Hamilton County
Queensgate Correctional Facility
Assessment

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COST ESTIMATE SUMMARY

Existing Facility	
Architectural	$ 70,000.00
Mechanical	$1,852,000.00
Electrical	$840,000.00
TOTAL	$2,762,000.00
Renovated New Facility	
80,000 sq ft Renovation	$12,400,000.00
New Construction	
80,000 sq ft New Facility	$15,600,000.00

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BUILDING REPORT

GBBN Architects and Thermal-Tech Engineering are pleased to have provided this report. This information will be helpful in your effort to establish a direction for the Queensgate Correctional Facility. Please call us should you have any questions or wish to coordinate additional investigation so that greater detail can be developed.

The team investigated your building during two extensive on site review sessions. Both efforts were valuable in the creation of this report.

Each section description that follows is arranged in general building use categories. Each begins with a written description of the area, accompanied by description of the deficiencies found for a particular isolated condition and a recommended course of action.

Following this is a qualitative report on each area, highlighting line items that addressed the building review. Each line is then given a quality rating based on a five tear rating system. A rating of 1 indicates a system or elements that has exceeded its life expectancy in its entirety, and is rated "Replace". A rating of 9 indicates a system or elements that is functioning at a modern standard. Each rating in-between indicated a value designation of "Poor", "Fair", and "Good". Totals are then calculated, arriving at a percentage of condition, or "Grade".

SUMMARY

Overall for the Core and Shell we give the building a rating of 76% out of 100 based on the Architectural issues and condition. The detail of that rating system follows in this document. Issues of Mechanical / Electrical and Plumbing have been documented by Thermal-Tech Engineering in the attached document and in a similar format.

REMEDIAL REPAIR COSTS

The remedial work identified as Architectural upgrades recommended to be made to the building for its continued use as a Correctional Facility total approximately $70,000. The highest priority and most costly is associated with Toilet, Restroom, and Shower areas, which have been subject to extensive moisture damage which will require the replacement of the metal stud / drywall partitions in this area. These should be replaced either with concrete masonry units if possible, or at least with new metal studs using cement board or moisture resistant gypsum board (eg. "greenboard").

The remedial work identified as Mechanical upgrades recommended to be made to the building for its continued use as a Correctional Facility total approximately $1,852,000. The highest priority is associated with the heating system. The present system should be replaced in its entirety, before any more major repair or maintenance costs are considered. Any substantial investment in the heating system should be applied to a new system that is better suited to the building's needs. Additional areas of work are summarized in the following pages.

The remedial work identified as Electrical upgrades recommended to be made to the building for its continued use as a Correctional Facility total approximately $840,000. The highest priority is associated with the lighting retrofit and emergency generator. Additional areas of work are summarized in the following pages.

REPLACEMENT COSTS - RENOVATION

Costs for replacement of the building are very difficult to identify if it is to be by retro-fit to an existing structure as each building is different and subject to its own conditions of Footprint, Conditions, Systems, Site, etc.. However, if the existing facility, which is approximately 80,000 sf., is to be replaced by another facility of equal size and in acceptable shape with regard to

the exterior envelope and suitable construction, it would be expected to spend approximately $155/sf for the necessary upgrades of a basic, open "warehouse" type of space – which would total $12,400,000. This does not include the cost of the building itself.

This scope of work would include entirely new systems, with the exception of structural work, for the fit-out – which would include the interior build-out, mechanical, electrical/lighting, plumbing/sanitary, and security.

REPLACEMENT COSTS – NEW CONSTRUCTION

Another option it was requested that we research would be a full replacement cost of the facility, for which an industry average of $195/sf would be expected. Based upon that, a new facility of 80,000 sf. would cost approximately $15,600,000, not including site acquisition.

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The Site Conditions

The site presents itself well, and is well maintained. The main entrance to the facility is easily identified and a temporary ramp is used for handicap accessibility. Visitor parking is located off site and is only serviced by off street parking, this creates an undesirable situation were separation of on-site parking and pedestrians is non-existent.

The service vehicle dock located in the rear is adequate for existing deliveries. The existing security gate to the west jumps the track and requires maintenance twice a month. The asphalt outdoor recreation area is well maintained, during the flood of '99 several large sinkholes had developed due to existing building foundations and shifting soil. Currently one minor sinkhole remains.

Parking	No Action	
Security Gate	$5,000.00	Replace existing gate.
Sink Hole	$2,000.00	Stabilize soil and asphalt.

A SITE CONDITIONS

	1	3	5	7	9	SUM	
a. Sidewalks/Ramps				7		7	
b. Parking for Handicapped				7		7	
c. Separation of parking from Pedestrians		3				3	See Summary
d. Site Drainage				7		7	
e. Service Vehicle Access			5			5	See Summary
f. _____						0	
					Goal 34	29	86%

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Exterior Building Features

The structure of the main building is a concrete frame with an 8" solid brick infill making up the exterior walls. On the north and east façades the exterior brick walls consist of a soft brick common to buildings of this age. which has been painted. The north façade shows signs of patching from previous maintenance and continues to show signs of new spalling. The west and south façade consists of a harder exterior face brick and is in excellent condition. On the west and south façades at the second and eighth floor lines, there is a concrete cornice which shows signs of sever deterioration which has had remedial repair work (basically chipping off large portions of unstable concrete and prepping the area with a concrete sealer to stem off further deterioration). Even though the cornice has been stabilized during the previous renovation, it will continue to be a maintenance issue over the life of the facility.

The foundation walls are made up of stone and concrete. It was noted that during heavy periods of rain the stone foundation does leak. Along the west façade the team noted spalling of the parging coat along the base of the building.

The windows are in excellent condition. On the west and south façades the windows have been replaced with aluminum frame and insulated glass windows. It was noted that in several locations on each floor a pane of glass was removed and a piece of unprotected plywood was inserted to serve as a blank off panel for the penetration of the HVAC supply air vent.

The roof consists of a fully adhered EPDM membrane, which was installed prior to the county leasing the facility, and is in excellent condition. The masonry parapet and terracotta coping is also in generally good condition and will require only minor maintenance.

North façade repair	$5,000
Cornice stabilization	Recommend Inspection
Window Blank off Panel	$1,050

B EXTERIOR BUILDING FEATURES	1	3	5	7	9	SUM	
a. Walls		3				3	
b. Foundations			5			5	
c. Windows			5			5	See Summary
d. Doors				7		7	
e. Gutters/Downspouts/Roof Drains				7		7	
f. Roofing				7		7	
g. Roof Penetrations				7		7	
h. _____						0	
				Goal 47		41	87%

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Interior Conditions

Office/Classroom Wing

The Office/Classroom is in good condition and general finishes consist of painted gypsum board and metal stud walls, carpet, epoxy coated flooring, and acoustical ceilings. There are several areas of concern on the second floor, where we have a Dead-End Corridor and no handicapped accessibility from the first floor or from the second floor dormitory, severely restricting the Classroom from any individual with an accessibility issue.

At the time of our walk-thru, the team noted a chemical odor on the second floor office area, which we were informed, has existed since the County took over the facility. We could not ascertain where the odor was coming emanating from.

The acoustical ceiling system in the far west classroom shows signs of sagging and deformed ceiling pads caused by excessive moisture. No signs of leaks were noted.

The structure of this building is less then 8 years old, with exterior masonry walls. At the time of the walk-thru the design team could not ascertain if exterior wall insulation was provided during its construction.

The sprinkler system heads currently are not tamper proof; standard practice in correctional facility design is to provide tamper proof sprinkler heads.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption.

Ceiling Repair	$1,000
Dead end corridor	Cannot be addressed independently
Tamper proof Sprinkler Heads	See Fire Protection
Retrofit Light Fixtures	See Electrical

1 Office/Classroom Wing (Two Stories)	1	3	5	7	9	SUM	
a. Floor (s)				7		7	
b. Exterior Walls				7		7	
c. Ceilings			5			5	See Summary
d. Doors				7		7	
e. Windows				7		7	
f. Lighting			5			5	See Summary
g. Means of Egress		3				3	See Summary
h. Life Safety/ Fire Protection			5			5	See Summary
I. Accessibility	1					1	See Summary
j. _____						0	
				Goal	61	47	77%

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Kitchen

The kitchen area has been well maintained and consists of unglazed terra cotta tile floors while the wall surfaces are constructed of gypsum board over metal studs with a FRP wall covering.

The exterior masonry walls consist of 8"-12" of solid masonry and are un-insulated. They are in Good condition and weather-tight. Due to the type of construction it would be cost prohibitive to insulate these exterior walls.

The sprinkler system heads currently are not tamper proof; standard practice in correctional facility design is to provide tamper proof sprinkler heads.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards.

Insulation	No Action
Tamper proof Sprinkler Heads	See Fire Protection
Retrofit Light Fixtures	See Electrical

2 Kitchen	1	3	5	7	9	SUM	
a. Floor(s)				7		7	
b. Walls			5			5	See Summary
c. Ceilings				7		7	
d. Doors				7		7	
e. Plumbing Fixtures				7		7	
f. Lighting Fixtures			5			5	See Summary
h. Means of Egress			5			5	See Summary
I. Life Safety/ Fire Protection			5			5	See Summary
j. Accessibility				7		7	See Summary
k. _____						0	
				Goal	61	55	91%

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Main Dining Room

The Main Dining Room area has been well maintained and consists of epoxy coated flooring, Masonry wall construction and acoustical ceilings.

The exterior masonry walls consist of 8"-12" of solid masonry and are un-insulated. They are in Good condition and weather-tight. Due to the type of construction it would be cost prohibitive to insulate these exterior walls.

The sprinkler system heads currently are not tamper proof; standard practice in correctional facility design is to provide tamper proof sprinkler heads.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards.

Insulation	No Action
Tamper proof Sprinkler Heads	See Fire Protection
Retrofit Light Fixtures	See Electrical

3 Main Dining Room	1	3	5	7	9	SUM	
a. Floor (s)				7		7	
b. Walls			5			5	See Summary
c. Ceilings			5			5	See Summary
d. Doors				7		7	
e. Windows				7		7	
f. Lighting			5			5	See Summary
g. Means of Egress			5			5	See Summary
h. Life Safety/ Fire Protection			5			5	See Summary
I. Accessibility				7		7	
j. _____						0	
				Goal 61		53	87%

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Gymnasium

The Gymnasium consists of an infill building, roofing over an existing courtyard. The floors consist of an epoxy coated concrete floor. The ceiling consists of metal bar joists incased in spray applied fireproofing.

The sprayed applied fireproofing to the bar joists shows signs of falling off and should be reapplied to maintain the fire resistant rating.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards

Fire Proofing Repair	$1,000
Retrofit Light Fixtures	See Electrical

4 Gymnasium	1	3	5	7	9	SUM	
a. Floor (s)				7		7	
b. Walls				7		7	See Summary
c. Ceilings		3				3	See Summary
d. Doors				7		7	
e. Lighting			5			5	See Summary
f. Means of Egress				7		7	
g. Life Safety/ Fire Protection			5			5	See Summary
h. Accessibility				7		7	See Summary
I. _____						0	
				Goal	54	48	89%

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Housing Unit

The main housing units are located on top seven floors of the 8-story concrete frame building. The housing units have been well maintained and consists of epoxy coated flooring, masonry wall construction and exposed concrete ceilings with a spray applied fireproofing.

The exterior masonry walls consist of 8"-12" of solid masonry and are un-insulated. They are in Good condition and weather-tight. Due to the type of construction it would be cost prohibitive to insulate these exterior walls.

The sprinkler system heads currently are not tamper proof; standard practice in correctional facility design is to provide tamper proof sprinkler heads.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards

The design team noted that the majority of electrical conduit was suspended down from the ceilings; standard practice in correctional facility design is to securely attach all conduits directly to walls, ceilings, or flat surfaces. The exposed conduit posses situations where an inmate can cause physical harm or provide a weapon. The suspended ductwork also poses a situation that lends itself to areas weapons/contraband

Insulation	No Action
Retrofit Conduit	See Electrical
Retrofit Light Fixtures	See Electrical

5 Housing Unit	1	3	5	7	9	SUM	
a. Floor(s)				7		7	
b. Exterior Walls			5			5	See Summary
c. Interior Walls				7		7	
d. Ceilings			5			5	See Summary
e. Lighting Fixtures			5			5	See Summary
f. Means of Egress			5			5	See Summary
g. Life Safety/ Fire Protection			5			5	See Summary
h. Accessibility				7		7	See Summary
I. Exposed Conduit	1					1	
				Goal	61	47	77%

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Restrooms

There are two public restrooms located on each floor of the 8 story-housing unit and are adjacent to the dormitory and the showers. The floors consist of an unglazed terra cotta tile and all floors are in good condition and have a positive slope to the drain.

The maintenance staff pointed out that all the toilet fixtures are not secured to the floor. They are secured to the PVC pipe collar. At the time of our inspection we did not note any problems with the connections to the floor.

Code would require one toilet stall with adequate grab bars for handicap access.

The existing lavatory counter consists of a plastic laminate counter with cast iron porcelain enamel lavatories. The lavatories all have a number of chips in the porcelain enamel and should be replaces. The facets are currently being replaces by the maintenance staff.

The surrounding walls of the toilet room consist of ceramic tile over gypsum board and metal studs. The ceramic tiles appear to be in fair condition in the restrooms. On the Second Floor the gypsum board and metal stud wall along the corridor/dormitory have disintegrated and requires replacement. Since the gypsum board was non-existent at the location we inspected, it is assumed that the entire restroom enclosures were not constructed with an approved substrate for the wet condition, this condition is assumed to exist on all seven of the housing floors.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards.

Wall replacement	$9,600 (seven floors)
Grab bars	$1,050
Toilet Fixtures	$5,000
Sinks	$10,000
Retrofit Light Fixtures	See Electrical

6 Restrooms

		1	3	5	7	9	SUM	
a.	Floor(s)				7		7	
b.	Walls		3				3	See Summary
c.	Ceilings				7		7	
d.	Fixtures		3				3	See Summary
e.	Lighting			5			5	See Summary
f.	Means of Egress				7		7	
g.	Life Safety/ Fire Protection				7		7	
h.	Accessibility	1					1	See Summary
i.	_____						0	
					Goal	54	40	74%

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Showers

There are 2 public shower facilities located on each floor of the 8 story-housing unit adjacent to the dormitory and the restrooms. The floors consist of an unglazed terra cotta tile and all floors are in good condition with a positive slope to the drain. There is a 4" curb at the entrance to the shower room, which does not allow for handicap access. Code would require one showerhead with adequate grab bars for handicap access.

The surrounding walls of the shower room consist of ceramic tile over gypsum board and metal studs. The ceramic tiles appear to be in fair condition in the shower area. On the Second Floor the gypsum board and metal stud wall along the corridor/dormitory have disintegrated and require replacement. Since the gypsum board was non-existent at the location we inspected, it is assumed that the entire shower enclosures were not constructed with an approved substrate for the wet condition, this condition is assumed to exist on all seven of the housing floors.

The maintenance staff also pointed out that the on several floors the corridor between the showers and the dormitory floor leaks down to the floor below.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards.

Wall replacement	$26,600 (seven floors)
Grab bars	$1,275
Retrofit Lights	See Electrical

7 Showers	1	3	5	7	9	SUM	
a. Floor(s)				7		7	
b. Walls		3				3	See Summary
c. Ceilings				7		7	
f. Lighting Fixtures			5			5	See Summary
h. Means of Egress				7		7	
I. Life Safety/ Fire Protection			5			5	See Summary
j. Accessibility	1					1	See Summary
k. Equipment/ Plumbing		3				3	See Summary
l. _____						0	
				Goal	74	38	51%

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Laundry

There is one public Laundry facility located on each floor of the 8 story-housing unit adjacent to the dormitory and the restrooms. The floors consist of an unglazed terra cotta tile and all floors are in good condition.

The exhaust for the dryers is exposed and is held off the wall by 1-2 feet. The dryer vents should be relocated and securely attached to the wall.

The common wall between the showers and the laundry room is constructed of gypsum board and metal studs. On the Second Floor the gypsum board and metal stud wall along the corridor/dormitory have disintegrated and require replacement. Since the gypsum board was non-existent at the location we inspected, it is assumed that the entire shower enclosures were not constructed with an approved substrate for the wet condition, this condition is assumed to exist on all seven of the housing floors.

The fluorescent lighting fixtures currently utilize a T12 fixture. Retrofitting the light fixtures to a T8 will substantially reduce energy consumption. The existing fluorescent lighting does not have adequate guards over the fluorescent lighting; standard practice in correctional facility design is to provide tamper proof guards

Wall replacement	$See Shower Room
Vent Replacement	$500 (seven floors)
Retrofit Lights	See Electrical

8 Laundry	1	3	5	7	9	SUM	
a. Floor(s)				7		7	
b. Walls			5			5	See Summary
c. Ceilings			5			5	See Summary
f. Lighting Fixtures			5			5	See Summary
h. Means of Egress				7		7	See Summary
l. Life Safety/ Fire Protection			5			5	See Summary
j. Accessibility	1					1	See Summary
k. _____						0	
					Goal	47	35 74%

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MECHANICAL SYSTEMS

Equipment Age

The majority of the mechanical equipment is well into its useful life. The one exception being the HVAC unit serving the first floor of the Staff/Officers Building", which is being replaced at the time of this study. The following is a tabular summary of major equipment, with present age and typical life expectancy.

Equipment	Approx. Age	Typ. Life
Steam Boiler	34	30-40
Fan Coils	10	15-20
Condensing units	10	12-15
Ventilation fans	10	15-20
Hot water heater	10	15-20
Fire pump	10	20-30

Energy Efficiency

The energy efficiency of the mechanical systems in this building is poor by today's standards. The boiler and associated steam piping have no insulation, and the domestic water heater is an atmospheric burner (generally less than 80% efficient). The fan coil units all have electric duct heaters to pre-heat outdoor air (electric is more costly than gas or hot water). The drop ceilings in most spaces act as a plenum return: while this saves first cost (no return duct needed) it is less energy efficient because you are, in effect, cooling space that is not occupied. Finally, none of the systems we saw have fresh air economizers to deliver free cooling during milder weather.

Ventilation Functionality

The building's ventilation is nearly all provided by the fan coil units through ducted outdoor air. The outdoor air is, as mentioned above, tempered with electric duct heaters. The heaters are reportedly a big problem; many do not operate (during one of our site visits we actually heard electrical contactors failing to engage on one duct heater). These also appear to be single stage heating, which can not provide good control of the mixed air temperature.

There is also a series of fans and outdoor air dampers which, we understand, serve as smoke evacuation. The individual floors have motorized dampers in the windows and prop style fans on the opposite walls, all controlled by starters interlocked with the fire alarm system. The stairwells are also pressurized by roof mounted fans as part of the same smoke control system. We were not able to confirm if anyone knew if these have ever been tested.

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Air Conditioning Functionality

The fan coil units, for the most part, all appear to function now. The most common complaint we discovered was with the distribution. Many supply outlets are very loud, and there is no individual temperature control for offices or large rooms. The biggest problem appears to be the continual failure of compressors in the condensing units on the roof. Some of these refrigerant lines are routed through several floors between the fan coil unit and the roof. Long vertical refrigerant lines like these will often fail to circulate oil properly, which leaves the compressor vulnerable to early demise. Long vertical refrigerant runs often require special design such as alternative sizing, traps and double suction risers: none of which were reportedly installed when the building was renovated by the previous owner.

Heating Functionality

The existing heating system in the main building appears to be the original single-pipe steam system. In this type of system steam is distributed to radiators through a slightly larger steam line, then, as steam condenses at the radiators, condensate drains by gravity through the same pipe (clinging to the perimeter wall of the pipe) and is then collected off the steam main in the basement through a steam condensate return manifold. The condensate return is trapped, collected in a tank and fed, by a small pump, back to the boiler. It is very difficult to control building temperatures with this type of system because the radiators are intended to be open to flow (so condensate can drain back). This is one of the main reasons that this distribution system is almost never used today. It is reported that this building has seasonal comfort problems now, and has for many years.

Heating piping

The single-pipe steam system is also vulnerable to pipe degradation due to the combined exposure to steam condensate and non-condensed gases. The problem is exaggerated when a chemical treatment program is not applied, which we understand is the case here. Therefore, we would expect the piping to have limited remaining life before failures become prevalent.

Plumbing Equipment

The most expensive piece of pluming equipment in this building is likely the domestic water heater, which, unfortunately, is reported to be in poor condition, requiring constant attention and repair. The domestic service, which includes a reduced pressure principal backflow preventer, seems to be in good condition. It has a bypass backflow preventer (which allows for servicing of the main backflow preventer), however, the bypass is much smaller than the main backflow preventer. It is customary plumbing design to provide a full capacity bypass backflow preventer where it is considered important to maintain water service at all times.

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Plumbing Piping

The domestic hot and cold water piping are reported to be in fair condition, and there were no evident signs of problems. The one exception would seem to be the mixing valves used to temper domestic hot water to shower and lavatory rooms in the main building. It is reported that these do not control temperature well and there is evidence of leakage at piping connection. These should be replaced with newer staged units equipped with a bypass feature to maintain calibration.

The sanitary piping that we encountered was all PVC. This piping all seems to be in good condition, with the exception that it is simply not as sturdy as the common alternative, cast iron. Water closet flanges are also PVC, and they are not as strong as the cast iron flange (inmates have discovered they can physically pull water closets off the floor by twisting the bowl). Some of the sanitary piping is completely exposed (such as that which runs through the middle of the dining room) which would seem to be inviting to vandalism.

The basement of the old building has three formed "pits", which appear to have originally been installed for storm drainage. During one site visit, these had some level of standing water in them. Standing water in a basement lends to some unhealthy conditions (insects, mildew, etc.). Ideally, these should be filled in, except that some piping is routed below the floor through these "pits". It would be our recommendation that a civil engineer survey the piping associated with these "pits" to determine their purpose and, then, establish a course of action.

Plumbing Fixtures

The fixtures, themselves, seem to be in fair condition, though it is reported that many faucet and shower controls require maintenance and replacement on an on-going basis. The addition of water softeners for the domestic water would help to reduce the need for this maintenance.

Fire Pump

The fire pump seems to be in fair condition. It is tested regularly and, upon inspection, seems to be holding appropriate pressure. There is some concern reported over the pump seal, which may predict that the pump seal will need to be replaced in the near future. Due to the upright configuration of the pump itself, this will require that the motor be lifted off the pump housing (end-suction pumps are often installed in fire pump applications because seal access is easier).

Fire Protection Distribution

The distribution piping seems to be in good condition where we have observed exposed piping. There are sprinkler risers on each floor of each building, often exposed. The piping, pressure gages, control valves and tamper switches all seem to be in place and in good condition (somewhat surprisingly, no sign of tampering or vandalism). If the Owner were to choose to completely renovate a floor, it would be a good idea to move the riser to above the ceiling. The sprinkler heads are the "O-ring" type that were popular about ten years back and have since been recalled due to concerns about lack of consistent performance when tested. The County is actively pursuing replacement from the manufacturer. The replacement heads should be the

tamper-resistant style, which are slightly more expensive than the heads the manufacturer will likely offer as a replacement.

Tabular Summary

	Replace 1	Poor 3	Fair 5	Good 7	Excellent 9	SUM	Comments:
MECHANICAL SYSTEMS							
a. Equipment Age		3				3	
b. Energy Efficiency		3				3	
c. Ventilation Functionality		3				3	
d. Air Conditioning Functionality			5			5	
e. Heating Functionality		3				3	
f. Heating Piping		3				3	
g. Plumbing Equipment		3				3	
h. Plumbing Piping			5			5	
I. Plumbing Fixtures			5			5	
j. Fire Pump			5			5	
k. Fire Protection Distribution		3				3	
l						0	
				Goal	70	41	59%

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COST IMPACT

Plumbing

There are a number of items that we would recommend be remedied soon to make the building functional from a plumbing standpoint for the near future. These items include replacement of the existing domestic hot water system, replacement of the water closets and the piping these are anchored to, new mixing valves for the gang showers and a water softening system for the building's domestic water service. The conceptual domestic hot water system is comprised of two gas-fired, forced draft heaters, a domestic hot water holding tank, circulating pump and hot water return pump.

Estimated probable construction budget $140,000

Fire Protection

The only near term need that we anticipate is that the heads, when replaced, should be replaced with a tamper-resistant style head (we would expect that the manufacturer will charge a slight add for this, despite the terms of the recall)

Estimated probable construction budget $ 12,000

Heating System

The present system should be replaced in its entirety, before any more major repair or maintenance costs are considered. Any substantial investment in the heating system should be applied to a new system that is better suited to the building's needs.

The concept for the new system is based upon hot water heating using two forced draft burner boilers, two circulating pumps, new piping distribution, zone temperature control, perimeter fintube baseboards and duct mounted coils for air systems.

Estimated probable construction budget $780,000

Air Conditioning System

Continued replacement of compressors in the existing condensing units will likely continue, therefore, it would be our recommendation that the system be replaced; perhaps with a chilled water system. In light of the problems with the outdoor air pre-heaters, lack of zone control and economizers, we will also assume that the fan coil units and air side distribution would be replaced at the same time. Conceptually, we would envision fan coil units, similar to before for open spaces like the main building floors, dining hall and recreation room, with the exception that additional zone control would be utilized for spaces like offices, education and medical.

Estimated probable construction budget $920,000

GBBN

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ELECTRICAL

Main Electrical Service

The building has two (2) main electrical services. The first is a 240-volt, 3-phase, 2000-amp 3-wire service, installed in 1991. The equipment is manufactured by Cutler Hammer (Cinergy meter number 86-150-451). The second service is a 120/240-volt, 1-phase, 400-amp service, also installed in 1991. This equipment is also manufactured by Cutler Hammer (Cinergy meter number 55-015-348).

Both services appear to be in good condition. The room where the gear is located is on the backside of the cafeteria, and additional wall space is limited. The gear has little additional breaker space for expansion. The size of the room would not accommodate any additional expansion of the gear. The electrical service size and location of gear would need to be addressed in the event that any expansion were considered.

The electrical switchgear room is also being utilized as a storage room. The National Electrical Code (NEC) expressly prohibits any storage in front of this equipment which inhibits access. Therefore, this storage should be relocated to maintain the NEC required clear spaces in front of the electrical gear and panels.

Emergency Generator

The existing emergency generator is located on the end of the loading dock on the south side of the building. There is a canopy over the generator, though it is open to the outdoors on the sides. The generator does not have a weather-proof enclosure, even though it is exposed to the weather. The exhaust stack for the unit is terminated just outside the space where it is located (discharging out over the dock), while code normally dictates that emergency generator exhaust be terminated above the adjoining roof line. The age of the generator is unknown, but is estimated to be 30-40 years old. The reliability of the generator is reported to be questionable. The generator should be replaced, based on all of the above, with a new unit UL listed for its location and application.

Power Distribution System

The building power distribution system is not well suited to the building's use. There are electrical panelboards located throughout the building in easily accessible areas, such as inmate laundry areas, inmate holding area, and corridors. The branch circuits are fed through surface mounted conduits throughout the building, most of which are also exposed to view. The existing system would be an acceptable installation for a warehouse application, but is somewhat vulnerable to vandalism in the present environment.

Another deficiency of the existing distribution system is that there is no clear differentiation between areas served by panels. It seems that, over the years, circuits were "grabbed" out of any panel that had space at the time. It is not clear which panels serve which loads, and when a breaker trips, valuable time is lost trying to locate the problem.

Lightning Protection System

The building has no lightning protection system in place. The building is the tallest structure for several blocks in all directions, which makes it susceptible to lightning strikes. The building maintenance staff indicated that, to their knowledge, there has not been a problem, to date. However, we would recommend that the facility be retrofitted with a lightning protection system to increase the level of safety to the building, the staff, the inmates and the equipment within the building.

Lighting System

The existing lighting system in the building is not appropriate for a correctional facility. In the inmate holding areas, the lighting fixtures are industrial, 8-foot long fluorescent fixtures with exposed "bare" lamps. The existing lighting fixtures are 96 watt, T-12 lamps with electro-magnetic ballasts: these types of fixtures sometimes contain PCB's. The existing lighting system should be replaced with fixtures that are appropriate for a correctional environment, and that contain energy efficient lamps and ballasts.

Emergency/Exit Lighting

The existing emergency lighting system is powered through the emergency generator. The existing exit lights are also powered from the emergency generator. This is allowable by code, and typical in a facility where an emergency generator exists. The exit signs, though, are older units with incandescent lamps. Several had one or both bulbs burned out. Incandescent exit signs consume a lot of electric since they must be on continuously, plus they are require high maintenance because lamp replacements are needed frequently. We recommend that all of the existing exit signs be replaced with new, LED lamp exit signs. The LED style fixtures consume very little electric and have a rated lamp life of 20 years (an incandescent lamp will last about 1 year, typically).

Fire Alarm System

The existing building fire alarm system is a Simplex 4100, zoned fire alarm system. The system appears to be in fair working condition, and is reported to be relatively problem free. The drawback to this system is that, due to its age, the availability of spare parts and/or components, when needed, will be limited in the near future. Also, with the system being a zoned system, the exact location of the device in alarm cannot be determined at the panel, as would be possible with the newer addressable systems available today.

The Fire Alarm Code states that when a facility undergoes any renovations, the fire alarm system within that area (and all areas until you exit the building from the area being renovated) must be brought into compliance with the present fire alarm codes. The existing fire alarm system is "grand-fathered" until the time when the building is renovated. The present fire alarm codes requires functions and features that the present system is not capable of doing without adding devices and equipment. Therefore, we would recommend that a new fire alarm system be budgeted in anticipation of future renovations.

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Door Access and Control

The existing building door access controller is a Montgomery Technology system, which has consistently been problematic. The system is continuously failing, leaving the facility with unsecured doors. The door access controller should be replaced immediately, even if the building is not renovated.

Security System

The existing building security system appears to be in good working condition. The camera system and the occupancy systems have not been an issue according to the staff at the facility. We would, then, recommend that the existing system be maintained and continue to be utilized in its present application. There are newer systems available today that require less maintenance (digital storage instead of video tape) and are more use- friendly ("Windows" based) platforms. If budget allows, this would be worth consideration.

Site Lighting

The existing building site lighting is minimal. The parking area for the staff is remote and the employees must walk approximately two blocks through un-lit areas to enter the building. The inmate activity courtyard has no lighting, except for "wall packs" by the dock. The staff indicated that they don't consider this is an issue because they do not allow the inmates in the courtyard after dark. None the less, we would recommend that site lighting be addressed to increase the safety of the employees and to allow the security camera system to operate better after dark.

COST IMPACT

Estimated probable construction budgets, related to the above:

Main Electrical Service	$ 85,000
Emergency Generator	75,000
Power Distribution System	170,000
Lightning Protection System	25,000
Lighting System	85,000
Emergency/Exit Lighting	16,000
Fire Alarm System	270,000
Door Access and Control	30,000
Security System	18,000
Site Lighting	30,000

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Enter Value in Cell Below

	Replace	Poor	Fair	Good	Excellent		
	1	3	5	7	9	SUM	Comments:
A MAIN ELECTRICAL SERVICE							
a. Accessibilty			5			5	first floor - cafeteria
b. Age of equipment				7		7	installed 1991
c. Equipment has NEC required Clear Space				7		7	
d. Equipment stored in front of gear		3				3	
e. Housekeeping pad below gear				7		7	3" concrete
f. Expandability		3				3	limited amount of space
g. Capacity - 3-Phase Service				7		7	
h. Capacity - 1-Phase Service			5			5	
				Goal	56	44	79%
B EMERGENCY GENERATOR	1	3	5	7	9	SUM	
a. Location		3				3	On loading dock
b. Age of Equipment	1					1	Estimated age = 30+ yrs
c. Exhaust System	1					1	Incorrect stack
d. Remote Radiator			5			5	
e. Rialiability		3				3	magneto problems
f. Capacity			5			5	see "e"
g. Correct for application		3				3	no outdoor enclosure.
				Goal	49	21	43%
C POWER DISTRIBUTION SYSTEM	1	3	5	7	9	SUM	
a. Branch Circuit Panelboards			5			5	
b. Raceways		3				3	surface mtd EMT
c. Circuit breakers			5			5	Aged
d. Reliability			5			5	Aged and worn
e. Locations of Panels		3				3	in accessable locations
f. NEC required Clearances		3				3	NEC issues in closets
g. Consistance throughout building		3				3	None.
h Easy to identify loads served.		3				3	No consistency in cktng
				Goal	56	30	54%

Queensgate Correctional Facility Audit

Enter Value in Cell Below

	Replace	Poor	Fair	Good	Excellent	SUM	Comments:
D LIGHTNING PROTECTION SYSTEM	1	3	5	7	9		
a. None present at the facility				0		0	tallest structure around
				Goal	7	0	0%
E LIGHTING SYSTEM	1	3	5	7	9	SUM	
a. Energy Efficient Fixtures		3				3	No energy eff fixtures
b. Fixtures provide adequate illumination				7		7	
c. Appropriate fixtures for locations installed	1					1	not correction fixtures
d. Fixtures all in good working condition			5			5	ballast and lamp issues
e. Lighting Control appropriate for application			5			5	
						0	
				Goal	35	21	60%
F EMERGENCY / EXIT LIGHTING	1	3	5	7	9	SUM	
a. Emergency Backup				7		7	
b. LED Exit Signs	1					1	Incandescent Exits
c. Exit Signs in all required locations		3				3	Not well marked
d. Reliability		3				3	Lamps burn out
e. Provides code minimum levels			5			5	
f. Locations are appropriate			5			5	
						0	
				Goal	42	24	57%
G FIRE ALARM SYSTEM	1	3	5	7	9	SUM	
a. Code Compliant			5			5	Grandfathered
b. Addressable system		3				3	zoned system
c. Reliability			5			5	
d. Frequency of False Alarms				7		7	
e. Component Availibility			5			5	
f. Components are functional			5			5	
g. Monitors Emergency genrator		3				3	
h. Interconnection with Door locks			5			5	
						0	
				Goal	56	38	68%
H DOOR ACCESS AND CONTROL	1	3	5	7	9	SUM	
a. Control Panel	1					1	Problematic
b. Ease of Use		3				3	Confusing to operate
c. User Friendly System		3				3	Confusing to operate
d. Reliability		3				3	
e. Emergency power supply	1					1	Batteries - go dead in an
						0	extended outage
				Goal	35	11	31%

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Enter Value in Cell Below

	Replace	Poor	Fair	Good	Excellent		Comments:
	1	3	5	7	9	SUM	
I SECURITY SYSTEM							
a. Cameras				7		7	
b. Recorders			5			5	
c. Occupancy sensors				7		7	
d. Reliability			5			5	
e. User Friendly			5			5	
f. Emergency Backup			5			5	
						0	
				Goal	42	34	81%
J SITE LIGHTING							
a. Parking Lot		3				3	None existant
b. Activities Courtyard		3				3	None existant
c. Loading Dock			5			5	
d. Roof	1					1	None
e. Access from Employee parking to building	1					1	None
f. Reliability		3				3	None existant
g. Coordination with Camera system.		3				3	None existant
						0	
				Goal	49	19	39%

Summary

		1	3	5	7	9	
A	MAIN ELECTRICAL SERVICE						79%
B	EMERGENCY GENERATOR						43%
C	POWER DISTRIBUTION SYSTEM						54%
D	LIGHTNING PROTECTION SYSTEM						0%
E	LIGHTING SYSTEM						60%
F	EMERGENCY / EXIT LIGHTING						57%
G	FIRE ALARM SYSTEM						68%
H	DOOR ACCESS AND CONTROL						31%
I	SECURITY SYSTEM						81%
J	SITE LIGHTING						39%

Grade 51%