

Requirement Detail

by Asset Name and Category

LOWELL

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell - Parking
Asset Number: 520a

Requirement Name	Vehicular Paving: Asphalt Parking Lots		
Linked System	Parking Lots	Inspection Date	08/01/2006
Prime System	Paving and Surfacing	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Inspec	Actual Cost	0
Action Date	08/01/2009	Total Estimated Cost:	94,400
Funding Year	-	Funding Type	-
Requirement Location	Asphalt Lot	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Asphalt parking and drive areas at site will need overlay in 3-5 years.

PHOTOS

ACTION DESCRIPTION

Overlay asphalt parking lots and drives at site.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell - Parking
Asset Number: 520a

Requirement Name	Vehicular Paving: Asphalt Parking Lots		
Linked System	Parking Lots	Inspection Date	08/01/2006
Prime System	Paving and Surfacing	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Inspec	Actual Cost	0
Action Date	08/01/2007	Total Estimated Cost:	35,400
Funding Year	-	Funding Type	-
Requirement Location	Asphalt Parking Lots	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Several areas of damaged pavement are present in parking lots and drives.

PHOTOS

ACTION DESCRIPTION

Repair areas of severely damaged pavement at site.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell - Parking
Asset Number: 520a

Requirement Name	Vehicular Paving: Gravel Drives		
Linked System	Parking Lots	Inspection Date	08/01/2006
Prime System	Paving and Surfacing	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	Inspec	Actual Cost	0
Action Date	-	Total Estimated Cost:	94,400
Funding Year	-	Funding Type	-
Requirement	Gravel Drives	Annual Energy/Ops	-
Location		Savings \$	
Savings Description	-		

REQUIREMENT DESCRIPTION

Gravel drives at site should be paved in future along with new curbing installation in these areas.

PHOTOS

ACTION DESCRIPTION

Install new curbing and pave gravel drivest at site.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell - Sidewalks
Asset Number: 520b

Requirement Name	Pedestrian Paving: Concrete Sidewalks and Curbs		
Linked System	Pedestrian Paving	Inspection Date	08/01/2006
Prime System	Paving and Surfacing	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Inspec	Actual Cost	0
Action Date	08/01/2007	Total Estimated Cost:	23,600
Funding Year	-	Funding Type	-
Requirement Location	Sidewalks	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Several areas of damaged concrete sidewalk are present at site.

PHOTOS

ACTION DESCRIPTION

Repair/replace damaged concrete sidewalk and curbing at site.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell - Site
Asset Number: 520c

Requirement Name	Site: Drainage Improvements	Inspection Date	08/01/2006
Linked System	Site Improvements	Finish Date	-
Prime System	Erosion Control Measures	Status	Open
Priority	2- Potentially Critical (1-2 Yrs)	Actual Cost	0
Inspector Name	Inspec	Total Estimated Cost:	118,000
Action Date	08/01/2007	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	South of Building		
Savings Description	-		

REQUIREMENT DESCRIPTION

Area south of building slopes and drains towards building and adjacent sidewalk areas. Culvert pipe under drive northeast of building is heaved.

PHOTOS

ACTION DESCRIPTION

Regrade the area south of the building to improve drainage away from the building and adjacent sidewalks. May require installation of new catch basins or drantile system and restoration of some sidewalks and playground areas. Replace heaved culvert northeast of building.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Accessibility

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Equipment and Furnishings: Accessibility		
Linked System	Equipment and Furnishings	Inspection Date	11/12/2006
Prime System	Equipment and Furnishings	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	JQP Inc.	Actual Cost	0
Action Date	11/12/2009	Total Estimated Cost:	5,192
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

This requirement includes accessibility issues related to high public use areas of the school, including auditoriums, stadiums, gymnasiums, ticket counters, and the main office. Items include: providing wheelchair viewing positions, providing access to the stage, providing an assistive listening system and lowering counters.

It also includes accessibility issues found in Specialty Areas (science labs, cooking labs, industrial arts areas, as well as the media center/library). Items include: providing accessible work stations in kitchens, providing accessible labs and lowering eyewashes.

PHOTOS



Equipment and Furnishings: Accessibility

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ACTION DESCRIPTION

Correct accessibility issues as required.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Accessibility

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Interior Construction: Accessibility		
Linked System	Interior Construction	Inspection Date	11/12/2006
Prime System	Interior Construction	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	JQP Inc.	Actual Cost	0
Action Date	11/12/2009	Total Estimated Cost:	15,109
Funding Year	-	Funding Type	-
Requirement Location	Interior	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

This requirement includes accessibility issues encountered while you move through the school. Items include: providing elevator or ramp, adding/modifying handrails (only if the level is not served by an elevator or other accessible route), widening doors, replacing door hardware, eliminating protruding hazards and all permanent room identification signage as well as directional signage (adding signs, replacing signs and relocating signs).

PHOTOS



Interior Construction: Accessibility

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ACTION DESCRIPTION

Make necessary modifications to correct accessibility issues as needed.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Accessibility

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Plumbing: Accessibility	Inspection Date	11/12/2006
Linked System	Plumbing	Finish Date	-
Prime System	Plumbing	Status	Open
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Actual Cost	0
Inspector Name	JQP Inc.	Total Estimated Cost:	16,452
Action Date	11/12/2009	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	Plumbing throughout		
Savings Description	-		

REQUIREMENT DESCRIPTION

This requirement includes accessibility issues in toilet rooms, locker/shower rooms and drinking fountains. All requirements for upgrading a toilet or locker/shower room are included in this category, even if they are not plumbing (i.e. relocating stall partitions to provide 60 in. wide stall, relocating toilet paper dispenser or grab bars, etc.). Items include: replacing drinking fountains, raising/lowering toilets, installing grab bars, relocating toilet paper or towel dispensers, adding handheld shower wands, and providing 60 in. wide fully compliant toilet stalls.

Note: the actual cost to complete work in toilet rooms may be increased by a decision to do work beyond what is required for accessibility, such as re-tiling, replacing all fixtures, replacing all stall partitions, etc.

PHOTOS



Plumbing: Accessibility

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ACTION DESCRIPTION

Upgrades as needed to meet plumbing accessibility requirements.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Accessibility

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Site Improvements: Accessibility		
Linked System	Site Improvements	Inspection Date	11/12/2006
Prime System	Site Improvements	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	JQP Inc.	Actual Cost	0
Action Date	11/12/2009	Total Estimated Cost:	3,699
Funding Year	-	Funding Type	-
Requirement Location	Exterior	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

This requirement includes accessibility issues from the moment you are on school grounds until you get to the front door. Items include: adding and identifying accessible parking and adding or modifying accessible routes (sidewalks).

PHOTOS



Site Improvements: Accessibility

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ACTION DESCRIPTION

Correct exterior accessibility issues as required.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Air and Water Quality

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC - Dehumidification Chiller and Piping Mains		
Linked System	Chilled Water Distribution	Inspection Date	07/12/2006
Prime System	Chilled Water Distribution	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	-	Total Estimated Cost:	476,012
Funding Year	-	Funding Type	-
Requirement Location	Entire Building	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Lowell Elementary School has no means of dehumidification. Without dehumidification capabilities, these spaces cannot meet ASHRAE 55-1992 space design conditions.

PHOTOS



HVAC - Dehumidification Chiller and Piping Mains

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ACTION DESCRIPTION

Addition of an air cooled chiller, pumps, and insulated chilled water pipe distribution system. Chiller to be screened for appearance purposes.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Air and Water Quality

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Add Dehumidification to Classroom and Office Areas		
Linked System	Cooling Generating Systems	Inspection Date	07/12/2006
Prime System	Cooling Generating Systems	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	-	Total Estimated Cost:	1,451,990
Funding Year	-	Funding Type	-
Requirement Location	Classrooms, Offices, and Media Center - 1993 Addition	Annual Energy/Ops Savings \$	4,305
Savings Description	Energy savings will be generated by using heat exchangers to recover exhaust air energy in order to pre-condition make-up air. In addition, each classroom occupancy controls will reduce ventilation rates and control the lighting to save energy when rooms are not in use. Additional energy will be consumed to provide dehumidification during the cooling months.		

REQUIREMENT DESCRIPTION

The four air handling units serving the classrooms, offices, and media center have no means of dehumidification. Without dehumidification capabilities, these spaces cannot meet ASHRAE 55-1992 space design conditions.

The existing ductwork in the classrooms is exposed spiral. The duct is quiet but the hard roof deck creates a noisy classroom environment. The systems are also multi-zone and do not have individual room reheats. New VAV boxes and an acoustical tile ceiling are desired.

As part of this upgrade, the new mechanical system will incorporate heat recovery and classroom occupancy / CO2 controls to save energy.

PHOTOS



HVAC: Add Dehumidification to Classroom and Office Areas

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ACTION DESCRIPTION

Addition of a dehumidification coils to four air handling units serving the classrooms, offices and media center via modification and internal closed cell AHU liner. The supply duct would be externally insulated in mechanical rooms and above ceilings. Upgrade the controls system. Test and Balance and Commissioning of the air handling systems.

VAV boxes with hot water reheat coils would be added to the exposed spiral ductwork in the classrooms, as well as the office and media center ductwork. The ductwork would be externally insulated. New acoustical tile ceilings would be installed. New lighting as well.

Airflow to the staff lounge would be increased, as it is always warm due to the added heat producing equipment (pop machine, refrigerators, laminator, etc.)

A new exhaust fan would be installed for the staff lounge toilet rooms. It is currently served by an exhaust fan located a long way away. The exhaust fan is currently not providing adequate exhaust.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Air and Water Quality

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Provide Negative Pressure in Crawlspace/Tunnels		
Linked System	Exhaust Ventilation Systems	Inspection Date	07/15/2006
Prime System	Exhaust Ventilation Systems	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	07/15/2007	Total Estimated Cost:	24,780
Funding Year	-	Funding Type	-
Requirement Location	1960 Barnes Wing	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

The tunnels have dirt floors and if not under negative pressure can transfer odors to the floors above due to the pipe and duct penetrations. The tunnels are also present opportunity for mold growth.

PHOTOS

ACTION DESCRIPTION

Install exhaust fans and outdoor air intakes as required to ventilate tunnels, as well as maintain negative pressure.

Two Locations back to boiler room to common fan. Need to close of tunnel entrances.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Air and Water Quality

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Plumbing: Replace Galvanized Domestic Water Piping		
Linked System	Domestic Water Distribution	Inspection Date	07/12/2006
Prime System	Domestic Water Distribution	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	07/12/2007	Total Estimated Cost:	94,400
Funding Year	-	Funding Type	-
Requirement Location	Barnes Wing - 1960 Building and 1962 Addition	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

The 46 year old domestic water distribution piping consists of galvanized piping which is connected via lead based solder. Current flushing procedures have maintained lead levels at an acceptable level. As the piping continues to age, this may not be possible.

During this process the domestic water piping system from the 1993 building would be connected to the Barnes 1960 Building and the 1962 Addition which would allow for a single hot water plant.

There are also two extra small toilets, one in the boys and one in the girls that are difficult to use and maintain.

PHOTOS



Plumbing: Replace Galvanized Domestic Water Piping

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ACTION DESCRIPTION

Remove all galvanized domestic water distribution piping as well as faucets and fixtures containing lead solder. Install insulated copper piping and fixtures/faucets where required. Wall cutting and patching would be required.

Interconnect the domestic water systems from the 1960 Barnes Wing and the 1962 Addition to the 1993 Addition.

All Costs in USD.

Replace the two (2) extra small water closets in the 1960 Barnes Wing.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Air and Water Quality

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Service Tunnels: Floor Vapor Barrier		
Linked System	Other Site Construction	Inspection Date	08/01/2006
Prime System	Service and Pedestrian Tunnels	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	Inspec	Actual Cost	0
Action Date	-	Total Estimated Cost:	1,180
Funding Year	-	Funding Type	-
Requirement Location	1960 Building	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Exposed dirt areas contributing to air quality issues.

PHOTOS



Service Tunnels: Floor Vapor Barrier

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ACTION DESCRIPTION

Install poly vapor barrier over exposed earth areas.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Appearance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Site Improvements: General Landscaping	Inspection Date	10/03/2006
Linked System	Site Improvements	Finish Date	-
Prime System	Site Improvements	Status	Open
Priority	2- Potentially Critical (1-2 Yrs)	Actual Cost	0
Inspector Name	Northern Lights Landscaping	Total Estimated Cost:	5,139
Action Date	10/03/2007	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	Property around facility		
Savings Description	-		

REQUIREMENT DESCRIPTION

There are areas around the facility (lawn, trees, shrubs and perennials) that require care to improve appearance. There are negative slope areas around the facility bringing drainage towards the facility instead of away from the facility. There are lawn areas around the immediate building requiring restoration.

PHOTOS

ACTION DESCRIPTION

Pruning, cultivating and mulching of existing trees, shrubs and perennials. Correct negative slope around foundations by installing soil and sod. Restore lawn at stressed and/or non existing lawn areas around immediate building by installing soil and sod.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Appearance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Wall Finishes: Paint Interior	Inspection Date	07/28/2006
Linked System	Wall Finishes	Finish Date	-
Prime System	Wall Finishes	Status	Open
Priority	4- Mid Term Needs (6-10 Yrs)	Actual Cost	0
Inspector Name	Siddens, Lance	Total Estimated Cost:	13,098
Action Date	07/28/2012	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	Entire Interior of Building		
Savings Description	-		

REQUIREMENT DESCRIPTION

General building interior painting, current condition is good.

PHOTOS



Wall Finishes: Paint Interior

ACTION DESCRIPTION

Paint entire interior building areas.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Asbestos

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Floor Finishes: VAT	Inspection Date	07/28/2006
Linked System	Floor Finishes	Finish Date	-
Prime System	Floor Finishes	Status	Open
Priority	4- Mid Term Needs (6-10 Yrs)	Actual Cost	0
Inspector Name	Siddens, Lance	Total Estimated Cost:	19,647
Action Date	07/28/2012	Funding Type	-
Funding Year	-	Annual Energy/Ops	-
Requirement	1960 and 1962 Addition, Rooms old	Savings \$	
Location	Gymnasium, Gym Storage, Staff Room, Head Start Office		
Savings Description	-		

REQUIREMENT DESCRIPTION

Vinyl Asbestos Tile (VAT) exists in old portion of building and doesn't meet current standards. Approximately 2000 S.F.

PHOTOS



Floor Finishes: VAT

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ACTION DESCRIPTION

Remove existing VAT and replace with vinyl composition tile (VCT), 2000 S. F.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Asbestos

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Hazardous Components: Abatement	Inspection Date	07/01/2006
Linked System	Hazardous Components Abatement	Finish Date	-
Prime System	Hazardous Components Abatement	Status	Open
Priority	1- Currently Critical (Immediately)	Actual Cost	0
Inspector Name	Wormuth, Kevin	Total Estimated Cost:	71,753
Action Date	07/01/2006	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	Entire Facility		
Savings Description	-		

REQUIREMENT DESCRIPTION

This facility was built when asbestos was a common component of many building materials. The majority of asbestos in this facility was part of the insulating materials. Some has been abated, but in some areas it is still present.

PHOTOS

ACTION DESCRIPTION

Abatement of asbestos containing materials throughtout facility.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Electrical Distribution: Outdated Panels		
Linked System	Electrical Service and Distribution	Inspection Date	08/11/2006
Prime System	Electrical Service and Distribution	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	08/11/2009	Total Estimated Cost:	8,260
Funding Year	-	Funding Type	-
Requirement Location	1960 Addition	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Electrical panels have become outdated which make it difficult to maintain and find the correct replacement parts.

PHOTOS



Electrical Distribution: Insufficient Capacity

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ACTION DESCRIPTION

New panels will replace outdated panels and new feeders will be pulled where required. The new panels will be easier to find parts for and to maintain.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Floor Finishes: VCT	Inspection Date	07/28/2006
Linked System	Floor Finishes	Finish Date	-
Prime System	Floor Finishes	Status	Open
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Actual Cost	0
Inspector Name	Siddens, Lance	Total Estimated Cost:	14,408
Action Date	07/28/2009	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	Corridor- old addition		
Savings Description	-		

REQUIREMENT DESCRIPTION

Vinyl tile in old 1960 building is ageing and drab.

PHOTOS



Floor Finishes: VCT

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ACTION DESCRIPTION

Replace old VCT with new VCT, 2000 SQFT

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Heating System Conversion - Steam to Hot Water		
Linked System	Steam Distribution Systems	Inspection Date	07/12/2006
Prime System	Steam Distribution Systems	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	07/12/2009	Total Estimated Cost:	225,970
Funding Year	-	Funding Type	-
Requirement Location	Barnes Wing - 1960 Building and 1962 Addition	Annual Energy/Ops Savings \$	5,411
Savings Description	Energy savings generated from converting from a steam system with old boilers to a hot water system that includes condensing style boiler(s).		

REQUIREMENT DESCRIPTION

The 46 year old steam system has exceeded the recommended useful life expectancy. A steam system requires substantially more maintenance than a modern hot water steam system due to steam traps, condensate pumps, and chemical treatment.

PHOTOS



HVAC: Heating System Conversion - Steam to Hot Water

ACTION DESCRIPTION

Installation of a new high efficiency boiler in the 1993 boiler room. Serve the Barnes wing from this boiler room. This would convert the entire building to hot water heating. The steam coils in AHU-1 and AHU-2 would need to be converted from steam to hot water as well. The existing steam boiler room in the 1960 Barnes wing would be demolished.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Lighting Equipment: Occupancy Sensors		
Linked System	Lighting Equipment	Inspection Date	09/19/2006
Prime System	Lighting Equipment	Finish Date	-
Priority	4- Mid Term Needs (6-10 Yrs)	Status	Open
Inspector Name	Ruud, Mark	Actual Cost	0
Action Date	09/19/2012	Total Estimated Cost:	10,026
Funding Year	-	Funding Type	-
Requirement	Classrooms	Annual Energy/Ops	-
Location		Savings \$	
Savings Description	-		

REQUIREMENT DESCRIPTION

The existing classroom occupancy sensors are single technology sensors and will need replacement in the mid term future. Dual technology sensors offer improved performance.

PHOTOS

ACTION DESCRIPTION

Remove and replace existing classroom occupancy sensors with dual technology occupancy sensors.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Plumbing: Replace Underground Sanitary Sewer Lines		
Linked System	Plumbing	Inspection Date	11/29/2006
Prime System	Plumbing	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	-	Total Estimated Cost:	29,500
Funding Year	-	Funding Type	-
Requirement Location	All Building Areas 35 Years or Older	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Underground sanitary sewer lines require replacement due to tree roots, pipe degradation, and pipe damage due to ground shifting over time.

PHOTOS

ACTION DESCRIPTION

Replace the underground sanitary sewer lines with new.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Roof System: Replace Roof	Inspection Date	08/01/2006
Linked System	Roofing	Finish Date	-
Prime System	Roofing	Status	Open
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Actual Cost	0
Inspector Name	Inspec	Total Estimated Cost:	1,281,140
Action Date	08/01/2009	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	2128
Requirement Location	Entire Building		
Savings Description	Energy savings generated from improved roof insulation.		

REQUIREMENT DESCRIPTION

Roof system beyond rated life.

PHOTOS



Roof System: Replace Roof

ACTION DESCRIPTION

Replace EPDM roof system. Sequence work with roof-level wall restoration.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Beyond Rated Life

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Site Furnishings: Playground Upgrade / Replacement		
Linked System	Site Furnishings	Inspection Date	10/03/2006
Prime System	Site Furnishings	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Earl F. Anderson	Actual Cost	0
Action Date	10/03/2009	Total Estimated Cost:	109,988
Funding Year	-	Funding Type	-
Requirement Location	Facility Grounds	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Playground equipment (built in 1990) was relocated onto the site in 1993. The playground equipment does not meet current safety and ADA requirements. Equipment is adequate for existing population.

PHOTOS



Site Furnishings: Playground Upgrade / Replacement

ACTION DESCRIPTION

Replace existing playground with new equipment to meet needs of enrollment. Replace surface material with district standard and replace edging as needed.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Building Code

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Add Exhaust Hood to Dishwasher	
Linked System	Exhaust Ventilation Systems	Inspection Date 07/12/2006
Prime System	Exhaust Ventilation Systems	Finish Date -
Priority	6- Does Not Meet Current Codes/Standards	Status Open
Inspector Name	Schumacher, Russ	Actual Cost 0
Action Date	-	Total Estimated Cost: 16,520
Funding Year	-	Funding Type -
Requirement Location	Kitchen - 1993 Addition	Annual Energy/Ops Savings \$ -
Savings Description	-	

REQUIREMENT DESCRIPTION

The existing dishwasher does not have an exhaust hood as required by the 2000 International Mechanical Code. Exhausting the dishwasher steam is critical in maintaining proper indoor air quality in the kitchen.

PHOTOS



HVAC: Add Exhaust Hood to Dishwasher

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ACTION DESCRIPTION

Add a Type II hood and dishwasher exhaust fan with the required externally insulated aluminum ductwork. Installation to comply with the 2000 International Mechanical Code.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Building Code

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Replace Classroom Unit Ventilators		
Linked System	Air Distribution Systems	Inspection Date	07/12/2006
Prime System	Air Distribution Systems	Finish Date	-
Priority	6- Does Not Meet Current Codes/Standards	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	-	Total Estimated Cost:	638,852
Funding Year	-	Funding Type	-
Requirement Location	Barnes Wing - 1960 Building	Annual Energy/Ops Savings \$	760
Savings Description	Energy savings will be generated by using heat exchangers to recover exhaust air energy in order to pre-condition make-up air. In addition, each classroom occupancy controls will reduce ventilation rates and control the lighting to save energy when rooms are not in use. Additional energy will be consumed to provide dehumidification during the cooling months.		

REQUIREMENT DESCRIPTION

The six (6) classroom unit ventilators are 46 years old and have exceeded the recommended useful life. In addition, these classroom unit ventilators are typically not capable of meeting current ASHRAE indoor air quality standards. As part of this upgrade, the new mechanical system will incorporated heat recovery and classroom occupancy / CO2 controls to save energy.

PHOTOS



HVAC: Replace Classroom Unit Ventilators

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ACTION DESCRIPTION

Remove existing classroom unit ventilators, patch wall to match existing. Replace with modern ventilation system with energy recovery with dehumidification, duct distribution system, and variable air volume boxes with hot water reheat coils
All Costs in USD.

and hot water finned tube radiation on exterior walls. Add ventilation to the ECFE Offices. Upgrade the controls systems to DDC and commission the new system.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Capacity

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Electrical Distribution: Insufficient Capacity		
Linked System	Electrical Service and Distribution	Inspection Date	08/11/2006
Prime System	Electrical Service and Distribution	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	08/11/2009	Total Estimated Cost:	16,166
Funding Year	-	Funding Type	-
Requirement Location	1960 Addition	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Existing Branch Panels are lacking capacity for additional circuits. Panels must be added to accommodate circuits needed for additional receptacles in classrooms.

PHOTOS



Electrical Distribution: Insufficient Capacity

ACTION DESCRIPTION

Provide one new 200 amp panel fed from a 75 kva transformer. New Panel will help carry the extra load of additional receptacles throughout the old section of building.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Capacity

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Add Cooling Capability to Computer Lab and IT Data Room		
Linked System	Cooling Generating Systems	Inspection Date	07/12/2006
Prime System	Cooling Generating Systems	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	07/12/2007	Total Estimated Cost:	133,930
Funding Year	-	Funding Type	-
Requirement Location	IT Data Room Located in Faculty Copy Room - 1993 Building	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

This Computer Lab and IT Data rooms get hot, which could cause technology equipment failure.

PHOTOS



HVAC: Add Cooling Capability to IT Data Room

-

ACTION DESCRIPTION

Provide a fan coil with a DX cooling coil with full economizer capability to utilize free cooling when outdoor conditions allow.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Capacity

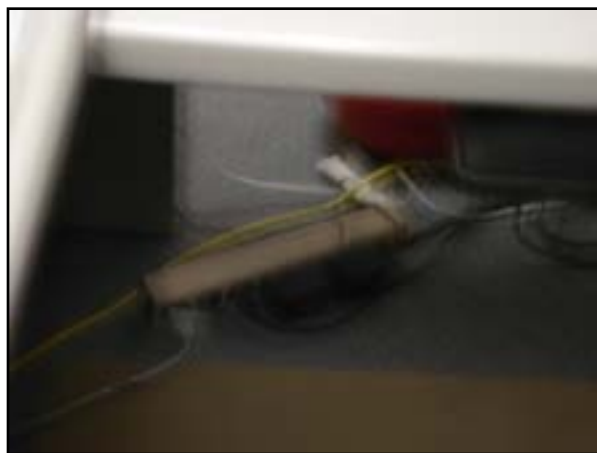
Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Wiring Devices: Insufficient Receptacles		
Linked System	Branch Wiring Devices	Inspection Date	08/11/2006
Prime System	Branch Wiring Devices	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	08/11/2009	Total Estimated Cost:	13,570
Funding Year	-	Funding Type	-
Requirement Location	1960 Addition	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

In older section of building classrooms have an insufficient number of receptacles. Computers and other electronics are plugged into power strips due to the lack of receptacles. This limits future addition of electronic devices and presents a fire hazard.

PHOTOS



Wiring Devices: Insufficient Receptacles

-

ACTION DESCRIPTION

Provide four additional 20 amp receptacle per classroom and associated branch wiring. Upgrade will first require additional branch panel boards.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Exterior Doors: Hollow Metal Doors and Frames		
Linked System	Exterior Doors	Inspection Date	07/28/2006
Prime System	Exterior Doors	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Siddens, Lance	Actual Cost	0
Action Date	07/28/2009	Total Estimated Cost:	140,125
Funding Year	-	Funding Type	-
Requirement Location	Exterior entries/miscellaneous exterior doors 1993 addition	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Existing Hollow metal dorrs and frames rust and are a maintenance problem.

PHOTOS



Exterior Doors: Hollow Metal Doors and Frames

-

ACTION DESCRIPTION

Replace existing hollow metal doors and frames with aluminum doors and frames. 35 Doors and Frames

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Exterior Walls: Wall Restoration		
Linked System	Exterior Walls	Inspection Date	08/01/2006
Prime System	Exterior Walls	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Inspec	Actual Cost	0
Action Date	08/01/2007	Total Estimated Cost:	282,020
Funding Year	-	Funding Type	-
Requirement Location	Entire Building	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Deteriorated roof-level and grade-level walls and chimney for entire building. Severe deterioration at rock-face CMU sills.

PHOTOS



Exterior Walls: Wall Restoration

-

ACTION DESCRIPTION

Tuck pointing, spot brick replacement, rock-face CMU sill replacement, joint sealant replacement, new chimney cap, and misc. items. Sequence work with reroofing at Area 2.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Exterior Windows: Replace Windows		
Linked System	Exterior Windows	Inspection Date	07/28/2006
Prime System	Exterior Windows	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Siddens, Lance	Actual Cost	0
Action Date	07/28/2009	Total Estimated Cost:	140,874
Funding Year	-	Funding Type	-
Requirement Location	1960 building	Annual Energy/Ops Savings \$	3580
Savings Description	Energy savings generated from improved window insulation values and reduced infiltration.		

REQUIREMENT DESCRIPTION

Windows in 1960 addition are aging with low quality glass.

PHOTOS



Exterior Windows: Replace Windows

ACTION DESCRIPTION

Replace existing windows with new aluminum and 1" insulating glass.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Floor Finishes: Carpet	Inspection Date	07/28/2006
Linked System	Floor Finishes	Finish Date	-
Prime System	Floor Finishes	Status	Open
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Actual Cost	0
Inspector Name	Siddens, Lance	Total Estimated Cost:	110,023
Action Date	07/28/2009	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	All Classrooms 1960 and 1993 Additions		
Savings Description	-		

REQUIREMENT DESCRIPTION

Carpet is exhibiting wear in entire building. In Approximately half of the classrooms, wear is considerably more pronounced. Carpet is most deteriorated in rooms B8, B12, B1, B3, B5, M13, R19, R21, R23, R25, R18, R20, R22, R24, R30. 15,000 S.F. in area.

PHOTOS



Floor Finishes: Carpet

-

ACTION DESCRIPTION

Replacement carpet in all classrooms. 15000 SQFT

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Floor Finishes: Embossed Rubber Sheet		
Linked System	Floor Finishes	Inspection Date	07/28/2006
Prime System	Floor Finishes	Finish Date	-
Priority	4- Mid Term Needs (6-10 Yrs)	Status	Open
Inspector Name	Siddens, Lance	Actual Cost	0
Action Date	07/28/2012	Total Estimated Cost:	7,924
Funding Year	-	Funding Type	-
Requirement Location	Corridor Staris (1993 addition), Corridor Ramp (1960 addition)	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Embossed rubber sheet flooring is exhibiting wear. Flooring is currently serviceable.

PHOTOS



Floor Finishes: Embossed Rubber Sheet

-

ACTION DESCRIPTION

Replace existing embossed rubber sheet flooring on stairs and ramp with new 550 S. F.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Ductwork Cleaning	Inspection Date	11/29/2006
Linked System	Air Distribution Systems	Finish Date	-
Prime System	Air Distribution Systems	Status	Open
Priority	4- Mid Term Needs (6-10 Yrs)	Actual Cost	0
Inspector Name	Schumacher, Russ	Total Estimated Cost:	112,100
Action Date	11/29/2012	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	-
Requirement Location	Building Wide		
Savings Description	-		

REQUIREMENT DESCRIPTION

Clean the duct systems that are not replaced by the indoor air quality upgrade.

PHOTOS

ACTION DESCRIPTION

Clean ductwork that is not replaced due to indoor air quality upgrades.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Deferred Maintenance

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Plumbing: Relocate Sump Pump Discharge		
Linked System	Plumbing	Inspection Date	07/12/2006
Prime System	Plumbing	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	07/12/2007	Total Estimated Cost:	3,304
Funding Year	-	Funding Type	-
Requirement	Barnes Wing Boiler Room Tunnel - 1960	Annual Energy/Ops	-
Location	Building	Savings \$	
Savings Description	-		

REQUIREMENT DESCRIPTION

The sump pump discharge located in the tunnel has substantial discharge piping attached to it. This piping rises and falls and plugs with sand and must be cleaned/serviced every two years. This pump is critical in removing ground water from the tunnel to reduce the potential of mold formation.

PHOTOS



Plumbing: Relocate Sump Pump Discharge

-

ACTION DESCRIPTION

Re-pipe the sump pump discharge piping from the exit outside the 1960 Building boiler room to outside the ECFE office. This will reduce the bends and discharge where ice formation will be minimized. This will reduce the maintenance required.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Energy and Operational Efficiency

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Controls: VendingMiser Vending Machine Controls		
Linked System	Controls and Instrumentation	Inspection Date	10/03/2006
Prime System	Controls and Instrumentation	Finish Date	-
Priority	1- Currently Critical (Immediately)	Status	Open
Inspector Name	Ruud, Mark	Actual Cost	0
Action Date	10/03/2006	Total Estimated Cost:	826
Funding Year	-	Funding Type	-
Requirement Location	Vending Machines	Annual Energy/Ops Savings \$	81
Savings Description	VendingMiser controls cycle power to the vending machine during unoccupied times to save energy.		

REQUIREMENT DESCRIPTION

Install VendingMiser controls on vending machines.

PHOTOS

ACTION DESCRIPTION

-

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Energy and Operational Efficiency

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Remote Condenser Heat Removal		
Linked System	Exhaust Ventilation Systems	Inspection Date	07/12/2006
Prime System	Exhaust Ventilation Systems	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	07/12/2007	Total Estimated Cost:	4,484
Funding Year	-	Funding Type	-
Requirement Location	Kitchen - 1993 Addition	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

The cooler and freezer condensers are located on top of cooler and freezer. This overheats the kitchen area.

PHOTOS



HVAC: Remote Condenser Heat Removal
-

ACTION DESCRIPTION

Add an roof exhaust fan above the condensers for summer operation. Add a side wall exhaust fan to transfer condenser heat to the loading dock area for winter operation.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Energy and Operational Efficiency

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	HVAC: Steam System Steam Trap Upgrades		
Linked System	Steam Distribution Systems	Inspection Date	09/07/2006
Prime System	Steam Distribution Systems	Finish Date	-
Priority	1- Currently Critical (Immediately)	Status	Open
Inspector Name	Ruud, Mark	Actual Cost	0
Action Date	09/07/2006	Total Estimated Cost:	4,047
Funding Year	-	Funding Type	-
Requirement Location	Facility Wide	Annual Energy/Ops Savings \$	849
Savings Description	Heating savings attributed to leaking steam traps that result in the overheating of tunnel areas or steam venting in condensate receiver tanks.		

REQUIREMENT DESCRIPTION

- 1) Complete survey all steam traps system wide to locate failed traps.
- 2) Replace or repair of failed traps depending on trap age, condition, and availability of replacement part kits.

PHOTOS

ACTION DESCRIPTION

-

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Energy and Operational Efficiency

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Lighting: Lighting Retrofit	Inspection Date	09/20/2006
Linked System	Lighting Equipment	Finish Date	-
Prime System	Lighting Equipment	Status	Open
Priority	1- Currently Critical (Immediately)	Actual Cost	0
Inspector Name	Ruud, Mark	Total Estimated Cost:	66,808
Action Date	09/20/2006	Funding Type	-
Funding Year	-	Annual Energy/Ops Savings \$	6,301
Requirement Location	Entire Facility		
Savings Description	Energy savings generated through more efficient lighting technology.		

REQUIREMENT DESCRIPTION

Lighting project consists of the following:

- 1) Relamp 32w T8 lamps with 25w T8 lamps
- 2) Replace HID lighting with T8 lighting fixtures
- 3) Replace Incand. lighting with Fluorescent
- 4) Upgrade exit signs with LED technology
- 5) Gym Occupancy Sensors

PHOTOS

ACTION DESCRIPTION

-

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Energy and Operational Efficiency

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Plumbing: Add Domestic Water Heat Exchanger		
Linked System	Plumbing	Inspection Date	07/12/2006
Prime System	Plumbing	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	Schumacher, Russ	Actual Cost	0
Action Date	-	Total Estimated Cost:	31,565
Funding Year	-	Funding Type	-
Requirement Location	Boiler Room - 1993 Building	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Provide a domestic hot water for domestic hot water. This will allow for an interruptible natural gas rate.

PHOTOS



Plumbing: Add Domestic Water Heat Exchanger

ACTION DESCRIPTION

Provide a new domestic hot water heat exchanger and all required piping and controls.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Energy and Operational Efficiency

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Plumbing: Water Conservation Upgrades		
Linked System	Plumbing Fixtures	Inspection Date	09/21/2006
Prime System	Plumbing Fixtures	Finish Date	-
Priority	1- Currently Critical (Immediately)	Status	Open
Inspector Name	Ruud, Mark	Actual Cost	0
Action Date	09/21/2006	Total Estimated Cost:	19,359
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	4,417
Savings Description	Reduce water and sewer usage using new low flow devices. Savings includes constant flow / timer urinals - urinal savings \$3,545, other water improvements \$872.		

REQUIREMENT DESCRIPTION

Replace / Retrofit standard flow flush valves and faucets with low flow devices.

PHOTOS

ACTION DESCRIPTION

-

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Life Safety

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Lighting Equipment: Exterior Lighting		
Linked System	Lighting Equipment	Inspection Date	09/19/2006
Prime System	Lighting Equipment	Finish Date	-
Priority	1- Currently Critical (Immediately)	Status	Open
Inspector Name	Ruud, Mark	Actual Cost	0
Action Date	09/19/2006	Total Estimated Cost:	9,670
Funding Year	-	Funding Type	-
Requirement Location	Exterior	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

The existing exterior lighting for this facility is getting old and the light levels and coverage for adequate safety is a concern.

PHOTOS

ACTION DESCRIPTION

Replace and add exterior fixtures as needed to improve light levels and coverage.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Occupant Security

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communication and Security: Access Control		
Linked System	Communications and Security	Inspection Date	09/18/2006
Prime System	Security and Detection Systems	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	09/18/2009	Total Estimated Cost:	23,600
Funding Year	-	Funding Type	-
Requirement Location	Exterior Doors	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Doors need ability to be locked down with access allowed only to authorized people. Also doors without card readers should be monitored for unauthorized access.

PHOTOS



Communication and Security: Access Control

-

ACTION DESCRIPTION

Install 6 proximity card readers at main entry doors for both public and personal
 And add magnetic door contacts to all other exterior doors on a alarm system.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Occupant Security

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communication and Security: Public Address and Sound System		
Linked System	Communications and Security	Inspection Date	09/18/2006
Prime System	Intercommunication and Paging System	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	09/18/2009	Total Estimated Cost:	14,160
Funding Year	-	Funding Type	-
Requirement Location	Building Wide	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

PA system is 25+ years old but is still functional.
 There are no speakers located in hallways or commons areas

PHOTOS



Communication and Security: Public Address and Sound System

ACTION DESCRIPTION

Update paging head end with new system and amplifier And install speakers where needed.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Occupant Security

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communications and Security: CCTV		
Linked System	Communications and Security	Inspection Date	11/30/2006
Prime System	Communications and Security	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	11/30/2007	Total Estimated Cost:	121,169
Funding Year	-	Funding Type	-
Requirement Location	Building Wide	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

There are currently no cameras located in the school. Cameras would add an increased security throughout the school which is becoming more critical.

PHOTOS

ACTION DESCRIPTION

Provide cameras throughout school. Camera locations provided by ISD 709.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Occupant Security

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Fire Alarm Systems: Outdated System		
Linked System	Fire Alarm Systems	Inspection Date	09/18/2006
Prime System	Fire Alarm Systems	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	09/18/2009	Total Estimated Cost:	81,656
Funding Year	-	Funding Type	-
Requirement Location	Building Wide	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Fire alarm systems are old analog system. System is prone to malfunctions and is very hard to identify exact area of alarm. It is also difficult to troubleshoot and find malfunctions.

PHOTOS



Fire Alarm Systems: Outdated System

-

ACTION DESCRIPTION

Replace fire system with a fully addressable fire system.
 This will allow for quick response to exact alarm device
 And allow for better maintenance and safety

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Ceiling Finishes: Acoustical Tile		
Linked System	Ceiling Finishes	Inspection Date	07/28/2006
Prime System	Ceiling Finishes	Finish Date	-
Priority	4- Mid Term Needs (6-10 Yrs)	Status	Open
Inspector Name	Siddens, Lance	Actual Cost	0
Action Date	07/28/2012	Total Estimated Cost:	27,506
Funding Year	-	Funding Type	-
Requirement Location	1960 Addition, Corridor old building R29, R30, ECFE Office, R31, R32, R33, R34, Head Start Office	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Existing 12 X12 adhesive applied acoustical ceiling tile is ineffective, drab and beyond rated life.

PHOTOS



Ceiling Finishes: Acoustical Tile

-

ACTION DESCRIPTION

Remove existing 12X12 adhesive applied accoustical tile and install 2 X 2 suspended acoustical tile ceiling 6000 S. F.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communication and Security: Cabling Upgrade		
Linked System	Communications and Security	Inspection Date	08/15/2006
Prime System	Local Area Networks	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	The Westlund Group	Actual Cost	0
Action Date	-	Total Estimated Cost:	136,290
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Existing building cabling has been installed in several stages over the years and contains different categories of cabling.

PHOTOS

ACTION DESCRIPTION

Replace old and mixed telephone/data cabling with up to date category 6 of 6A. Add basic wireless coverage. Add high bandwidth Fiber Optic Cabling between wiring closets. Standardize quantity of phone and data in classroom and offices.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communication and Security: Clock System		
Linked System	Communications and Security	Inspection Date	09/18/2006
Prime System	Clock and Program Systems	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	Crotteau, Paul	Actual Cost	0
Action Date	09/18/2009	Total Estimated Cost:	25,960
Funding Year	-	Funding Type	-
Requirement Location	Building Wide	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Master clock systems no longer keep clocks in time. Most are only used for running the bells. Atomic clocks may not receive a signal through the brick buildings. Many clocks do not work at all.

PHOTOS



Communication and Security: Clock System

-

ACTION DESCRIPTION

Install new wireless master clock system. The main clock receives the GPS signal for exact time and then sends signal to other clocks in facility. This will allow for accurate time and less tardiness between classes.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communication and Security: Telephone System Upgrade		
Linked System	Communications and Security	Inspection Date	08/15/2006
Prime System	Telephone Systems	Finish Date	-
Priority	1- Currently Critical (Immediately)	Status	Open
Inspector Name	The Westlund Group	Actual Cost	0
Action Date	08/15/2006	Total Estimated Cost:	5,192
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

The telephone system should be upgraded to the new District standard of CISCO VOIP. The telephone system should include port for access to the Paging/Intercom system. The Paging/Intercom system should be modified to allow access from the new telephone system.

PHOTOS

ACTION DESCRIPTION

Install a new CISCO phone system. Add paging interface. Remove old system after installation of new.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communication and Security: Video/TV Distribution Upgrade		
Linked System	Communications and Security	Inspection Date	08/15/2006
Prime System	Television Systems	Finish Date	-
Priority	3- Necessary - Not Yet Critical (3-5 Yrs)	Status	Open
Inspector Name	The Westlund Group	Actual Cost	0
Action Date	08/15/2009	Total Estimated Cost:	33,748
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Analog Broadcast TV Signals are required by the FCC to be turned off in the Spring of 2009.

PHOTOS

ACTION DESCRIPTION

Install new TV Distribution System capable of digital signals in all classrooms and administrative areas as required.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Communications and Security: Sound System Upgrades		
Linked System	Communications and Security	Inspection Date	08/15/2006
Prime System	Classroom Sound Systems	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	The Westlund Group	Actual Cost	0
Action Date	-	Total Estimated Cost:	132,396
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

The 1st and 2nd Grade Classrooms have Audio Enhancement systems.

PHOTOS

ACTION DESCRIPTION

Add audio enhancement systems to remaining classrooms.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Controls and Instrumentation: BAS and Controls Upgrade		
Linked System	Controls and Instrumentation	Inspection Date	07/11/2006
Prime System	Building Automation Systems	Finish Date	-
Priority	2- Potentially Critical (1-2 Yrs)	Status	Open
Inspector Name	Schmidt, Brian	Actual Cost	0
Action Date	07/11/2007	Total Estimated Cost:	253,700
Funding Year	-	Funding Type	-
Requirement Location	Entire building	Annual Energy/Ops Savings \$	3,492
Savings Description	Energy saving through optimization and repairs of existing control system.		

REQUIREMENT DESCRIPTION

Upgrade existing, outdated BAS to new Web-based BAS and tie to new District-wide BAS network. This will allow for central monitoring and control of all buildings from the Facilities Management building.

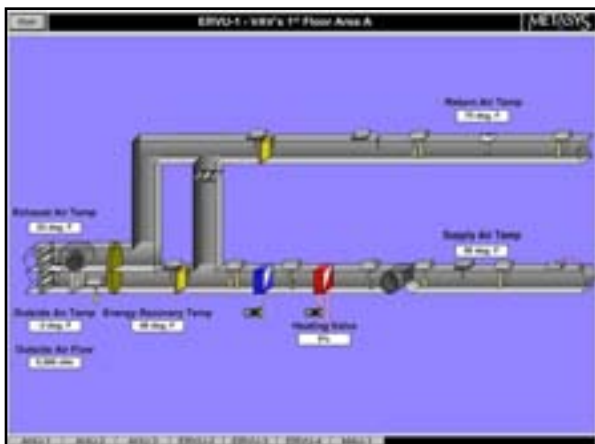
Upgrade existing pneumatic controls (old technology) to new Direct Digital controls.

Upgrade/replace existing temperature control valves, dampers, and actuators. The majority are beyond rated life and many are disconnected and not functioning, thus not operating as energy efficiently as possible.

Replace existing temperature control air compressor and air dryer with new and repair control air line leaks. This will improve the energy efficiency of the existing control system.

The existing controls shall be recommissioned to verify proper sequence of operation and optimize energy efficiency. Additional control and monitoring points shall also be added to the BAS system to optimize HVAC system performance.

PHOTOS



BAS Graphic

-

ACTION DESCRIPTION

Replace existing BAS headend to Web-based headend to tie to District wide BAS. Replace existing DDC and pneumatic controls with new JCI DDC controls to allow integration to District wide BAS.

District: Duluth Public Schools
Facility: Lowell Elementary School
Category: Upgrades

Asset Name: Lowell Elementary School
Asset Number: 520

Requirement Name	Equipment and Furnishings: Visual Systems (Smart Boards)		
Linked System	Equipment and Furnishings	Inspection Date	08/15/2006
Prime System	Audio-visual Equipment	Finish Date	-
Priority	5- Recommendations/ Improvements	Status	Open
Inspector Name	The Westlund Group	Actual Cost	0
Action Date	-	Total Estimated Cost:	363,440
Funding Year	-	Funding Type	-
Requirement Location	Entire Facility	Annual Energy/Ops Savings \$	-
Savings Description	-		

REQUIREMENT DESCRIPTION

Site has no Smart Boards installed. Two Smart Boards are on order.

PHOTOS

ACTION DESCRIPTION

Install additional Smart Boards.