, and fire protection systems. The existing roof top air handling unit will remain as it was recently installed. New fan powered boxes will be provided to distribute heating and cooling to each room as these boxes are beyond their useful life.
4. **Renovate the Library to create a more inviting space.** This includes: new book shelving, circulation desk, finishes, and MEPFP systems. Modify existing Maker Space to also serve as a user-friendly TV Studio.
5. **Renovate the Auditorium to replace aging systems.** This includes new seating, acoustical wall panels, theatrical lighting, speakers, modifications to rigging, and replacement of the stage floor.
6. **Reconfigure Kitchen Serving area to improve serving for 3 grade levels and to create modern food court style serving.** This includes relocating dish room, creation of new remote serving line, slight reconfigure of Serving Area, replacement of food service equipment that are beyond their useful life, new finishes, and new MEPFP systems. (The roof top air handling unit that serves the Cafeteria will remain as it was recently installed.)
7. **Relocate Toilet Rooms that are between the Auditorium and Cafeteria to create an open feel between Auditorium and Cafeteria.**
8. **Reconfigure the oversized locker rooms and create an Adaptive PE Fitness Room and two Health Classrooms.**
9. **Replace the bleachers, divider curtains, basketball hoops, and acoustical treatments in Gymnasium.**
10. **Replace all handrails and guardrails in all stair towers.**

- 11. Replace all ductwork, fan powered boxes, hot water piping, and associated controls not replaced in Phase 1 and not mentioned above.**
- 12. Replace all rooftop HVAC units that exceeded or are near the end of their useful life.**
- 13. Provide enlarged windows at all classrooms, replace the main entrance canopy, replace metal roofing and provide other aesthetic improvements shown on the exterior elevations and renderings to provide an updated appearance to IMS.**
- 14. Replace the low slope roof system on the entire building.**
- 15. Fully renovate the multi-user toilet rooms including new plumbing fixtures, new finishes, and handicap accessibility improvements.**
- 16. Extend the Phase 1 fire sprinkler system to all areas not renovated in Phase 1**
- 17. Install code compliant fire alarm system in areas not renovated in Phase 1.**
- 18. Provide new LED light fixtures in the renovated areas.**
- 19. Provide new 21st Century Learning technology systems throughout the areas not renovated in Phase 1.**
- 20. Replace existing electrical feeders to panelboards.**
- 21. Replace clock system throughout the building.**
- 22. Install the emergency generator.**

Refer to the following pages for more detailed descriptions of the proposed scope of work.



Renovations to Independence Middle School - Phase 2
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SCHEMATIC DESIGN - ARCHITECTURAL SCOPE OF WORK DESCRIPTION

Second Floor 7th and 8th Grade General Instruction Area

On the second floor of the building, the arrangement of the general instructional classrooms will remain as they are currently constructed. In a few locations, walls will be adjusted to improve classroom size or to improve circulation. As shown on the floor plans, a corridor adjacent the Auditorium will be eliminated to help with circulation and monitoring of students. The existing Special Education Area at the south end of the 2nd floor will be reconfigured to create additional classroom space as the Special Education Department will be relocated to the first floor in the Phase 1 Renovations. In addition to the modifications mentioned above, the renovations on the second floor will include:

- Replacement of existing operable walls with new high acoustically rated operable walls
- New double tier student lockers.
- New suspended acoustic tile ceiling systems
- Plastic laminate-faced casework and countertops will be provided at all Classrooms for storage of teaching supplies and books.
- Wood casework and epoxy countertops for all Science Classrooms
- New Markerboards and Tackboards in all Classrooms
- New wood doors with heavy duty door hardware and glass vision panels where applicable.
- All toilet rooms will be fully renovated to be handicap compliant.
- All classrooms & corridors to be provided with Luxury Vinyl Tile similar to 6th grade area in Phase 1.

Unified Arts and Nurse Area

As shown on the floor plans, the Unified Arts area of the building will be completely reconfigured to improve circulation and to increase the efficiency of useable space. The reconfiguration of the Unified Arts Area will include the following:

- All corridor walls will be concrete masonry units (CMU) to provide increased durability in this area of the building. Walls between classrooms will be gypsum wall board partitions.
- New suspended acoustic tile ceiling systems will be provided throughout.
- New wood doors with heavy duty door hardware and glass vision panels where applicable.
- New Markerboards and Tackboards in all Classrooms
- Plastic laminate-faced casework and countertops will be provided at all Classrooms for storage of teaching supplies and books. A built-in computer workstation counter will be provided in the Computer Lab. New tall storage cabinets will be provided in the Manufacturing Lab.
- The existing ramp will be adjusted to fit in the new arrangement of classroom spaces. The existing small stair will be replaced with a ramp to create a fully handicap compliant loop around the Unified Arts Area.
- The group toilet room will be fully renovated to be handicap compliant.
- Two new Kilns will be provided in the Kiln room adjacent the Art Classrooms
- All classrooms and corridors to be provided with Luxury Vinyl Tile flooring. The concrete floor slab in the Manufacturing Lab to be cleaned and possibly coated. The Computer Lab to have a carpeted floor.

Music Suite

The Music Suite will be reconfigured to improve circulation, increase the useable size of classrooms and to improve acoustics. The reconfiguration of the Music Suite will include the following:

- All corridor walls will be impact resistant gypsum wall board for increased durability. All walls between classrooms will be extended to the deck and be treated to be highly acoustically rated.
- Relocate and reconfigure group toilet room to be handicap compliant. By relocating the toilet room, a larger Choral Room will be created.
- Provide acoustical wall panels and special acoustically rated ceiling panels in the Band, Orchestra, and Choral Rooms. Provide acoustical wall panels as needed in the General Music Classrooms. (this will be explored in more detail with the acoustical consultant during the design development phase)
- New wood doors with heavy duty door hardware and glass vision panels where applicable.
- New instrument storage cabinets in the Band and Orchestra Storage Rooms.
- New Luxury Vinyl Tile flooring throughout the classrooms and the corridors.

Library

The Library will remain in its existing location and will be “re-envisioned” to be more inviting to students. The modifications to the Library will include the following:

- New tall book shelving will be provided around the perimeter of the room. Low moveable book shelving will be provided at other locations.
- A new single circulation desk will be provided.
- Suspended acoustic tile ceiling systems will be provided throughout with painted bulkheads or ceiling clouds intermixed.
- New carpeted flooring throughout the Library.
- New markerboards at the presentation or classroom area of the Library.
- At the existing Maker Space (adjacent the Library), the Maker Space will be slightly modified to accommodate a user friendly TV Studio.

Auditorium

The Auditorium will remain in its existing location, with some of finishes and equipment being replaced. The scope of the modifications in the Auditorium include the following:

- New Auditorium seating will be provided. (approx. 750 seats) New aisle lighting will be installed.
- New acoustical wall panels will be provided.
- Theatrical lighting will be replaced in kind.
- New speakers will be provided and a new projector will be installed.
- Modifications will be made to the existing rigging system to allow the entire system to function as intended.
- New carpeted flooring will be provided in the aisles throughout the Auditorium
- New phenolic stage flooring system to replace existing masonite stage flooring system.
- Adjustment of the locations of the main Auditorium doors to align better with re-envisioned entrance to Auditorium as shown on the floor plans.

Dining and Food Services

In order to accommodate the additional 6th grade students, the food service coordinator requested that an additional serving line be provided. In addition, the food service coordinator requested that the existing dishwashing area be relocated to kitchen versus the current remote location in the Cafeteria. Through discussions with the district and the food service coordinator it was decided to also modify the Kitchen and Serving Area to create a modern food court design.

At the Cafeteria, the existing skylights are leaking and will be removed. The skylights will be replaced with clerestory windows to avoid leaking issues in the future. In addition, the toilet rooms that are adjacent the Auditorium will be relocated to open the area between the Auditorium and the Cafeteria as shown on the floor plans.

The modifications and renovations to the Cafeteria and Kitchen include the following:

- Reconfiguration of the Kitchen to support a modern food court Serving Area and the relocation of the existing dish washing equipment.
- Replacement of food service equipment that is beyond its useful life. (the existing dishwashing machines will be reused)
- Demolition of the wall between the existing serving area and the Cafeteria. For after-hours security, new rolling grilles will be installed in this location to secure the Serving Area.
- At the location of the existing dishwashing room, a new serving station will be created. The existing room will be used to house the food service equipment for this serving station. In lieu of a permanent wall between the serving station and the Cafeteria, a rolling grille will be installed.
- Replacement of the flooring in the Kitchen with a resilient safety flooring system.
- Relocation of the existing group toilet rooms as shown on the floor plans. New toilet rooms will be fully handicap compliant.
- Modification of existing ramp adjacent the Cafeteria to be handicap compliant.
- New Luxury Vinyl Tile flooring will be provided in the Cafeteria.
- New suspended acoustical ceiling systems with painted bulkheads throughout the Cafeteria.
- The existing skylights will be replaced with clerestory windows.

Gymnasium

The flooring, wall pads, and HVAC were replaced in the 2021 project. Additional work recommended in the Gymnasium for the Phase 2 Renovations include the following:

- Replacement of the existing bleachers with new motorized bleachers
- Replacement of divider curtains
- Replacement of basketball backstops and backboards
- Replacement of wall and ceiling acoustical panels.
- New painting on all walls

Locker Room Area

The existing Locker Rooms are oversized and will be completely reconfigured to provide more useable space. Two new Health Classrooms and a Fitness Room will be created adjacent the renovated locker rooms as shown on the floor plans. The renovations of the Locker Room Area will include the following:

- New concrete masonry unit (CMU) partitions for increased durability.
- Ceramic Tile flooring in the Locker Rooms. Luxury Vinyl Tile in the Health Classrooms. Rubber sports flooring will be provided in the Fitness Room.
- 55-60 full height lockers and built-in benches will be provided in each Locker Room. Two single user shower stalls will be provided in each Locker Room.

- The Health Classrooms will be provided with plastic laminate casework and markerboards as to be outfitted similar to a typical new classroom.
- New display cases will be provided in the corridor that leads to the Gymnasium.
- New wood doors with heavy duty door hardware and glass vision panels where applicable.
- Existing cantilever beam supports are to be removed to accommodate Health Classrooms.

Stair Towers and Building Circulation

As was reviewed during the design of the Phase 1 Renovations, the existing Ramp between the first and second floor will be demolished and replaced with a new Stair and Elevator during the Phase 2 Renovations.

The renovations at each Stair Tower will include the following:

- Replacement of all handrails and guardrails to be handicap compliant.
- New wood doors with heavy duty door hardware and glass vision panels where applicable.
- New rubber treads and risers
- New painting on all walls.

Exterior Improvements

The following improvements are proposed for the exterior of the building as shown on the exterior renderings and elevations:

- New 8'-0" wide aluminum framed storefront windows will be provided at all classrooms.
- All exterior storefront entrances will be replaced.
- New insulated metal wall panels will be installed at the sixth-grade area of the building.
- Create a ramp and drop-off loop outside of New Building Stair on Educational Boulevard. Provide a sidewalk along Educational Boulevard to the main drive.
- New metal roofing system will be installed over the sixth-grade classrooms and at the classrooms above the cafeteria.
- Demolish the existing main entrance canopy and construct new a canopy as indicated on elevations and renderings.
- Create new entrances included piers and adjusting roof canopies at the sixth-grade entrance, rear gym entrance, and new entrance at new interior stair that exits to Educational Boulevard. Install new signage at each entrance.
- Install metal panel screen system on the exterior of the Auditorium as indicated on the elevation drawings.
- Install new decorative corrugated/perforated metal panel screen system as indicated on the elevation drawings.
- Demolish skylights at Cafeteria and create new clerestory windows.
- Reconfigure flag pole plaza to align with new main entrance canopy. Surround flag plaza with a new low masonry seat wall.
- Clean and Stain all of the existing exterior architectural concrete block veneer to create a uniform appearance.
- Replace the low slope roof system on the entire building. Replace miscellaneous skylights and roof accessories during the replacement of the roof system. Existing roof insulation is to be re-used with additional insulation added to meet energy code requirements. The basis of design for the new roof system to be Garland KEE low slope roof assembly.



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SCHEMATIC DESIGN NARRATIVE – HVAC

6th Grade Classroom Wing

1. The formally renovated 6th grade classroom wing is served by a single variable air volume packaged rooftop unit, RTU-2. This unit and all associated outdoor ductwork and piping will be removed as part of this renovation.
2. The four remaining existing fan powered boxes serving the Library and adjacent spaces will be replaced in kind during this phase.

8th Grade Classroom Wing

1. The entire 8th grade wing is served by a single variable air volume packaged rooftop unit, RTU-1. This unit and all associated outdoor ductwork and piping will be removed as part of this phase.
2. Downstream of the existing rooftop unit is a supply and return ductwork system serving all spaces in the 8th grade wing. The main duct trunks running in the corridor were installed in 1973 and the remaining downstream ductwork was installed in 1991. All of the supply and return ductwork on this floor of the 8th grade wing will be replaced as part of this phase.
3. Each zone has a constant volume fan powered terminal unit equipped with a hot water reheat coil. These fan powered boxes were installed in 1991 and have exceeded their serviceable life expectancy. Each box will be replaced in kind with a new series fan powered terminal unit equipped with a hot water reheat coil. It is anticipated that there will be roughly 26 new fan powered boxes. Zoning of each fan powered box will be reviewed with the owner during the design development phase.
4. Each set of gang toilet rooms in the 8th grade wing will be renovated in their entirety. These toilet rooms are served by roof mounted exhaust fans that appear to be original to the 1973 project. These fans and all associated exhaust ductwork will be removed and replaced in their entirety.

2nd Floor Mechanical Room

1. Two new floor mounted air handling units (AHU) will be located in this room, one unit to serve the 6th grade wing, and the other unit to serve the 8th grade wing. Each unit will have the following performance characteristics and accessories:
 - a. ~25,000 CFM of supply air
 - b. Chilled water cooling / Hot water heating
 - c. Energy recovery section
 - d. Enthalpy economizer
 - e. Remote return fan
 - f. MERV 13 filters
 - g. Field supplied automatic temperature controls
2. A 150-ton packaged air cooled chiller will be located on the roof above this mechanical room. All chilled water pumps, expansion tank, air separator, chemical feeder, and all associated piping will be located within the 2nd floor mechanical room. This chiller will serve the two new indoor AHUs only.

Visual Arts Wing (1st floor) & 7th Grade Classroom Wing (2nd floor)

BPSD – Renovations to IMS – Phase 2
Schematic Design – HVAC Scope of Work Description

1. Both floors of this area of the building are served by a single variable air volume packaged rooftop unit that was installed in 2003. This rooftop unit will be replaced with a unit with the following performance characteristics and accessories:
 - a. ~25,000 CFM of supply air
 - b. Direct expansion (DX) cooling / Hot water heating
 - c. Energy recovery section
 - d. Enthalpy economizer
 - e. Powered exhaust/return fan
 - f. MERV 13 filters
 - g. Field supplied automatic temperature controls
2. Downstream of the existing rooftop unit is a supply and return ductwork system serving all spaces in the area of the building. Portions of the main duct trunks were installed in 1973 and the remaining downstream ductwork was installed in 1991. All of the supply and return ductwork on both floors will be replaced as part of this phase.
3. Each zone has a constant volume fan powered terminal unit equipped with a hot water reheat coil. These fan powered boxes were installed in 1991 and have exceeded their serviceable life expectancy. Each box will be replaced in kind with a new series fan powered terminal unit equipped with a hot water reheat coil. It is anticipated that there will be roughly 23 new fan powered boxes. Zoning of each fan powered box will be reviewed with the owner during the design development phase.

World Language Suite

1. The existing area that will be renovated into the 'World Language Suite' is served by a single variable air volume packaged rooftop unit. This rooftop unit and all associated downstream ductwork will be removed as part of this phase.
2. A new variable air volume packaged rooftop unit will be provided to serve the entire World Language Suite and the four learning support and speech classrooms adjacent to the World Language Suite. This unit will have the following performance characteristics and accessories:
 - a. ~8,000 CFM of supply air
 - b. Direct expansion (DX) cooling / Hot water heating
 - c. Energy recovery section
 - d. Enthalpy economizer
 - e. Powered exhaust/return fan
 - f. MERV 13 filters
 - g. Field supplied automatic temperature controls
3. Each zone served by this RTU has a constant volume fan powered terminal unit equipped with a hot water reheat coil. These fan powered boxes were installed in 1991 and have exceeded their serviceable life expectancy. Each box will be replaced in kind with a new series fan powered terminal unit equipped with a hot water reheat coil. It is anticipated that there will be roughly 10 new terminal boxes. Zoning of each terminal box will be reviewed with the owner during the design development phase.

Auditorium

1. The auditorium is served by a single variable air volume packaged rooftop unit. The rooftop unit will be removed but the downstream supply and return ductwork will remain.
2. A new variable air volume packaged rooftop unit will be provided to serve the Auditorium. This unit will have the following performance characteristics and accessories:
 - a. ~18,000 CFM of supply air
 - b. Direct expansion (DX) cooling / Hot water heating
 - c. Enthalpy economizer
 - d. Powered exhaust fan
 - e. MERV 13 filters

- f. Field supplied automatic temperature controls

Music Suite

1. The entire music suite is served by a single variable air volume packaged rooftop unit. The age of this unit is unknown but it appears to have significant life remaining. All associated ductwork and hot water piping serving this area will be removed as part of this phase.
2. Each zone served by this RTU has a constant volume fan powered terminal unit equipped with a hot water reheat coil. These fan powered boxes were installed in 1991 and have exceeded their serviceable life expectancy. Each box will be replaced in kind with a new series fan powered terminal unit equipped with a hot water reheat coil. It is anticipated that there will be roughly 7 new terminal boxes. Zoning of each terminal box will be reviewed with the owner during the design development phase.

Cafeteria Lobby

1. A single constant volume packaged rooftop unit serves the Lobby adjacent to the Cafeteria and Kitchen. This unit will be replaced in kind as part of this phase. All existing ductwork will remain. This unit will have the following performance characteristics and accessories:
 - a. ~3,000 CFM of supply air
 - b. Direct expansion (DX) cooling / Natural gas heating
 - c. Enthalpy economizer
 - d. Powered exhaust fan
 - e. MERV 13 filters
 - f. Field supplied automatic temperature controls

Cafeteria

1. The cafeteria is served by two packaged rooftop units. The age of these units is unknown but they appear to have significant life remaining. These units will not be replaced as part of this project.
2. A new ceiling is being provided in the Cafeteria. All existing grilles, registers, and diffusers in the cafeteria will be demolished and replaced in kind in the new ceiling. Extend branch ductwork as needed to connect to new GRDs.
3. The gang toilet rooms adjacent to the cafeteria are being moved. Rework exhaust ductwork as needed to accommodate the new located of the toilet rooms. Replace the roof mounted exhaust fan in kind.

Kitchen

1. The kitchen is served by a single, gas fired, make up air unit and delivers the conditioned air directly to the kitchen. This unit will be replaced with a packaged rooftop unit with the following performance characteristics and accessories:
 - a. Supply air roughly equal to the sum of the grease hood exhaust flow rates
 - b. Direct expansion (DX) cooling / Natural gas heating
 - c. Enthalpy economizer
 - d. Powered exhaust fan
 - e. MERV 13 filters
 - f. Field supplied automatic temperature controls
2. Remove and replace each roof mounted grease hood exhaust fan. New exhaust fan shall match the flowrate required by the grease hood manufacturer. Exhaust fans shall conform with UL-762.
3. Provide a new exhaust fan for the dishwasher condensate hood.

Ground Floor Area C (New Health Suite)

BPSD – Renovations to IMS – Phase 2
Schematic Design – HVAC Scope of Work Description

1. This area is being completely reconfigured. All existing equipment, ductwork, piping, GRDs, and controls shall be removed in their entirety. Remove all associated roof mounted exhaust fans. Hot water supply and return piping running through the existing locker room area feeding into the gymnasium needs to remain in service.
2. A new variable air volume packaged rooftop unit will be provided to serve the this area. Supply and return ductwork will need to be routed down to the ground floor through the Music Suite. This unit will have the following performance characteristics and accessories:
 - g. ~7,000 CFM of supply air
 - h. Direct expansion (DX) cooling / Natural gas heating
 - i. Enthalpy economizer
 - j. Powered exhaust fan
 - k. MERV 13 filters
 - l. Field supplied automatic temperature controls
3. Each occupiable space or zone will be provided with either a series fan powered box or a single duct variable air volume terminal unit. Each box/unit will be provided with a hot water reheat coil. It is anticipated that there will be roughly 6 new terminal boxes. Zoning of each terminal box will be reviewed with the owner during the design development phase.
4. A new roof mounted exhaust fan will provide all required exhaust for the renovated locker and toilet rooms.

Controls

1. All new equipment replaced during this project will be tied into the building's existing Krueter DDC control system. The pneumatic control system will need to remain in place until the remainder of the building is renovated.



**Renovations to Independence Middle School - Phase 2
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SCHEMATIC DESIGN NARRATIVE – PLUMBING & FIRE PROTECTION

Plumbing

1. Replace domestic water piping, fittings and valves in the school, not renovated in Phase 1
2. Completely renovate 1st floor and 2nd floor gang toilet rooms not renovated in Phase 1. Adjustments to the plumbing piping and fixture spacing will be necessary to make the toilet rooms code compliant. The existing faucets and flush valves in the 1st and 2nd floor toilet rooms are manually operated. The new water closets and urinals will have hardwired sensor operated flush valves installed. The new lavatory faucets will be manual operation.
3. Ground floor corridor: Renovate existing toilet rooms to provide four individual toilet rooms.
4. Ground floor locker rooms: Gang toilet rooms, showers and individual toilet/shower rooms to be reconfigured.
5. First floor: Relocate gang toilet rooms near cafeteria.
6. First floor: Provide plumbing revisions as required for the reconfigurations in the cafeteria/serving area. Dishwashing room to be relocated.
7. First floor: Provide plumbing revisions as required for the reconfiguration of the laundry under the existing ramp to be removed.
8. First floor: Provide plumbing revisions as required for the reconfiguration of the Nurse's Suite and renovation of toilet rooms to be ADA compliant.
9. Second Floor: Renovate single user toilet rooms.
10. General: Provide plumbing revisions to sink locations as required for various room reconfigurations.

Fire Protection

1. Provide new automatic sprinkler system in areas of the school not included in Phase 1.
2. The new elevator will be provided with an elevator sump pump as required by code and a sidewall sprinkler in the bottom of the hoist way. The elevator sump pump discharge will be routed to the nearest service sink.



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SCHEMATIC DESIGN NARRATIVE – ELECTRICAL & TECHNOLOGY

Power Distribution

1. Utility Electrical Service

- a. Existing 277/480 volt, 3 phase, 4 wire service to remain, including pad-mounted utility transformer and associated service feeder.

2. Normal Power Service

- a. Existing 3000A, 480Y/277 volt, 3 phase, 4 wire switchboard located in Boiler Room to remain.
- b. Remove existing electrical distribution equipment within Phase 2 area of work.
- c. Provide the following equipment in the Boiler Room:
 - (1) One 100A, 277/480 volt branch panelboard to serve lighting loads within approximately 300' of panelboard.
 - (2) One 400A, 277/480 volt branch panelboard will serve HVAC equipment within approximately 300' of panelboard.
 - (3) One 225 KVA step-down, dry-type, energy star rated transformer to feed distribution panelboard.
 - (4) One 800A, 120/208 volt distribution panelboard to feed 120/208 volt branch panelboards within approximately 300' of distribution panelboard.
 - (5) Two 225A, 120/208 volt branch panelboards to feed receptacle loads located within approximately 125' of panelboard.
 - (6) One 75KVA step-down, dry-type, energy star rated transformer to feed stage dimming racks.
- d. Provide the following equipment in an Electrical distribution room located in the Art area:
 - (1) One 100A, 277/480 volt branch panelboard to serve lighting loads within approximately 300' of panelboard.
 - (2) One 60A, 277/480 volt branch panelboard fed from the Life Safety transfer switch (described below) to serve emergency lighting loads within approximately 300' of panelboard.
 - (3) One 400A, 277/480 volt branch panelboard will serve HVAC equipment within approximately 300' of panelboard.
 - (4) One 225 KVA step-down, dry-type, energy star rated transformer to feed distribution panelboard.
 - (5) One 800A, 120/208 volt distribution panelboard to feed 120/208 volt branch panelboards within approximately 300' of distribution panelboard.
 - (6) Two 225A, 120/208 volt branch panelboards to feed receptacle loads located within approximately 125' of panelboard.
- e. Provide the following equipment in an Electrical distribution room located in the Music area:
 - (1) One 100A, 277/480 volt branch panelboard to serve lighting loads within approximately 300' of panelboard.
 - (2) One 225A, 277/480 volt branch panelboard will serve HVAC equipment within approximately 300' of panelboard.
 - (3) Two 225A, 120/208 volt branch panelboards to feed receptacle loads located within approximately 125' of panelboard.
- f. Provide eight additional 150A, 120/208 volt branch panelboards located on the second floor to feed receptacle loads located within approximately 125' of panelboards. Branch panelboards to be fed from nearest distribution panelboard.
- g. Provide three 120/208 volt panelboards in Kitchen to feed kitchen equipment fed from distribution panelboard located in Boiler Room.

3. Emergency Power

BPSD – Renovations to IMS – Phase 2
Schematic Design - Electrical & Technology Scope of Work Description

- a. Demolition: Upon complete installation of new generator, remove existing generator and automatic transfer switch.
 - b. Emergency power will be supplied from a 375KW, 277/480 volt, 3 phase, 4 wire, diesel-fueled emergency generator (purchased under Phase 1, installed under Phase 2).
 - c. Generator will be located outside near the utility transformer and will be furnished with an outdoor weatherproof enclosure package.
 - d. EC will provide concrete pad per manufacturer's requirements and ductbank and feeders into ATS Room.
 - e. Generator will feed two automatic transfer switches located in the ATS Room. One 150A transfer switch will only serve essential Life Safety loads (egress lighting, fire alarm, etc.) and the second 400A transfer switch will serve all non-essential Emergency Standby loads (kitchen cooler, kitchen refrigerators, kitchen milk coolers, data/networking equipment, telephone equipment, security system equipment, building heating plant, domestic hot water boilers/pumps, receptacles and ventilation in Cafeteria, elevator, etc.)
 - f. Life Safety transfer switch will feed a 150A, 277/480 volt panelboard, a 30KVA step-down transformer, and a 100A, 120/208 volt panelboard all located in the ATS Room. Additional 277/480 volt panelboards to be located as described above and fed from the 150A, 277/480 volt panelboard located in the ATS Room.
 - g. Emergency Standby transfer switch will feed a 400A, 277/480 volt panelboard, a 112.5KVA step-down transformer, and a 400A, 120/208 volt panelboard all located in the ATS Room.
 - h. Provide new feeder from 120/208 volt panelboard to existing panel 1AESL1 (installed in Phase 1).
 - i. Emergency generator annunciator panel will be located in maintenance office.
4. General:
- a. Wiring will be minimum #12AWG and will be run in minimum ¾" EMT conduit.
 - b. Power to all HVAC and plumbing equipment as required. Local disconnect switches will be located where required by code.
 - c. Power to all kitchen equipment. Local disconnect switches will be located where required by code.
 - d. Minimum of four receptacles and one tele/data rough-in in each office, work room, etc.
 - e. Minimum of twelve receptacles and four tele/data rough-ins in each classroom.
 - f. Convenience receptacles located in each storage room and minimum every 40' in corridors.
 - g. Rough-ins for all technology equipment (i.e. audio/visual devices, telephone/data jacks, security cameras, access control devices, etc.).
 - h. Provide power to, and install, hand dryers in all toilet rooms.
 - i. Power to automatic flush valves furnished by PC.

Lightning Protection System

1. Maintain existing lightning protection system. Provide disconnection and reconnection at roof-mounted equipment as required.

Site Electrical Work

1. Installation of emergency generator and associated feeder as described above.
2. Concrete pad for generator.
3. Site lighting as described below.

Fire Alarm System

1. Demolition: Upon complete installation of new fire alarm system, remove existing horn system and existing devices in Phase 2 construction areas.
2. Provide the following devices connected to existing voice annunciated fire alarm system control panel (installed in Phase 1):
 - a. Combination speaker/strobe devices located every 30' in corridors.
 - b. Combination speaker/strobe devices located in every classroom, conference room, and similar public gathering space.
 - c. Combination speaker/strobe devices located in each toilet room.

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- d. Connection to fire suppression system tamper switches and flow switches.
 - e. Duct detectors as required by HVAC design.
 - f. Connection to ansul system in kitchen.
 - g. Connection to all fire-rated doors for automatic closure.
3. Provide programming of speaker devices installed in Phase 1 to match voice annunciation of new devices.

Lighting

1. Demolition: Existing lighting, controls, and associated branch circuit wiring in Phase 2 construction areas to be removed in their entirety and replaced with new.
2. Emergency:
 - a. Die-cast aluminum LED exit signs located at each means of egress at a maximum distance of 100' from each other fed from the normal emergency panelboard.
 - b. Select light fixtures in corridors will be circuited to Life Safety emergency panelboards and routed through emergency relay packs as described below to function as emergency lighting. Emergency light fixtures will be located no more than 30' from each other.
 - c. Select light fixtures in Cafeteria, Gymnasium and Library will be circuited to Life Safety emergency panelboard and routed through emergency relay packs as described below.
 - d. One light fixture per toilet room will be circuited to Life Safety emergency panelboard and routed through emergency relay packs as described below.
 - e. One light fixture per classroom will be circuited to Life Safety emergency panelboard and routed through emergency relay packs as described below.
 - f. Emergency feed to stage dimming panel for automatic transfer to emergency lighting in Auditorium.
3. Controls:
 - a. Networked, digital lighting control system with relay packs located local to the spaces they are controlling.
 - b. Relays to control all building-mounted exterior lighting with two levels of lighting for each circuit and a low-voltage override switch located in the building.
 - c. Relays to control all exterior pole-mounted lighting with two levels of lighting for each circuit and a low-voltage override switch located in the building.
 - d. Normal and emergency corridor lighting circuits will be controlled by occupancy sensors and relays packs located near the panelboards of origin. Low-voltage override switches to be located in all corridors for local control.
 - e. Emergency relay packs will be UL listed for emergency transfer operation so that all light fixtures can be controlled through the same control system.
 - f. All spaces will have occupancy sensors for automatic shut-off of lighting.
 - g. All spaces containing windows will have ambient light sensors for daylight sensing and automatic dimming controls in response to daylight.
4. Exterior:
 - a. Building mounted LED wedge style wall packs or recessed downlights on Life Safety emergency power at each exit discharge. Lights will be programmed to be on from dusk to dawn.
 - b. Building mounted high-output LED wedge style wall packs around building for security lighting. Lights will be programmed to go on at dusk and turn off during the night.
 - c. Recessed linear light fixtures at new main canopy on Life Safety emergency power. Lights will be programmed to be on from dusk to dawn.
 - d. Existing pole-mounted light fixtures at main drive and parking lots to remain.
 - e. Decorative LED fixtures on a maximum 12' high poles located at new sidewalk and stair along Educational Blvd.
5. Interior:
 - a. All new light fixtures to have dimmable LED light source.

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- b. Utility Spaces: Pendant/surface mounted LED strip fixtures (Lithonia Z Strip or equal).
- c. Classrooms: Recessed architectural troffer (Mark Lighting Whisper or equal).
- d. Offices: Recessed architectural troffer (Mark Lighting Whisper or equal).
- e. Locker Rooms: Surface mounted vandal-resistant fixtures (Kenall Millennium Stretch or equal).
- f. Storage rooms: Recessed flat-panel (Elite Lighting FPL1 or equal).
- g. Corridors: Recessed flat-panel (Elite Lighting FPL1 or equal).
- h. Toilet rooms: Recessed flat-panel (Elite Lighting FPL1 or equal).
- i. Gymnasium: Pendant mounted high-output fixtures with conical, prismatic lens and wire guard (Lithonia JBL or equal).
- j. Library: Combination of 4" wide recessed linear fixtures (Finelite Series 19 or equal), recessed architectural troffers (Mark Lighting Whisper or equal), and decorative accent lighting.
- k. Cafeteria: Combination of 4" wide recessed linear fixtures (Finelite Series 19 or equal), recessed architectural troffers (Mark Lighting Whisper or equal), and decorative accent lighting.
- l. Auditorium: Recessed downlights to replace existing downlights.
- m. Stage: Theatrical-type stage lighting dimming system utilizing LED lamping, including three stage electrics, front of house electric at catwalk, and DMX controls.

Network Infrastructure

- 1. Demolition: Remove existing telephone/data jacks and associated cabling, cable tray, racks, etc.
- 2. Network Closets
 - a. MDF near Library (Existing to remain)
 - b. IDF in 6th Grade wing (Existing to remain)
 - c. New IDF in Health area (Ground Floor)
 - (1) 4 post racks as required to support switch quantity.
 - (2) Ladder rack above racks to support cabling.
 - d. New IDF in Music area (First Floor)
 - (1) 4 post racks as required to support switch quantity.
 - (2) Ladder rack above racks to support cabling.
 - e. New IDF in 7th Grade wing (Second Floor)
 - (1) 4 post racks as required to support switch quantity.
 - (2) Ladder rack above racks to support cabling.
 - f. New IDF in 8th Grade wing (Second Floor)
 - (1) 4 post racks as required to support switch quantity.
 - (2) Ladder rack above racks to support cabling.
- 3. Cabling Infrastructure
 - a. Cable tray throughout all corridors. J-hooks for cabling outside of trays.
 - b. CAT6A cabling to all network jacks and device. Terminated on patch panels and provided with a switch side patch cord.
 - c. 12 Strand OM4 multimode fiber from the MDF to each new IDF.
 - d. 12 Strand OS2 singlemode fiber from the MDF to each new IDF.
 - e. 25 pair CAT5e from the MDF to each new IDF for miscellaneous phone/fax requirements.
 - f. 3/0 grounding wire from main electrical service, to the MDF, to each IDF and back to the main grounding bar in the main electrical service.
- 4. Network Hardware
 - a. All network hardware including core switches, POE edge switches, firewalls, wireless access points, servers, etc. shall be provided by the owner.

Communications

- 1. Demolition: Remove existing speakers, clocks, etc. and associated cabling.

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- a. VoIP phone system server, handsets, licensing, etc shall be provided by the owner.
2. Paging
 - a. IP based paging system that is SIP compliant for two-way communication via the VoIP phone system installed in Phase 1. Provide the following devices connected to existing system:
 - (1) Speakers throughout all corridors spaced every 40’.
 - (2) One-way speakers in classrooms and call-in button with integral microphone.
 - (3) Speakers on all sides of the exterior of the building.
3. Synchronized Clocks
 - a. POE powered digital clocks in common areas and classrooms that receive updates from an NTP time server via the network.
4. Digital Signage
 - a. Electrical and telecommunication rough-ins shall be provided for digital signage in the cafeteria, lobbies and at locations requested by the school district.
 - b. The owner shall provide digital signage players and displays.

Security

1. Access Control
 - a. Card readers at all exterior doors that require ingress.
 - b. Door position switches and audible alarms on all exterior doors.
 - c. Card readers on interior doors that require monitored access such as the network closets.
 - d. All access control components shall be compatible with Johnson Controls CCure access control system to match district standard.
2. Surveillance
 - a. CAT6A cabling for surveillance cameras throughout all common spaces and on building exterior.
 - b. Cameras and licensing by contractor, Meraki to match district standard.

Audio Visual Systems

1. Classrooms
 - a. The classroom AV system shall consist of an interactive display (furnished by owner), audio system with sound bar at display, wireless microphone, hardwired HDMI and USB at teacher’s station, and wireless connectivity.
2. Music Classrooms
 - a. Music Rooms shall receive a typical classroom AV system but with a high end audio system. A digital mixing console shall be provided which will allow musical instruments to connect the audio system for amplification or recording.
3. Cafeteria
 - a. The cafeteria shall receive a simple sound system ceiling mounted speakers, a controls system, and wireless microphones.
4. Gymnasium

- a. The Gymnasium shall receive a sound system with speakers hung from the structure, a controls system and wireless microphones.

5. Auditorium/Stage

- a. Large venue sound system with line array speakers.
- b. Reuse existing mixing console.
- c. 2 channels of digital wireless microphones for general use. Additional microphones shall be rented when needed for theatrical productions.
- d. Wall mounted microphone and AV jacks at proscenium opening, on stage and at back of house.
- e. New laser projector to be used with existing projection screen.
- f. Touch screen control system with wall mounted controller and wireless control via iPad.
- g. Lectern with integral video switcher, Blu-ray player and control panel.
- h. Communication pathways between auditorium and music rooms for queuing.