

**Building Assessment Studies and Cost Estimates**  
for  
**Capital Improvements**  
at the  
**Jail (Public Safety Building)**

Whatcom County - Contract 201607005 – PHASE 1B

17 July 2017

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# EXECUTIVE SUMMARY ...TAB A



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**EXECUTIVE SUMMARY – PHASE 1B**

design2 LAST was retained by Whatcom County to perform building assessments on the existing Jail, (Public Safety Building) and the existing Work Center. The assessments, completed as Phase 1A in December of 2016 were to address two issues; the physical condition of each building; and the operational condition of each facility. The objective of the assessment was to identify building systems, materials, and procedures that can be improved to increase building safety and reform processes which would allow the facilities to remain in operation until such time as a new Public Safety Building can be procured, constructed, and occupied. Our objective during that phase was to complete a high level review of overall systems without getting into a full, invasive study of each piece of equipment. The result of that study included a long list of deficiencies and potential repair tasks at both facilities, and included rough order of magnitude costs. **Whatcom County then selected the ten most urgent tasks for further study for the Jail building only.** The Work Center has been omitted from the Phase 1B scope. The list from Phase 1A, is included for reference only as Appendix B under Tab K.

In January of 2017, the team was given notice to proceed with Phase 1B. **The objective of this phase was to complete a more detailed, yet non-invasive, study of each of the tasks for the Jail only, and propose corrective actions (scope options) as well as total estimated costs.** This evaluation includes visual observation of each piece of equipment, area, or material, analysis of the operation of those units, documentation of the existing condition, and recommendation (scope option) for repairs, or removal and replacement, as required to maintain the equipment in continued operation until the new jail facility can be occupied. In addition, the costs are further refined with the estimate in this phase to obtain a more detailed cost analysis to implement each task.

The study began with 5 days of field surveys by the team members (listed below) for varying durations. Each team member was tasked to review and evaluate the equipment and materials related to their expertise.

The design2 LAST team consisted of the following firms and disciplines:

design2 LAST, inc..... Architecture, Project Manager (PM)  
Architects Rasmussen Triebelhorn (A-RT).....Criminal Justice Facility Design and Operations  
MENG Analysis (MENG)..... Cost Estimator  
Hargis Engineers (Hargis)..... Mechanical, Electrical, and Security Engineering  
    Tuazon Engineering (Tuazon) (sub to Hargis) .....Fire Protection Engineer  
    International Seismic Application Technology (ISAT) (sub to Hargis) .....Seismic Bracing Design Engineer  
SCBC Engineers (SCBC) ..... Structural Engineering  
Clevenger and Associates (Clevenger).....Kitchen and Laundry Design and Operations

Abbreviated firm names or acronyms listed in parenthesis may be used throughout the report.

The result of those field surveys is included in detail in the following report. The report is divided into 8 tabbed sections. For ease of referencing back to Phase 1A, we continue to use the task numbers initiated in the Phase 1A report. Tasks 3 and 6 have been combined in one section as they both concern seismic bracing of mechanical and electrical systems. Tasks 9 and 10 have been combined as they both concern doors throughout the facility, task 9 is specific to commercial-type doors; task 10 is specific to detention-type doors. All others are separated into their own tabbed sections.

Each task narrative is divided into three sections followed by the related drawings, schedules and/or cut sheets referenced in the text. The first section is a *General Summary* of the task, the second section details the *Findings* resulting from the field surveys, and the third section outlines *Proposed Scope Options* to correct the deficiencies found.

#### Items of Note

1. We are aware that doing construction projects in an occupied jail facility poses logistical and security issues that must be fully addressed before any work is attempted. For all of the scope options identified in this report, **the logistics of relocating inmates, staff and programs will pose an additional cost to the County that is not included in this estimate.** The next phase of this work will include several meetings with the County and jail staff to identify which tasks you want to implement. As a part of that dialogue, identifying and planning the logistics for each task will need to be discussed so we can properly prepare the documents to address how they can be successfully accomplished. Along with that, the team, including the County, will identify the costs associated with our plan. As the County considers these scope options, we encourage you to think about what logistical issues will need to be addressed, and how the operational costs will add to the design and construction costs estimated and presented in this report. Keep in mind, combining all the tasks into one project will yield the greatest value, since the operational costs would be divided for tasks that can be completed at the same time.

2. The **existing generator** is loaded to its maximum available capacity. There are several tasks that require a new generator. In some cases, the cost for a new generator is included in the estimate, in some cases it is not. In each case, the generator recommended for that particular scope option has been sized for that option only, and the cost for that size generator is included in the estimate. Should the County decide to pursue multiple tasks where a generator is necessary, we would combine these items on one generator sized for all the connected loads. There will be some savings realized in doing that.

#### Task Summary

##### Tasks 3/6 – Lack of Seismic Bracing on Domestic Water Piping (3) and Heat Generating Systems (6)

Per ASCE (American Society of Civil Engineers) 7-10, section 13.2, code compliant seismic design requires the design of the vertical (gravity) supports as well as the restraint (brace arms) components. The building equipment does not meet this code, although it may have met the code in force when the jail was designed and built. Field observations and plan review revealed much of the structure was designed using precast hollow-core slabs, resulting in additional challenges and costs in bringing the bracing up to current code requirements. The current IBC (International Building Code) requires the use of anchors approved for cracked concrete conditions that meet the requirements of ACI-318 (American Concrete Institute) for post installed concrete anchors. Some destructive testing will be necessary to determine if the current supports meet this requirement. Destructive testing is included in the scope options listed below. For estimating purposes, the scope and cost included in this phase reflect the replacement of 100% of the vertical supports and restraint components.

Due to the high concentration of utilities in small spaces with limited access, the ceilings would have to be removed prior to design and installation of seismic upgrades throughout most of the building. Should partial improvements or upgrades be undertaken; the roof mounted equipment, "Mechanical Tray", Boiler and Electrical rooms should be given priority. These areas house the most vital components of the Mechanical/ Plumbing/Heating/Electrical (MPHE) systems.

The team has identified two (2) potential scope options for this task.

Scope Option 3/6-1) Seismically engineer and restrain the existing equipment, and any new equipment and the other MPHE utilities on the roof, in the mechanical tray, boiler, mechanical and electrical rooms.

Scope Option 3/6-2) Seismically engineer and restrain the remaining deficiencies not corrected in Scope Option 3/6-1.

**Design Team Recommendations:**

We recommend not implementing either of these scope options. The building was not designed under current seismic code requirements, but likely met the code requirements at the time of its original design and construction. It is not cost effective to complete a full seismic analysis and upgrades for a building that is expected to be vacated in the next five-ten years. The logistics of implementing either or both of these scope options could require a multi-year and expensive process. Without addressing the building structural code deficiencies, completing a full seismic retrofit on the all equipment throughout the entire facility is not the best use of County funds or time.

**Task 4 – Multiple and ongoing failures of the domestic water distribution systems**

This task included investigating known locations where the domestic water distribution piping system is failing and identifying options to prevent future failures. The domestic cold water system enters the building in the basement mechanical room and passes through a backflow preventer assembly before being piped throughout the facility. Domestic hot water is created at 110°F by two gas fired tank type water heaters located in the basement mechanical room. Much of the existing domestic water piping system has been replaced on an as needed basis over the years. . In addition, staff had reported that inside the air handling unit's air tunnels, the bottom of the unit's casing are showing signs of rust. The field survey found no visible leaks in pipes or at the air handling units.

The team has identified two (2) potential scope options for this task.

Scope Option 4-1) Continue to monitor the domestic water system for leaks, water velocity noise, and water hammer.

Scope Option 4-2) Install moisture eliminators.

**Design Team Recommendations:**

We recommend moving forward with both scope options 1 and 2. Our documents will be written such that an HVAC contractor, approved by the unit manufacturer, would install the moisture eliminator and fan motor replacement.

**Task 5 – Fire Sprinkler coverage does not appear to meet current code**

The facility is provided with fire sprinkler systems that provide partial coverage in the building. Wet-pipe and dry-pipe automatic sprinkler protection is provided in most office, storage, and egress paths. Only limited-coverage, manually-operated, deluge systems are provided in the offender housing areas. This does not meet current IBC and NFPA 13 requirements, which requires automatic sprinkler protection throughout all rooms, cells, and spaces. Replacement of the deluge systems with code-compliant wet-pipe sprinkler systems using detention (tamper-resistant) sprinkler heads would be required to meet current codes. While there are several other deficiencies noted, the lack of automatic sprinklers in the offender housing areas should be considered the highest priority. These areas present a high fire safety risk due to the high concentration of occupants and the restriction of free movement in the event of a fire.

The team has identified three (3) potential scope options for this task.

Scope Option 5-1) Provide new wet pipe sprinkler protection in the second and third floor housing units fed from the existing 6-inch standpipe risers in the stairwells. Demolish existing deluge systems.

Scope Option 5-2) Extend wet pipe and dry pipe sprinkler protection to unsprinklered areas in the basement, first, mezzanine, and second floors.

Scope Option 5-3) Maintenance and repair of other minor deficiencies throughout the building.

**Design Team Recommendations:**

We recommend moving forward with scope option 5-3 immediately. This will require the services of a certified fire sprinkler contractor to add and relocate sprinkler heads. Further discussion with the County and Jail staff is paramount to moving forward with options 5-1 and 5-2. As these are Life Safety issues, we recommend moving forward with design for both options 5-1 and 5-2. While we can complete the drawings and specifications for this work quickly, these two scope options are likely to span a multi-year construction period, due to the logistical challenges of relocating inmates and staff, and finding space for a contractor to do the work. There are many logistical issues to be identified, discussed and solved before any actual work can commence.

**Task 7 – Jail lacks a code compliant smoke evacuation system**

The facility currently does not have a smoke control system for the two story housing units on the west side of the building. Current code requires a smoke control system connected to the fire alarm system be installed to maintain a smoke layer 6 feet above a walking surface that forms a portion of a required egress system within the smoke zone. The facility has an evacuation procedure in place for relocating inmates in the event of a smoke or fire event in the building. The typical approach to providing smoke control in the housing units is to use independent mechanical exhaust smoke control system in each of the housing units.

The team has identified two (2) potential, mutually exclusive, scope options for this task.

Scope Option 7-1) Install a code compliant smoke exhaust system in each of the two story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.

Scope Option 7-2) Install a smoke exhaust system in each of the two story housing units to maintain the smoke layer 3 feet above the floor of the upper cells.

**Design Team Recommendations:**

The design team has found several problems to installing a smoke control system and therefore recommends not implementing either option. First, scope option 7-2 is not code compliant, but is a temporary “band-aid” to mitigate smoke accumulation. Since it is not code compliant, we would not make a recommendation to fund and move forward with construction. Scope option 7-1 requires adding openings to the exterior roof and wall at the cells. Adding openings to the roof requires removing the 8’ wide x 20’ long hollow core concrete roofing panels above the housing unit one at a time, then replacing them with new cast-in-place concrete roof panels designed to fit in the same location. The make-up air openings above the existing cell windows in each of the lower level cells also pose structural complications. We can propose a design to cut these opening in the wall, but the wall would then have to be reinforced with shotcrete or concrete overlay along its entire length. While structurally possible, the enormous cost of these two issues alone, far outweighs the outcome for a facility that is planned to be vacated in 5-10 years. Installing electronic louvers that can open enough to bring in make-up air, may pose an insurmountable security breach. In addition, the cell doors on each of those lower level units would need to be automatically opened by the fire alarm control system during a smoke event. This security breach makes this project a non-starter for this system.

Task 8 – institutional Kitchen Equipment has reached the end of its useful life

While some components of the kitchen equipment have been replaced over the years, many of the main components remain from the original construction. Commercial grade kitchen and laundry equipment, of high-end heavy duty quality can be expected to last 20 years in a traditional kitchen environment, less in an institution due to the abusive environment and extended operational hours. The team evaluated items that have exceeded their useful life, and also identified items that have an expected remaining life of less than five years, or are in need of repairs.

The team has identified four (4) potential scope options for this task.

Scope Option 8-1) Replace the following 6 items that have exceeded their useful life: dishwasher, clean dishtable, soiled dishtable, disposer at dishwashing station, worktable at dishwashing station, and walk-In shelving.

Scope Option 8-2) Replace the following 3 items that have an expected remaining life of less than five years: (2) hot holding cabinets,, and the tilting braising pan.

Scope Option 8-3) Repair the following items: walk-In cooler/freezer, disposer at pot wash (problem may be related to the sanitary sewer pipe identified in Task 17), and Hot Top Range.

Scope Option 8-4: Replace existing electrical panelboard serving kitchen equipment. Remove existing abandoned diesel generator system in the basement. Provide new 60kW packaged diesel engine generator

Design Team Recommendations:

We recommend moving forward with scope options 8-1, 8-2 and 8-3, with the caveat that the replaced equipment can be easily disconnected and moved to the new jail facility upon its completion. This may pose some operational challenges during the actual move. The timing to relocate the equipment would have to be carefully coordinated to minimize meal service disruption at both facilities during the transition. To potentially mitigate the time needed to move the new food service equipment from the current jail to the new facility, the county could contract with a food service company to provide temporary meal service until the equipment switchover could be completed.

Task 9 and 10 – Doors in the facility are damaged and in disrepair and security door locks are failing

The majority of the commercial doors and frames are in functional condition, needing minor repair to extend the use of the door assemblies for an additional 5 to 10 years. The majority of the problems with the commercial doors were cosmetic and due to years of heavy use. The problems that came up the most were; disconnected closers on fire rated corridor doors, damage to the finish to about 12" above floor level, sticky locksets, and loose or missing smoke seals.

The detention doors and associated detention hardware exhibit the anticipated wear and tear expected in a 35 year old jail facility. With few exceptions, the originally installed detention door hardware (including locksets, hinges, door position switches and door closers) have reached their useful life. Most of the cell doors and door hinges have been significantly damaged from inmate abuse. Virtually every cell door leaf was damaged as a result of inmates swinging the doors open until they were stopped by the cell front walls. All but a few of the detention door frames are in acceptable condition. The mechanical and electronic mogul key locksets and paracentric key locksets are still generally operational, although most are in need of cleaning and lubrication..

The team has evaluated every door opening and has identified options to replace or repair individual pieces of hardware or replace entire doors and frames. We have grouped the scope options by repair type and identified the doors that fall into each of those categories for this task.

Scope Options 9-1 – 9-11) Replace/repair door hardware on commercial type doors  
Scope Options 10-1-10-12) Replace all detention doors at housing units, including door locksets, hinges and door position switches. Replace specific hardware pieces identified on other detention doors listed.

**Design Team Recommendations:**

We recommend moving forward with all the scope options listed under tasks 9 and 10. Operation of the detention cell doors is critically important, and damaged doors and lockset pose a direct security threat to the staff and ultimately, the community. Tab G details the list of repair/replacement items for specific doors, which are included in all the scope options. We have included our comprehensive list of the condition of each door in the door schedule attachment following the narratives under Tab G.

**Task 12 – Emergency Lighting delay between power outage and emergency generator power up**

Upon loss of normal utility power, the emergency (and other) lighting in the facility goes dark for approximately 10 seconds while the emergency generator system starts and transfers over to power the building's emergency electrical system. In a correctional environment, this delay can present significant safety and security concerns. Implementation of an emergency battery system would be a significant improvement over the existing installation. Areas within the jail such as dayrooms, sally port, corridors, and support spaces where offenders and staff mix should be considered the highest priority.

The team has identified four (4) scope options for this task. Scope option 12-1 has been divided into two mutually exclusive methods to achieve the same end; the county can select one or the other.

Scope Option 12-1A) Provide UL924 listed central emergency lighting inverter/battery system and electrical panelboard to provide uninterrupted power to emergency lighting fixtures in critical jail areas

Scope Option 12-1B) Provide UL924 listed "bugeye" emergency lighting units with integral batteries in critical jail spaces

Scope Option 12-2) Provide UL924 listed "bugeye" emergency lighting units with integral batteries in elevator cabs

Scope Option 12-3) Provide UL924 listed "bugeye" emergency lighting units with integral batteries in exterior recreation areas

Scope Option 12-4) Re-circuit existing lighting in the dormitory spaces to provide additional emergency lighting beyond the current single lamp "night lights".

**Design Team Recommendations:**

We recommend proceeding with scope options 12-1B, 12-2, 12-3, and 12-4 above. Scope option 12-1A is a more permanent solution but the costs outweigh the benefit in a facility expected to be vacated in 5-7 years. Scope Option 12-1B provides similar benefits at a lower cost. These projects should easily aid the jail operations for the next 5-10 years.

**Task 17 – Sanitary waste pipe in the basement recurrently clogs up**

The facility is provided with a traditional waste and vent system to meet the sanitary drain requirements of the plumbing fixtures in the building. The waste piping system connects drains from the upper floors together at the basement level in the ceiling space over the sheriff's offices before exiting the building. Investigation of the piping system involved looking at the known problem locations with the guidance of a facilities representative and discussing the symptoms of the issue, the frequency of the occurrence, any remedies that have already been attempted, and proposed solutions to the issue. Some of the issues were installation issues, while others appear to be operational issues caused by inmate behavior.

The team has identified four (4) scope options for this task.

Scope Option 17-1) Modify the sanitary drain from the kitchen to eliminate backups and promote water flow out of the building.

Scope Option 17-2) Modify shower drains in the cells that are beginning to fail.

Scope Option 17-3) Seal the floor of first floor restroom next to the shower room in the north east corner of the building (Room 155 per as-built drawings)

Scope Option 17-4) Modify the drain pipe in the clothes washing machine drain room and provide ventilation to the space to remove moisture and odors.

**Design Team Recommendations:**

We recommend proceeding with all four scope options. Scope option 17-1 is more complex and will require some logistical coordination to implement. Scope options 17-2, 17-3 and 17-4 are smaller projects and will affect only small areas of the facility. These will be less disruptive to operations and the benefits will outweigh the costs, even for a short term.

**Conclusion**

Our team understands the difficulties of accomplishing some of these options, but we also understand the necessity to promote ongoing operations of the facility until such time as the new Jail can be procured, designed, constructed and occupied. We look forward to working with the County to select and move forward with the scope options recommended in this report. We understand the urgency to get these underway and completed as soon as possible, and we are ready to move on to the next phase, completing design drawings and specifications for the tasks you elect to implement.

**The following table is a summary of the estimated project costs by task and includes a total projects cost and a total cost for the recommended projects.**

<b>LEGEND and NOTES regarding the following table:</b>	
	Orange shading indicates a SCOPE OPTION not recommended by the team to be implemented. Some of the SCOPE OPTIONS are mutually exclusive (see below) of another SCOPE OPTION and are not recommended or included for that reason.
Mutually Exclusive	Indicates a choice between two options presented to accomplish the same outcome
"Cost" column	<b>Bold Black</b> text indicates the total cost of scope options in the list recommended by the team to be implemented in the Whatcom County Jail Renovation project. Costs shown in <b>Orange text</b> are not recommend to be implemented, but were included in the estimate for this phase.
<b>Costs shown in this table are totals – reference the cost estimate in Appendix A for a more detailed breakdown of the estimated costs</b>	

Task	Scope Options	Summary Description	Cost
3/6	3/6-1 (Not recommended)	Seismic restraints for equipment on the roof, in the mechanical tray, boiler, mechanical and electrical rooms	<b>600,092</b>
	3/6-2 (Not recommended)	Seismic restraints for equipment in other areas	<b>1,178,759</b>
4	4-1	Continue to monitor the domestic water system for leaks, water velocity noise, and water hammer	<b>62,010</b>
	4-2	Install moisture eliminators	<b>155,025</b>
5	5-1	Provide new wet pipe sprinkler protection in the second and third floor housing units. Demolish existing deluge systems.	<b>810,595</b>
	5-2	Extend wet pipe and dry pipe sprinkler protection to unsprinklered areas in the basement, first, mezzanine, and second floors.	<b>277,784</b>
	5-3	Maintenance and repair of other minor deficiencies throughout the building	<b>23,316</b>
7	7-1 (Not recommended)	Install a code compliant smoke exhaust system in each of the two story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.	<b>4,096,123</b>
	7-2 (Mutually Exclusive with scope option 7-1)	Install a smoke exhaust system in each of the two story housing units to maintain the smoke layer 3 feet above the floor of the upper cells. <i>[will not accomplish code compliance, cost prohibitive] [NOT ESTIMATED]</i>	0
8	8-1	Replace items that have exceeded their useful life: Dishwasher, Clean Dishable, Soiled Dishable, Disposer at dishwashing station, Worktable at dishwashing station, Ice Bin, and Walk-In Shelving.	<b>132,342</b>
	8-2	Replace items that have an expected remaining life of less than five years: (2) Hot Holding Cabinets, and the Tilting Braising Pan.	<b>98,311</b>
	8-3	Repair: Walk-In Cooler/Freezer, Disposer at Pot Wash, and Hot Top Range.	<b>4,465</b>
	8-4	Replace existing electrical panelboard serving kitchen equipment. Remove existing abandoned diesel generator system in the basement. Provide new 60kW packaged diesel engine generator. <i>[recommended only if another task requiring a new generator is implemented]</i>	<b>245,655</b>
9/10	9-1 – 9-11	Replace/repair door hardware on commercial type doors.	<b>387,009</b>
	10-1 – 10-12	Replace all detention cell doors, including detention hardware. Replace specific hardware pieces identified on other detention doors listed.	<b>1,356,116</b>
12	12-1A (Mutually Exclusive with scope option 12-1B)	Provide UL924 listed central emergency lighting inverter/battery system and electrical panelboard to provide uninterrupted power to emergency lighting fixtures in critical jail areas <i>[will entail adding a generator - cost prohibitive – not recommended]</i>	<b>350,406</b>
	12-1B	Provide UL924 listed “bugeye” emergency lighting units with integral batteries in critical jail spaces	<b>118,067</b>
	12-2	Provide UL924 listed “bugeye” emergency lighting units with integral batteries in elevator cabs	<b>5,581</b>
	12-3	Provide UL924 listed “bugeye” emergency lighting units with integral batteries in exterior recreation areas	<b>6,945</b>
	12-4	Re-circuit existing lighting in the dormitory spaces to provide additional emergency lighting beyond the current single lamp “night lights”.	<b>45,267</b>
17	17-1	Modify the sanitary drain from the kitchen to minimize backups and prevent water from flowing toward the cleanout.	<b>78,877</b>
	17-2	Modify shower drains in the cells that are beginning to fail.	<b>118,563</b>
	17-3	Seal the floor of first floor restroom next to the shower room in the north east corner of the building (Room 154 per as-built drawings)	<b>13,072</b>
	17-4	Modify the drain pipe in the clothes washing machine drain room and provide ventilation to the space to remove moisture and odors.	<b>39,468</b>
<b>TOTAL RECOMMENDED SCOPE OPTIONS</b>			<b>3,978,468</b>
<b>TOTAL ALL SCOPE OPTIONS</b>			<b>9,853,442</b>

## Legend

The following labeling criteria are used to identify photos, cut sheets, drawings and schedules in the document.

Attachment Type	Example:	Identifier or Discipline*	Task Number	Scope Option	Number Sequence or Page Number
Photos	<b>Figure 04.03</b>	Figure	04		03
Cut Sheets	<b>Figure 12.02.01</b>	Figure	12	2	01
Drawings	<b>M17.03.01</b>	M (mechanical)	17	3	01
Schedule	<b>A09.01.03</b>	A (architectural)	09	1	03

\* Disciplines: A (architectural); SR (seismic restraint); E (electrical); M (mechanical/plumbing); FP (fire protection); K (kitchen)

TASKS 3/6 - SEISMIC RESTRAINT (SR) ...TAB B



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Task 3/6 - **Seismic Protection of Mechanical, Plumbing, Electrical and Fire Suppression Systems**

SUMMARY:

International Seismic Application Technology's (ISAT) field survey revealed the Jail, Sheriff's Offices and subsequent improvements and remodels all appear to have been constructed without seismic design or protection for the Mechanical Piping, Plumbing, Heating Ventilation, Air Conditioning (HVAC) Duct, Electrical, and Fire Sprinkler (MPHEF) systems. Some inadequate bracing was observed on the Fire Suppression System. Although this may have complied with the building code enforced at the time of design and construction of the jail, it does not meet current seismic design codes. Many agencies are electing to upgrade their buildings and equipment to comply with more stringent current codes in older buildings in order to mitigate potential catastrophic failures.

Per the FEMA E-47 (Federal Emergency Management Agency) report, "nonstructural failures have accounted for the majority of earthquake damage in several recent U.S. earthquakes". The report also explains the relative investment in commercial facilities.

In general, the structural components of a commercial building account for approximately 15-25% of the original construction cost, while the nonstructural (mechanical, electrical, plumbing, and architectural) components account for the remaining 75-85% of the cost. Contents belonging to the building occupants, such as movable partitions, furniture, and office or medical equipment, represent a significant additional value at risk. When these costs are compared, it becomes clear that the largest capital investment in most commercial buildings is in the nonstructural systems and contents.

Seismic protection of non-structural systems is also needed to ensure continued operations of the facility should a seismic event occur on site. If the building remains in place and structurally sound, but the facility must be evacuated due to flooding, loss of systems, fire, etc. all inmates and staff would have to be relocated to other facilities, complicating the county's services and responses during a natural disaster.

Per ASCE (American Society of Civil Engineers) 7-10, section 13.2, code compliant seismic design requires the design of the vertical (gravity) supports as well as the restraint (brace arms) components. Field observations and plan review revealed much of the structure was designed using precast hollow-core slabs, resulting in additional challenges and costs in bringing the bracing up to current code requirements. The current IBC (International Building Code) requires the use of anchors approved for cracked concrete conditions that meet the requirements of ACI-318 (American Concrete Institute) for post installed concrete anchors. Some destructive testing is necessary to determine if the current supports meet this requirement. Destructive testing is included in the scope options listed below. For estimating purposes, the scope and cost included in this phase reflect the replacement of 100% of the vertical supports and restraint components.

Due to the high concentration of utilities in small spaces with limited access, the ceilings would have to be removed prior to installation of seismic upgrades throughout most of the building. Should partial improvements or upgrades be undertaken; the roof mounted equipment, "Mechanical Tray", Boiler and Electrical rooms should be given priority. These areas house the most vital components of the MPHEF systems, should not require disruption of the MPHEF systems, and ceilings would not have to be removed.

GENERAL FINDINGS:

- 1) Roof: During a seismic event the roof mounted utilities will realize the greatest accelerations and displacements and are likely to fail causing an interruption in the facilities mechanical (HVAC / mechanical piping) systems. There is also a fire and possible explosive hazard from unsecured gas piping.
  - a) There is a rusty 2" gas pipe resting on wood sleepers that is not secured to the structure. A flex connection between the gas pipe and make-up unit will afford some accommodation for the differential movement between the equipment and pipe, however the flex connection alone will not prevent a failure in the pipe and does not meet the requirements of the IBC or ASCE codes (refer to Figure 3/6.01).

Figure 3/6.01: Unsecured rusty gas pipe on roof.



- b) The make-up unit is mounted on stanchions. The stanchions appear to be connected to the roof structure, however there is not a "positive" (bolt through or weld) attachment between the unit and the stanchions. In a seismic event the unit could simply slide off the stanchions disrupting the service to the building, damaging the roof and possibly causing a natural gas leak and fire.
- c) Exhaust fan #3 is supported by and welded to stanchions. The frame between the unit and stanchions is rusty. If the stanchions, frame and connections were engineered and the rust damage has not compromised the integrity of the restraint this unit should stay in place during a "maximum

considered earthquake ground motion" event as defined by the ASCE 7.

- d) The cooling tower is mounted directly to three tube steel rails that are supported by two I-beams. The I-beams are mounted and welded to roof stanchions. The three tube steel rails are bolted on one end to the I-beams, however the other end is cantilevered past and not attached to the second I-beam. The restraint of the unit relies on a cantilevered support system that is only secured by three ½" bolts. This unit is very likely to overturn during a seismic event and may fall off the roof due to its proximity to the edge (refer to figure 3/6.02).
- e) The 5" pipes servicing the cooling tower are mounted on two supports. The support closest to the cooling tower is resting, not positively attached, on the I-Beams supporting the cooling tower and is at risk of sliding off the I-Beams during a seismic event. This support only provides gravity support and affords no seismic restraint. The second pipe support is mounted to the wall where the pipes enter and exit the building. This support does not incorporate any seismic restraints (refer to figure 3/6.02).

Figure 3/6.02: Cooling tower on cantilevered support close to the edge of the roof and 5" pipes that are not seismically restrained.



- 2) Mechanical Tray: The MPHEF systems and equipment in this area of the building are the most at risk due to the high concentration of unrestrained systems. During a seismic event, it is very likely that several systems and pieces of equipment will impact other equipment and systems causing a "domino effect" increasing the damage and system failures. There is limited access to the overhead concrete structure complicating the installation of new seismic restraints.
  - a) None of the suspended MPHEF utilities or mechanical units are seismically braced (refer to figure 3/6.03).

Figure 3/6.03: Unbraced pipes and ducts. Overhead obstructions will interfere with anchorages.



- b) The seven large base mounted mechanical units are all anchored with the same size anchors. It is unlikely the anchorages were engineered based on the size.
- c) Some base mounted duct supports and mechanical units are not anchored (refer to figure 3/6.04).

Figure 3/604: Unanchored equipment and duct supports.



- d) The security pathway access control panels are mounted on a floor to ceiling strut stand. It is unclear if the stand has been engineered to accommodate seismic loading.
- e) Numerous electrical utilities are connected directly (not suspended) to the overhead concrete structure and the floor. The floor mounted systems could be disrupted or fail due to other utilities falling on them during a seismic event. The overhead electrical utilities will interfere with anchorage of bracing to the structure (refer to figure 3/6.03).
- f) There are several locations where a suspended utility is hanging from another suspended utility. These installations can amplify the seismic loading and reactions increasing the likelihood of failures (refer to figure 3/6.05).

Figure 3/6.05: Example of suspended utility suspended from suspended utility.



- g) Many of the supports have oversized holes through the bottom of the overhead hollow core planks. It is undetermined how they are anchored above or if the hangers can accommodate the additional loading that occurs during an earthquake. (refer to figure3/6.06).

Figure 3/6.06: Oversized holes through the bottom of the overhead hollow core planks.



- 3) Basement Boiler/Mechanical and Electrical Rooms
  - a) Due to enclosures, unable to determine if the main electrical switch gear is adequately anchored.

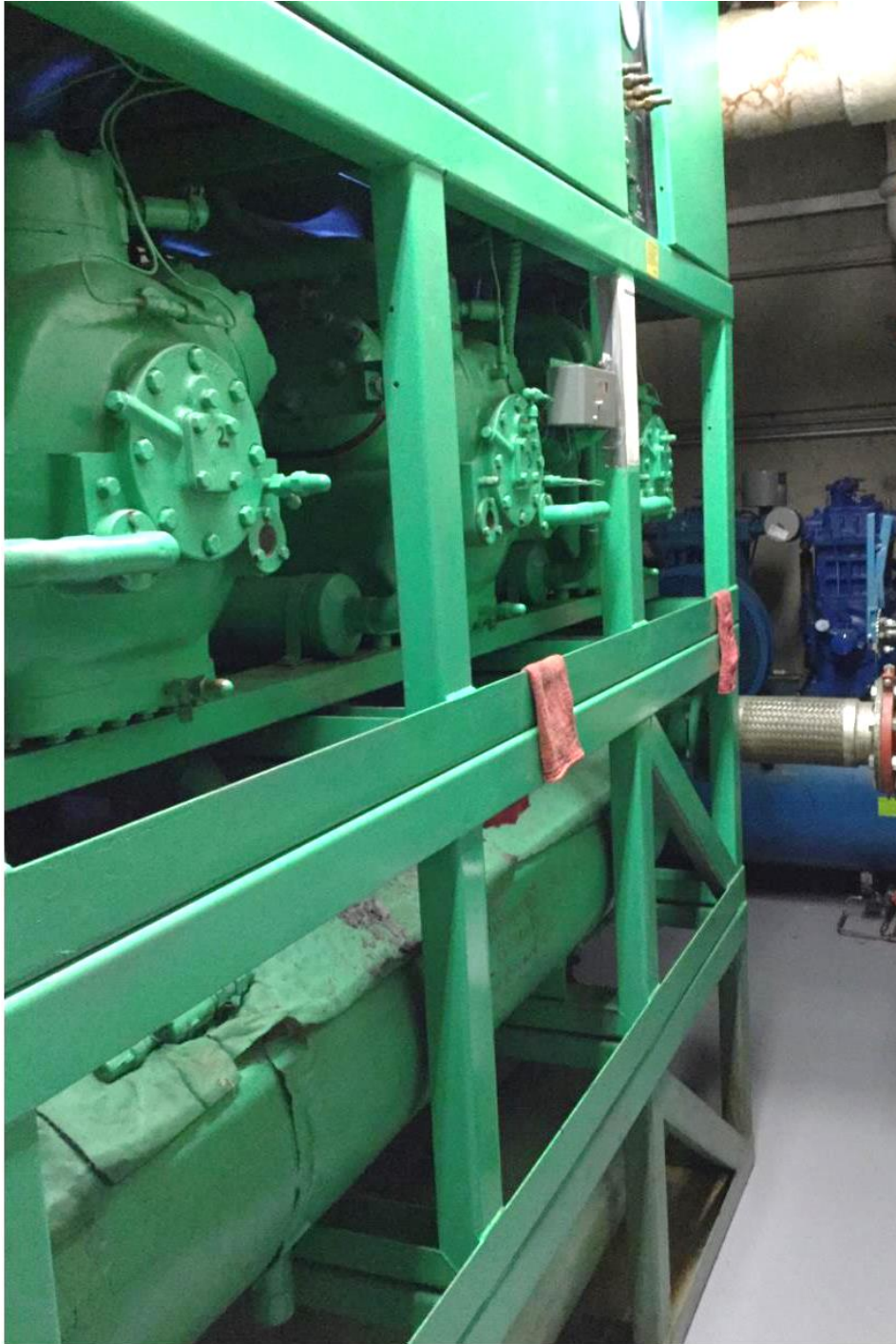
- b) None of the suspended overhead conduits are braced.
- c) Two generators are anchored, undetermined if the anchors are sized correctly. Some of the retaining nuts are loose.
- d) Due to enclosures and the energized systems, unable to inspect anchors on wall mounted panels and equipment.
- e) Suspended mufflers and exhaust pipes for the generators are not braced. If power is disrupted during an earthquake, the generators would activate. If the mufflers/exhaust are compromised, the toxic fumes could be released into the building causing a life safety hazard (refer to figure 3/6.07). If the abandoned generator is removed under tasks 7, 8 or 12, the related piping will also be removed and would not need to be braced.

Figure 3/607: *Unbraced mufflers and exhaust pipes for emergency generators.*



- f) Due to enclosures, unable to determine if the boilers are anchored properly.
- g) The chiller is likely to overturn during an earthquake because it is not anchored and has a high center of gravity (refer to figure 3/6.08).

Figure 3/6.08: Unanchored high center of gravity equipment.



- h) None of the suspended piping or ducts are braced. Many hangers are loose and not supporting the utilities correctly (refer to figure 3/6.09).

Figure 3/609: Unbraced pipes and ducts. Suspended utilities hanging from suspended utilities.



- i) Floor mounted water heaters, storage tank and abandoned air compressor are anchored. These anchors should be checked to ensure they are sized properly.
  - j) There are several locations where a suspended utility is hanging from another suspended utility. These installations can amplify the seismic loading and reactions increasing the likelihood of failures (refer to figure 3/6.09).
  - k) The plans do not accurately reflect all the utilities currently installed in this area.
- 4) Distributed MPHEF systems Basement through Third Floors.
- a) The current plans are not accurate and do not show all existing utilities.
  - b) Some hangers are spaced to far apart or in disrepair.
  - c) Anchors installed as part of the 1981 construction appear to be post installed wedge type or through bolt connections. Further investigation would be needed to confirm code compliance.
  - d) Anchors installed as part of the 1988 and other remodels and additions appear to be “flush shell” or lead inserts and are not compliant with the current code.

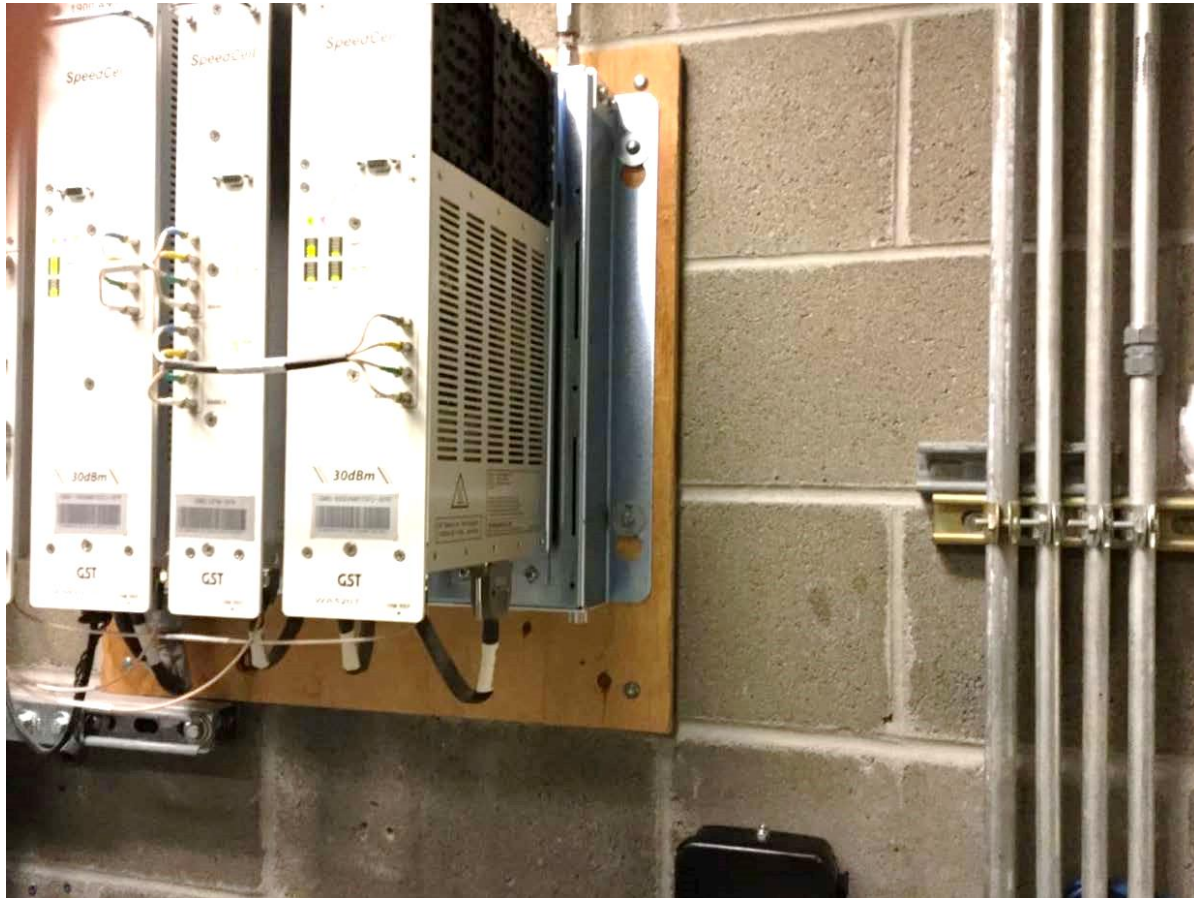
- e) None of the equipment or distributed utilities are seismically restrained.
- f) Observed clutter stacked on utilities, utilities being used for hanging supports including a pull up harness hanging from a sprinkler pipe. Using utilities for supports increases the loading on the utility and anchors and could contribute to failures of the systems. (refer to figure 3/6.10).

Figure 3/6.10: *Suspended utilities used for hanging supports.*



- g) There are several locations where a suspended utility is hanging from another suspended utility, including a suspended mechanical unit hanger screwed to the bottom of a large duct in the kitchen area. These installations can amplify the seismic loading and reactions increasing the likelihood of failures.
  - h) Some HVAC units are suspended on straps while other units are suspended with all-thread rod. Units that are suspended via straps need to have new hangers that utilize all thread rods and code complaint anchors.
- 5) First, second and third floor Electrical rooms
- a) Some wall mounted equipment and conduits anchored to walls with non-code compliant anchors (refer to figure 3/6.11).

Figure 3/6.11: Wall mounted equipment and conduits with non-code compliant anchors.



- b) Suspended electrical raceways are not braced.
- 6) Fire protection system
- a) Some bracing is installed on the vertical risers in the stairwells (refer to figure 3/6.12).

Figure 3/6.12: Bracing in stairwells.



- b) Seismic bracing is not provided on all feed and cross mains at the locations prescribed by NFPA 13 (refer to figure 3/6.13 and drawing SR3/6.02.02). Installed bracing is mostly limited to the vertical risers in the stairs.

Figure 3/6.13: Unbraced sprinkler pipe valve assembly.



- c) Seismic bracing components, where used, are not designed and calculated for the region and are not UL (Underwriters Laboratory) listed for use in fire protection systems, as required by NFPA 13 (National Fire Protection Agency).
- d) Branch lines are not provided with restraints as required by NFPA 13.
- e) Sprinkler heads at suspended ceilings are not provided with oversized escutcheons to permit differential movement, as required by ASCE 7.
- f) The ability to maintain fire protection piping integrity after a seismic event is important for continued fire/life safety protection, building operations, and to prevent significant water damage to the building and contents.
- g) A 6-inch diameter fire main is installed under the building slab for approx. 150 feet, and feeds a main 6-inch wet pipe sprinkler riser located at the east wall of the Boiler/Mechanical Room in the basement level. The installation of a fire main under a building is not permitted by NFPA 13 and NFPA 24, as a failure of a fitting or pipe section can result in significant water damage. In addition there is insufficient clearance around pipe penetrations through the floors per NFPA 13. Refer to drawings SR3/6.02.01.

OPTIONS FOR IMPROVEMENTS AND UPGRADES:

- 1) Scope Option 3/6-1 – Seismically engineer and restrain the existing equipment, and any new equipment and the other MPHEF utilities on the roof, in the mechanical tray, boiler, mechanical and electrical rooms. These areas house the most critical components, are most at risk, do not require the removal of ceilings and could be able to be completed with minimal or no interruption of services. The cost estimate includes design and construction of the following scope of work.
  - a) Roof
    - i) The gas pipe will be repaired or replaced with a corrosion resistant pipe. The gas pipe will be mounted to engineered roof stanchions attached directly to the roof structure. .
    - ii) All roof mounted equipment will be remounted on seismically designed supports that penetrate the roof membrane and attach directly to the roof structure.
    - iii) The pipes servicing the cooling tower will be mounted on new seismically engineered supports.
    - iv) The roof membrane will be repaired and portions replaced as required by the new work. (The estimate reflects 50% of roof membrane replacement for this scope option.)
  - b) Mechanical Tray
    - i) A consultant specializing in site survey and mapping of existing utilities will create an accurate set of plans and/or 3D model for all MPHEF utilities in this area.
    - ii) A comprehensive code compliant seismic restraint and vertical support system will be designed for this area. (The estimate for this phase assumes 100% replacement in this space.)
    - iii) Miscellaneous electrical utilities will be combined on common runs with trapeze type hangers for bracing where that opportunity exists.
    - iv) Once installation is complete, inspection by the authority having jurisdiction and a conformance review letter from the design professional will be completed.
  - c) Basement Boiler/Mechanical and Electrical Rooms
    - i) A consultant specializing in site survey and mapping of existing utilities will create an accurate set of plans and/or 3D model for all MPHEF utilities in this area.
    - ii) Hangers will be repaired and corrected to eliminate utilities hanging from other utilities.
    - iii) A comprehensive code compliant seismic restraint and vertical support system will be designed for this area. (The estimate for this phase assumes 100% replacement in this space.)
    - iv) Once installation is complete, inspection by the authority having jurisdiction and a conformance review letter from the design professional will be completed.
- 2) Scope Option 3/6-2- The remaining deficiencies not corrected in scope option 3/6-1 would be addressed in this option. Ceilings will need to be removed and MPHEF services will need to be interrupted during construction. Occupants will need to be temporarily relocated, the costs for which are NOT included in the estimate. The cost estimate includes design and construction of the following scope of work.
  - a) Distributed MPHEF systems Basement through Third Floors.
    - i) A consultant specializing in site survey and mapping of existing utilities will create an accurate set of for all MPHEF utilities in this area. These areas will not need to be 3D modeled.

- ii) A comprehensive code compliant seismic restraint and vertical support system will be designed for these areas to include:
  - (1) Replace strap supports with all-thread rod hangers for suspended equipment.
  - (2) Provide new hangers where hangers are missing.
  - (3) Destructive testing will be done on a random selection of vertical support anchors and hangers. Documents will be completed to replace those that are not code compliant. (For estimating purposes at this phase, we have included replacement of 50% of the vertical support anchors and hangers.)
  - (4) All utilities supported from other utilities will be redesigned with independent code compliant supports.
- iii) Once installation is complete, inspection by the authority having jurisdiction and a conformance review letter from the design professional will be completed.
- b) First second and third floor Electrical rooms
  - i) Provide anchors and seismic restraints of all suspended utilities, ground and wall mounted equipment, panels, conduits, etc.
  - ii) Once installation is complete, inspection by the authority having jurisdiction and a conformance review letter from the design professional will be completed.
- c) Fire protection system
  - i) New and existing fire protection systems will be seismically restrained to meet the current NFPA-13 standard
  - ii) Inspection will be conducted by the Fire Marshal.
  - iii) Abandon in place the existing fire main under the building slab. Provide a new main, 6-inch wet pipe sprinkler riser, directly through the east wall of the Boiler/Mechanical Room in the basement level from Prospect Street.
  - iv) Enlarge openings around fire protection floor penetrations to meet NFPA 13 requirements.

# TASK 4 - DOMESTIC WATER DISTRIBUTION ...TAB C



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## TASK 4 - Plumbing System

### SUMMARY:

The facility is provided with domestic cold water and domestic hot water systems to meet the requirements of the plumbing fixtures in the building. Domestic hot water is created at 110°F by two gas fired tank type water heaters located in the basement mechanical room. Each hot water heater includes a circulation pump to keep the domestic hot water system warm at all times and reduce the amount of time before hot water is available at a fixture. The domestic cold water system enters the building in the basement mechanical room and passes through a backflow preventer assembly before being piped throughout the facility.

This task included investigating known locations where the domestic water distribution piping system is failing. The Whatcom County Facilities staff revealed much of the domestic water piping system has been replaced over the years on an as needed basis. The team was asked to check the domestic water piping for the possibility of preventing future failures.

In addition, the engineers were asked to look at the air handling units on the mechanical tray level of the building. Facilities staff has reported that inside the unit's air tunnels, the bottom of the unit's casing is showing signs of rust. The team was asked to investigate and determine where the rust is originating, and if there is something to slow or stop future problems.

### GENERAL FINDINGS:

- 1) The domestic water system was originally installed during the original construction of the building in 1981. The life expectancy of a copper pipe system is 50-60 years depending on the condition of the water entering the system. Per coordination with facilities staff the plumbing piping system has been replaced on an as needed basis since the original construction. There are currently no known locations where the plumbing piping system has leaks or is failing. Upon inspection of the exposed plumbing piping, there are no current signs of system failure or locations where future failure might occur.
- 2) The drain pans inside the air handling unit cabinets are showing signs of rust. The units are from the original construction in 1981. However, there are currently no visible signs of water leaking from units onto the mechanical tray floor.

### OPTIONS FOR IMPROVEMENTS AND UPGRADES:

- 1) Scope Option 4-1 – Domestic Water Distribution Piping System
  - a) Test the water system to determine if the properties of the water are causing early failure of the copper piping system.
  - b) Track the location of past failures on the plans to identify if there is a pattern where the failures happen. Potential piping design or areas of high water velocity could be adding to premature failure of the copper pipe.
  - c) Continue to have the facilities staff monitor the domestic water system for leaks, water velocity noise, and water hammer.

- 2) Scope option 4-2 – Rusty condensate drain pans of the AHU cabinets (typical 5 units, refer to M4.02.01 through M4.02.02).
  - a) Provide design documents to replace drain pans inside each air handling unit.
    - a) The AHUs either serve the housing/detention areas or the surrounding support spaces. For estimating purposes, our estimate includes the cost for a contractor to provide temporary equipment and ductwork at the mechanical tray level to provide fresh air into the facility and exhaust it out of the facility using the existing duct system. The documents will include requirements for the contractor to verify existing AHU airflow at the time of the pan replacement to assist in sizing the temporary equipment.
      - (1) At the County's option, we could also explore the logistics of moving the inmates out of the facility or to other areas inside the facility during the pan replacement and compare this cost to the cost of the temporary equipment. This option is NOT included in the estimate.
    - b) Due to space constraints the new drain pans will need to be installed in sections that are sealed together at each joint.
    - c) Replacement of the pans will occur during off hours or at a time of day/year when loss of supply/exhaust air and heating/cooling to the impacted spaces is least disruptive (as directed by the County).
    - d) Scope will include phasing of the pan replacement to focus on and complete one unit at a time.

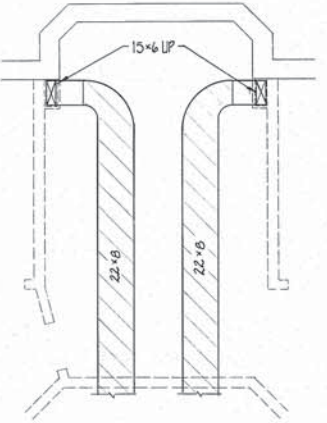
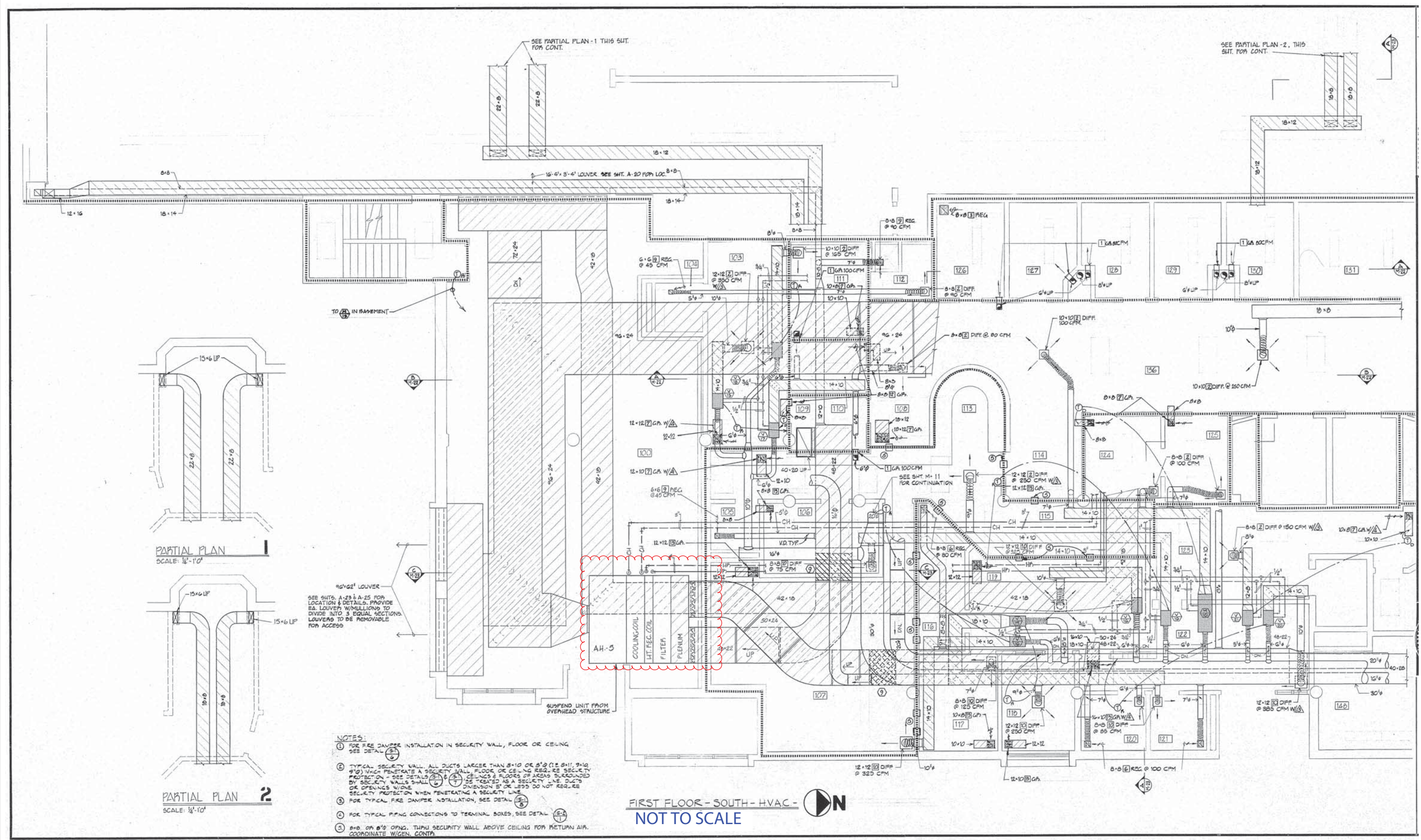
ATTACHED DOCUMENTS:

Scope option 4-1

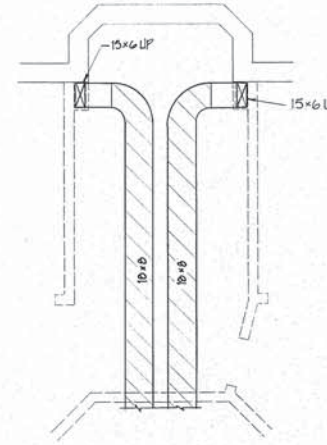
NA

Scope option 4-2

M4.02.01 through M4.02.02 – Location of Air Handling Units



PARTIAL PLAN  
SCALE: 1/4"=1'-0"



PARTIAL PLAN 2  
SCALE: 1/4"=1'-0"

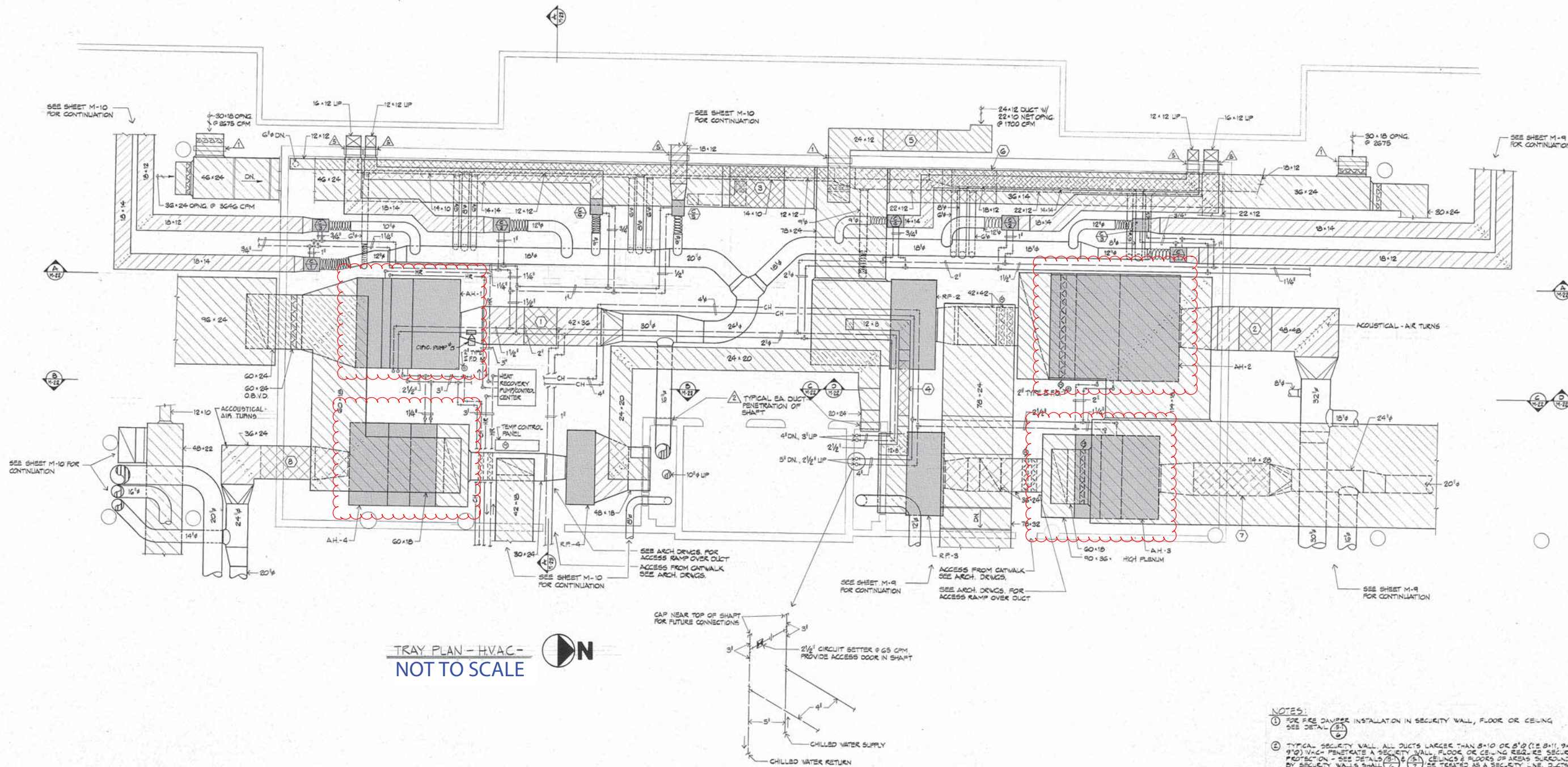
96"x62" LOUVER  
SEE SHTS. A-23 & A-25 FOR LOCATION & DETAILS. PROVIDE 24" LOUVER WITH LUGS TO DIVIDE INTO 3 EQUAL SECTIONS. LOUVERS TO BE REMOVABLE FOR ACCESS.

- NOTES:
- 1 FOR FIRE DAMPER INSTALLATION IN SECURITY WALL, FLOOR OR CEILING SEE DETAIL (S-1)
  - 2 TYPICAL SECURITY WALL. ALL DUCTS LARGER THAN 8"x10" OR 8"x8" (12 SHU, 9"x10" 9"x10") WHICH PENETRATE A SECURITY WALL, FLOOR OR CEILING REQUIRE SECURITY PROTECTION - SEE DETAILS (S-1) & (S-7). CEILING & FLOOR OF AREAS SURROUNDED BY SECURITY WALLS SHALL BE TESTED AS A SECURITY LINE. DUCTS OR OPENINGS WIDER OR DEEPER THAN DIVISION 5" OR LESS DO NOT REQUIRE SECURITY PROTECTION WHEN PENETRATING A SECURITY LINE.
  - 3 FOR TYPICAL FIRE DAMPER INSTALLATION, SEE DETAIL (S-1)
  - 4 FOR TYPICAL PIPING CONNECTIONS TO TERMINAL BOXES, SEE DETAIL (S-1A)
  - 5 8"x8" OR 8"x6" OPNG. THRU SECURITY WALL ABOVE CEILING FOR RETURN AIR. COORDINATE W/GEN. CONTR.

FIRST FLOOR - SOUTH - HVAC - NOT TO SCALE

SCOPE OPTION 4-2: Rusty condensate drain pans in the AHU cabinets

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA



TRAY PLAN - HVAC -  
NOT TO SCALE

- NOTES:
- 1 FOR FIRE DAMPER INSTALLATION IN SECURITY WALL, FLOOR OR CEILING SEE DETAIL (S-1)
  - 2 TYPICAL SECURITY WALL. ALL DUCTS LARGER THAN 8"10 OR 8"8 (12 8"11, 9"10, 9"8) WHICH PENETRATES A SECURITY WALL, FLOOR OR CEILING REQUIRE SECURITY PROTECTION - SEE DETAILS (S-2) & (S-3). CEILING & FLOOR OF AREAS SURROUNDED BY SECURITY WALLS SHALL (S-4) BE TREATED AS A SECURITY LINE. DUCTS OR OPENINGS W/ORE DIMENSION 8" OR LESS DO NOT REQUIRE SECURITY PROTECTION WHEN PENETRATING A SECURITY LINE.
  - 3 FOR TYPICAL FIRE DAMPER INSTALLATION, SEE DETAIL (S-5)
  - 4 FOR TYPICAL PIPING CONNECTIONS TO TERMINAL BOXES, SEE DETAIL (S-6)
  - 5 SEE SHIT. M-17 FOR COIL PIPING DIAGRAMS.

SCOPE OPTION 4-2: Rusty condensate drain pans in the AHU cabinets

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA

TASK 5 - FIRE PROTECTION SYSTEM ...TAB D



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**TASK 5 – Fire Protection System**

**SUMMARY:**

The facility is provided with fire sprinkler systems that provide partial coverage in the building. Wet-pipe and dry-pipe automatic sprinkler protection is provided in most office, storage, and egress paths, but only limited-coverage, automatically-operated, deluge systems are provided in the offender housing areas. This does not meet current IBC and NFPA 13 requirements, which requires automatic sprinkler protection throughout all rooms, cells, and spaces. Replacement of the deluge systems with code-compliant wet-pipe sprinkler systems using institutional (tamper-resistant) sprinkler heads would be required to meet current codes.

While there are several other deficiencies noted, the lack of automatic sprinklers in the offender housing areas should be considered the highest priority. These areas present a high fire safety risk due to the high concentration of occupants and the restriction of free movement in the event of a fire. Fire sprinklers are important as they provide automatic fire detection and control of a fire in its earliest stages of growth. By applying water directly to the fire and pre-wetting any adjacent contents, heat and smoke production is significantly reduced and a fire will typically not reach flashover nor extend beyond its room of origin. To be effective, sprinklers must be located in all rooms and areas. A properly installed and maintained automatic sprinkler system often reduces the need to rapidly evacuate occupants from an area.

It is noted, however, that the existing deluge systems appear to meet the building and fire code requirements at the time of original design (1981) and construction (1982). At the time of the facility's design in 1981, the State of Washington adopted the 1976 Uniform Building Code (UBC). 1976 UBC Section 3802.(b).5 required sprinkler protection all Group I Occupancies *except jails, prisons, and reformatories*. The provision of deluge systems would have been deemed to exceed the 1976 UBC requirements.

1976 UBC Section 3802.(b).5:

**Automatic Fire-extinguishing Systems**

**Sec. 3802. (a) General.** Automatic fire-extinguishing systems shall comply with the provisions of this Section.

**(b) Where Required.** Standard automatic fire-extinguishing systems shall be installed and maintained in operable condition as specified in this Chapter in the following locations:

5. In all Group I Occupancies **except jails, prisons and reformatories;** however, the respective increases for area and height specified in Sections 506 (c) and 507 shall be permitted.

**EXCEPTION:** In hospitals of Types I and II -F.R. construction the automatic fire-extinguishing system may be omitted from operating rooms, X-ray rooms, delivery rooms, cardiac and intensive care rooms and patient sleeping rooms not exceeding 600 square feet in area when each such room is provided with detectors of products of combustion other than heat, complying with U.B.C. Standard No. 43-6.

There was a significant change in fire sprinkler requirements in 1984 when the State adopted the 1982 UBC. 1982 UBC Section 3802.(g) required fire sprinkler systems in Group I occupancy jails and prisons for the first time, but allowed deluge systems controlled at a continuously monitored location.

1982 UBC Section 3802.(g):

**(g) Group I Occupancies.** An automatic sprinkler system shall be installed in Group I Occupancies.

**EXCEPTIONS:** 1. In hospitals of Types I, II Fire-resistive and II One-hour

construction, the automatic sprinkler system may be omitted from operating, delivery, cardiac, X-ray and intensive care rooms and patient sleeping rooms not exceeding 450 square feet in area when each such room is provided with smoke detectors connected to a continuously attended station or location within the building. Increases for area and height specified in Sections 506 (c) and 507 shall not apply when this exception is used.

2. In jails, prisons and reformatories, the piping system may be dry, provided a manually operated valve is installed at a continuously monitored location. Opening of the valve will cause the piping system to be charged. Sprinkler heads in such systems shall be equipped with fusible elements or the system shall be designed as required for deluge systems in U.B.C. Standard No. 38-1.

The existing deluge systems appear to meet the 1982 UBC requirements as they are automatically actuated and controlled at a continuously monitored location. This code alternative for deluge sprinkler system continued until 2004, when the State adopted the 2003 International Building Code (IBC), which required full-coverage automatic sprinkler system complying with NFPA 13. Automatic sprinkler systems continue to be required per the currently adopted 2015 IBC and 2013 NFPA 13, Standard for the Installation of Sprinkler Systems.

**SYSTEM DESCRIPTION:**

The building is provided with wet-pipe systems, a dry-pipe system, and thirty-two (32) deluge systems that appear to have met building and fire codes at the time of original installation. There is also a Class I, manual-wet, standpipe system. All systems are supplied from an 8-inch fire service connection to the public water main in Prospect St. An underground vault contains a backflow preventer, post indicator valve (PIV), and three-way combination sprinkler-standpipe fire department connection (FDC). A 6-inch diameter fire main is installed under the building slab for approx. 150 feet, and feeds a main 6-inch wet pipe sprinkler riser located at the east wall of the Boiler/Mechanical Room in the basement level. The installation of a fire main under a building is not permitted by NFPA 13 and NFPA 24, as a failure of a fitting or pipe section can result in significant water damage. The fire protection systems are not seismically braced or protected per current code requirements (see seismic recommendations under Task #3 / #6).

The wet pipe system in the basement area is hydraulically calculated and designed for light hazard and ordinary hazard occupancies per NFPA 13, as evidenced by the design placards on the riser. There is no hydraulic calculation information available for the other levels. The system utilizes schedule 10 and 40 black steel pipe with threaded, welded, and roll grooved fittings. There is a main waterflow and tamper switch in the basement. The other floors are provided with individual waterflow and tamper switches located in the north, south, and center stairwells. Sprinkler heads are standard response, standard spray, and 1/2" orifice heads. The majority of the sprinklers observed are 1982 Central Sprinkler Model A heads. The sprinklers are less than 50 years old and do not require testing or replacement per NFPA 25. Sprinkler coverage is incomplete in several areas as identified below and on included drawings/sketches. Inspection tags indicate the system is tested and maintained on an annual basis.

The dry pipe system is an auxiliary system and is fed downstream of the main 6-inch wet-pipe system. The system provides protection in the vehicle sally port that runs the entire length of the building on the west wall

of the first floor. There was no hydraulic design information on the riser. The system utilizes schedule 10 and 40 black steel pipe with threaded, welded, and roll grooved fittings. The system is provided with a waterflow switch, tamper switch, and low air pressure switch. Sprinkler heads are standard response, standard spray, sidewall, and ½" orifice. The sprinklers are less than 50 years old and do not require testing or replacement per NFPA 25. Sprinkler coverage is incomplete as identified below and on included drawings/sketches. Inspection tags indicate the system is tested and maintained on an annual basis.

The deluge systems are auxiliary systems and are fed downstream of the main 6-inch wet-pipe system. As explained in the previous section, deluge systems do not meet current building code and NFPA 13 requirements, but they likely met or exceeded the requirements of the codes when the facility was constructed in the early 1980's. There are thirty-two (32) deluge system zones, all of which are automatically operated from a deluge release panel located in the Central Control room on the second floor. The systems utilize solenoid valves for on-off flow control and open head spray nozzles. Nozzles are located in the housing dayroom and circulation areas, but are not provided in individual cells. As the systems do not discharge water into the cells, the fire protection provided by these systems is limited.

#### GENERAL FINDINGS:

- 1) The existing wet-pipe and dry-pipe sprinkler systems have significant coverage deficiencies per current NFPA 13 and IBC requirements. The existing deluge systems in the Housing Units provide only partial coverage, and do not meet NFPA 13 and IBC requirements for automatic sprinkler protection in a Group I occupancy.
  - a) Basement – Wet pipe sprinkler coverage is not provided in the Generator, Electrical, and Compressor Rooms.
  - b) First Floor – Dry pipe sprinkler coverage is not provided along the entire west wall of the Vehicle Sally Port.
  - c) Mezzanine – Wet pipe sprinkler coverage is not provided in the east and north areas of the mechanical mezzanine.
  - d) Second Floor – Wet pipe sprinkler coverage is not provided in the Skybridge corridor and in the Housing Units (including the cells). Dry pipe sprinkler coverage is not provided in the Covered Rec Area.
  - e) Third Floor – Wet pipe sprinkler coverage is not provided in the Housing Units (including the cells).
- 2) The fire protection systems are lacking seismic bracing and restraint systems that meet current code requirements. Additional information about this deficiency is included in the seismic recommendations in Task 3/6 under Tab B.
- 3) There were minor deficiencies observed in the existing wet system that require maintenance and repair.
  - a) Basement – There was exercise equipment supported from the sprinkler piping in the Fitness Room.
  - b) First Floor – There is insufficient deflector-to-ceiling distance and missing escutcheons at multiple sprinkler heads in the Food Service area.
  - c) Mezzanine – There is no sprinkler protection below ductwork at the SW corner of the mezzanine.

OPTIONS FOR IMPROVEMENTS AND UPGRADES:

- 1) Scope Option 5-1 – Provide new wet pipe sprinkler protection in the second and third floor housing units fed from the existing 6-inch standpipe risers in the stairwells. Demolish existing deluge systems. Refer to drawings F05.01.01 and F05.01.02.
  - a) All new wet pipe sprinkler protection will be installed in the housing unit dayrooms and cells as required by IBC and NFPA 13.
    - i) Areas affected:
      - (1) Second Floor (Housing Units): 5,190 SF
      - (2) Third Floor (Housing Units): 13,610 SF
    - ii) The new wet pipe systems will be hydraulically calculated for light hazard occupancies and utilize schedule 40 steel pipe, institutional-style (tamper resistant) sprinkler heads, and code compliant seismic bracing. The new systems will be fed from the existing 6-inch risers in the north, south, and central stairs. Sprinklers will be provided in each individual cell, at the day room ceilings, below walkways, etc., for complete coverage. All piping will be concealed within soffits that meet prison standards for tamper resistance.
    - iii) The new wet pipe system will be installed in secure soffits in the dayroom and housing units and all areas where inmates have access.
    - iv) After the new wet pipe systems are installed, tested, and inspected by the Fire Department, the nozzles will be removed and the piping of the existing deluge system abandoned in place.
    - v) Installation of new wet pipe systems will require significant construction activity and cannot be performed in an occupied housing unit. This option would be designed for construction in multiple phases. Inmates and staff will have to be relocated during each phase and may occur over multiple years. Costs for relocating inmates and staff have NOT been included in this phase estimate. .
- 2) Scope Option 5-2 – Extend wet pipe and dry pipe sprinkler protection to unsprinklered non-housing areas in the basement, first, mezzanine, and second floors by extending adjacent sprinkler systems into the areas. Refer to drawings F05.02.01, F05.02.02, F05.02.03, and F05.02.04.
  - a) In the basement, sprinkler protection will be added to the Generator, Electrical, and Compressor rooms by extending the existing wet pipe system. Affected area: 1,000 SF.
  - b) On the first floor, sprinkler protection will be provided along the west wall of the Vehicle Sally port by extending the existing dry pipe system. Affected area: 3,700 SF
  - c) On the mezzanine level, sprinkler protection will be added to the east and north areas by extending the existing wet pipe system. These areas have very difficult access and may require removal of first floor ceilings below to facilitate system installation. Affected area: 1,340 SF.
  - d) On the second floor, sprinkler protection will be added to the Skybridge corridor and Covered Rec Area by installing an auxiliary dry pipe or anti-freeze system. The new dry valve/antifreeze loop will be located in the South Stair. Affected area: 2,260 SF
- 3) Scope Option 5-3 – The following minor deficiencies will be corrected as part of sprinkler system maintenance and repair. Refer to drawings F05.03.01, F05.03.02, and F05.03.03.
  - a) In the basement, remove the exercise equipment supported from the sprinkler piping in the Fitness Room.
  - b) On the first floor, insufficient deflector-to-ceiling distance and missing escutcheons at multiple

sprinkler heads in the Food Service area will be corrected. A fire protection contractor will be required to adjust, modify, or provide replacement sprinklers and escutcheons in accordance with NFPA 13. There are approximately 10 sprinklers affected.

- c) On the mezzanine, three (3) sprinkler heads will be added below the ductwork at the SW corner in accordance with NFPA 13.

ATTACHED DOCUMENTS:

Scope Option 5-1

Drawing F05.01.01, Fire Protection - Second Floor  
Drawing F05.01.02, Fire Protection - Third Floor

Scope Option 5-2

Drawing F05.02.01, Fire Protection - Basement Level  
Drawing F05.02.02, Fire Protection - First Floor  
Drawing F05.02.03, Fire Protection - Mezzanine  
Drawing F05.02.04, Fire Protection - Second Floor

Scope Option 5-3

Drawing F05.03.01, Fire Protection - Basement Level  
Drawing F05.03.02, Fire Protection - First Floor  
Drawing F05.03.03, Fire Protection - Mezzanine

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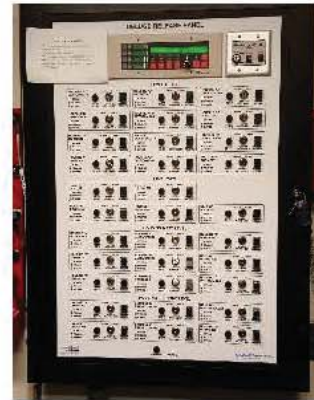
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SCOPE OPTION 5-1 - PROVIDE NEW WET PIPE SPRINKLER PROTECTION IN THE SECOND AND THIRD FLOOR HOUSING UNITS FED FROM THE EXISTING 6-INCH STANDPIPE RISERS IN THE STAIRWELLS. DEMOLISH EXISTING DELUGE SYSTEMS.

NO SPRINKLER COVERAGE PER NFPA 13 - 4.1 (EX DELUGE SYSTEM DOES NOT MEET NFPA 13 REQS FOR COVERAGE)



EX DELUGE HEADS IN DAYROOM AREAS ONLY



EX DELUGE SYSTEM RELEASE PANEL (32 ZONES)

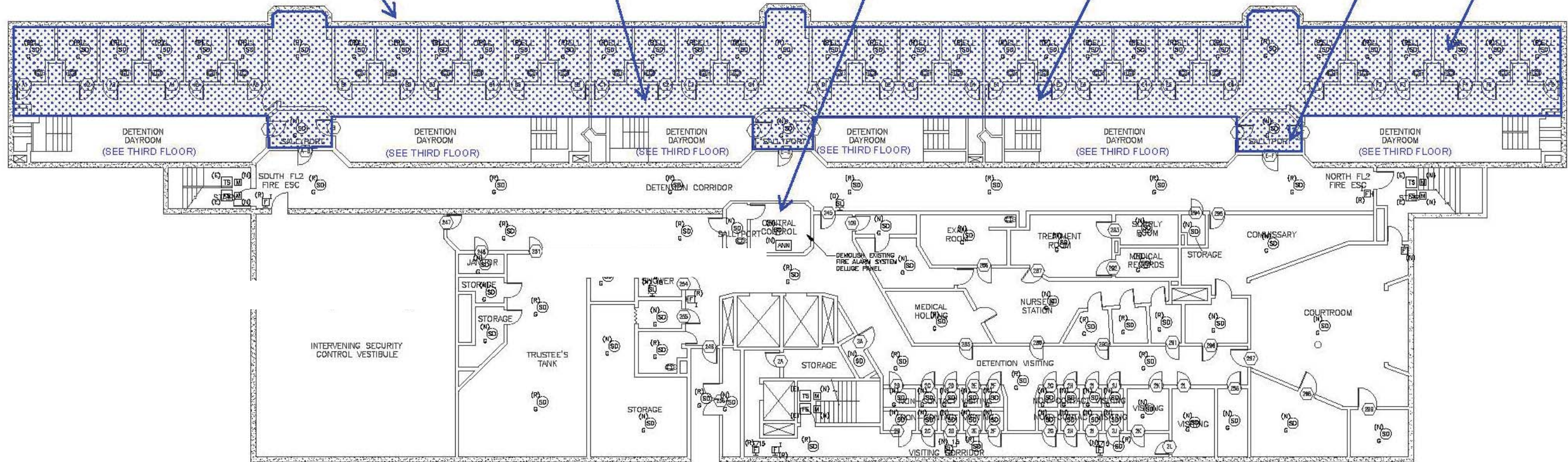


EX DELUGE HEAD IN DAYROOM, TYP



EX DELUGE VALVES ABOVE HARDLID CLG, TYP

NO DELUGE HEADS IN CELLS, TYP



SCOPE OPTION 5-1 - PROVIDE NEW WET PIPE SPRINKLER PROTECTION IN THE SECOND AND THIRD FLOOR HOUSING UNITS FED FROM THE EXISTING 6-INCH STANDPIPE RISERS IN THE STAIRWELLS. DEMOLISH EXISTING DELUGE SYSTEMS.

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WHATCOM COUNTY  
BELLINGHAM, WA

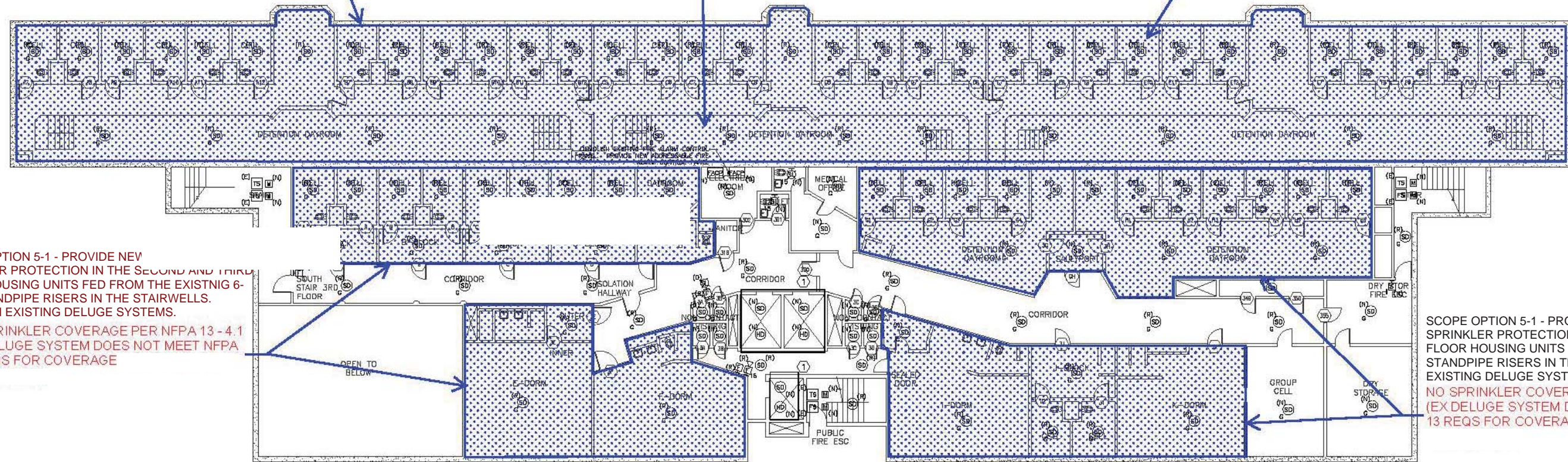
SCOPE OPTION 5-1 - PROVIDE NEW WET PIPE SPRINKLER PROTECTION IN THE SECOND AND THIRD FLOOR HOUSING UNITS FED FROM THE EXISTING 6-INCH STANDPIPE RISERS IN THE STAIRWELLS. DEMOLISH EXISTING DELUGE SYSTEMS.

NO SPRINKLER COVERAGE PER NFPA 13 - 4.1 (EX DELUGE SYSTEM DOES NOT MEET NFPA 13 REQS FOR COVERAGE)



EX DELUGE HEADS IN DAYROOM AREAS ONLY, TYP

NO DELUGE HEADS IN CELLS, TYP



SCOPE OPTION 5-1 - PROVIDE NEW SPRINKLER PROTECTION IN THE SECOND AND THIRD FLOOR HOUSING UNITS FED FROM THE EXISTING 6-INCH STANDPIPE RISERS IN THE STAIRWELLS. DEMOLISH EXISTING DELUGE SYSTEMS.

NO SPRINKLER COVERAGE PER NFPA 13 - 4.1 (EX DELUGE SYSTEM DOES NOT MEET NFPA 13 REQS FOR COVERAGE)

SCOPE OPTION 5-1 - PROVIDE NEW WET PIPE SPRINKLER PROTECTION IN THE SECOND AND THIRD FLOOR HOUSING UNITS FED FROM THE EXISTING 6" STANDPIPE RISERS IN THE STAIRWELLS. DEMOLISH EXISTING DELUGE SYSTEMS.

NO SPRINKLER COVERAGE PER NFPA 13 - 4.1 (EX DELUGE SYSTEM DOES NOT MEET NFPA 13 REQS FOR COVERAGE)

SCOPE OPTION 5-1 - PROVIDE NEW WET PIPE SPRINKLER PROTECTION IN THE SECOND AND THIRD FLOOR HOUSING UNITS FED FROM THE EXISTING 6-INCH STANDPIPE RISERS IN THE STAIRWELLS. DEMOLISH EXISTING DELUGE SYSTEMS.

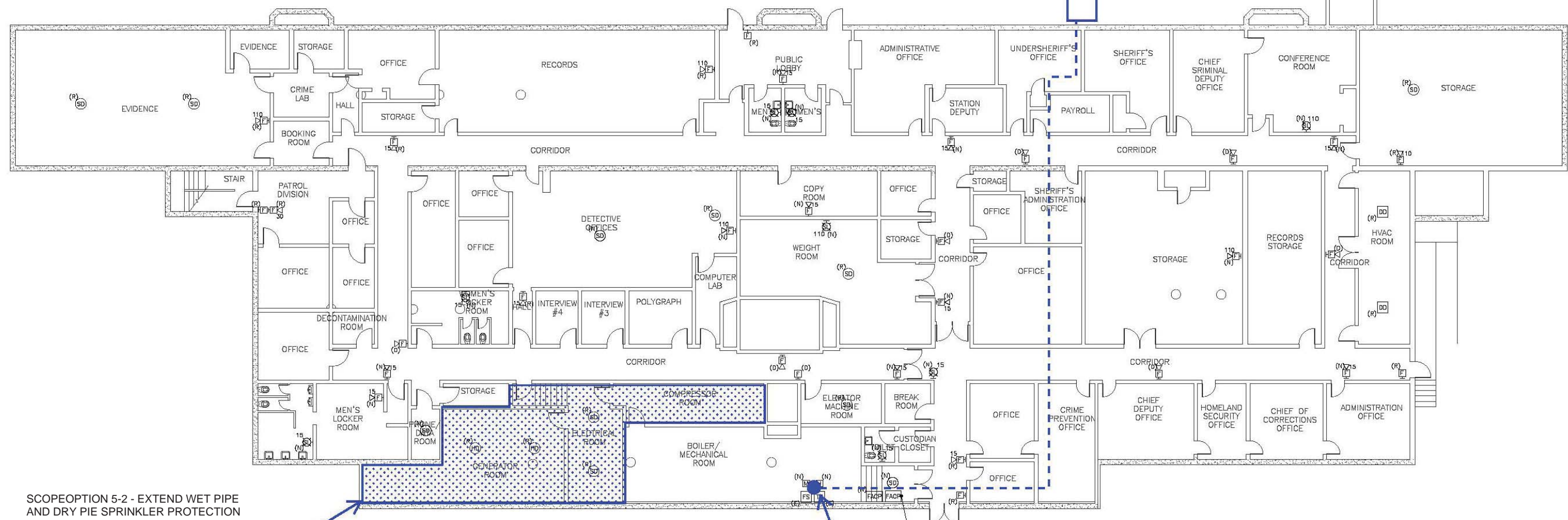
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EX VAULT WITH BACKFLOW PREVENTER, 3-WAY FIRE DEPT CONNECTION (FDC), & POST INDICATOR VALVE (PIV)



EX 8" FIRE SERVICE CONNECTION TO PUBLIC WATER MAIN



SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS

NO SPRINKLER COVERAGE PROVIDED PER NFPA 13 - 4.1

EX 6" SPRINKLER RISER

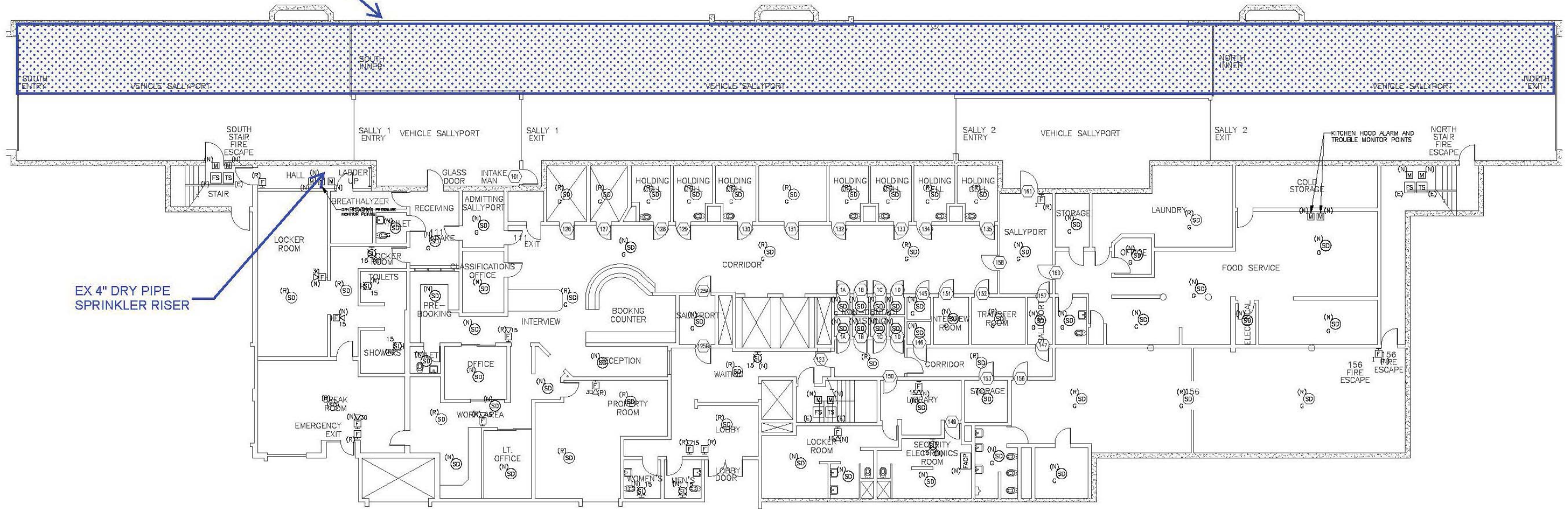


SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS

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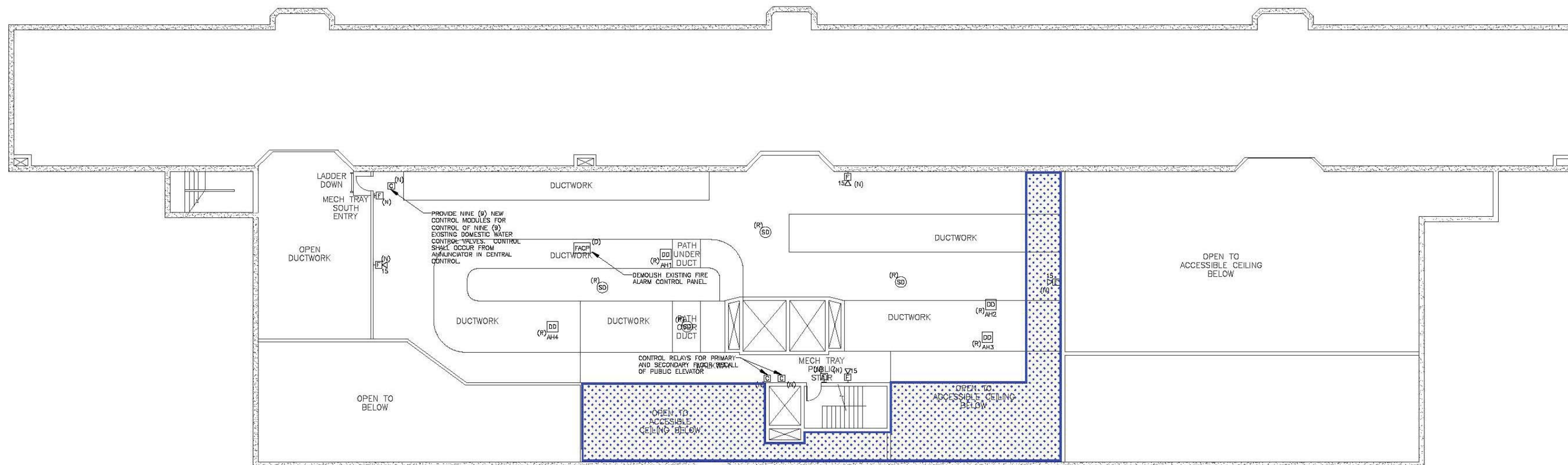
SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS

**INCOMPLETE SPRINKLER COVERAGE PER NFPA 13 (INADEQUATE COVERAGE AND OVERSPACED SPRINKLERS)**

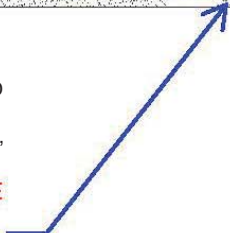


**SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS**

PHASE 1B - JAIL ASSESSMENT  
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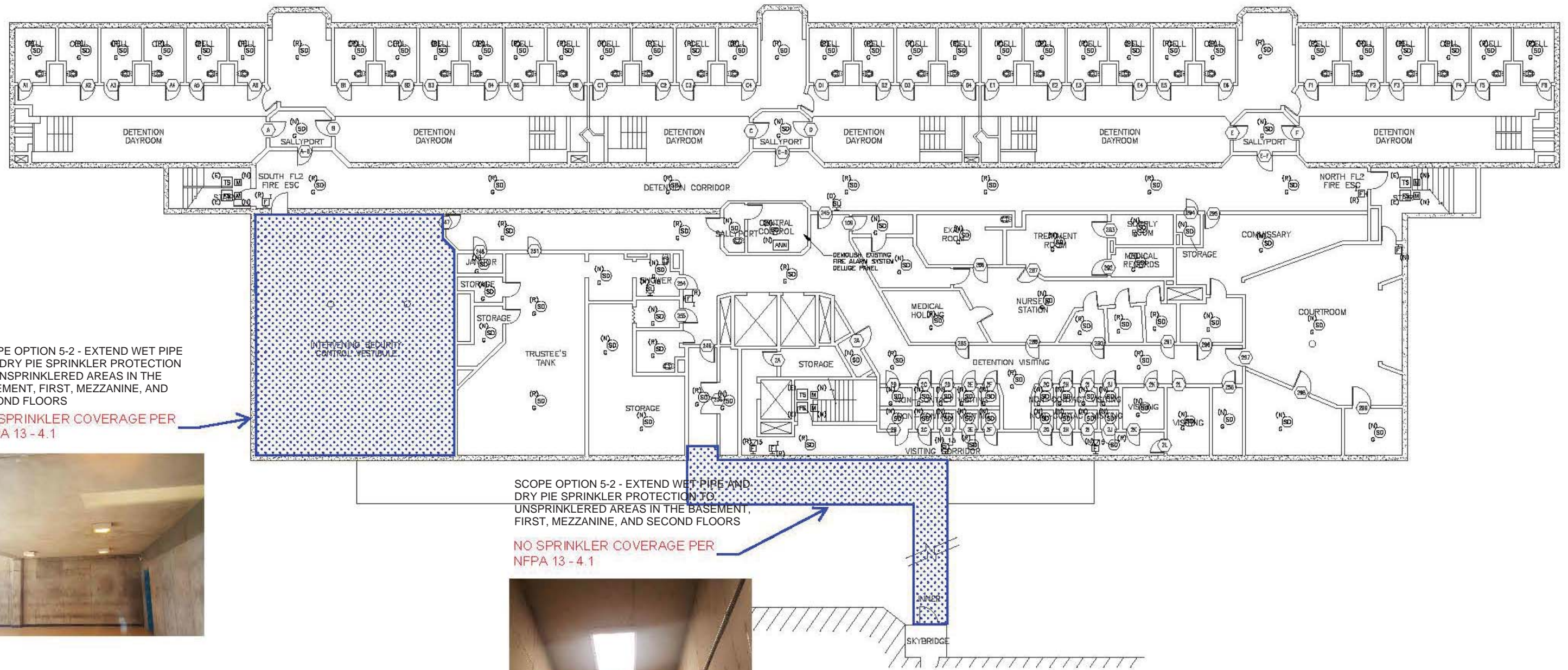


SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS  
**INCOMPLETE SPRINKLER COVERAGE PER NFPA 13 - 4.1 (INADEQUATE COVERAGE AND OVERSPACED SPRINKLERS)**



**SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS**

PHASE 1B - JAIL ASSESSMENT  
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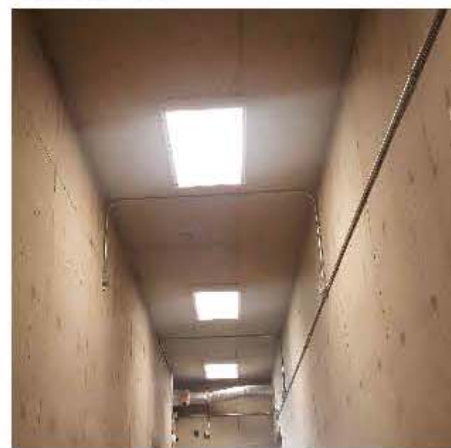
SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIPE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS

NO SPRINKLER COVERAGE PER NFPA 13 - 4.1



SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIPE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS

NO SPRINKLER COVERAGE PER NFPA 13 - 4.1



**SCOPE OPTION 5-2 - EXTEND WET PIPE AND DRY PIPE SPRINKLER PROTECTION TO UNSPRINKLERED AREAS IN THE BASEMENT, FIRST, MEZZANINE, AND SECOND FLOORS**

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA

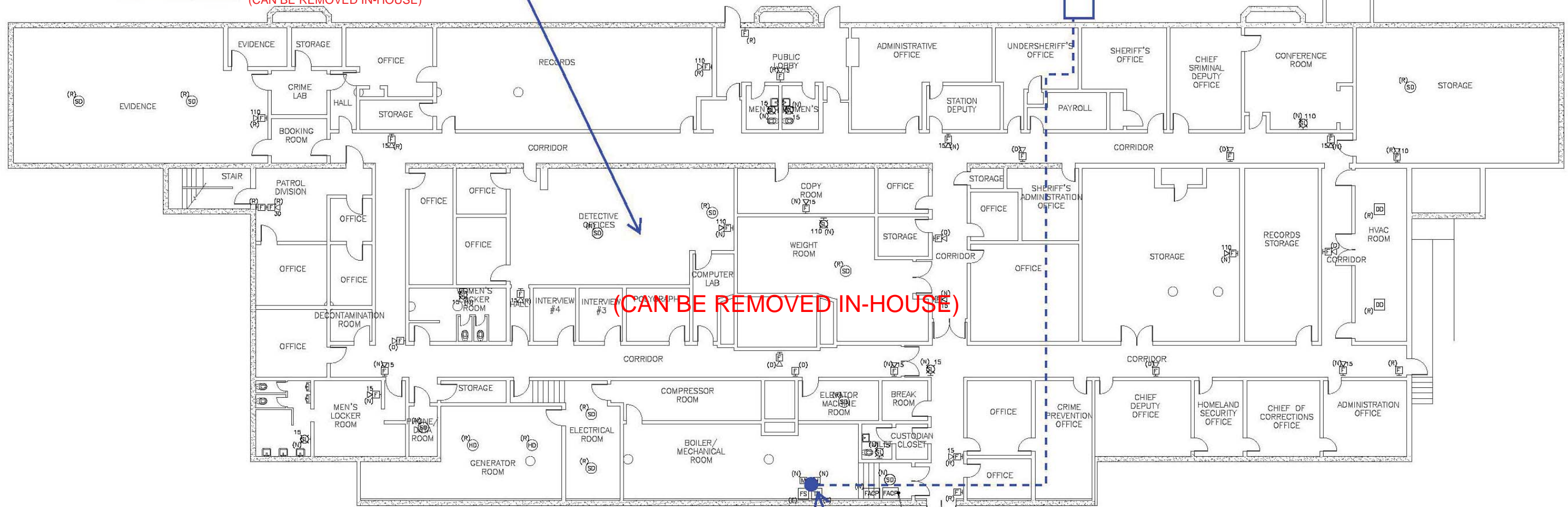


SCOPE OPTION 5-3 - MAINTENANCE AND REPAIR OF MINOR DEFICIENCIES.  
**SPRINKLER PIPING SUBJECT TO EXTERNAL LOADS HUNG FROM PIPING - VIOLATES NFPA 25 - 5.2.2.2 (CAN BE REMOVED IN-HOUSE)**

EX VAULT WITH BACKFLOW PREVENTER, 3-WAY FIRE DEPT CONNECTION (FDC), & POST INDICATOR VALVE (PIV)



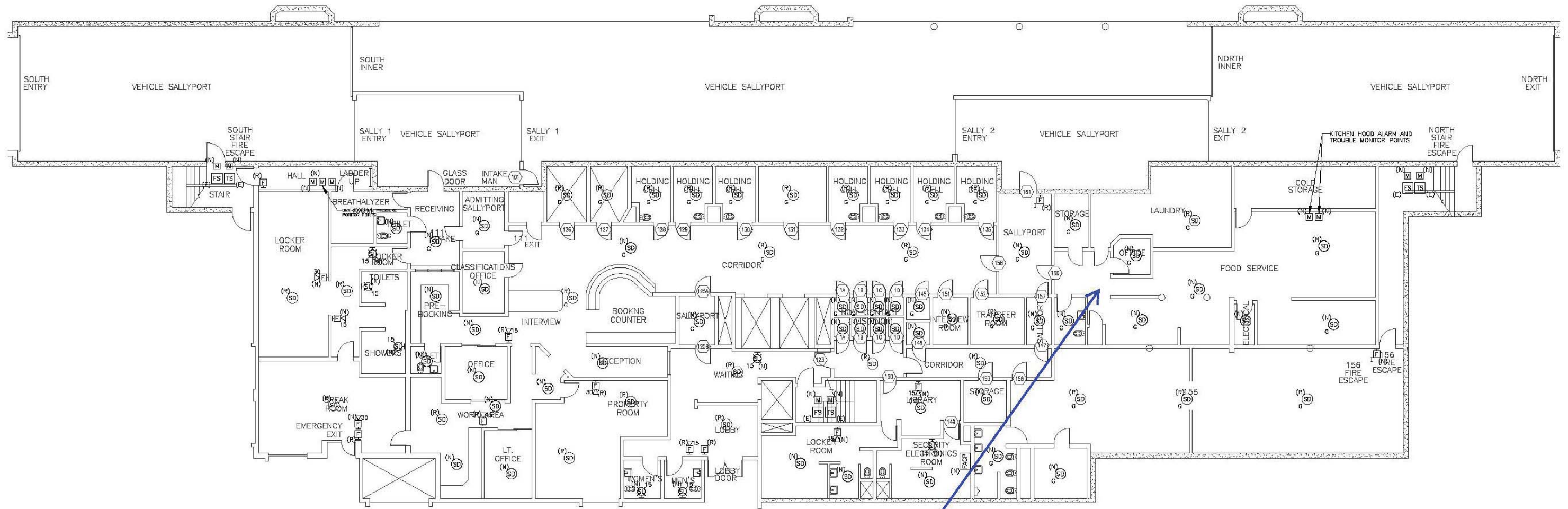
EX 8" FIRE SERVICE CONNECTION TO PUBLIC WATER MAIN



**(CAN BE REMOVED IN-HOUSE)**

EX 6" SPRINKLER RISER





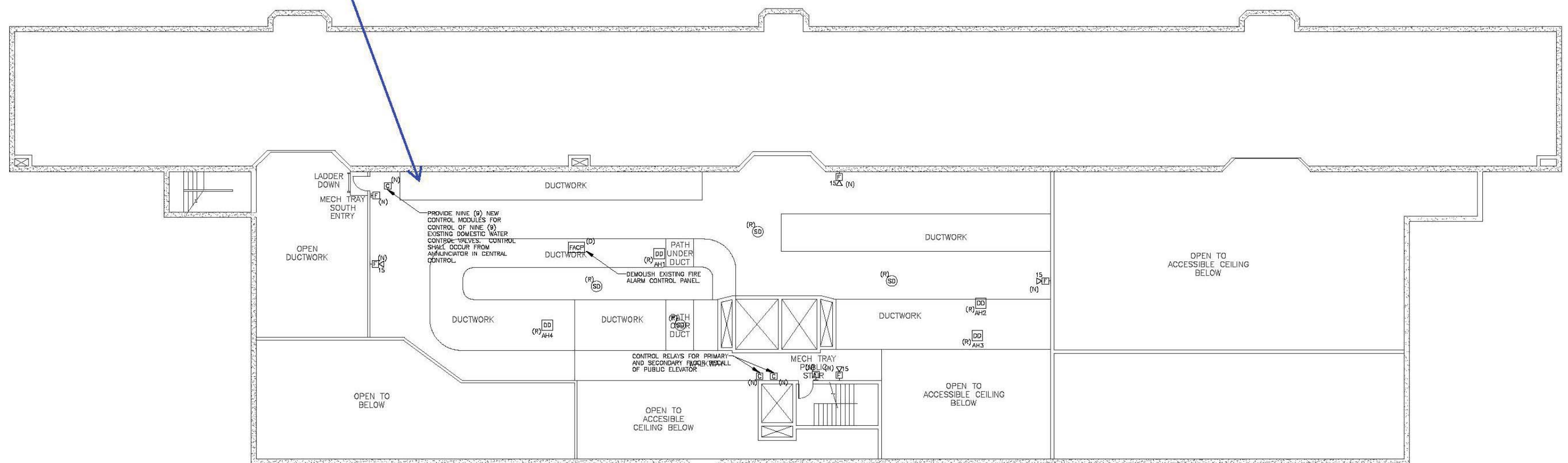
SCOPE OPTION 5-3 - MAINTENANCE AND REPAIR OF MINOR DEFICIENCIES.

INSUFFICIENT DEFLECTOR-TO-CEILING CLEARANCE (1/2" MIN) CREATES SPRAY PATTERN DEFICIENCY. MISSING ESCUTCHEON.





SCOPE OPTION 5-3 - MAINTENANCE AND REPAIR OF MINOR DEFICIENCIES.  
**NO SPRINKLER COVERAGE BELOW DUCTWORK >4 FT WIDE PER NFPA 13 - 8.5.5.3.1**



## TASK 7 - SMOKECONTROL SYSTEM ...TAB E



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## Task 7- **Smoke Control System**

### SUMMARY:

At the time of the facility's design in 1981, the State of Washington adopted the 1976 Uniform Building Code (UBC) and 1976 Uniform Fire Code (UFC). Neither of these codes have a requirement for a smoke control system in an I-occupancy building. The requirement for smoke control came after the building was designed (1981) and constructed (1982) in the 1985 building code. Our team has been designing jails since the 80's and has typically included smoke control as part of best design practices. Current codes prescribe a combination of fire detection, fire control/suppression, smoke compartmentation, smoke control, and inmate movement/egress to provide an adequate level of fire/life safety protection. This task addresses only the smoke control portion of the current code requirements.

The facility does not have a smoke control system complying with current code for the two-story housing units on the west side of the building. If the jail was built today, and fell under the 2015 IBC section 408.9 requirements for a group I-3 occupancy and a windowless building, a smoke control system would be required in each smoke compartment (each housing unit is considered a smoke compartment). The jail is considered a windowless building because there are no windows in the smoke compartment, they are not-operable and they are not readily breakable.

The facility has a limited-coverage automatic deluge fire sprinkler system in the housing units as described under Task 5. The jail also has a procedure in place for moving/evacuating inmates in the event of a smoke or fire incident. We typically recommend a mechanical exhaust smoke control system for an existing building in order to maintain a tenable environment for exiting from the smoke compartment in the area of fire origin. The requirements of the mechanical exhaust smoke control system are to maintain a smoke layer 6 feet above a walking surface that forms a portion of a required egress system within the smoke zone (Section 909.8.1). The requirements for the size of the intake opening is defined as the greater of 200fpm where the makeup air can come into contact with the smoke plume, or as required to limit the pressure drop across egress doors below the required door-opening or closing forces. All make-up openings need to be below the bottom of the smoke layer. Further investigate of existing wall construction and size of openings in the smoke barrier walls of the housing unit will be required to establish the exact airflow requirements to maintain the minimum door opening force.

The current fire alarm system sequence shuts down the existing HVAC equipment so that smoke is not moved from the area of the building where smoke is present to any other area of the building through the building's ductwork system. The existing HVAC system and equipment is not rated to exhaust smoke. Integrating a new HVAC smoke control system into an existing operational jail facility poses many challenges. Structural improvements, security upgrades, floorplan modifications, roof modifications while maintaining operations are all made more difficult and more expensive.

The team reviewed several possible scenarios for installing a new smoke evacuation system. To make the new system functional requires major demolition to the roof areas, with major structural improvements at the roof and the exterior walls. New openings would need to be cut into existing exterior walls to be used for new grille openings to exhaust smoke in the event of a fire. This poses a security problem in each inmate cell. While security bars can be installed, there are still issues with passing of contraband through an operable grille. Installing the grill above the existing windows in the wall poses a structural problem as it would interfere with the structural integrity of the window header. Removing the windows located within the cells to

install grilles, renders them non-compliant with the American Correctional Association's requirements for natural light provided in each cell.

The amount of openings needed in the west wall adds significant reconstruction to the exterior wall to meet current building codes. That wall was built using hollowcore wall panels. The new 24"x48" openings will compromise the integrity of the vertical and lateral load carrying ability of the panels. The gunite and insulation on the outside face would need to be removed, and an estimated new 4"-6" +/- thick reinforced shotcrete layer added to compensate. This additional shotcrete load would need to be carried down to foundation, requiring a new foundation wall adjacent to the existing foundation wall.

Similar conditions will occur at the roof. The roof is also constructed using hollowcore panels. Hollowcore slab by design is not conducive to large openings being cut into it after it has been designed and installed. Hollowcore slab designs typically require all openings be known and located on the design drawings. The slab manufacturer then adjusts the prestressed strand layout and adds mild reinforcing and/or steel embeds to address the loss of strength and stress concentrations that result from the opening. Openings are limited in size, and quite often located so that the opening straddles two adjacent panels. This is true whether the hollowcore slab is used in the horizontal orientation such as a floor or roof slab, or the vertical orientation such as a bearing/shear wall.

The size of the penetrations through the roof hollowcore slab required for the smoke evacuation system, 36x36 and 48x48, would compromise the structural integrity of the existing hollowcore slab. Therefore, the existing hollowcore roof slab would need to be removed and a new cast-in-place system added back in with the smoke evacuation system penetrations cast in. This would allow the additional reinforcing necessary to address the penetrations in the new conventionally reinforced slab.

The team also reviewed possible options to utilize a single cell in each housing area for the smoke control system. Structurally the same problems exist but are slightly less severe. The smoke control would then be minimized to a central area. This is an improvement but not feasible. The biggest drawback would be the elimination of one cell in each unit, for a total of 6 cells.

All of the new work can be performed but at a high construction cost and significant disruption to operations. Unforeseen conditions found during construction may also impede the new system from being completely code compliant upon its installation. Maintaining security in this active jail facility during this major renovation appears to be a non-starter, and funding may be better saved for the new construction.

The options described below assume the existing walls and doors of the housing units are, or can be made to be, code compliant smoke barriers with door openings protected by fire door assemblies complying with Section 716.5.3. The openings through the smoke barriers for pipes and ducts will be resealed as part of the option.

In order to support a new smoke evacuation system, upgrades will be required to the electrical power distribution, emergency/standby power and fire alarm systems. Based on review of the available record documents and non-invasive field observation, the existing building emergency generator is operating at capacity. A power monitoring study could be conducted to confirm the actual operating load on the existing generator and associated power distribution system, but is not necessary. A new, second diesel engine generator – to replace the existing abandoned generator in the basement – would be provided, as would a new automatic transfer switch (ATS), panelboard and branch circuits for the smoke control fans and

associated controls. The fire alarm system would be expanded to provide required detection, activation and smoke management controls.

GENERAL FINDINGS:

- 1) The two-story tall housing units in the facility do not have a smoke control system.
  - a) The approach to providing smoke control in the housing units would be to use independent mechanical exhaust smoke control systems in each of the housing units.
    - i) The exhaust equipment will be located on the roof above the housing unit they serve to exhaust smoke directly outside.
      - (1) The size and quantity of exhaust openings is determined to prevent "plugholing". This is when the make-up air moves at too high a velocity and is pulled through the smoke layer without exhausting the smoke.
    - ii) Makeup air for the exhaust fan will be drawn directly through the exterior wall and from the roof through the existing pipe chases of each housing unit.
      - (1) The make-up air openings will be through new wall openings in the lower level cells of the housing unit. This is to ensure the openings are below the bottom of the smoke layer assumed in the design calculations. The existing windows will remain as natural daylight is required in the cells and day rooms.
      - (2) The size of the openings needs to be large enough to not cause an issue in opening doors to the space and shall not be any faster than 200fpm if it will come into direct contact with the smoke plume.
        - (a) All make-up air openings will be on the lower cell level as the bottom of the smoke layer is targeted to be at or above the upper cell floor depending on the option chosen in the next section.
        - (b) The designs listed below as projects 1 and 2 assume the inlet velocity of the make-up air openings are above 200fpm, but should not come into contact with the smoke plume at that velocity. If a cell on the lower level contains a fire, the make-up openings in that cell need to remain closed.
        - (c) Opening sizes will be driven based on acceptable opening forces at the sally port door. Exact dimensions to be further investigated depending on air leakage rates of the housing unit walls.
    - iii) The fire alarm system currently shuts down the HVAC equipment so any smoke in the system will not transfer to other spaces through the buildings ductwork system. This sequence will remain unchanged.
    - iv) In order for the make-up air to get to the exhaust fan, the lower level cell doors will need to be opened.
    - v) The existing facility emergency/standby power system (described below) would not support the new smoke control system.
      - (1) There is one emergency/standby diesel engine generator, located in the basement generator room rated 250kW.
      - (2) A second diesel engine generator is installed within the same room. This engine generator appears to be original to the building, and has been decommissioned. It is abandoned in place.
      - (3) A single ATS, rated 600 Amps at 480Y/277 Volts, 3 phase, 4 wire provides emergency power to the building emergency power distribution system.

- (4) There is no additional capacity available within the existing generator system. The system is maxed out with load shedding. To accommodate new loads, a new generator would need to be added. The building fire alarm system is a Simplex 4100 system, which has been installed fairly recently along with an automatic deluge system.

#### OPTIONS FOR IMPROVEMENTS AND UPGRADES:

The following summarizes the general requirements for two smoke control system options. While two scope options have been identified, it is the design team's recommendation to not move forward with these projects due to cost and logistical issues of major construction projects in an occupied jail facility. The first option is if the system installed is up to code requirements. The second is a system that would provide a level of protection below code recommendations, but aligns with the facilities current procedures around inmate movements during a smoke/fire event. Both projects assume linens are set on fire in one of the lower cells and the smoke moves out of the cell and into the two-story tall housing unit to be exhausted through the roof. The final design for the smoke exhaust system is to be determined using CFD analysis and verifications of acceptable door opening forces based on field conditions. The calculations performed and sketches generated during this phase of the project are for cost estimating purposes only.

- 1) Scope Option 7-1 –Provide a code-compliant smoke control system in each of the two-story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell. Refer to attached sketch M7.01.01 through M7.01.05.
  - a) Two 7.5hp upblast type exhaust fans (similar to Greenheck TAUB 42H) will be installed on the roof of each housing unit centered between the upper cell wall and the duct enclosure on the east wall. Fans will provide independent smoke exhaust systems for each housing unit.
  - b) 48x18 exhaust ductwork will be routed just below the ceiling of the housing units, outside the cells, between the two exhaust fans and on the outside of each exhaust fan (refer to sketches). The ductwork shall have multiple 18x13 exhaust grilles installed in the side of the ductwork (refer to sketches for quantity). Each grille shall have a balancing damper with an access door for field modulation of each pair of balancing dampers. Exhaust grilles shall be similar to Kruger series 1310. Ductwork will be enclosed in protective gyp cover like the existing sprinkler piping.
  - c) 48x24 make-up air openings will be required in the walls of the lower cells. Each opening will require a thermally insulated isolation damper. Openings will receive security bars similar to the existing ones at the cell windows.
  - d) The existing pipe chases will be used as a pathway for make-up air drawn from the roof. A 24x24 security type grille similar to Kruger series 1310 will be installed per pipe chases at the lower cell level. An intake penthouse will be installed on the roof for each pipe chase at approximately 34x34 in size, installed on a roof curb, and provided with a motorized isolation damper. The make-up grille will have a balancing damper. Refer to attached sketches for quantity.
  - e) Draft curtains will be installed 4 feet apart on either side of the lower cell doors. Refer to attached sketches.
  - f) Install a new generator and connect the new equipment to the new emergency power system. The new equipment will connect to the fire alarm system.
  - g) The cell doors will connect to the fire alarm system or be manually opened by the deputies in order for the make-up air to get to the exhaust fan.
  - h) The gunite and insulation on the outside of the west wall will be removed and an estimated new 4"-6" +/- thick reinforced shotcrete layer added to carry the roof load.

- i) A new foundation wall will be added to the outside of the existing foundation wall in this location.
  - j) The roof openings would be placed in each 8' wide hollowcore slab, which will require the removal of the entire 27'-4" spanning hollowcore roof slab over the housing units. Removal of the hollowcore slab will require a crane to lift the individual hollowcore slabs as they are sawcut free. The existing concrete at each end of the hollowcore will need to be carefully chipped away to free the panel from the wall dowels and embed connections. Each roof panel will be replaced by an approximately 12" thick conventionally reinforced concrete slab. This process will need to be phased, with replacement work occurring simultaneously with the removal work, so that the bearing walls are not left unbraced due to a missing roof diaphragm for long periods of time.
  - k) Remove the existing abandoned generator.
  - l) Provide new emergency/standby diesel engine generator to be installed in the basement generator room where the abandoned generator was removed. Conceptual generator system size is 300kW/375 kVA.
  - m) Provide new 600 Amp ATS and output distribution panelboard and associated normal and emergency feeders.
  - n) Provide branch panelboard(s), motor controllers and branch circuits to supply smoke management fans, dampers and associated controls.
  - o) Provide fire alarm detection, signaling and smoke management system controls.
- 2) Scope Option 7-2 – Provide a smoke control system in each of the two-story housing units to maintain the smoke layer 3 feet above the floor of the upper cells. Refer to attached sketch M7.02.01 through M7.02.05.
- a) Provide three 7.5hp upblast type exhaust fans (similar to Greenheck TAUB 42H) on the roof of each housing unit centered between the upper cell wall and the duct enclosure on the east wall. Each fan will exhaust air directly from the space through a ceiling grille. Refer to attached sketches for size of the ceiling grilles. The groups of three fans will provide independent smoke exhaust systems for each housing unit. Refer to attached sketches.
  - b) 48x24 make-up air openings will be required in the walls of the lower cells. Each opening will require a thermally insulated isolation damper. Openings will receive security bars similar to the existing ones at the cell windows.
  - c) The existing pipe chases will be used as a pathway for make-up air drawn from the roof. A 24x24 security type grille similar to Kruger series 1310 will be installed per pipe chase at the lower cell level. An intake penthouse will be installed on the roof for each pipe chase at approximately 20x20 in size, installed on a roof curb, and provided with a motorized isolation damper. The make-up grille will have a balancing damper. Refer to attached sketches for quantity.
  - d) The new equipment will connect to emergency power.
  - e) The new equipment will connect to the fire alarm system.
  - f) The cell doors will connect to the fire alarm system or be manually opened by the deputies in order for the make-up air to get to the exhaust fan.
  - g) The gunite and insulation on the outside of the wall will be removed and an estimated new 4"-6" +/- thick reinforced shotcrete layer added to carry the roof load.
  - h) A new foundation wall will be added to the outside of the existing foundation wall in this location.
  - i) The roof penetrations would occur in approximately 35% of the roof hollowcore slabs. The affected slabs would be sawcut free of the adjacent hollowcore slab, then carefully chipped free of their supports at each end, then lifted by crane and removed. A new cast-in place roof slab with the new openings designed and located, would be cast.

- j) Remove the existing abandoned generator.
- k) Provide new emergency/standby diesel engine generator to be installed in the basement generator room where the abandoned generator was removed. Conceptual generator system size is 300kW/375 kVA.
- l) Provide new ATS and output distribution panelboard and associated normal and emergency feeders.
- m) Provide branch panelboard(s), motor controllers and branch circuits to supply smoke management fans, dampers and associated controls.
- n) Provide fire alarm detection, signaling and smoke management system controls.

ATTACHED DOCUMENTS:

Scope Option 7-1

- M7.01.01 – Overall Quantity of Fans
- M7.01.02 – Third Floor
- M7.01.03 – Second Floor
- M7.01.04 – Section Looking North
- M7.01.05 – Section Looking West

Scope Option 7-2

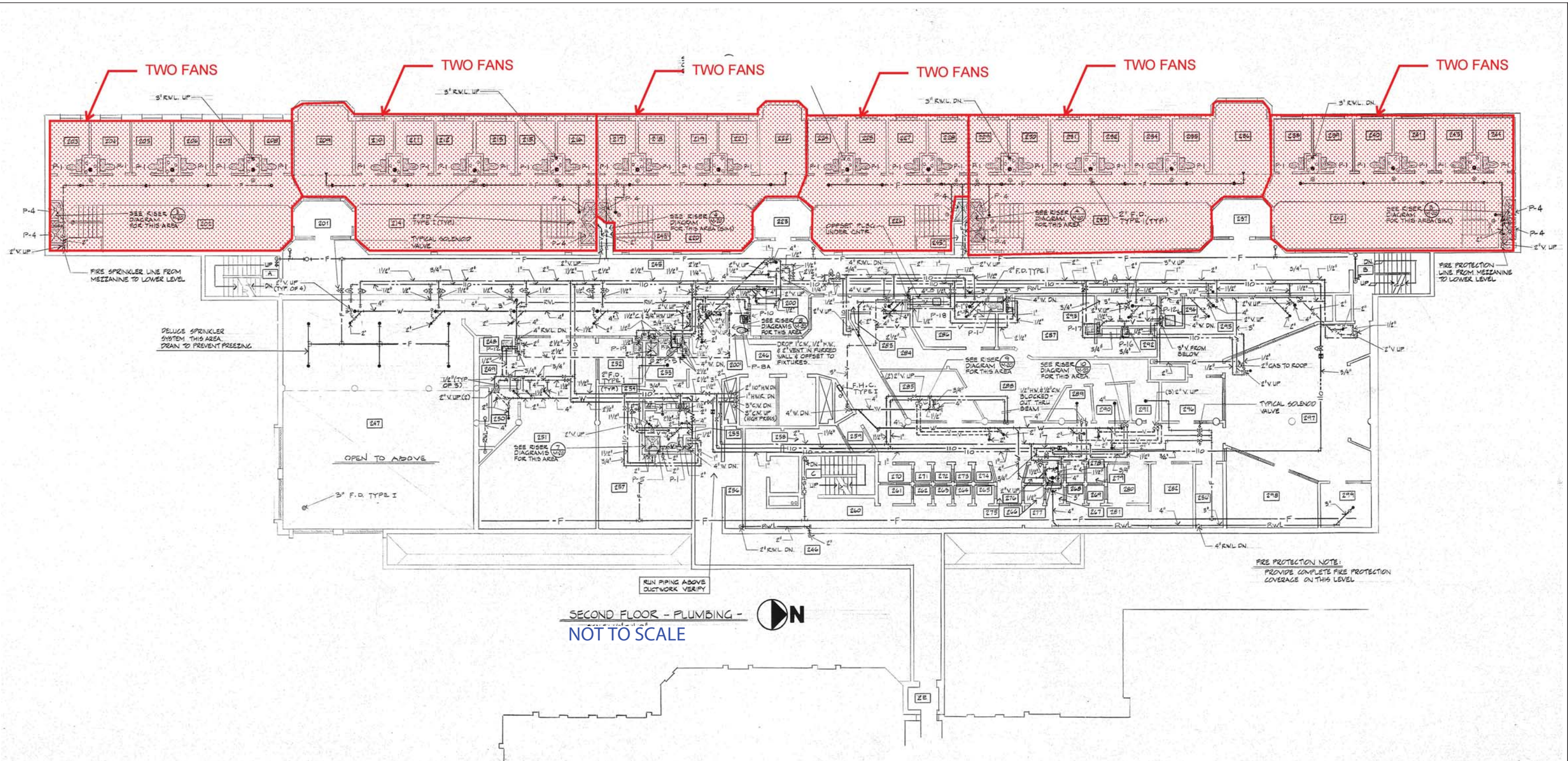
- M7.02.01 – Overall Quantity of Fans
- M7.02.02 – Third Floor
- M7.02.03 – Second Floor
- M7.02.04 – Section Looking North
- M7.02.05 – Section Looking West

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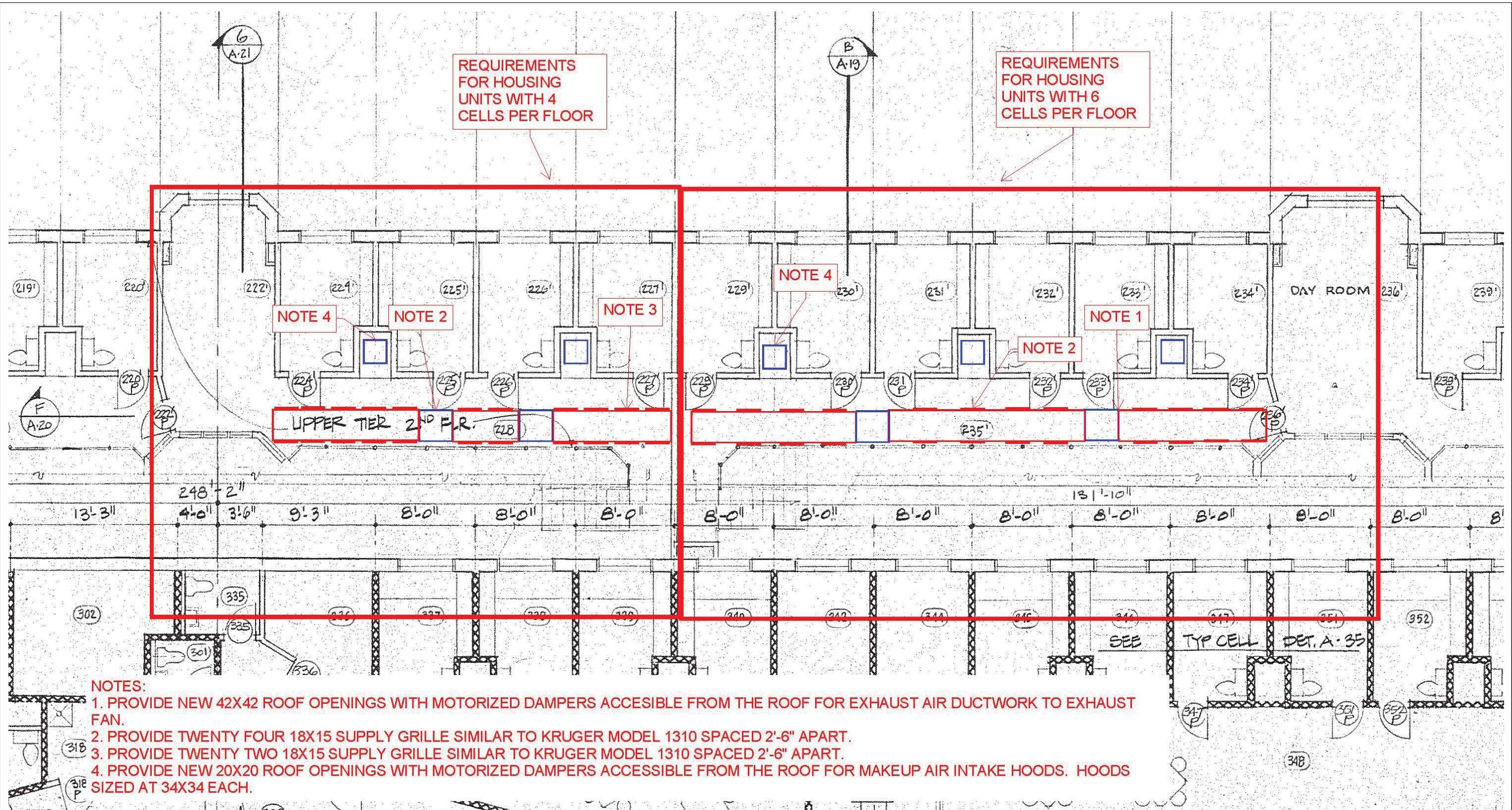
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SCOPE OPTION 7-1: Install a code-compliant smoke control system in each of the two-story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.

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 WHATCOM COUNTY  
 BELLINGHAM, WA



REQUIREMENTS FOR HOUSING UNITS WITH 4 CELLS PER FLOOR

REQUIREMENTS FOR HOUSING UNITS WITH 6 CELLS PER FLOOR

NOTE 4

NOTE 2

NOTE 3

NOTE 4

NOTE 1

NOTE 2

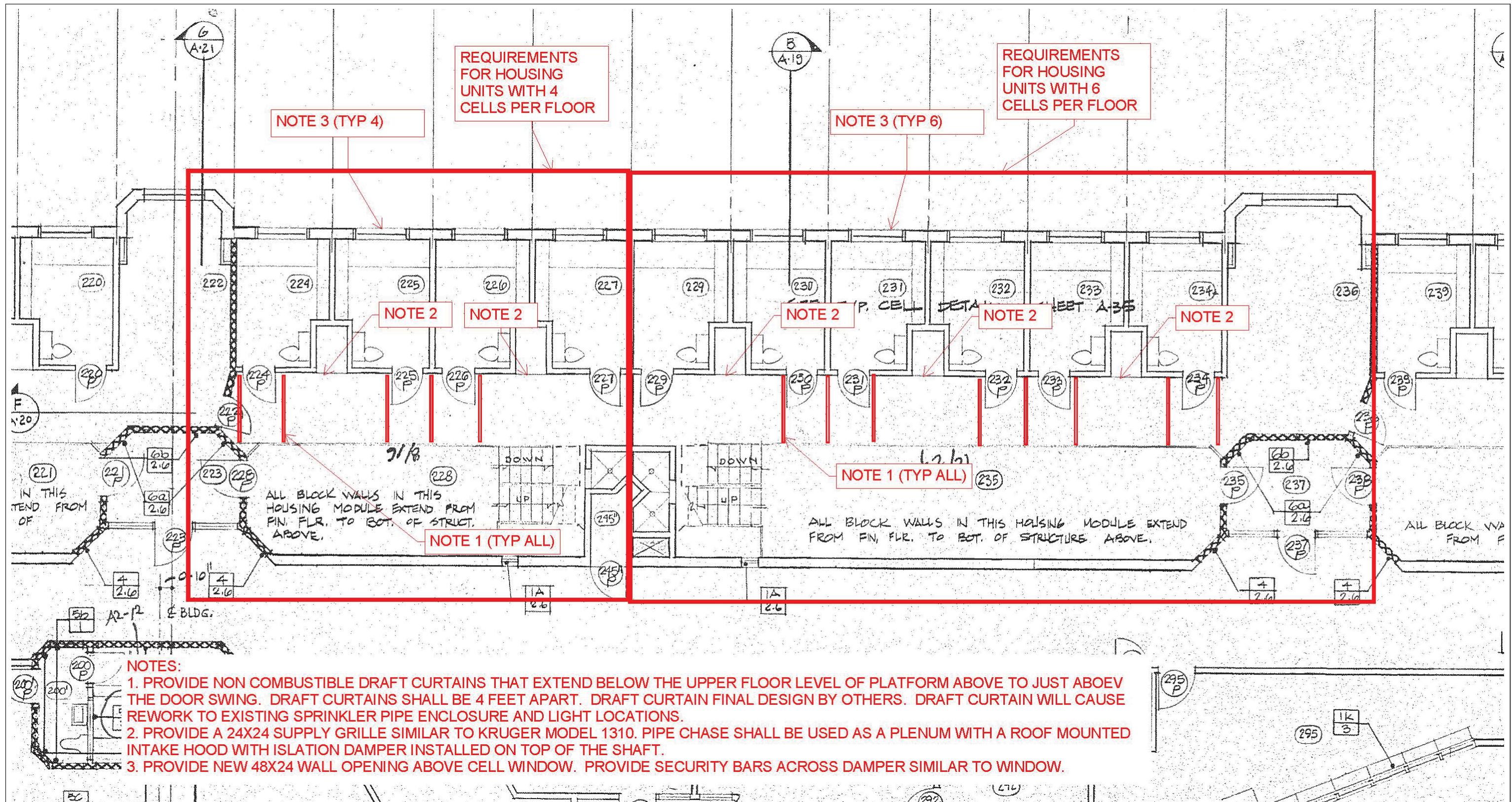
UPPER TIER 2ND F.L.

**NOTES:**

1. PROVIDE NEW 42X42 ROOF OPENINGS WITH MOTORIZED DAMPERS ACCESSIBLE FROM THE ROOF FOR EXHAUST AIR DUCTWORK TO EXHAUST FAN.
2. PROVIDE TWENTY FOUR 18X15 SUPPLY GRILLE SIMILAR TO KRUGER MODEL 1310 SPACED 2'-6" APART.
3. PROVIDE TWENTY TWO 18X15 SUPPLY GRILLE SIMILAR TO KRUGER MODEL 1310 SPACED 2'-6" APART.
4. PROVIDE NEW 20X20 ROOF OPENINGS WITH MOTORIZED DAMPERS ACCESSIBLE FROM THE ROOF FOR MAKEUP AIR INTAKE HOODS. HOODS SIZED AT 34X34 EACH.

SCOPE OPTION 7-1: Install a code-compliant smoke control system in each of the two-story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.

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**NOTES:**

1. PROVIDE NON COMBUSTIBLE DRAFT CURTAINS THAT EXTEND BELOW THE UPPER FLOOR LEVEL OF PLATFORM ABOVE TO JUST ABOVE THE DOOR SWING. DRAFT CURTAINS SHALL BE 4 FEET APART. DRAFT CURTAIN FINAL DESIGN BY OTHERS. DRAFT CURTAIN WILL CAUSE REWORK TO EXISTING SPRINKLER PIPE ENCLOSURE AND LIGHT LOCATIONS.
2. PROVIDE A 24X24 SUPPLY GRILLE SIMILAR TO KRUGER MODEL 1310. PIPE CHASE SHALL BE USED AS A PLENUM WITH A ROOF MOUNTED INTAKE HOOD WITH ISLATION DAMPER INSTALLED ON TOP OF THE SHAFT.
3. PROVIDE NEW 48X24 WALL OPENING ABOVE CELL WINDOW. PROVIDE SECURITY BARS ACROSS DAMPER SIMILAR TO WINDOW.

SCOPE OPTION 7-1: Install a code-compliant smoke control system in each of the two-story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.

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APPROX LOCATION OF MAKE-UP AIR WALL OPENING

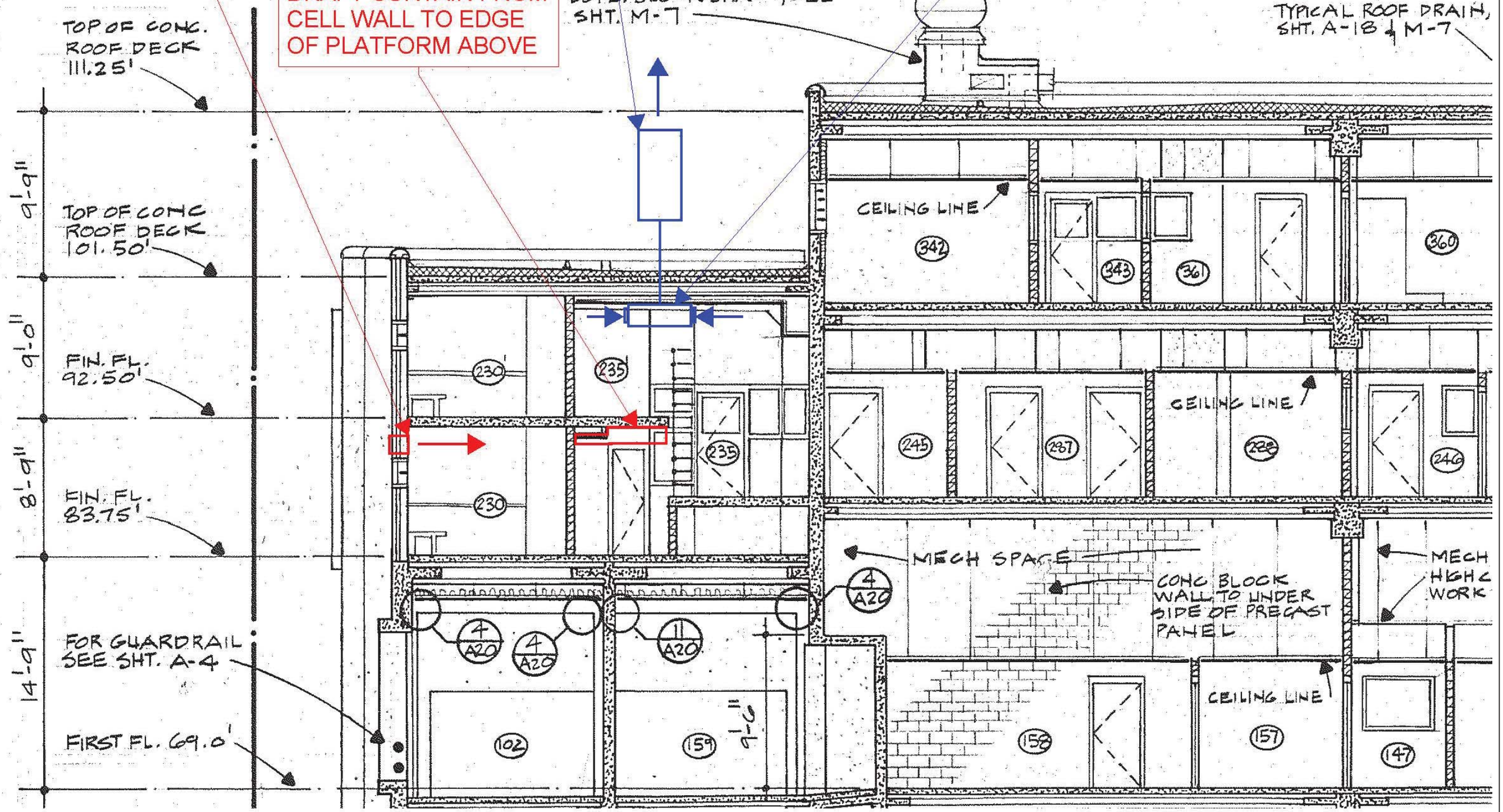
EXHAUST FAN (TYP 2 PER HOUSING UNIT)

48X18 EXHAUST DUCT BETWEEN ROOF PENETRATIONS WITH PROTECTIVE GYP ENCLOSURE.

DRAFT CURTAIN FROM CELL WALL TO EDGE OF PLATFORM ABOVE

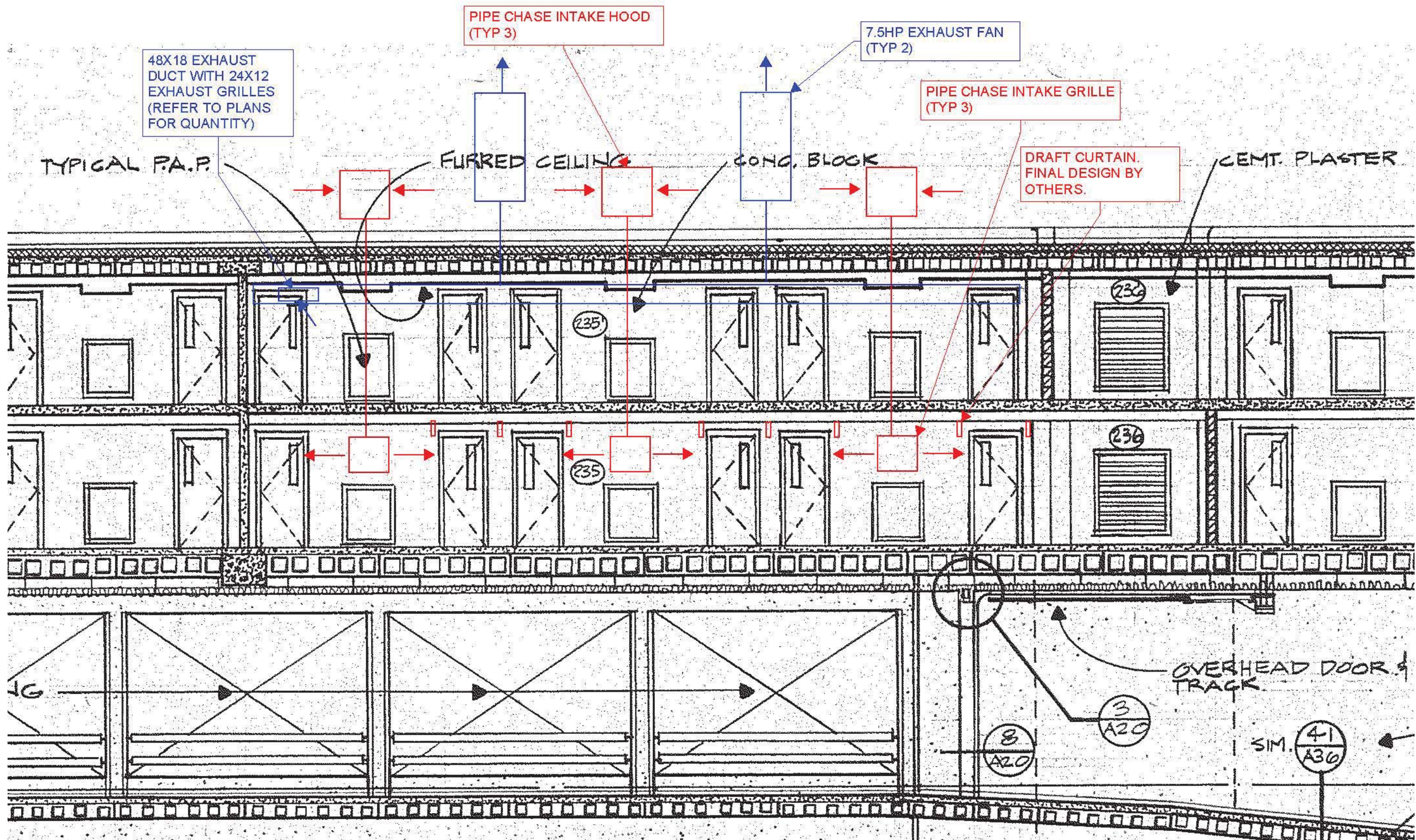
MECH. EQUIP ON RAISED CONC. BLOCK SHAFT, SEE SHT. M-7

TYPICAL ROOF DRAIN, SHT. A-18 & M-7



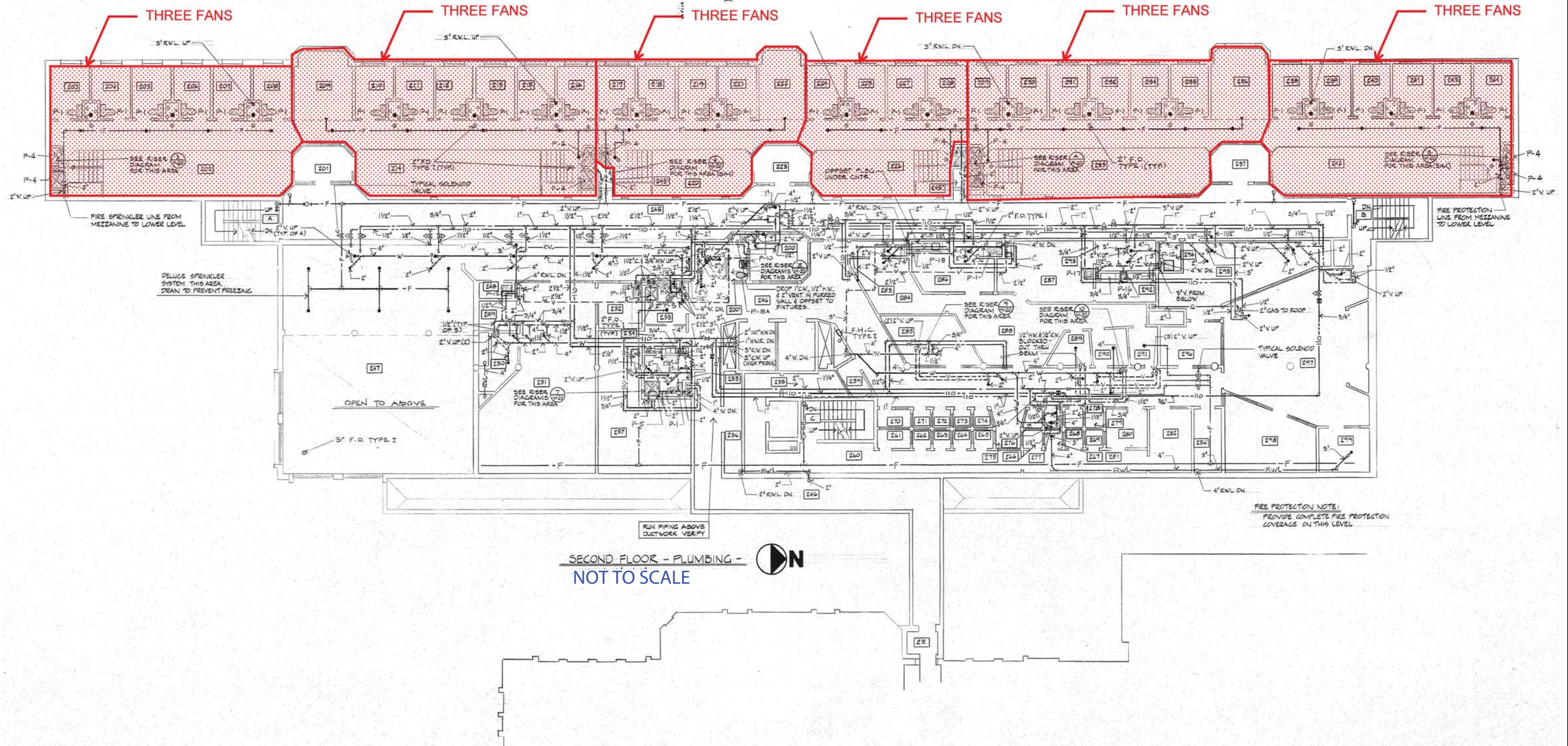
SCOPE OPTION 7-1: Install a code-compliant smoke control system in each of the two-story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.

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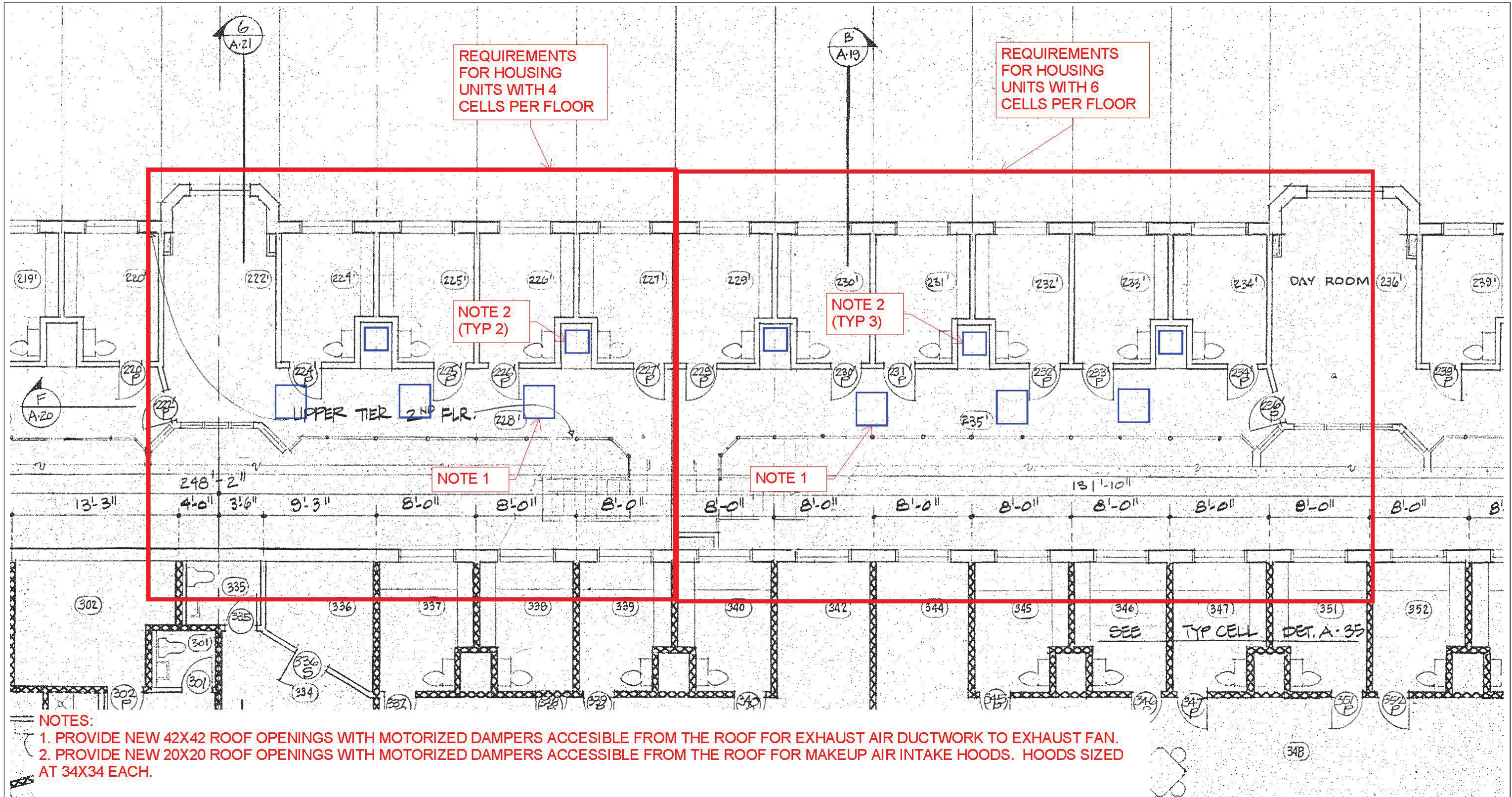
SCOPE OPTION 7-1: Install a code-compliant smoke control system in each of the two-story housing units to maintain the smoke layer 6 feet above the floor level of the upper cell.

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SCOPE OPTION 7-2: Install a smoke control system in each of the two-story housing units to maintain the smoke layer 3 feet above the floor of the upper cells.

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REQUIREMENTS FOR HOUSING UNITS WITH 4 CELLS PER FLOOR

REQUIREMENTS FOR HOUSING UNITS WITH 6 CELLS PER FLOOR

NOTE 2 (TYP 2)

NOTE 2 (TYP 3)

NOTE 1

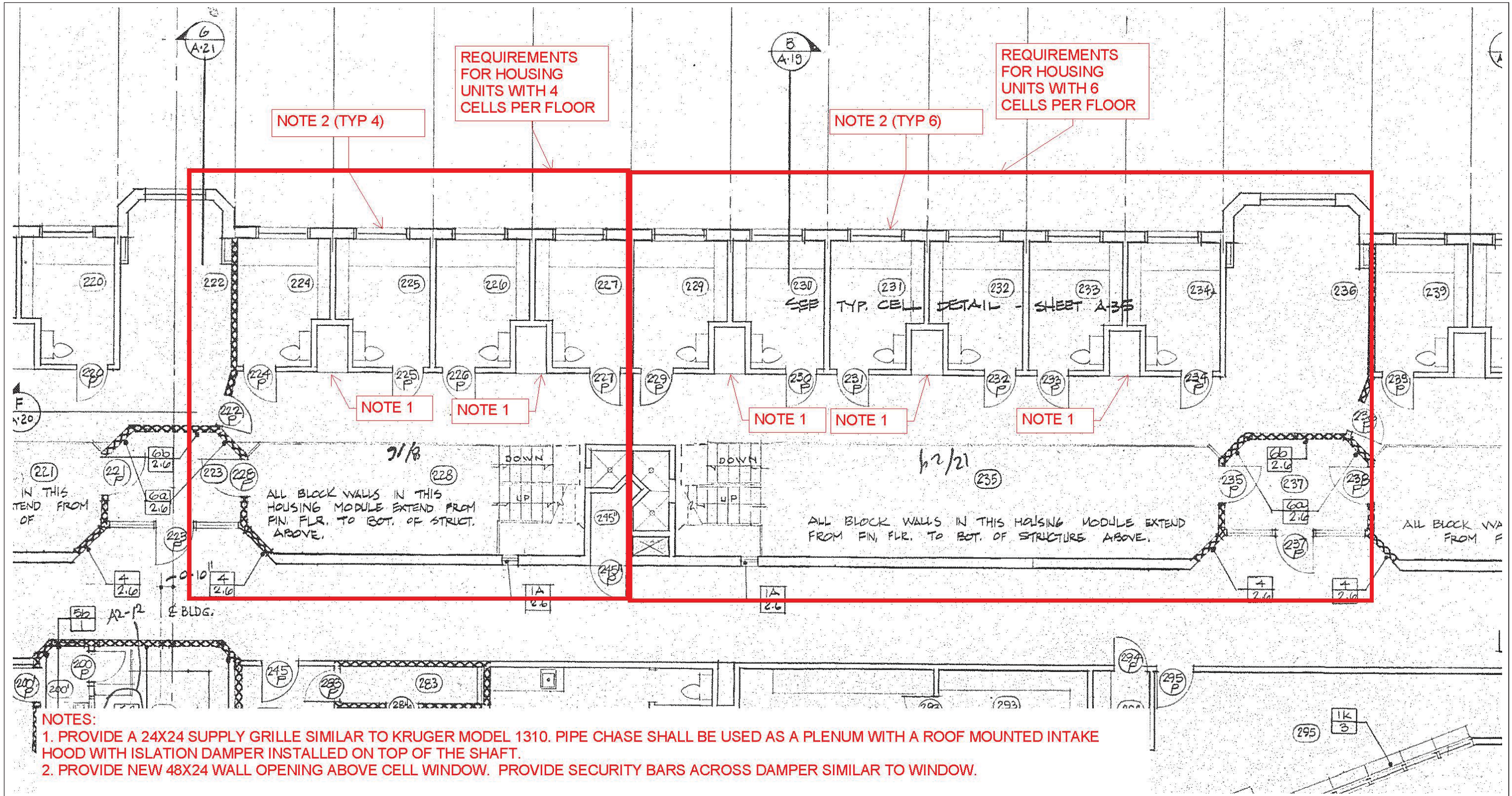
NOTE 1

**NOTES:**

1. PROVIDE NEW 42X42 ROOF OPENINGS WITH MOTORIZED DAMPERS ACCESSIBLE FROM THE ROOF FOR EXHAUST AIR DUCTWORK TO EXHAUST FAN.
2. PROVIDE NEW 20X20 ROOF OPENINGS WITH MOTORIZED DAMPERS ACCESSIBLE FROM THE ROOF FOR MAKEUP AIR INTAKE HOODS. HOODS SIZED AT 34X34 EACH.

SCOPE OPTION 7-2: Install a smoke control system in each of the two-story housing units to maintain the smoke layer 3 feet above the floor of the upper cells.

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**NOTES:**

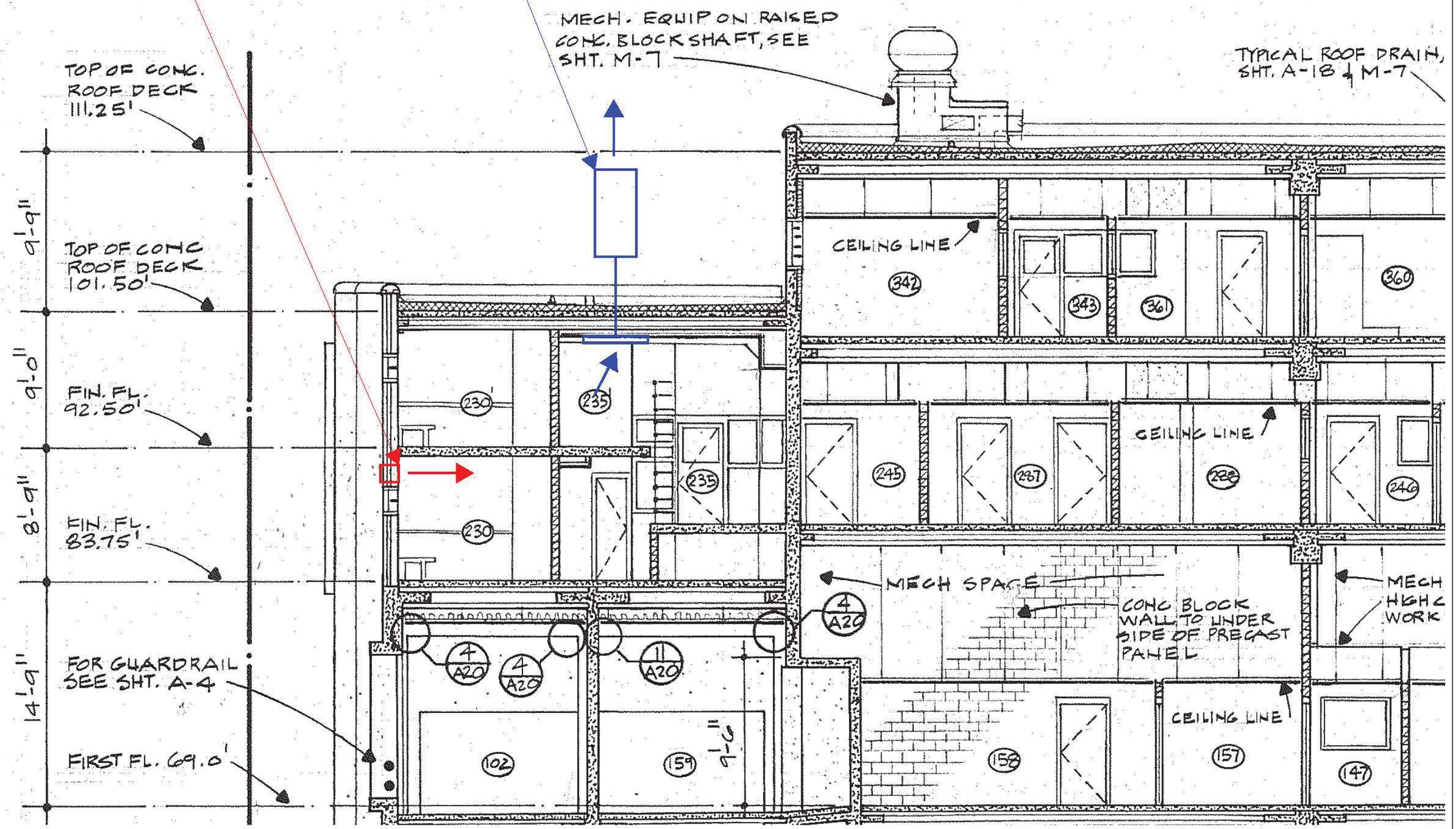
1. PROVIDE A 24X24 SUPPLY GRILLE SIMILAR TO KRUGER MODEL 1310. PIPE CHASE SHALL BE USED AS A PLENUM WITH A ROOF MOUNTED INTAKE HOOD WITH ISLATION DAMPER INSTALLED ON TOP OF THE SHAFT.
2. PROVIDE NEW 48X24 WALL OPENING ABOVE CELL WINDOW. PROVIDE SECURITY BARS ACROSS DAMPER SIMILAR TO WINDOW.

SCOPE OPTION 7-2: Install a smoke control system in each of the two-story housing units to maintain the smoke layer 3 feet above the floor of the upper cells.

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA

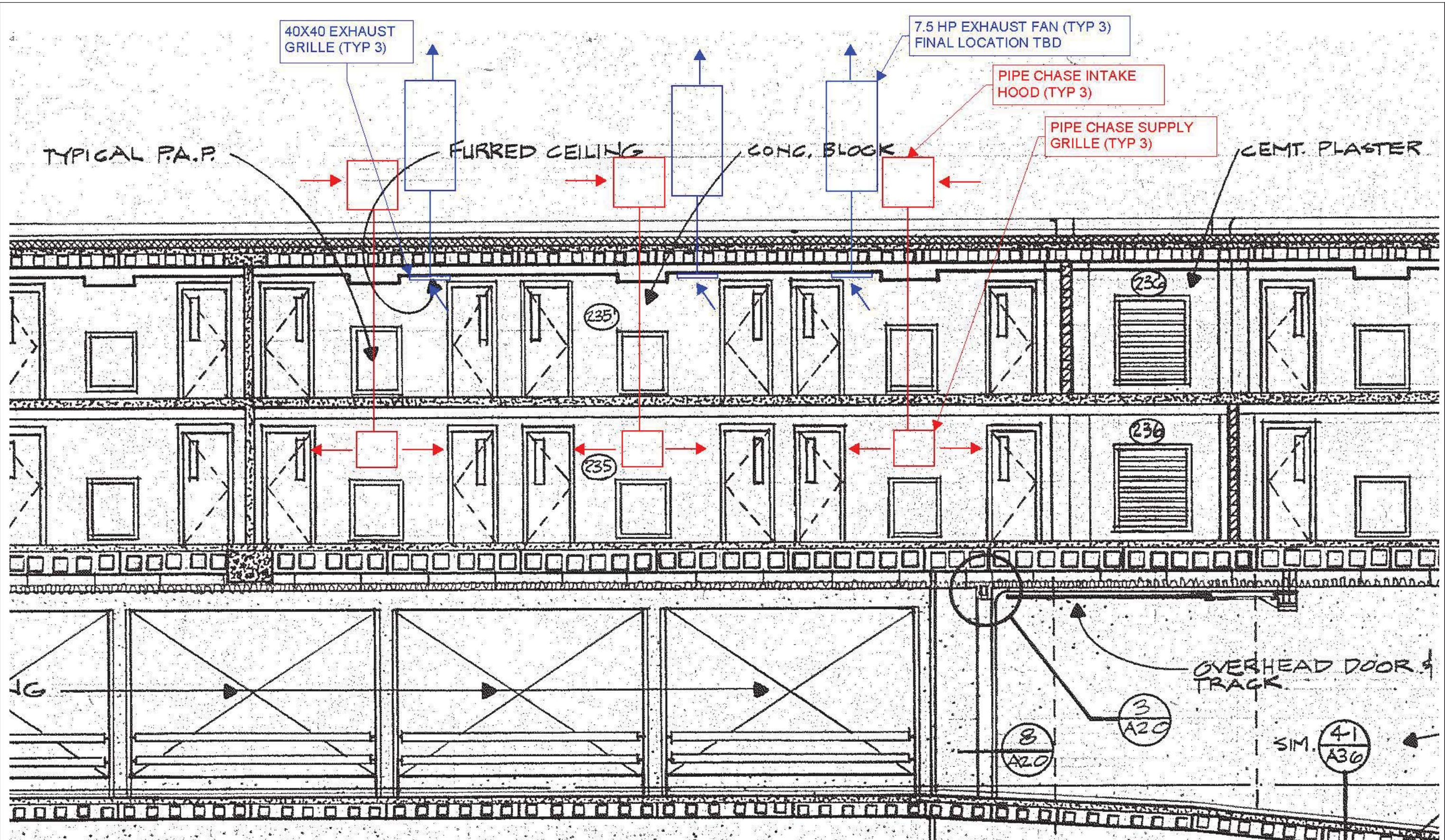
APPROX LOCATION OF MAKE-UP AIR WALL OPENING

EXHAUST FAN (TYP 3 PER HOUSING UNIT)



SCOPE OPTION 7-2: Install a smoke control system in each of the two-story housing units to maintain the smoke layer 3 feet above the floor of the upper cells.

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WHATCOM COUNTY  
BELLINGHAM, WA



SCOPE OPTION 7-2: Install a smoke control system in each of the two-story housing units to maintain the smoke layer 3 feet above the floor of the upper cells.

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## TASK 8 - INSTITUTIONAL EQUIPMENT ...TAB F



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Task 8 – **Institutional Equipment (Kitchen and Laundry)**

SUMMARY:

Kitchen and laundry equipment, at almost 35 years old, has reached the end of useful life. While some components have been replaced over the years many of the main components remain from the original opening. Commercial grade kitchen and laundry equipment, of high-end, heavy duty quality, may last 20 years in a traditional commercial environment. It would not be expected to last that long in a correctional facility such as a jail, due to the abusive environment and extended operational hours. The team evaluated items that have exceeded their useful life, and also identified items that have an expected remaining life of less than five years, or are in need of repairs.

In order to support replacement of kitchen equipment, miscellaneous electrical work will be required to disconnect electrical systems serving existing kitchen equipment and reconnect to new equipment. Since kitchen equipment upgrades will primarily be one-for-one replacement, we expect that minor rework of electrical branch circuitry will be required. Electrical systems supporting the kitchen are original, so upgrades to corresponding electrical panels and devices are recommended.

Currently, kitchen equipment, including refrigeration and freezer equipment, is not supported by the building emergency/standby generator system. An extended power outage may result in the loss of a significant amount of food. Currently, if there is an extended power outage, the County uses refrigerator truck(s) to keep the food cold. The available capacity within the existing generator system will not handle any additional load from kitchen equipment, meaning that the project would need to include a new generator dedicated to the kitchen equipment. This cost is included in the estimate. This is an important consideration for a new Jail facility.

GENERAL FINDINGS:

Much of the kitchen equipment, although showing wear, is still functional. The lists below itemize equipment that we recommend replacing or repairing. The refrigeration equipment is not connected to the emergency generator. In an extended power outage, this could put a large amount of food at risk of spoiling before the power restored.

A single ATS, rated 600 Amps at 480Y/277 Volts, 3 phase, 4 wire provides emergency power to the building emergency power distribution system. This existing building emergency generator system does not have capacity to accommodate additional loads. There is not a separate ATS for National Electrical Code (NEC) Section 702 "optional standby" building loads, which is required by current code. Adding kitchen equipment to the generator will require a new generator system and ATS dedicated to this purpose.

All laundry equipment was discovered to be in good shape, not falling into the three assessment categories.

OPTIONS FOR IMPROVEMENTS AND UPGRADES:

- 1) Scope Option 8-1: Replace the following items.
  - a) Dishwasher (single, door type)  
Manufacture: Stero  
Model #: SDRA-PKG

- Serial #: 68807-11-00
- i) Heating element, broken buttons (does not allow for manual mode/cleaning), pressure gauges not reading correctly, 17 years old (exceeded expected useful life)
  - b) Clean Dishtable
    - Manufacture: Custom
    - Model #: Custom
    - Serial #: N/A
    - i) Channels and Legs breaking away from top, oxidation, mineral deposits, original equipment 33 years old (exceeded expected useful life)
  - c) Soiled Dishtable
    - Manufacture: Custom
    - Model #: Custom
    - Serial #: N/A
    - i) Channels and Legs breaking away from top, oxidation, mineral deposits, original equipment 33 years old (exceeded expected useful life)
  - d) Disposer at Dishwashing
    - Manufacture: Unknown
    - Model #: Unknown
    - Serial #: N/A
    - i) Issues: Works okay but can't use much because of existing sewer line conditions, original equipment 33 years old (exceeded expected useful life)
  - e) Worktable at Dishwashing
    - Manufacture: Custom
    - Model #: Custom
    - Serial #: N/A
    - i) Issues: Bowing top and cracks in stainless steel at edges leading to sharp edges, original equipment 33 years old (exceeded expected useful life)
  - f) Walk-In Shelving
    - Manufacture: Unknown
    - Model #: Unknown
    - Serial #: N/A
    - i) Issues: All old and very rusty
  - g) Supplement and modify existing branch circuits to accommodate replaced equipment.
  - h) Replace original receptacles and disconnect switches associated with new kitchen equipment.
  - i) Replace original electrical panel serving the kitchen with a new panel.
- 2) Scope Option 8-2: Replace the following pieces of equipment with an expected remaining life of less than five years:
- a) Hot Holding Cabinet
    - Manufacture: FWE
    - Model #: UHS-12
    - Serial #: 06151971
    - i) Old but working okay, 11 years old, just had doors adjusted.

- b) Hot Holding Cabinet  
Manufacture: FWE  
Model #: UHS-12  
Serial #: 06151972
    - i) Issues: Old but working okay, 11 years old, just had doors adjusted.
  - c) Tilting Braising Pan  
Manufacture: Vulcan  
Model #: VG40  
Serial #: N/A
    - i) Issues: Just replaced hinges, works fine now, 11-13 years old.
- 3) Scope Option 8-3: Repair the following items:
- a) Walk-In Cooler/Freezer  
Manufacture: Unknown  
Model #: Unknown  
Serial #: N/A
    - i) Issues: Door Gaskets need replacement. Freezer coil seems to be having defrost issues. Appears drain line has a leak as it seems to leak in defrost mode.
  - b) Disposer at Pot Wash  
Manufacture: Unknown  
Model #: Unknown  
Serial #: N/A
    - i) Issues: Works okay but can't use much because of existing sewer line conditions, original equipment 33 years old (exceeded expected useful life), missing rubber sleeve
  - c) Hot Top Range  
Manufacture: Vulcan  
Model #: GH60X  
Serial #: N/A
    - i) Issues: Do not use oven, broken knobs, only use griddle once per week, missing bottom cover, 11-13 years old.
- 4) Scope Option 8-4: Replace existing electrical panelboard serving kitchen equipment. Remove existing abandoned diesel generator system in the basement. Provide new 60kW packaged diesel engine generator, 100 Amp ATS with load shed, output branch panelboard, and associated normal and generator feeders. This panelboard will be available to serve other non-emergency building loads, if desired by the owner.
- a) Provide branch circuits to supply kitchen refrigeration and freezers.

ATTACHED DOCUMENTS:

K8.01.01	Existing Kitchen Plan showing Items to be replaced
K8.02.01	Existing Kitchen Plan showing Items not expected to last more than five years
K8.03.01	Existing Kitchen Plan showing Items to be repaired

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**GENERAL NOTES**

1. UTILITY CONNECTION LOCATIONS TO BE CONSIDERED AS "NOT SHOWN" CONNECTION POINTS FOR THE WORK ON THE DRAWINGS. REVIEW EXISTING AND REQUIRED PRIOR TO SUBMIT.
2. ALL SURFACE PLUMBING-TAPS, PIPES, DRIP TRAYS, EQUIPMENT, AND POT FILLERS SHALL BE INSTALLED IN PLACE BY THE CONTRACTOR IN LOCATING SIZE, TYPE, NUMBER, AND LOCATION OF FLOOR DRAINS.
3. THE FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE CONDENSING UNITS AND UNIT EVAPORATORS FOR THE WALK-IN REFRIGERATOR-FREEZER AS SHOWN ON THE DRAWINGS. THE CONDENSING UNITS SHALL BE MOUNTED ON A STRUCTURAL STAND. SELF-CONTAINED REFRIGERATION SYSTEMS TO BE LOCATED AS SHOWN ON THE DRAWINGS. THE FOOD SERVICE EQUIPMENT CONTRACTOR SHALL SUPPLY AND INSTALL ALL REFRIGERATION TUBING AND LEADS FROM CONDENSING UNITS TO THE UNIT EVAPORATORS; THE FLOW CLOCK AT FREEZER CONDENSING UNIT, FREEZER PRESSURE RELIEF PORT, SLIP-ON PLASTIC INSULATION, LINE VANGUARDS, STAINLESS STEEL EQUIPMENT PLATES, LIQUID LINE KITS, PROPER SIZED SHIMS, SIGHT GLASS, AND HAND VALVES, ALL CONNECTED WITH COPPER TUBING TO THE LEAD LINE ON THE CONDENSING UNIT.
4. EACH CONDENSING UNIT SHALL BE PRE-WIRED TO A PANEL BOX MOUNTED TO THE FRAME WHICH SHALL CONTAIN MOTOR DISCONNECT CIRCUIT BREAKERS OR CONTACTORS AS REQUIRED; EACH CONDENSING UNIT SHALL BE LABELED "SYSTEM NO. 1, SYSTEM NO. 2" ETC., WITH A BAKELITE LABEL WITH WHITE LETTERING. THE LINES OF EACH SYSTEM SHALL BE COLOR-CODED AT 36" ON CENTER.
5. PARTITION LOCATIONS SHALL THICKNESS, FINISH, DOOR SIZES, DOOR LOCATIONS, AND NAME ARE SHOWN ON THE FOOD SERVICE EQUIPMENT DRAWINGS FOR CONVENIENCE ONLY; REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL BUILDING CONSTRUCTION DIMENSIONS AND FINISHES.
6. ALL FABRICATED CONSTRUCTION SHALL BE TO NATIONAL SANITIZATION FOUNDATION (N.S.F.) STANDARDS.
7. ADEQUATE MAKE-UP SUPPLY SHALL BE PROVIDED TO MAINTAIN A BALANCED SYSTEM (SLIGHT POSITIVE PRESSURE). THIS IS NOT A PART OF THE FOOD SERVICE EQUIPMENT WORK.
8. PROVIDE ADEQUATE VENTILATION FOR SELF-CONTAINED REFRIGERATION UNITS BY ENCLOSED REFRIGERATION UNITS TO PREVENT OVER-HEATING AND SURVIVAL OF UNITS.



1.c



1.e



1.f



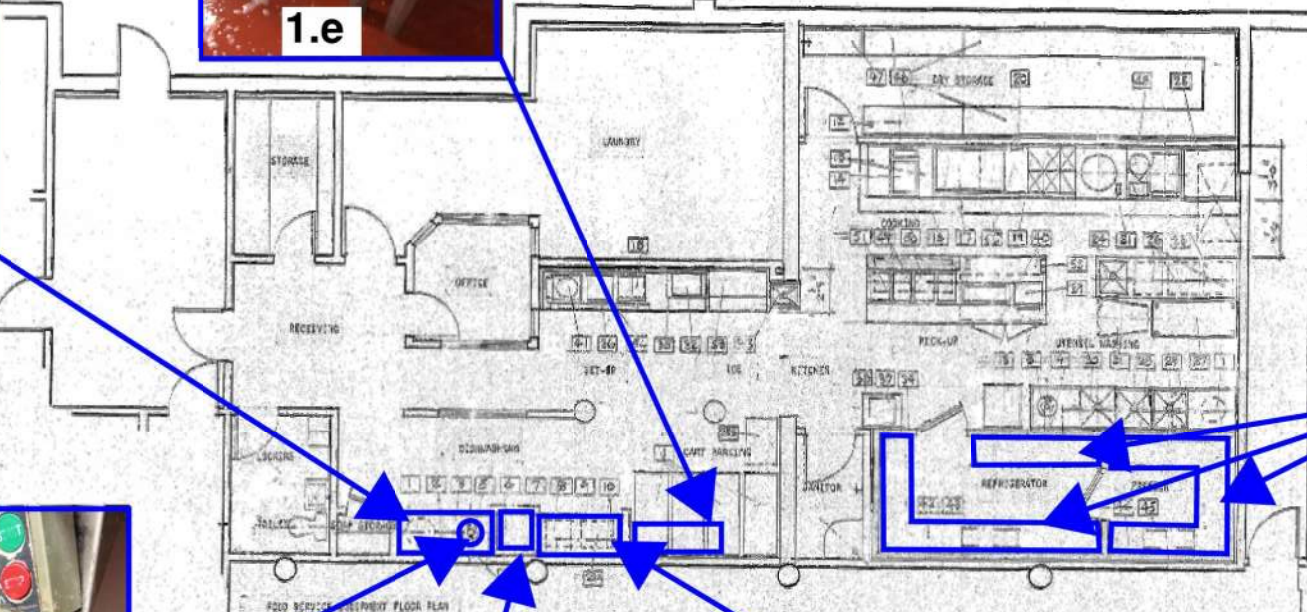
1.d



1.a



1.b

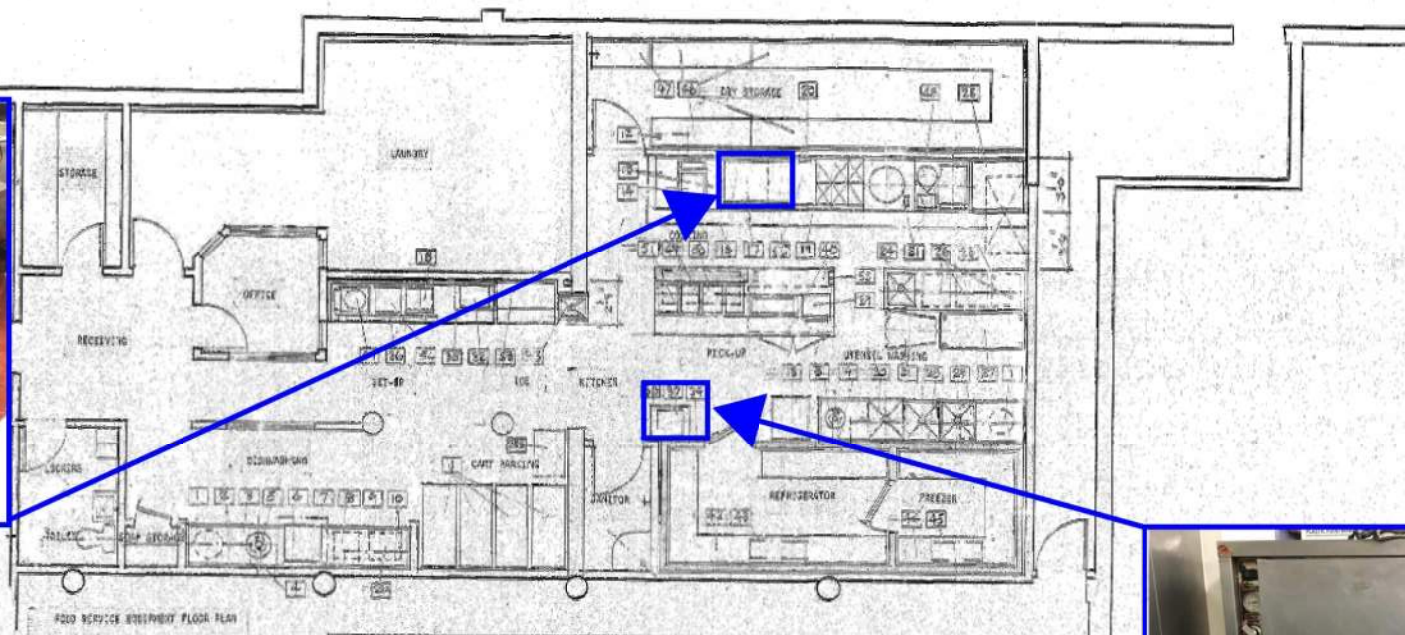


FOOD SERVICE EQUIPMENT SCHEDULE

NO.	DESCRIPTION	QUANTITY	UNIT	MANUFACTURER	FINISH
1	WALK-IN REFRIGERATOR-FREEZER	1	48" X 72" X 84"	METROPOLITAN	"METROPOLITAN"
2	STAINLESS STEEL COUNTER	1	48" X 72" X 36"	WALCO	"304 SS"
3	STAINLESS STEEL SINK	1	30" X 18" X 16"	WALCO	"304 SS"
4	STAINLESS STEEL CUPBOARD	1	48" X 72" X 36"	WALCO	"304 SS"
5	STAINLESS STEEL CHINA CABINET	1	48" X 72" X 36"	WALCO	"304 SS"
6	STAINLESS STEEL DISHWASHER	1	48" X 24" X 36"	WALCO	"304 SS"
7	STAINLESS STEEL PREP TABLE	1	48" X 72" X 36"	WALCO	"304 SS"
8	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
9	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
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84	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
85	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
86	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
87	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
88	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
89	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
90	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
91	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
92	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
93	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
94	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
95	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
96	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
97	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
98	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
99	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"
100	STAINLESS STEEL SHREDDER	1	48" X 24" X 36"	WALCO	"304 SS"

**GENERAL NOTES**

- UTILITY CONNECTION LOCATIONS AS INDICATED ON THE FOOD SERVICE EQUIPMENT DRAWINGS ARE NOT TO BE CONSIDERED AS "ROUGH-IN" OR "STUB-UP" FROM WALLS, FLOOR OR CEILING BUT ARE ACTUAL CONNECTION POINTS FOR THE UTILITIES ON THE FOOD SERVICE EQUIPMENT. THE FOOD SERVICE EQUIPMENT SHOULD BE INSTALLED IN PLACE FOR ALL FOOD SERVICE EQUIPMENT. EXISTING AND OTHER-FUNCTIONING EQUIPMENT, VERIFIED PRIOR TO SUBMITTAL OF ROUGH-IN DRAWINGS.
- ALL SURFACE PLUMBING-TRENCH, SPECIFICALLY FRANCES, TAIL PIECES, GRIP THROUGH DRAINS, REFRIGERATOR DRAIN EQUIPMENT, AND POT FILLERS ARE A PART OF THE FOOD SERVICE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE, TYPE, NUMBER, AND LOCATION OF FLOOR DRAINS.
- THE FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE FOR THE WALK-IN REFRIGERATOR/FREEZER ASSEMBLY AS SHOWN ON THESE SHEETS. THE UNIT SHALL BE MOUNTED ON A STRUCTURAL STAND, 20" ABOVE FLOOR AS SHOWN ON THE DRAWINGS. THE FOOD SERVICE CONTRACTOR SHALL INSTALL ALL REFRIGERATION SUCTION AND LIQUID LINE PIPING, THE FLOW CLOCK BY FREEZER COMPRESSOR, PLASTIC INSULATION, LINE VANGERS, STRAINERS, STEEL PROPER SIZES GASKETS, SIGHT GLASS, AND BOND WELDED LEAD LINES ON THE CONDENSING UNIT.
- BACK CONDENSING UNIT SHALL BE PRE-WIRED TO A PANEL CONTAINING MOTOR DISCONNECT CIRCUIT BREAKERS OR CIRCUIT BREAKERS. THE LINES OF EACH SYSTEM SHALL BE COLOR CODED.
- PARTITION LOCATIONS SHALL THICKNESS, FINISHES, DOOR SIZES, DOOR LOCATIONS, AND WALL FINISHES ARE DEPENDENT ON THE FOOD SERVICE EQUIPMENT DRAWINGS FOR CONVENIENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL BUILDING CONSTRUCTION DIMENSIONS AND FINISHES.
- ALL FABRICATED CONSTRUCTION SHALL BE TO NATIONAL SANITATION FOUNDATION (N.S.F.) STANDARDS.
- ADEQUATE MAKE-UP SUPPLY SHALL BE PROVIDED TO INSURE A POSITIVE SYSTEM (SLIGHT NEGATIVE PRESSURE). THIS IS NOT A PART OF THE FOOD SERVICE EQUIPMENT WORK.
- PROVIDE ADEQUATE VENTILATION FOR SELF-CONTAINED REFRIGERATION UNITS IN ENCLOSED SPACES TO PREVENT OVER-HEATING AND SURVIVAL OF UNITS.



**FOOD SERVICE EQUIPMENT SCHEDULE**

NO.	QTY	DESCRIPTION	MANUFACTURER	MODEL NO.	FINISH	INSTALLATION	REMARKS
1	1	PORTABLE TRASH CAN	WILSON	48X24X21	STAINLESS	1	
2	1	ROCK SHELF	FABRICATED	SEE DRAW.		1	
3	1	COILED SCOURERS	FABRICATED	SEE DRAW.		1	
4	1	PRE-HEAT GAIT	T. & S.	1-1/2X9-1/2		1	
5	1	DISPOSER	WILSON	200		1	
6	1	DISPOSER	WILSON	200-PACKAGE		1	
7	1	VAPOR HOOD	NOT A PART OF THE WORK	REFER TO SPEC. PAGE		1	
8	1	BOOSTER HEATER	WILSON	1000-1/2		1	
9	1	CLEAN DISINFECTANT	FABRICATED	SEE DRAW.		1	
10	1	SHOULDER	FABRICATED	SEE DRAW.		1	
11	1	WALK-IN DELIVERY CABINETS	METROPOLITAN	600-80-1		1	
12	1	FLAME PROTECTION SYSTEM	WILSON	6-1/2X11-1/2		1	
13	1	WALK-IN FREEZER	WILSON	11-1/2		1	
14	1	GRIP PAT FRYER	WILSON	700E		1	
15	1	SPREADER PLATE	WILSON	54-70/000		1	
16	1	VENTILATING HOOD	NOT A PART OF THE WORK	REFER TO SPEC. PAGE		1	
17	1	GRIDDLE RANGE	WILSON	7000X		1-4.0T	
18	1	VOICE DISPENSER	WILSON	1		1	
19	1	DRINK DISPENSER	WILSON	7000A		1-4.0T	
20	1	POT FILLER	T. & S. PARTS & SERVICE	9-1/2		1	
21	1	KETTLE	CL. L. L. L.	PART OF 1-1/2		1-4.0T	
22	1	SPARE NUMBER				1	
23	1	WORK TABLE	FABRICATED	SEE DRAW.		1	
24	1	SHOULDER	FABRICATED	SEE DRAW.		1	
25	1	CONVECTION OVEN	WILSON	50-02		1	
26	1	TRAY/PALETTE CART	WILSON	3475		1	
27	1	UTILITY CART	WILSON	3485		1	
28	1	WALK-IN REFRIGERATOR	METROPOLITAN	600-80-1		1	
29	1	WALK-IN FREEZER	METROPOLITAN	600-80-1		1	
30	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
31	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
32	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
33	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
34	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
35	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
36	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
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65	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
66	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
67	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
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70	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
71	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
72	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
73	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
74	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
75	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
76	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
77	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
78	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
79	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	
80	1	STAINLESS STEEL SINK	FABRICATED	SEE DRAW.		1	

**GENERAL NOTES**

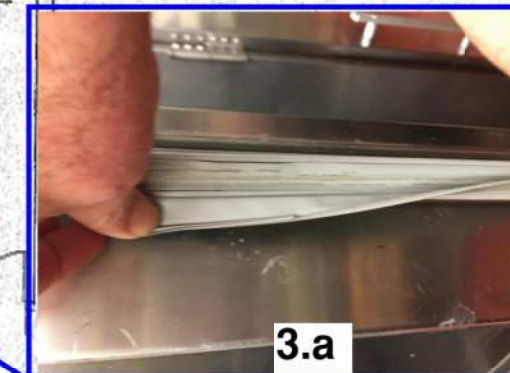
- UTILITY CONNECTION LOCATIONS AS DETERMINED ON THE FOOD SERVICE EQUIPMENT DRAWINGS ARE NOT TO BE CONSIDERED AS "ROUGH-IN" OR "STUB-UP" FROM WALLS, FLOOR OR CEILING BUT ARE ACTUAL CONNECTION POINTS FOR THE UTILITIES ON THE FOOD SERVICE EQUIPMENT AS SPECIFIED AND AS SHOWN ON THE DRAWINGS. THE FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE FULLY-DIMENSIONED MOUNTING-ON PLANS FOR ALL FOOD SERVICE EQUIPMENT SPECIFIED, INCLUDING ALL ITEMS OF RE-USED EXISTING AND OTHER-FUNCTIONAL EQUIPMENT. "ROUGH-IN" DATA FOR SUCH EQUIPMENT MUST BE VERIFIED PRIOR TO SUBMITTAL OF "ROUGH-IN" DRAWINGS.
- ALL SURFACE PLUMBING-TRENCH, SPECIFICALLY FRANCES, LEVER HANDLE DRAINS, CRUISE CLIPS, STRAINERS, TAIL PIECES, GRIP THROUGH DRAINS, REFRIGERATOR DRAINS, VACUUM BREAKERS WHERE ATTACHED TO EQUIPMENT, AND POT FILLERS ARE A PART OF THE FOOD SERVICE EQUIPMENT WORK.
- FLOOR DRAINS, SHOWN ON THESE SHEETS, ARE FOR THE GUIDANCE OF THE FOOD SERVICE EQUIPMENT CONTRACTOR IN LOCATING DRAINS WITHIN A FEATURE. REFER TO PLUMBING DRAWINGS FOR ACTUAL SIZE, TYPE, NUMBER, AND LOCATION OF FLOOR DRAINS.
- THE FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE CONDENSING UNITS AND UNIT EVAPORATORS FOR THE WALK-IN REFRIGERATOR/FREEZER ASSEMBLY AS SHOWN ON THE DRAWINGS. THE CONDENSING UNITS SHALL BE MOUNTED ON A STRUCTURAL STAND, SELF-CONTAINED REFRIGERATION SYSTEMS TO BE LOCATED AS SHOWN ON THE DRAWINGS. THE FOOD SERVICE EQUIPMENT CONTRACTOR SHALL SUPPLY AND INSTALL ALL REFRIGERATION SUCTION AND LIQUID LINES FROM CONDENSING UNITS TO THE UNIT EVAPORATORS; THE TON CLOCK BY FREEZER COMPRESSOR UNIT, FREEZER PRESSURE RELIEF PORT, SLIP-ON PLASTIC INSULATION, LINE VANGERS, STRAINERS STEEL EQUIPMENT PLATES, LIQUID LINE KITS, PROPER SIZED GAGES, SIGHT GLASS, AND SHUT VALVES, ALL CONNECTED WITH COPPER TUBING TO THE LIQUID LINES ON THE CONDENSING UNIT.  
BACK CONDENSING UNIT SHALL BE PRE-WIRED TO A PANEL BOX MOUNTED TO THE FRAME WHICH SHALL CONTAIN MOTOR DISCONNECT CIRCUIT BREAKERS OR CONTACTS; EACH CONDENSING UNIT SHALL BE LABELED "SYSTEM NO. 1, SYSTEM NO. 2" ETC., WITH A BAKELITE LABEL WITH WHITE LETTERING. THE LINES OF EACH SYSTEM SHALL BE COLOR-CODED AT 36" ON CENTER.
- PARTITION LOCATIONS WALL THICKNESS, PARTING, DOOR SIZES, DOOR LOCATIONS, AND WALL FINISHES ARE SHOWN ON THE FOOD SERVICE EQUIPMENT DRAWINGS FOR CONVENIENCE ONLY; REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL BUILDING CONSTRUCTION DIMENSIONS AND FINISHES.
- ALL FABRICATED CONSTRUCTION SHALL BE TO NATIONAL SANITATION FOUNDATION (N.S.F.) STANDARDS.
- ADEQUATE MAKE-UP SUPPLY SHALL BE PROVIDED TO INCLUDE A BALANCED SYSTEM (SLIGHT NEGATIVE PRESSURE). THIS IS NOT A PART OF THE FOOD SERVICE EQUIPMENT WORK.
- PROVIDE ADEQUATE VENTILATION FOR SELF-CONTAINED REFRIGERATION UNITS IN ENCLOSED SPACES TO PREVENT OVER-HEATING AND SURVIVAL OF UNITS.



3.c



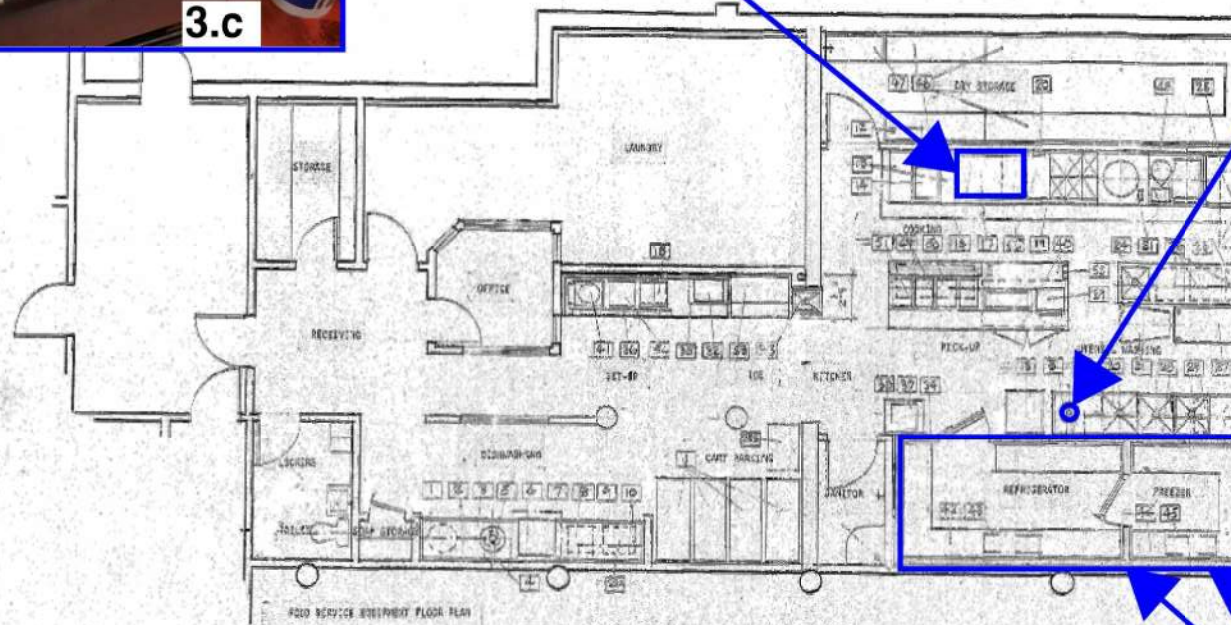
3.b



3.a



3.a



FOOD SERVICE EQUIPMENT SCHEDULE

NO.	QTY	DESCRIPTION	UNIT OF MEASURE	MANUFACTURER	MODEL NO.	NO.	QTY	DESCRIPTION	UNIT OF MEASURE	MANUFACTURER	MODEL NO.
1	1	PORTILE TRASH CAN	PANTRY	WILSON	48-100	28	1	SHREVE SUBMERCENT STN	36-30	METROPOLITAN	"METROSERV"
2	1	ROCK SHELF	PANTRY	SEE DWG.		29	1	SHREVE LITERAL BASK	SEE DWG.	SEE DWG.	
3	1	SOLEO SCURTALS	PANTRY	SEE DWG.		30	1	SHREVE AND LITERAL BASK	SEE DWG.	SEE DWG.	
4	1	PRE-HEAT UNIT	T-2	1-434/9-100		31	1	STAKE HEATER	WATCO	W30-A	
5	1	DISPENSER	SALAD	200		32	1	VARIABLE SIZE AND UNADORNED	PANALCATER	SEE DWG.	
6	1	DISPENSER	STEAM	200-PACKAGE		33	1	60 QT. PLEUR	HEBART	H-600-2	
7	1	VAPOR HOOD	NOT A PART OF THE WORK	REFER TO SECT. 2402		34	1	MICROWAVE OVN	ALTON	40-12	
8	1	BOOSTER HEATER	STEAM	700T OR 14		35	1	LABATORY SINK	TECO	40-15 3/4	
9	1	CLEAN DISINFECTANT	PANTRY	SEE DWG.		36	1	WALK-IN REFRIGERATOR/FREEZER	SHAW	SEE DWG.	
10	1	SHREVE	PANTRY	SEE DWG.		37	1	SHREVE	PANALCATED	SEE DWG.	
11	1	WHAILE DELIVER ORAT	METROPOLITAN	200-20-1		38	1	DELTA-UP TABLE	PANALCATED	SEE DWG.	
12	1	FLAME PROTECTION SYSTEM	WALL	4-101-8Y-001		39	1	HEBART	HEBART	1700	
13	1	WHAILE FOOD CASSETT	CHINA	17-140		40	1	ROCKLE SLICER OVN	OMER-OWN	270-1210-1	
14	1	GRIP PAT PRYER	WALCOH-HST	700E		41	1	CONVECTION TOASTER	WELLS	70-720	
15	1	SPREADER PLATE	WALCOH-HST	24-70/000		42	1	VORX COOKER W/ REFRIGERATOR	PANALCATED	SEE DWG.	
16	1	VENTILATING HOOD	NOT A PART OF THE WORK	REFER TO SECT. 2402		43	1	COFFEE JNH	AMERICAN COFFEE UNN	341E	
17	1	GRIDDLE RANGE	WALCOH-HST	7000X		44	1-40T	REFRIGERATOR SHELVING	METROPOLITAN	"METROSERV"	
18	1	VOICE DISPENSER	DISPENSER	T		45	1	REFRIGERATION SYSTEM NO. 1	WELLS	W4-100-1	
19	1	WASH-BURNER WASH	WALCOH-HST	7000A		46	1-40T	FREEZER ASSEMBLY	METROPOLITAN	"METROSERV"	
20	1	POT FILLER	T-2	1-434/9-100		47	1	REFRIGERATION SYSTEM NO. 2	WELLS	W4-100-1	
21	1	HEATSE	CL-CL-140	PART OF 1-43		48	1-40T	DRY STORAGE SHELVING	METROPOLITAN	"METROSERV"	
22	1	SPARE NUMBER				49	1	TRUCK	SECO	3400	
23	1	WORK TABLE	PANTRY	SEE DWG.		50	1	STEAMER W/100 QT. KETTLE	CLEVELAND	2000L-113	
24	1	SHREVE	PANTRY	SEE DWG.		51	1	HEATER GRABNET	THEYORNER	3500	
25	1	CONVECTION OVEN	WALCOH-HST	50-02		52	1	ICE FOOD HELD	WELLS	W4-100-1	
26	1	TRAY/WASH DRAY	SECO	3470		53	1	SHREVE	PANALCATED	SEE DWG.	
27	1	UTILITY LAMP	SECO	3485		54	1	ICE CRACKER	SECO	3485	
						55	1	ICE MACHINE	BOYDSON	16-0000-3140-40	
						56	1	MELT DISPENSER	WALCOH	30-1	
						57	1	CONVECTION OVN	WALCOH-HST	50-02	

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TASKS 9/10 - DOORS ...TAB G



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**Task 9 - Interior and Exterior Door and Hardware Evaluation for non-inmate area doors (referred to here as Commercial doors)**

SUMMARY:

**For the purposes of this report, "Commercial" door openings are herein defined as ones containing solid or hollow core wood doors, light gauge (18 or 16 gauge) hollow metal doors, or aluminum doors, 16 or 18 gauge hollow metal or aluminum frames, and standard commercial grade door hardware (lock-sets or passage-sets, hinges, door closers, door stops, door seals, thresholds, door bottoms, kick plates, etc.).**

Basement Level Sheriff's Area

The majority of the doors and frames on this floor are in functional working condition. The doors show expected wear that would be associated with an office space, with the majority of wear shown on the lower 12 inches of the door from kicking or pushing the door with a foot. The door hardware is a mixture of knob style, older, lever action hardware with a gold finish, and replaced lever action hardware with stainless steel or chrome finish. Many of the fire-rated doors within corridors have had their closers disconnected from the door or frame where they should be attached due to fire ratings. In general, the doors are in functional working condition with minimal damage needing repair. The hardware cores are original in most instances and should be considered for replacement for security reasons.

1<sup>st</sup> Floor Jail Areas Non-Visitation Rooms

Door assemblies are a mixture of painted hollow metal doors and frames as well as aluminum storefront systems. Storefront systems are found in office areas, the receiving room off the sally port, and at the main entry. In general, the doors, frames, and hardware are in fair to good working condition. Door assemblies within the food storage and laundry areas have worn finishes down to bare surface metal. The wear on these doors is normal for a jail environment and would return to the same condition if repainted.

1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Floor Jail Areas Visitation Rooms

Doors and frames show expected wear and tear on the inmate side of the visitation rooms. This includes engravings on door surface, picking of sealant around vision lite frames, and minor damage at door edges due to inmates kicking the doors. Only one door was found to have the door surface pulled from the core of the door. The doors have been recently painted and have knob handle hardware on the hallway side with flush covers on the inside. In general, the doors, frames, and hardware are in functional working condition.

Doors and frames on the public side are in functional working condition. Door hardware has been replaced with lever action type hardware. The return on the lever action hardware handle rubs the vision lite glass frame and screws in most locations. However, it does not appear to affect the operation of these doors or hardware.

2<sup>nd</sup> Floor Jail Area Non-Visitation Rooms

Remaining doors on the second floor are a mixture of commercial and institutional types. Commercial type door assemblies are scattered throughout the second floor and are located within the secure medical area, janitor closets, mechanical/electrical rooms, and stairwells. The majority of the doors are hollow metal doors and frames and are in fair to good working condition with 1 metal folding partition door that is in acceptable working condition.

### 3<sup>rd</sup> Floor Jail Area Non-Visitation Rooms

Remaining doors on the third floor are a mixture of detention and commercial types. Commercial type door assemblies are few and are located at toilet rooms, the medical office, and the stairwells. These doors and frame are in fair to good working condition.

### 1<sup>st</sup> Floor Sally port Jail Area Overhead Doors

The sally port overhead doors are a mixture of coiling and sectional types. Doors are worn and in some instances the bottom portion of the door is dented but that does not appear to affect operation. Door finishes are faded and in need of painting. Sally port areas in general are affected by lint collecting in the areas from a dryer exhaust. Overhead doors and operating hardware are collecting lint that can affect the operation of the door. Doors in most cases seemed to be operating well with one exception of a door that sounds like it is binding, but is still operational. Doors are controlled via central control and by keycard access. The doors do not have the photo cell safety hardware for security reasons.

## GENERAL FINDINGS:

### Basement Level Sheriff's Area

1. The majority of the doors and frames are in functional working condition and need minor repairs to extend the use of the door assemblies for an additional 5 to 10 years.
2. Most door assemblies are solid core wood doors in hollow metal frames and generally conform to the original construction documents.
3. A few door assemblies are accompanied by vision panels set in hollow metal frames. Some of the vision lites within doors or adjacent vision panel have wire glass. Wire glass is no longer accepted in fire rated door assemblies per building codes but would not need to be replaced as part of the minor repairs.
4. A few doors were observed to be rubbing against the door frame.
5. The majority of the doors are in fair cosmetic condition. The major area of cosmetic damage is at the bottom 12 inches of doors where it is visibly noticeable that doors are being pushed or kicked open.
6. Door hardware is a mixture of mostly knob style, some older lever action and very few newer lever action.
7. Door hardware finishes vary between gold and polished silver and brushed aluminum. The older gold finishes are showing signs of wear with the finishes being rubbed off exposing bare metal.
8. Many of the rated doors within corridors have had their closers disconnected from the door or frame where they should be attached in accordance with fire ratings of the openings.

*\* Note: If the entire facility is supplied with a full fire suppression system, current building codes would allow for a reduction of corridor wall fire ratings by 1 hour. If the fire suppression system is not added, maintaining the original fire rating requirements for walls and door assemblies would be required. The*

*basement level is fully equipped with a fire suppression system, and the code official may allow the basement level to have a 1 hour reduction even if the entire facility is not provided with a full fire suppression system.*

9. With only a few exceptions, door locks are equipped with Best brand cylinders (core). It is our understanding that the keying system within the sheriff's space has not been modified since the facility was built. This may pose a security concern and should be presented to Jail personnel to determine if re-keying or core replacement is desired. This could be added to the door projects, but it NOT currently in the estimate.
10. According to the original plans there have been some minor modifications to the floor plans. Some doors and walls have been removed near the lab area on this floor. To the best of our ability, we have provided for these changes in our accompanying as-built floor plans.
11. During our site visit we were not allowed to assess door assembly conditions at the sheriff's evidence storage rooms. One set of doors (Door # 035B) was an in-swinging hollow metal door and frame, with an out-swinging metal screen door (see Figure 9.01 below).



Figure 9.01: Door 035B-to Evidence Storage

12. Many of the rated doors within corridors are missing gaskets around the door frame that prevent smoke from entering through the air space between the door and frame. Some of the gaskets have been removed, some are loose, and some are damaged or in pieces.
13. There are two sets of exterior aluminum storefront entry doors, frames, and vision sidelites. The assemblies

were in functional working condition. The glazing in the door has been replaced, or the gaskets have been replaced with sealant. The sealant was not installed with clean lines and is cosmetically unappealing. However, the installation of the sealant does not have gaps or voids and is adequately holding the glass in place. The floor tile at these doors is damaged and broken near the threshold (see Figure 9.02 at below left). The cause appears to be from running the tile up to the door threshold rather than below the threshold, leaving the edge of the tile exposed.



Figure 9.02: Door 024D showing damaged floor tiles.



Figure 9.03: Door 024D

14. One pair of exterior hollow metal doors (Door # 062A) was observed to have rust on the bottom of the doors, the door frame and the threshold (see Figure 9.05 at below right). This set of doors is also noted with exterior signage as being an ADA accessible door. The threshold exceeds the height allowable to meet ADA code requirements (see Figure 9.04 at below left).



Figure 9.04: Door 062A showing exterior



Figure 9.05: Door 062A showing condition of threshold and frame

15. At Door 038B, -the door and frame assembly showed more signs of damage than other door assemblies due to the movement of equipment such as carts through the door opening. Edges of the door and door frame were slightly damaged. In this same area, a portion of the adjacent wall base is loose (see Figure 9.06 below). Corner edges of a nearby wall have been damaged from the movement of equipment as well.



Figure 9.06: Door 038B shows signs of damage at wall and loose base.

16. Mechanical room doors have hardware, door, and frame surfaces covered with accumulating lint and dust which indicates there is a potential problem with air flow within the facility.
17. The closers on a few door assemblies do not fully close and latch the doors. This may be fixed with an adjustment to the closers.
18. A small quantity of doors need minor revisions to varying hardware components such as missing screws in the hinges.
19. Flush mounted door position indicators were noted on a few doors.

#### 1<sup>st</sup> Floor Jail Areas Non-Visitation Rooms

1. Door assemblies generally match the original construction documents and are in fair to good working condition. Minimal work is required to keep them properly operating for an additional 5 years.
2. Door 124 from the vehicle sally port into the receiving room is an aluminum storefront controlled entry door with controlled access door operator and with aluminum storefront vision lites on either side (see Figures 9.07 and 9.08 below). The door assembly is in good working condition and there are no recommendations for repair.



Figure 9.07: Door 124 -Sally port side



Figure 9.08: Door 124-Reception Side

3. Doors 115 and 124A are into toilet rooms. Doors are painted hollow metal with painted hollow metal frames. Doors and hardware are in good working condition. Door 124A does not have lever action hardware.

4. Door 121 is a wood door in a wood frame with a standard knob hardware set. To meet current codes, the hardware should be changed out to be lever action type. Otherwise the door assembly is in good working condition.
5. Door 114 is a heavy steel painted door in a painted steel frame (see Figure 9.09 below). The paint on the door is worn away and the lower portion of the door is marred. We recommend installing a kick-plate. The paint damage is purely cosmetic and does not affect the operation of the door. The closer cover is missing. The door operating hardware is keypad type with a lever action handle. The door is somewhat difficult to open. Adjustment of the closer and hinges is recommended. Otherwise the door assembly is in good working condition.



Figure 9.09: Door 114

6. Doors 109, 113, and 113A are anodized aluminum sliding door assemblies located as entrances to office spaces (see Figure 9.10 below). Doors and hardware are in good operating condition and there are no recommendations for repairs.



Figure 9.10: Sample of interior aluminum sliding door

7. Doors 100A0 and 100B are painted hollow metal doors in hollow metal frames located off the entry lobby into the jail. The doors access men's and women's toilet rooms. Both doors have lever action hardware. According to fire rating labels on the doors, they should have closers installed on each door, but none were present. The fire-rating labels have been painted over making it impossible to determine the rating of the door and frame. Otherwise doors appeared to be in fair working condition for their type of use.
8. Door 122 is a solid core stained wood door within a painted hollow metal frame that leads into the breathalyzer room. The door is equipped with a commercial lockset and deadbolt and is in good working condition.
9. Door 122A is a painted hollow metal door and frame leading into the Breathalyzer room. The door is equipped with lever action handles, a floor stop and a closer. The closer is disconnected from the door and could be removed. The door assembly is in good working condition.
10. Door 100 is an aluminum storefront entry system with side-lites on other side of the door that lead into the jail lobby. The door and hardware are in good working condition and operate efficiently, with the exception of the door hitting a surface mounted light fixture when opened at 90 degrees (see Figure 9.11 below). We recommend replacing the light fixture with a flush mounted unit.

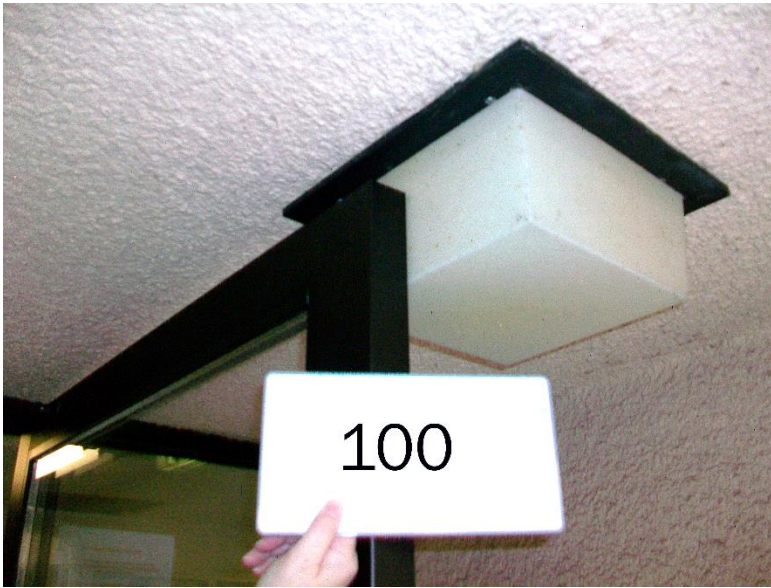


Figure 9.11: Door 100 hitting surface mounted light fixture

11. Door 103 is a painted hollow metal door and frame leading out of stairwell STC. The door is equipped with panic hardware and is in good working condition for the type of use.
12. Doors 150 and 162 are painted hollow metal doors and frames leading into the maintenance staging room. Doors have knob style door hardware that should be replaced with lever action type to meet codes. Doors and hardware are in functional working condition.
13. Doors 143,148, and 154 are located in high use areas accessed by inmates that include food prep, laundry, storage, and toilet. Doors are painted hollow metal with painted hollow metal frames that have damaged finishes. Due to the nature of the use, location, and the potential short-term use, repainting of the door assembly is not recommended. Door operating hardware varies from knob style to lever action. Closers do not have cover plates for security reasons. Other than cosmetic appearance, these doors appear to be in functional operating condition.
14. Doors 142 and 160C are painted hollow metal doors and frames that access storage and electrical closets located in the food prep area. The finishes are diminished due to surrounding activities and use. Due to the nature of the use, location, and the potential short-term use, repainting of the door assembly would not be recommended. Closers do not have cover plates for security reasons. Other than cosmetic appearance, doors appear to be in functional working condition.
15. Door 144 is a painted hollow metal door and frame leading to an office located within the food prep area and adjacent to the laundry room. This room is used by correctional staff to observe inmates working in adjacent areas. The door finish is worn, but other than cosmetic appearance, door and hardware are in fair working condition. Due to the nature of the use, location, and the potential short-term use, repainting the door assembly is not recommended.

1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Floor Jail Areas Visitation Rooms

1. Doors and frame assemblies at the visitation rooms match the configurations shown on the original construction documents and floor plans.
2. The door hardware on the inmate sides are gold finish knob type with a flush plate on the inside of the visitation room. Door hardware appears to function well and no other door hardware items were observed that needed repair. Vision lites within doors are in good physical condition.
3. The visitation doors on the inmate side have been recently painted. As expected within a jail facility the interior (visitation room side) finish on all doors and frames has been vandalized by inmates with scratched and inked graffiti. These are cosmetic, however, and do not affect the operation and security of the doors. There are a few areas where the door surface has been picked at around the glazing frames leaving small voids of varying sizes (see Figure 9.14 below).
4. Doors on the inmate side are generally in functional condition with a few observations of damage (see Figure 9.13 at top right below). The damage is primarily around the latch edge of the door where the metal door material is bent (see Figure 9.12 at top left below). No observations were made where this was a major problem that hindered the door from proper operation. One door was observed to have the metal face pulled away from the main door surface. This is caused from an inmate vandalizing a door by kicking it and causing damage using forces applied at the edge of the door in a closed position. Due to the severity of damage at this door, we recommend that the door be replaced.



Figure 9.12: Door 2EV damaged door face



Figure 9.13: Looking towards inmate visitation doors



Figure 9.14: Door 2EV-Typical damage at vision lite frame

5. The doors on the public side of the visitation rooms show signs of standard surface finish wear that would be expected for this type of use. Door operation hardware is chrome lever action with a return at the end of the handle towards the door. The end of the handle is rubbing against the glazing frame and glazing frame screws. Wear is visible on the door and glazing frame finish from the movement of the door handle. The hardware operation was not hindered by the style of hardware. Some, but not all, of the doors had floor stops.

#### 2<sup>nd</sup> Floor Jail Area Non-Visitation Rooms

1. Doors 286, 287, 292, and 293 and frames in the medical area are painted hollow metal. The four door assemblies in the exam room, treatment room, supply room and medical records room and are in good working condition. Doors have knob handle style hardware that should be replaced with lever action hardware. We observed that a number of the installed closers have been disconnected from the door. Since there are no fire-ratings in this area, leaving these as-is is strictly a preference of the user.
2. Door 299A is a painted hollow metal door and frame located off the courtroom. The door hardware is a knob style that is loose and should be replaced with lever action style. The door is in functional working condition.
3. Door 248 is a painted hollow metal door and frame leading into a janitor room. Door operating hardware is lever action. Door assembly is in good working condition.
4. Door 252 is a metal folding gate door that is secured with a padlock. Door is in good working condition.
5. Door 256 is a pair of painted hollow metal doors within a painted hollow metal frame that accesses a Mechanical/Electrical/Plumbing room. The door operating hardware is lever action handle, is in fair working condition, but is loose. The bottom latching bolt does not work properly and should be adjusted.

6. Door 2AP is a painted hollow metal door and frame with a knob lock and a floor stop. The door assembly is in good working condition.
7. Door 2AV is a painted hollow metal door and frame, with an adjacent vision lite in a painted hollow metal frame. The door is equipped with knob hardware with an interior flat plate which is the same as the adjacent visitation rooms. The door assembly has been recently painted and is in good working condition. Similar to the visitation rooms, abuse and graffiti should be expected with use of the room. The room is used by small groups for visitation or meeting space.

### 3<sup>rd</sup> Floor Jail Area Non-Visitation Rooms

1. Door 307B is located in the public stairwell and is a painted hollow metal door and frame (see Figure 9.16 at below right). The door is considered an egress door but is not equipped with panic hardware. It is apparent, due to painting and door hardware configurations, that the door at one time was equipped with panic hardware. The door currently has an interior gold knob handle that does not comply with building code egress requirements (see Figure 9.15 at below left). Otherwise the door assembly is in good working condition.



Figure 9.15: Door 307B knob hardware    Figure 9.16: Door 307B frame condition

2. Door 307A is a painted hollow metal door and frame with egress door leading into public stairwell, Stairwell STC. The door is equipped with panic hardware, closer, and lever action hardware and is in good working condition.
3. Doors 301 and 355 are painted hollow metal doors and frames equipped with lever action hardware and closers. Doors are in good working condition.
4. Door 305B is a painted hollow metal door and frame leading into a medical office. The door is equipped with a knob handle that should be replaced with a lever action handle. The closer is currently not attached which does not violate current code. The door assembly is in good working condition considering the environment.

### 1<sup>st</sup> Floor Sally Port Jail Area Overhead Doors

The sally port overhead doors are a mixture of coiling and sectional types (see Figures 9.18 and 9.19 at top below). Doors are worn and in some instances the bottom portion of the door is dented but does not appear to affect proper operation (see Figure 9.20 at below left). Door finishes are faded and in need of painting. Sally port areas in general are affected by lint collecting in the areas from a dryer exhaust (see Figure 9.21 at below right). Overhead doors and operating hardware are collecting lint that can and has affected the operation of the door. These doors in most cases seemed to be operating well with one exception of a door that sounds like it is binding but still appears to operate efficiently.

As part of the assessment we discussed the condition and general maintenance history with Jack Johnson, owner of Overhead Door Company of Bellingham. Some of the items he identified as potential issues are due to the age of the motors. The motors that are currently installed are no longer available for replacement, and replacement parts for repairs are no longer available. Motors would need to be replaced if they fail, but the new motors are not compatible with the existing door styles. He did indicate one of the motors has been replaced already. We believe this is door 164.

Another maintenance consideration is the condition of the counterbalance springs. The large coiling doors cannot be easily observed without removal of the large housing. Due to the age of the doors and operating hardware, there are some potential repairs needed.

Overhead Door Company has replaced some of the sectional door panels and provided some stock to Facilities for replacement. They believed they may have some additional stocked panels. They indicated that they are on site once or twice a year to repair panels.

In general, the doors and hardware are functional and have several more years of life provided that regular maintenance is performed.



Figure 9.17: Standard condition of coiling doors



Figure 9.18: Condition of overhead panel door



Figure 9.20: Damage at bottom door panels



Figure 9.21: Lint accumulation on hardware

#### OPTIONS FOR IMPROVEMENTS AND UPGRADES:

##### Basement Level-Sheriff's Area

The cost to do cosmetic upgrades exceeds the value of the work for a 5-year life. Removing the doors for a period of time to be re-finished presents a security concern. Doors would need to be removed in some efficient quantity and taken off site to remove all hardware, sand door surfaces, stain, seal, reinstall hardware, and then return them to the site for reinstallation. Several doors may be removed over a period of a few days to over a week depending on the efficiency of the crews performing the work. This is a major security concern for operations of a law enforcement facility. Our recommendation is to leave the doors in place and make the repairs/corrections listed in the scope options below. Where door surfaces are worn at the bottom, a kick plate will be added, rather than refinishing the entire door.

##### 1) Scope Option 9-1:

- a) Remove original knob handle and lever action hardware and replace with new stainless steel lever action hardware to match recent upgrades. This affects 70 doors.
  - i) Remove old latch sets and replace with new lever action hardware.
  - ii) Test door for positive latching and locking.
- b) Install new smoke seal gaskets at fire rated doors. This affects 67 doors leafs. (a pair of doors has 2 door leafs)
  - i) Remove old gasket material from existing frame and install new gaskets.
  - ii) Install seals at bottom of door leafs
  - iii) Test doors for positive latching.
- c) Re-connect closers at fire rated doors, and adjust closing speed as needed. This affects 9 doors.

##### 2) Scope Option 9-2:

- a) Remove cylinders (cores) and install new cylinders according to new keying schedule coordinated with the sheriff's department. This affects 88 locks.
  - i) Coordinate keying schedule with Sheriff's Department and Whatcom County Facilities.
  - ii) Remove old cylinders (cores).

- iii) Replace with new Best brand lock cylinders (cores).
  - iv) Test each door for positive latching, locking and unlocking with all master keys and individual keys.
- 3) Scope Option 9-3:
- a) Remove existing exterior door threshold, clean rust from door and frames, and refinish, install new ADA compliant threshold at door 062A. This affects 1 pair of doors and frame.
    - i) Remove existing threshold and prep for new.
    - ii) Clean rust from metal surfaces, sand, patch doors and frames, prime and paint hollow metal doors and frames.
    - iii) Remove damaged floor tile and replace with new (8 s.f.).
    - iv) Install new ADA compliant threshold.
    - v) Coordinate installation of door hardware identified in other sections.
  - b) Remove existing thresholds at aluminum entrance doors. Repair VCT (vinyl composition tile) and install new ADA complaint threshold at doors 024C and 024D. This affects 2 doors
    - i) Remove damaged VCT and door thresholds (12s.f.).
    - ii) Install new VCT to match existing.
    - iii) Install new ADA compliant threshold set in sealant.
  - c) Repair wall edges, wall base, install stainless steel corner guards and touch up paint at door frame at door 038B. This affects 1 door.
    - i) Remove rubber wall base and salvage for reinstallation.
    - ii) Patch gypsum board walls and paint.
    - iii) Reinstall rubber base.
    - iv) Install two (2), 4' tall - stainless steel corner guards at wall edges in adjacent corridor.
- 4) Scope Option 9-4:
- a) Perform a general maintenance check on all doors and frames. This affects 94 doors. (a pair of doors has 2 door leafs)
    - i) Review condition of each door leaf for proper latching, tightness of screws, missing screws, hardware operation, and damage that may have occurred since the development of this report. Tighten loose screws and replace missing screws as needed.
    - ii) Adjust for clear operation without binding where doors rub on frames.
    - iii) Adjust closers so doors fully close and latch.
- 5) Scope Option 9-5:
- a) Install new 12" high x full door width plastic kick-plates on push side of doors. This affects 79 doors.

1<sup>st</sup> Floor-Jail Areas-Non-Visitation Rooms

- 6) Scope Option 9-6:
- a) Perform a general maintenance check on all doors, frames, and hardware. This affects 29 doors. (a pair of doors has 2 door leafs)
    - i) Review condition of each door leaf for proper latching, tightness of screws, missing screws, hardware operation, and damage that may have occurred since the development of this report.

Includes slight modifications where doors rub on frames. Tighten loose screws and replace missing screws as needed.

- b) Doors 120A, 162 and 150 - Replace knob hardware and replace with lever action hardware to match existing in other locations.
- c) Door 114 - Paint door, add stainless steel kick-plate and adjust closer.
- d) Doors 100A and 100B - Provide and install door closers.
- e) Door 100 - install floor stop to prevent door from hitting surface mounted soffit light fixture.

#### 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Floor Jail Area Visitation Rooms

Note: We are not recommending re-painting doors in these areas as the cost, time and logistics to complete a renovation of this magnitude do not provide a positive benefit, due to the nature of use, daily abuse, and short term life of these doors.

#### 7) Scope Option 9-7:

- a) Remove damaged door number 2EV and secure metal door facing to door core.
  - i) Remove door and any hardware needed to repair door, and salvage for reinstallation.
  - ii) Reattach door facing material to door edge channel by spot welding. Repaint door.
  - iii) Re-install door hardware and test for positive latching.
- b) Repair removed sealant/grout at door vision lites - Inmate visitation rooms. This affects 18 doors.
  - i) Remove additional material from damaged areas around vision lite frames, fill in with new cementitious grout and paint to match existing door color.
- c) Perform a general maintenance check on all doors, frames and hardware. This affects 34 doors. (a pair of doors has 2 door leaves)
  - i) Review condition of each door for proper latching, tightness of screws, missing screws, hardware operation, and damage that may have occurred since the development of this report. Tighten loose screws and replace missing screws as needed.

#### 8) Scope Option 9-8:

- a) Remove lever action hardware where return rubs against door vision lite frame - public side visitation rooms. This affects 18 doors.
  - i) Remove door hardware handset and reinstall with new lever action handset. Test door for proper latching.

#### 2<sup>nd</sup> Floor Jail Area Non-Visitation Rooms

#### 9) Scope Option 9-9:

- a) Perform a general maintenance check on all doors, frames and hardware. This affects 11 doors. (a pair of doors has 2 door leaves)
  - i) Review condition of each door for proper latching, tightness of screws, missing screws, hardware operation, and damage that may have occurred since the development of this report. Tighten loose screws and replace missing screws as needed. Repair door if/as needed.
- b) At doors 286, 287, 292, 293 and 299A - Remove knob handle and replace with lever action handle. Re-attach closures if desired by staff.

- c) Door 256 - Remove door hardware and replace with new lever action hardware. Repair or replace floor latching bolt.

### 3rd Floor Jail Area Non-Visitation Rooms

#### 10) Scope Option 9-10:

- a) Perform a general maintenance check on all doors, frames and hardware. This affects 11 doors. (a pair of doors has 2 door leaves).
  - i) Review condition of each door for proper latching, tightness of screws, missing screws, hardware operation, and damage that may have occurred since the development of this report. Tighten loose screws and replace missing screws as needed. Repair door if/as needed.
- b) Door 307B Remove knob hardware, paint door and frame and install new panic hardware. Prep door frame as needed for new hardware.
- c) Door 305B- Remove knob handle and replace with lever action handle. Re-attach closers.

### 1st Floor Sally Port Jail Area Overhead Doors

#### 11) Scope Option 9-11:

- a) Clean all overhead doors, tracks, motors, chains, etc. of lint and dirt and repaint doors.
  - i) 2 overhead coiling doors (doors 164 and 168) 21'-5" x 10'-6".
    - (1) Clean surfaces of all doors, tracks, motors etc. Lubricate operating mechanisms as needed for smooth operation.
    - (2) Prep doors for painting.
    - (3) Paint with high performance coating.
  - ii) 6 overhead sectional doors (164A, 165, 165A, 167, 167A and 168A) 12'-6" x 12'-6".
    - (1) Clean surfaces of all doors, tracks, motors etc. Lubricate operating mechanisms as needed for smooth operation.
    - (2) Prep doors for painting.
    - (3) Paint with high performance coating system.

#### ATTACHED DOCUMENTS:

- A9.01.01 – Basement color-coded door plan\*
- A9.01.02 – First Floor color-coded door plan\*
- A9.01.03 – Second Floor color-coded door plan\*
- A9.01.04 – Third Floor color-coded door plan\*

\*Includes Task 10 doors

**TASK 10 – Interior and Exterior Door and Hardware Evaluation for inmate areas (referred to here as Detention doors)**

SUMMARY:

**For the purposes of this report, “Detention” door openings are herein defined as ones containing heavy gauge (12 gauge or heavier) detention hollow metal doors, heavy gauge (12 gauge or heavier) detention hollow metal frames, detention grade mechanical and electrified door hardware (latching deadlock lock-sets, deadbolt lock-sets, hinges, lock cylinders, surface mounted detention grade door position switches, detention grade door stops, etc.), limited commercial grade door hardware (heavy duty door closers, door seals, thresholds, etc.), and in many cases detention grade security glazing at door vision panel openings.**

With approximately 35 years of use, the detention security doors and associated hardware exhibit the wear and tear expected in a jail facility of this age.

Door and Hinges: Virtually every cell door and associated door hinges have been significantly damaged from inmate abuse.

Frames: All but a few of the detention security door frames have little damage. The few exceptions with more detrimental damage appear to be deteriorating near the floor line from exposure to urine or water from plumbing leaks.

Hardware: With few exceptions, the originally installed detention security door hardware (including locksets, door knobs, hinges, door position switches, and door stops) and accompanying commercial grade door hardware have exceeded the end of their useful life.

Locksets: With few exceptions, the mechanical and electronic mogul key locksets and paracentric key locksets appear to still be generally in fair operational condition, although most are in need of cleaning and lubrication.

Electronics: Although apparently still operational, many of the surface-mounted door position switches, particularly at cell doors, squeak or click when the doors are opened and closed.

GENERAL FINDINGS:

1. Virtually every cell door was damaged as a result of inmates swinging the doors open until they are stopped by the cell front walls. The damage was to the improperly specified commercial-grade wall mounted door stops, brass door pull knobs and to the faces of the doors. All of the wall mounted door stops have been removed. In addition, in all but a few exceptions, the top corners of the doors at the strike edges project up to ½” from the faces of the door frames (see Figure 10.01 at below left). This is also likely the result of the doors being bent from repeated slamming against the cell front walls. This slamming has also caused many of the doors to bulge in the area of the strike plates (see Figure 10.02 at below right and Figure 10.16 further below). Additionally, many of the existing security brass hinges are bent as a result of abuse thus causing the strike edges of the doors to catch/rub on the door frames. In many locations, we noted some of the security fasteners were either loose or missing, and some fastener heads had been broken off, likely from over-tightening. Some door hinges have been replaced with stainless steel security-grade hinges. All originally installed wall stops have been removed. The original “pin” locksets manufactured by Southern Steel and installed at cell doors are no longer being manufactured and many have been replaced with after-market latch bolt solenoid locksets. The replacement locksets provide a slightly higher degree of security, but according to county maintenance staff, even their useful life has

been exceeded in some cases in only a couple of years. Although the cell doors are damaged, all remaining electric "pin" locksets and replacement locksets, with a few exceptions, are still functional.



Figure 10.01: Warped Door



Figure 10.02: Denting at Door Knob/Door Bulging at strike plate

2. Per the original construction project documents' door schedule, all detention security doors and door frames are 12 gauge in thickness. Most door frames are still in reasonably good working condition.
3. Most paracentric locksets, whether by manual key or electric solenoid operation, are still operational.
4. Most Mogul cylinder locksets, whether by manual key or electric solenoid operation, are still operational. A few examples of damaged cylinders were noted, but they too are still operational (see Figure 10.03 below).



Figure 10.03: Damaged Mogul Lockset

5. Some of the isolation cell door frames are rusting out at the floor line (see Figure 10.04 below).



Figure 10.04: Rusted Frame at Base

6. The paint finish on all cell doors and frames has been vandalized by inmates with scratched and inked graffiti. Similarly, at high traffic door openings the paint finish has been scraped off in a variety of ways (See Figure 10.05 below). These are cosmetic, however, and do not affect the operation and security of the doors.



Figure 10.05: Paint Scraping

7. Airborne lint has accumulated on the door frame door stops in multiple locations (see Figure 10.07 at below right). In many instances, this lint has migrated into the security lock bodies around the lock deadbolts, latch bolts and lock plungers. When manually keying these locksets, it is apparent that this lint is affecting the mechanical operation of the locksets due to increased friction on the internal working parts of the locksets. This does not appear to affect the electrical operation of the locksets.



Figure 10.06: Dust Accumulation in Mechanical Shaft



Figure 10.07: Dust in Door

8. The glazing gasket material has been removed from both sides of the door lites in multiple cell door locations (see Figure 10.08 below). In some cases, silicone sealant has been installed on the non-offender sides of the glass panels to hold the glass panes in place.



Figure 10.08: Glazing Stops Missing

9. Many of the electromechanical surface-mounted door position switches (DPS) were squeaking or clicking as a result of extensive use, and/or from dust/lint contamination. In cases where the cell doors have been damaged and forced to rub against the door frames, the shaft extending from the door mounting plate into the door position housing has been bent. However, the DPSs still function properly.
10. Many of the continuous hinges originally installed on the holding cell or isolation cell doors cuff/food pass ports are rusting out, (see Figure 10.09 below). Some of the pass ports have been repaired by welding on a piece of heavy sheet metal to reinforce the hinge.



Figure 10.09: Rusted Cuff/Food Pass Port

11. A recessed hand pull was originally installed at the exterior face of the isolation cell doors (see Figure 10.10 below). The heavy weight of the doors makes using this recessed pull by corrections staff to open the door extremely difficult, particularly when corrections staff are dealing with an agitated inmate. A couple of doors have been retrofitted with a steel cover plate (also shown in Figure 10.10 below) on the pull side of the door to close the gap between door and frame at the lockset. This was done to eliminate access to the lockset latch bolt by inmates.



Figure 10.10: Recessed Hand Pull / Steel Cover Plate

12. There is, in some cases, an existing level threshold (see Figure 10.11 at below left) or metal strip (see Figure 10.12 at below right) at passage doors leading from dayroom to adjacent dayroom (some originally installed doors, some recently installed doors). Even with the threshold, excessive gaps between the door bottom and the floor slab or threshold or metal strip exist. This gap allows for passage of contraband by inmates from one side of the door to the other.



Figure 10.11: Commercial (Non-Security) Threshold



Figure 10.12: Metal Strip at Threshold

13. All chase access doors were inspected. All the manually keyed locksets appeared to be fully operational, although most showed evidence of dust or lint getting into the bodies of the locksets making manual unlocking and relocking a bit difficult. Some chase doors in inmate dayrooms were bent at the upper corners causing the doors to not seat properly in the frame openings (see Figure 10.13 below).



Figure 10.13: Bent Mechanical Chase Door

14. Many of the door closers originally installed are showing signs of internal hydraulic seal failure, and hydraulic oil has been leaking onto the door and door frame (see Figure 10.14 below). Where door closers are exposed to inmates, the plastic covers have been removed by staff for security reasons. All doors with closers were tested for their ability to adequately close the doors and latch the bolts into the bolt keepers when the doors were open +/- 60 degrees. Many of these closers were unable to completely close the doors and will require adjustment to assure they close the doors to full lockset latch bolt engagement.



Figure 10.14: Door Closer Leaking Oil

15. All of the south isolation cell doors had manually keyed, door-mounted, deadbolt locksets, but no deadbolt strike plates mounted to the frames. Only a cut-out hole in the door frame is provided (see

Figure 10.15 below). Although not a recommended installation, the doors appeared to be adequately secure when closed and locked.



Figure 10.15: No Bolt Keeper/Hole in Door Frame Only

16. We found other miscellaneous door and door hardware issues such as doors scraping on the floor when fully opened, damaged builders lock cylinders, missing fasteners (see Figure 10.16 at below left), grout at edges of door frames missing, etc. (see Figure 10.17 at below right).

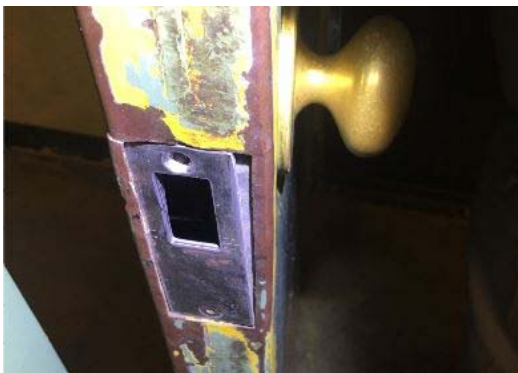


Figure 10.16: Screw Missing in Strikeplate/Door Frame



Figure 10.17: Missing Groove Bulging at Strikeplate

OPTIONS FOR IMPROVEMENTS AND UPGRADES (See Door Analysis Schedule for locations):

- 1) Scope Option 10-1:
  - a) Replace detention cell doors, door locksets, hinges and door position switches. (Figure 10.01.01-07)  
This affects 74 doors
    - i) Replace existing 2'-6" x 6'-8" x 2" x 12-gauge detention hollow metal doors with new doors. Prep door to receive new strike plate, hinges, surface-mounted door position switch, surface-mounted door pull, and security-grade wall-mounted door stop. Install new jamb-mounted solenoid lockset in existing frame and reconnect to existing power and signal wiring. Remove relite glass panel from old door and install in new door relite opening. Reconnect new door position switch to existing signal wiring. Paint door. Clean, sand, prime and repaint door frame.

- 2) Scope Option 10-2:
  - a) Replace electric pin lockset at locations other than at cell doors. (Figure 10.01.01) This affects 2 doors
    - i) Install new jamb-mounted solenoid lockset in existing frame and reconnect to existing power and signal wiring.
- 3) Scope Option 10-3:
  - a) Replace damaged mogul key cylinder. (Figure 10.03.08) This affects 6 doors
    - i) Replace existing Southern Steel mogul key cylinders with like replacement. Key to match existing.
- 4) Scope Option 10-4:
  - a) Repair water damaged and rusting door frames . This affects 5 doors
    - i) At affected door frames, remove paint and rusted metal. Weld 12-gauge sheet metal cover over cell side and hallway side of door frames at bases, and through bolt to wall. Paint repair work.
- 5) Scope Option 10-5:
  - a) Weld/reinforce continuous hinges at food pass/cuff port doors at holding and isolation cells. This affects 6 doors
    - i) At affected pass doors, remove rust, weld 2" wide x 12-gauge cover over cell side of pass door hinge. Fabricate steel cover plate to match other locations, and weld to door. Paint all repair work.
- 6) Scope Option 10-6:
  - a) Install new security door pull and detention grade wall stop at isolation and holding cell doors. (Figure 10.01.03, 10.01.07) This affects 21 doors
    - i) At all isolation and holding cell doors, install a new security-grade solid brass door pull similar to Southern Steel #212C raised door pull. Fasten security wall stop similar to DDS Group #7003 on adjacent wall.
- 7) Scope Option 10-7:
  - a) Install new latching panic exit threshold at inmate unit dayroom-to-dayroom passage doors. (Figure 10.07.09) This affects 8 doors
    - i) At all dayroom-to-dayroom passage doors, remove existing thresholds and metal strips installed to floor and install new latching panic exist threshold similar to Pemko #179AP. Secure to floor with epoxy anchors and Torx machine screw fasteners.
- 8) Scope Option 10-8:
  - a) Repair bent chase access door. This affects 3 doors
    - i) At dayroom plumbing chase access doors, where door panel has been sprung at upper corners, remove panel, straighten door, and reinstall. Touchup paint as needed.
- 9) Scope Option 10-9:
  - a) Replace defective and leaking door closers. (Figure 10.09.10 – 10.09.11) This affects 2 doors
    - i) At affected doors, remove and install a new door closer to match existing. Where closer is exposed to inmates, remove cover and give to Owner. Adjust closer closing pressure and/or speed to assure closing and latching of door.

10) Scope Option 10-10:

- a) Replace door position switches. (Figure 10.01.05) This affects 7 doors
  - i) At affected doors, remove existing door position switch, install new door position switch similar to Folger Adam 534, and connect to existing signal wiring.

11) Scope Option 10-11:

- a) Clean and lubricate all security locksets not noted to be replaced. This affects 11 doors
  - i) At affected doors, remove lockset from lock pocket, clean interior of lockset and lubricate per manufacturer's instructions. Reinstall lockset.

12) Scope Option 10-12:

- a) Fix/repair miscellaneous door items. (reference attached Door Analysis Schedule for locations) (Figure 10.12.12) This affects numerous doors.
  - i) At affected doors, provide the necessary fixes and minor repairs as needed.
  - ii) Replace builder cylinders
  - iii) Grind floors where door does not open completely
  - iv) Grind door to fit within door frame opening

ATTACHED DOCUMENTS: Product cut sheets

## JAMB MOUNTED FOR SWINGING DOORS

Minimum and medium security.

10195R-1: KEYED ONE SIDE  
10195R-2: KEYED TWO SIDES

### APPLICATION:

**Direct replacement for Southern Steel 10195 series locks.**

Minimum and medium security swinging doors that are to be unlocked from a remote location. Jamb mounted.

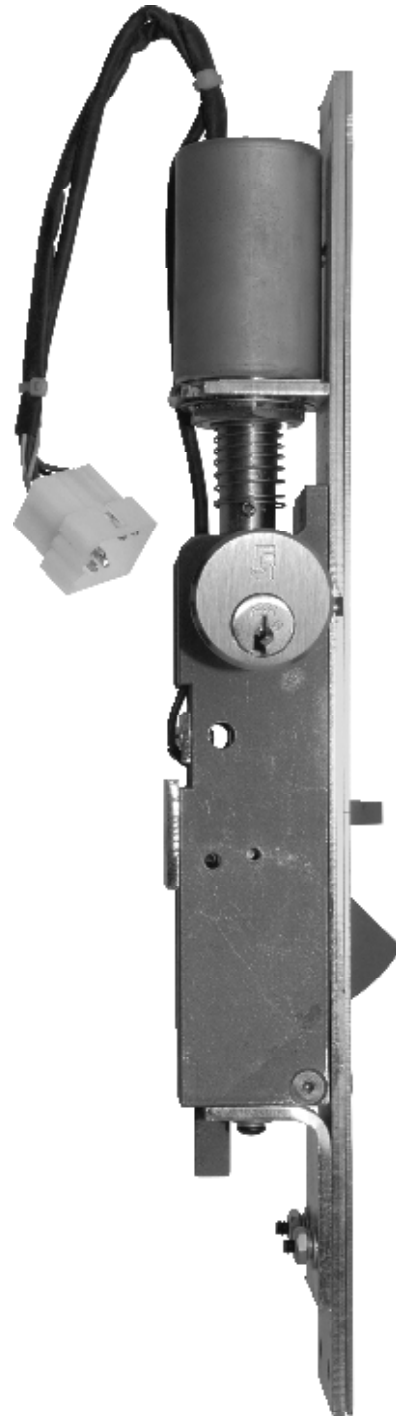
Door position indicator switch, door closer and heavy duty door pull are recommended.

### FUNCTION:

**ELECTRIC** - Remote switch activates a solenoid which retracts the latchbolt. Latchbolt remains retracted approximately 2 seconds, then it releases, automatically latches and deadlocks when the door is closed.

**MECHANICAL** - Latchbolt is retracted with a builder's hardware key at the door, and remains retracted while key is held in retracted position. When latchbolt is no longer held by key, the lock latches and deadlocks when the door is closed.

## SOUTHERN STEEL 10195R SOLENOID OPERATED ELECTRO-MECHANICAL DEADLATCH REPLACEMENT



# JAMB MOUNTED FOR SWINGING DOORS

Minimum and medium security.

## STANDARD FEATURES:

- Deadlock indication switch
- 2 second electrical holdback
- Strike with security fasteners
- Faceplate with security fasteners
- Plug connector
- High power, dual coil solenoid with overload protection. Intermittent coil is protected by module. Second coil is continuous duty.
- Fail secure
- Mounting fasteners

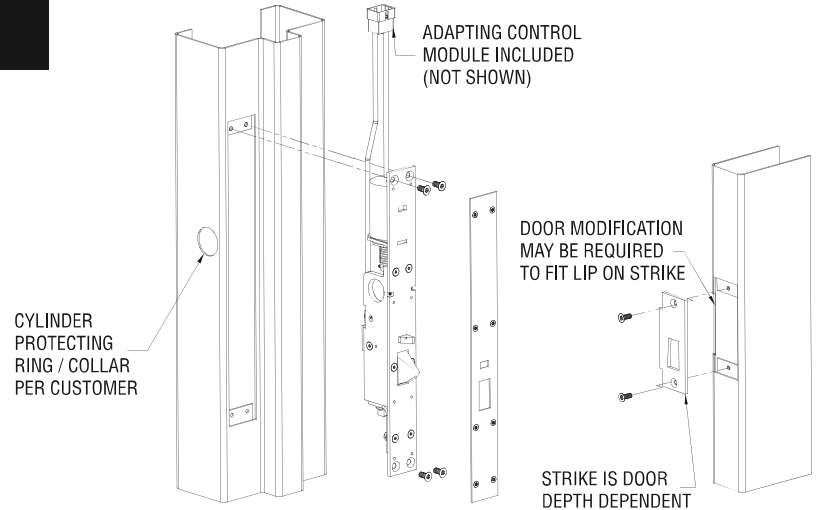
## OPTIONAL FEATURES:

FOR ORDERING NEW BUILDER'S HARDWARE CYLINDERS - Specify:

- "10195R-1" keyed one side.
- "10195R-2" keyed both sides.

KEY CYLINDER EXTENDER - Special order - priced on request.

# 10195R SOLENOID OPERATED ELECTRO-MECHANICAL DEADLATCH REPLACEMENT

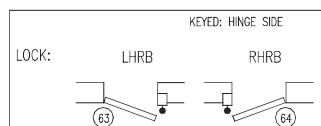
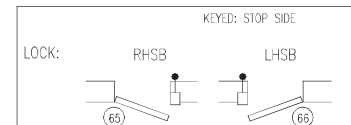
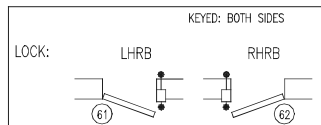


Strike is supplied with lip. Modifications for clearance may be required.

### Frame Preparation

NOTE: Drawing for illustration only. Reference template for specific information.

**Swing Chart:** Specify circled swing number when ordering.



## TECHNICAL DATA:

- STANDARD FINISH: US32D
- LOCK BODY: Stainless steel
- FACE PLATE: Stainless steel
- LATCHBOLT: Stainless steel
- DEADLOCK ACTUATOR: Stainless steel
- ELECTRICAL: 24 VDC, 3.6 amp inrush, .32 amp seated\*
- LOCK SIZE: 13-3/8" H x 1-1/2" W x 1-13/16" D
- LOCK WEIGHT: 4.1 lbs.
- LATCHBOLT SIZE: 1-5/8" H x 5/8" TK
- LATCHBOLT THROW: 3/4"
- BUILDER'S CYLINDER: 1-5/32" diameter with standard Yale cam or equal

## TO ORDER:

- Provide door thickness of 1-3/4" or 2"
- Handing

\*Minimum voltage 22VDC when unlock solenoid energized. Maximum voltage not greater than 28VDC at any point.



# MOGUL CYLINDER AND KEY

## HIGH SECURITY SIX-PIN MOGUL CYLINDER

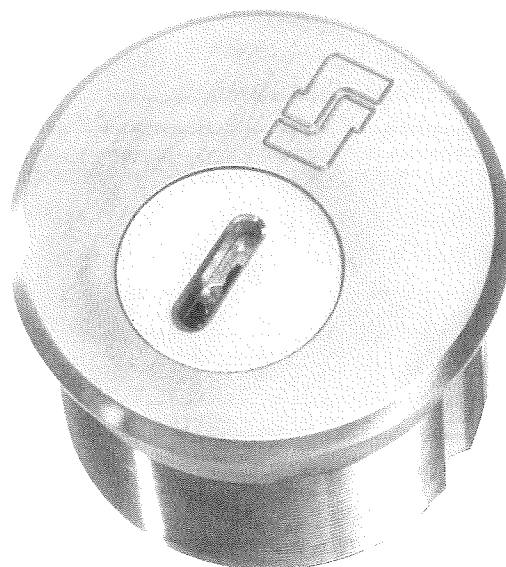
### APPLICATION:

Many of our locks are equipped with a "mogul-type" cylinder. This rugged cylinder is approximately twice the size of a standard "builder's hardware" cylinder. The mogul cylinder has six-pins with side bar operation. Six tumbler cylinders provide higher security than standard five tumbler cylinder with more combinations available. All cylinders may operate under the same exclusive key, including Southern Steel security builders cylinder, if desired.

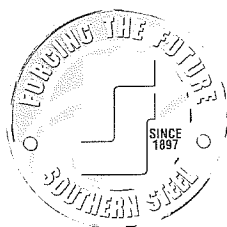
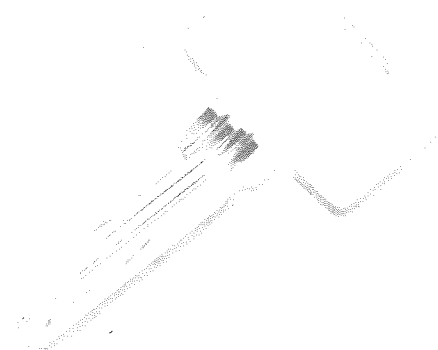
NOTE: Master keying available.

### TECHNICAL DATA:

- STANDARD FINISH: US26D
- MOGUL CYLINDERS:  
Brass
- MOGUL KEYS: Nickel silver
- CYLINDER SIZE: 2" thread  
Diameter
- CYLINDER WEIGHT: 1.5 lbs.
- KEY SIZE: 2-3/8" L x 1/8" TK
- TENSILE STRENGTH:  
91,000 lbs/in.2
- YIELD STRENGTH:  
76,000 lbs/in.2
- ROCKWELL HARDNESS:  
84-86.5 HRB
- PIN TUMBLERS:  
Combination nickel silver  
and stainless steel,  
6 tumblers per lock



### MOGUL KEY



Detention Equipment by  
**SOUTHERN  
STEEL.**  
SINCE 1897

## DOOR PULLS

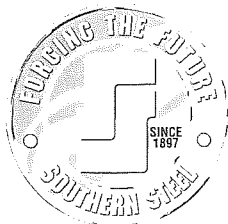
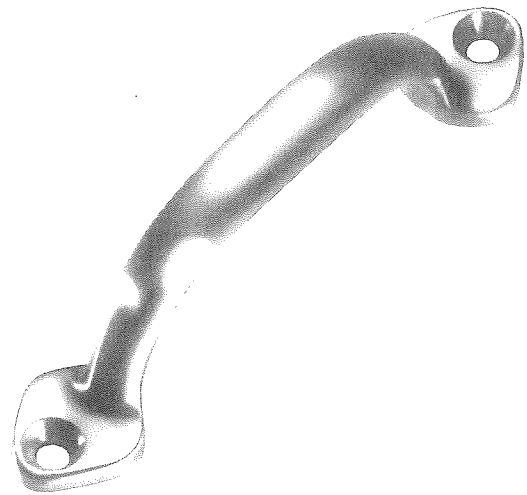
# 212C RAISED DOOR PULL

### APPLICATION:

Economical, attractive, general purpose door pulls designed for ease of operation on heavy doors and/or heavy traffic areas. Provided with security fasteners.

### TECHNICAL DATA:

- FINISH:  
US32D
- MATERIAL:  
Cast brass
- SIZE:  
8-11/16" L x 1-3/4" W x 2-3/8"  
Projection
- WEIGHT: 1.3 lbs.



# INSTITUTIONAL HINGES

## 204FMSS INSTITUTIONAL HINGES

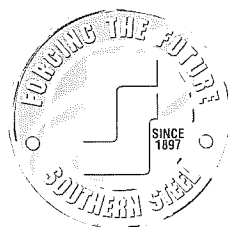
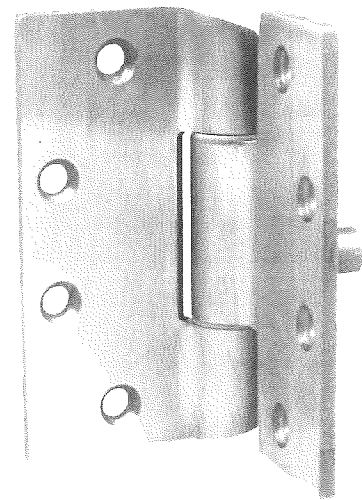
### APPLICATION:

For swinging hollow metal doors. Each hinge features cast stainless steel leaves with integral security stud and non-removable stainless steel pin. Security fasteners are provided with each unit.

### TECHNICAL DATA:

- STANDARD FINISH:  
Stainless steel - US32D
- SIZE: 4-1/2" x 4-1/2" x 3/16"
- WEIGHT: 1.5 lbs.
- HINGE LEAVES:  
Cast stainless steel
- HINGE PIN: Stainless steel

## 204FMSS FULL MORTISE HINGE



# 534 Door Position Switch



## DESCRIPTION:

Model 534 Door Position Switch is a mechanically operated monitoring device for swinging hollow metal, plate or grille doors. Specify for use in medium to maximum security locations.

## APPLICATION:

Model 534 is designed for use as part of a remote electric unlocking and indication system. When wired in series with the indication switches of an electric lock, the switch provides a secure indication of door position at a remote control panel or control console. Fits a standard 2" frame header.

## TESTING:

Test fixtures in Folger Adam facilities have performed cycle tests up to 1,000,000 operations.

## STANDARDS COMPLIANCE:

Switches and wiring are UL recognized.

## STANDARD FEATURES:

- **Pre-set adjustment**—The switch is factory set to trip when a 2'-6" door moves 3/8" from its stop.
- **Adjustable trip point**—Simple adjustments permit use with various size doors.
- **Sloped-top design**—Precludes hiding of contraband.
- **Tamper-resistance**—Housing baffles combined with use of Torx® and security screws eliminate abuse/tampering.
- **Heavy duty construction**—Case and cover of 10 gauge hot rolled steel; switch actuator formed of



13 gauge, galvanized cold rolled steel; baffle of 16 gauge hot rolled steel.

- **180 degree door swing**—No restriction of door swing.
- **Universal mounting**—The surface actuator and unique trip mechanism work on all applications. Various gauge lines and handing are factory set from the same unit, and may be easily reset if ordered incorrectly.
- **Lower cost installation**—Surface mounted door bracket mounts on a hollow metal door.
- **Plug connector**—Plug with 9' of wire allows pre-wiring of the junction box.
- **Finish**—USP primed for painting.

## OPTIONAL FEATURES:

- **Finish**—Galvanized for damp or exterior locations.

## SPECIFICATIONS:

Case and cover: 11 gauge steel  
 Actuator arm: 1/4" x 1" x 2" with 3/8" diameter steel pin  
 Actuator mounting assembly: 1/4" x 7/8" x 2-1/2" with steel post  
 Gauge line plate: 11 gauge steel  
 Switch actuator: 13 gauge steel, galvanized

Figure 10.1.07

## ELECTRICAL CHARACTERISTICS:

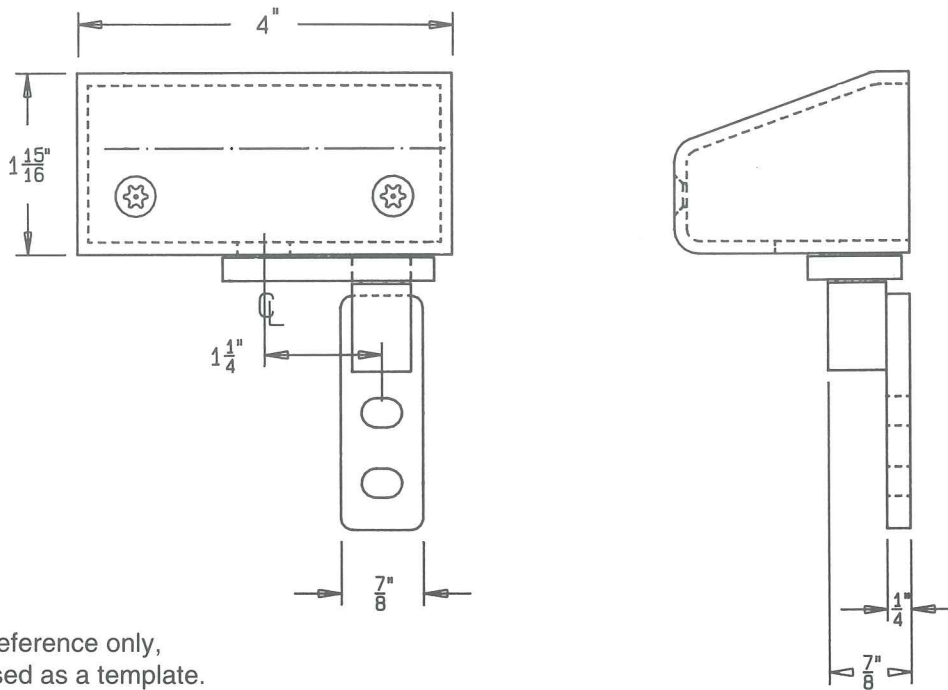
Switch: SPDT type, form C  
contacts  
Rating: 10 amps @ 125 VAC

## HOW TO ORDER:

SPECIFY:

1. Model number
2. Handing
3. Hinge gauge line dimensions
4. Optional features:
  - a. DPDT switches
  - b. Galvanized finish

## DIMENSIONAL DATA:



**Note:** For reference only,  
not to be used as a template.



4634 S. Presa Street, San Antonio, Texas 78223  
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www.folgeradam.com • Email: sales@folgeradam.com



*DETENTION EQUIPMENT.....DOOR OPERATORS.....DETENTION*

**DetentionGRADE™ Door Stops**



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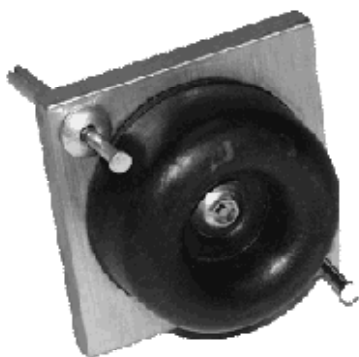
[News Page](#)

[Quotation Inquiry](#)

Click Picture t



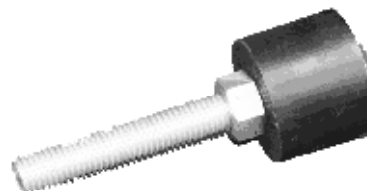
o to HomePage



**7003 Wall Mount Door Stop**

**DDS Wall Mount Door Stop** is specified in the California Prison system for use on CMU or concrete walls.

Material: 3/8" x 3" x 3" steel mount with 1" x 2-1/2" diameter neoprene bumper and 2 ea. 1/4" x 2" hit anchors



**7006 Floor Mount Door Stop**

**DDS Floor Mount Door Stop** is specified in the California Prison system for use with concrete floors.

Material: 5/8" x 7" steel mount with 2" x 2" diameter neoprene bumper

Figure 10.7.09



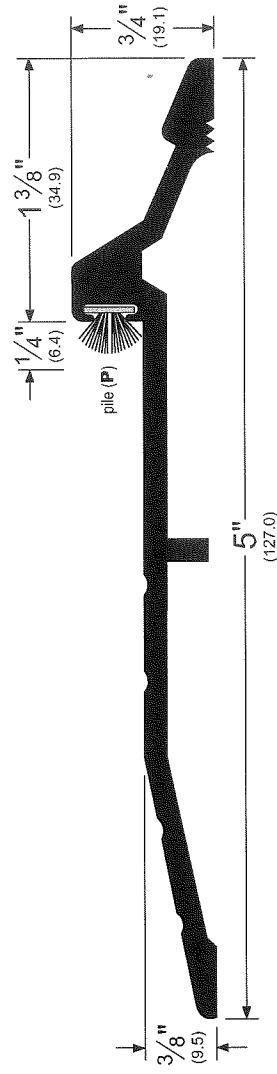
**ASSA ABLOY**

**COMMERCIAL THRESHOLDS:  
LATCHING PANIC EXIT SADDLES**

**179\_P** 

AVAILABLE FINISHES: A, B, D, G  
WIDTH: 5" (127.0 mm)  
HEIGHT: 3/4" (19.1 mm)

<b>TITLE:</b>
<b>PREPARED FOR:</b>
<b>PREPARED BY:</b>
<b>DATE:</b>
<b>COMMENTS:</b>



- A (Mill Finish Aluminum)
- B (Mill Finish Extruded Bronze [Brass])
- D (Dark Bronze Anodized)
- G (Gold Anodized)

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permission of Pemko Manufacturing Co. is prohibited.

179\_P\_CUT Rev 1 - 04.01.08

Figure 10.12.10



## BEST ACCESS 1E SERIES RIM CYLINDER... FEATURES INTERCHANGEABLE CORE & MAY BE MASTER KEYED INTO ANY EXISTING BEST SYSTEM

\$32.63

**Shipping:**

Calculated at checkout

**\* Finishes:**

- Satin Chromium Plated (BHMA 626 US 26D)
- Oil Rubbed Bronze (BHMA 613 US 10B)

**\* Core Options (not available for Passage, Privacy or Dummy functions):**

- No Core
- with Seven Pin Zero Bitted Core

**Quantity:**

1

ADD TO CART

### PRODUCT DESCRIPTION



**BEST mortise and rim cylinders feature the BEST interchangeable core and may be masterkeyed into any existing BEST system.**

BEST cylinders may be altered to function with other manufacturers' locks by use of different cams and different cylinder rings. Special cylinder variations are available for most applications. BEST cylinders are machined from brass or bronze bar stock and are available in a variety of finishes.

Figure 10.9.11



Us



# LCN 4040XP Series

Products > Door Control > Surface Mounted > LCN 4000 Series > LCN 4040XP Series

## 4040XP



### Popular Links

- [Get BIM Models](#)
- [LCN 1460 Green Dial](#)
- [LCN 4000 Series Metal Template](#)

### Additional Products

- [4010 Series](#)
- [4020 Series](#)
- [4030 Series](#)
- [4110 Series](#)
- [4210 Series](#)
- [4510 Series](#)

- Overview
- Mounting Options/Arms
- Options
- Downloads



Select Sweets ProductTAG to Annotate Content

### LCN 4040XP

Stronger, smarter and built for the real world.

The LCN 4040XP sets a new standard for reliability, longevity and value with a beefier design and extraordinary performance testing that goes far beyond industry requirements. We built the 4040XP from the inside out, combining tougher, bolder construction with proven LCN technology. The result is a closer that's stronger, smarter and delivers remarkable value in a variety of applications.

The 4040XP is LCN's most durable heavy duty closer designed for the most demanding, high use and abuse applications.

#### Features and Benefits

- 44% increased bearing load capacity
- Strongest pinion ever- at 3/4" journal diameter
- Widest bearing ever- at 5/8"
- Stronger pinion teeth
- New V-shield™ seal with 20% longer life
- XP = eXtra Protection in real world applications
- Cast Iron
- Forged Steel Arm
- Double Heat Treated Steel Pinion
- All Weather Fluid
- Non-Handed
- LCN® Fast™ Power Adjust
- Fast & Accurate Installation
- UL & cUL Listed
- Tested and certified under ANSI Standard A156.4, grade one

#### Specifications

- Non-sized cylinder is adjustable for interior doors to 5'0" and exterior doors to 4'0"
- Closer can mount hinge side, top jamb, or parallel arm (with PA bracket) on either right or left swinging doors
- Closers to meet ADA requirements
- Standard or optional custom powder coat finish
- Optional plated finish on metal cover, arm and fasteners
- Optional SRI primer for installations in corrosive conditions is available with powder coat only
- UL and cUL listed for self-closing doors without hold-open
- 4040XP can be used with all 4040 accessories

### Related Products

- [High Security Closers](#)
- [Concealed Series](#)
- [Surface Mounted Closers](#)
- [Fire & Life Safety Closers & Holders](#)

Figure 10.9.12

- High traffic commercial applications

**Quality and Safety:**

- UL and cUL listed for self-closing doors without hold-open
- Closer meets ADA requirements

**Available Options:** [Choose Options Above](#)

- **Finish:**
  - AL-Aluminum Painted (689)
  - DKBRZ-Dark Bronze Painted (695)

**Product at A Glance**

- **XP - eXtra Protection** in real world applications
- The LCN 4040XP replaces and retrofits the 4041 closer.
- 4040XP can be used with all 4041 accessories
- Shipped with Tri-Pak arm which includes a regular arm for hinge side (pull side) and top jamb mount (push side) and parallel arm bracket for parallel arm mount for push side
- Adjustable from size 1 through size 6 and is shipped set to size 3
- Cast Iron construction
- Forged Steel Arm
- Double Heat Treated Steel Pinion
- Supplied with All Weather Fluid

<b>Style</b>	Door closer
<b>Grade</b>	Heavy Duty
<b>Handing</b>	Non-handed
<b>Door Width</b>	- Interior doors: maximum 5' - Exterior Doors: maximum 4'

Qualifiedhardware.com (<https://www.qualifiedhardware.com>) is the leading online store for commercial door hardware. Choosing the right commercial door hardware is not the easiest of tasks, but we are here to help you make the right decision. On our site, you will find all the major brands and a large inventory to meet your commercial door hardware needs. If you do not know anything about door hardware, call or email us and our associates will help you choose the right product. We offer free phone assistance and a contractor hotline. We carry quality products from companies like LCN, Norton, Sargent and Rixson.

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- ✓ Huge Inventory
- ✓ 24 Hours a day
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- ✓ 365 Days a year



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**60 Day Return Policy**  
[Read more](#)

**Shopping Help**

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- Opening degrees (<https://www.qualifiedhardware.com/degrees>)
- Frequently used terms (<https://www.qualifiedhardware.com/glossary>)
- Door handing (<https://www.qualifiedhardware.com/door-handing>)

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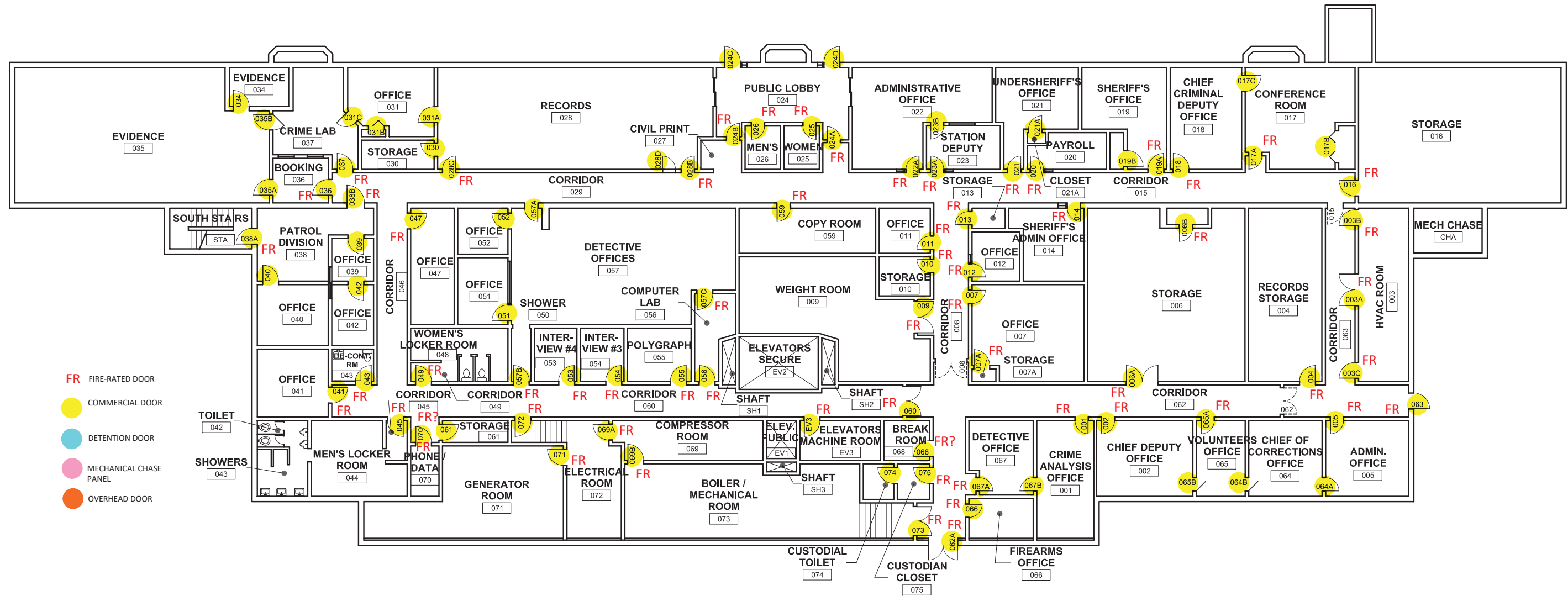
- Login (<https://www.qualifiedhardware.com/login>)
- View Orders (<https://www.qualifiedhardware.com/account>)
- Edit Login Info (<https://www.qualifiedhardware.com/account/info>)
- Edit Billing/Shipping Info (<https://www.qualifiedhardware.com/account/billing>)

**Company Info**

- About Us (<https://www.qualifiedhardware.com/about>)
- Site Map (<https://www.qualifiedhardware.com/sitemap>)
- Contact Us (<https://www.qualifiedhardware.com/contact>)
- Shipping Policies (<https://www.qualifiedhardware.com/policies>)



Same-Day Shipping



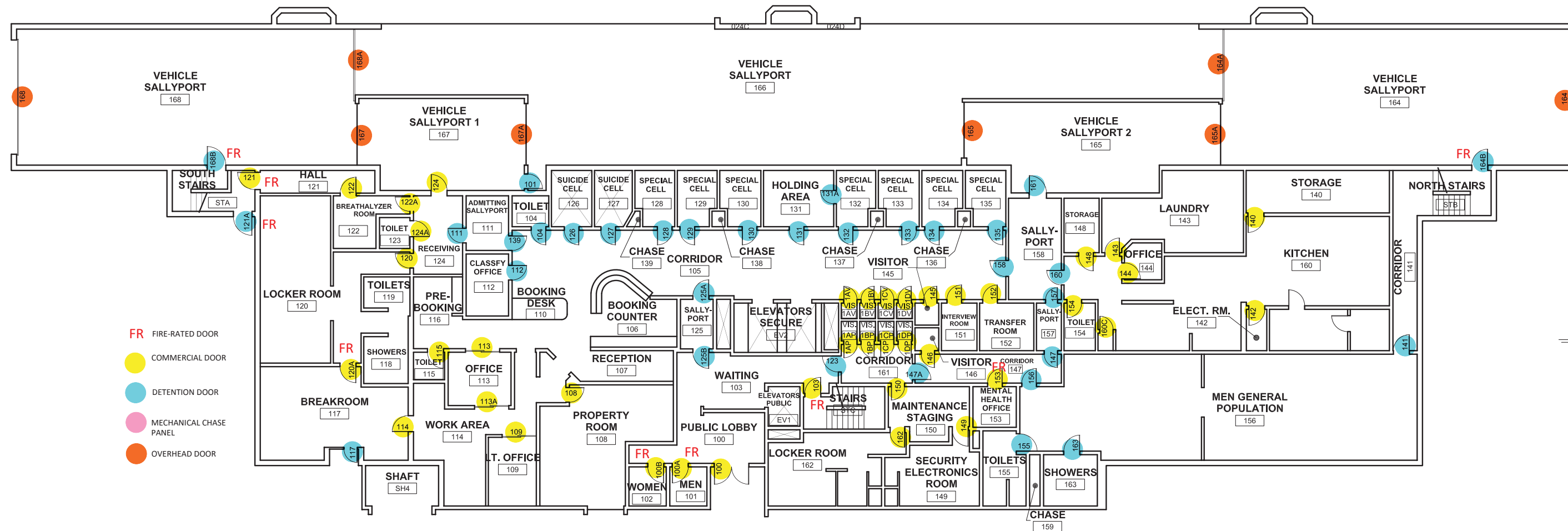
- FR FIRE-RATED DOOR
- COMMERCIAL DOOR
- DETENTION DOOR
- MECHANICAL CHASE PANEL
- OVERHEAD DOOR

**A BASEMENT FLOOR PLAN**  
SCALE: N.T.S.

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA



NOTE: THIS DRAWING ACCOMPANIES TASKS 9 & 10 OF THIS REPORT.
SHEET NAME FLOOR PLAN - BASEMENT
SHEET NO. A9.01.01



- FR FIRE-RATED DOOR
- COMMERCIAL DOOR
- DETENTION DOOR
- MECHANICAL CHASE PANEL
- OVERHEAD DOOR

**A FIRST FLOOR PLAN**  
SCALE: N.T.S.

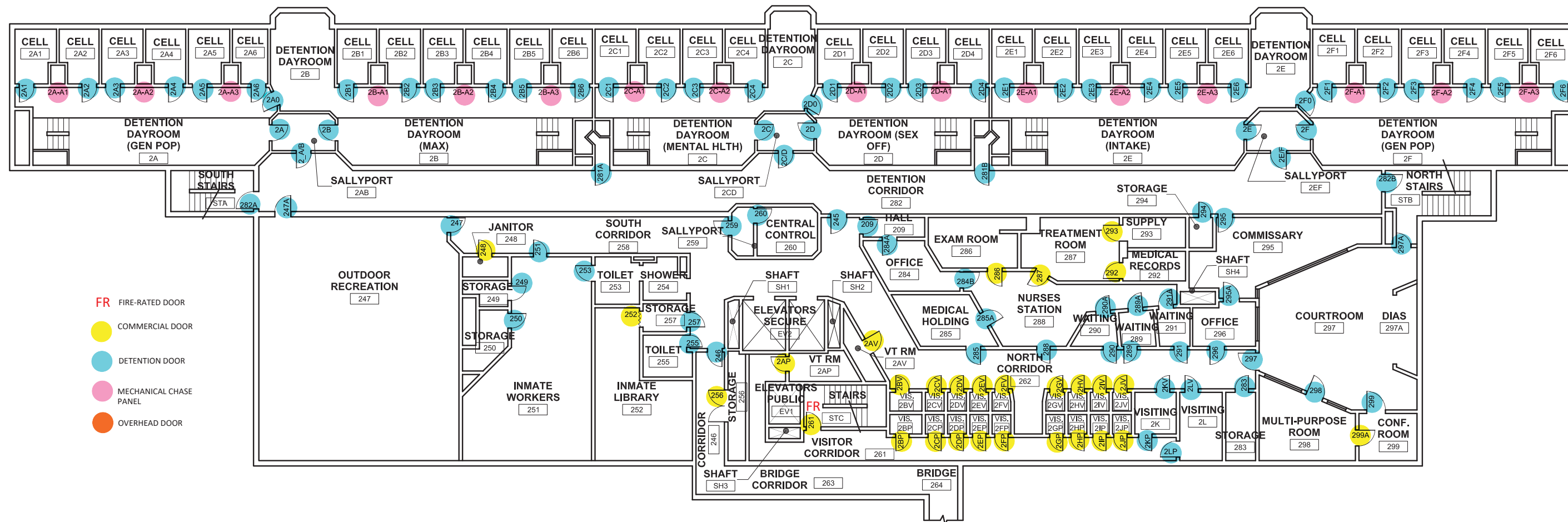
PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA



NOTE: THIS DRAWING ACCOMPANIES TASKS 9 & 10 OF THIS REPORT.

SHEET NAME  
FLOOR PLAN - FIRST FLOOR

SHEET NO.  
A9.01.02



**A SECOND FLOOR PLAN**  
SCALE: N.T.S.

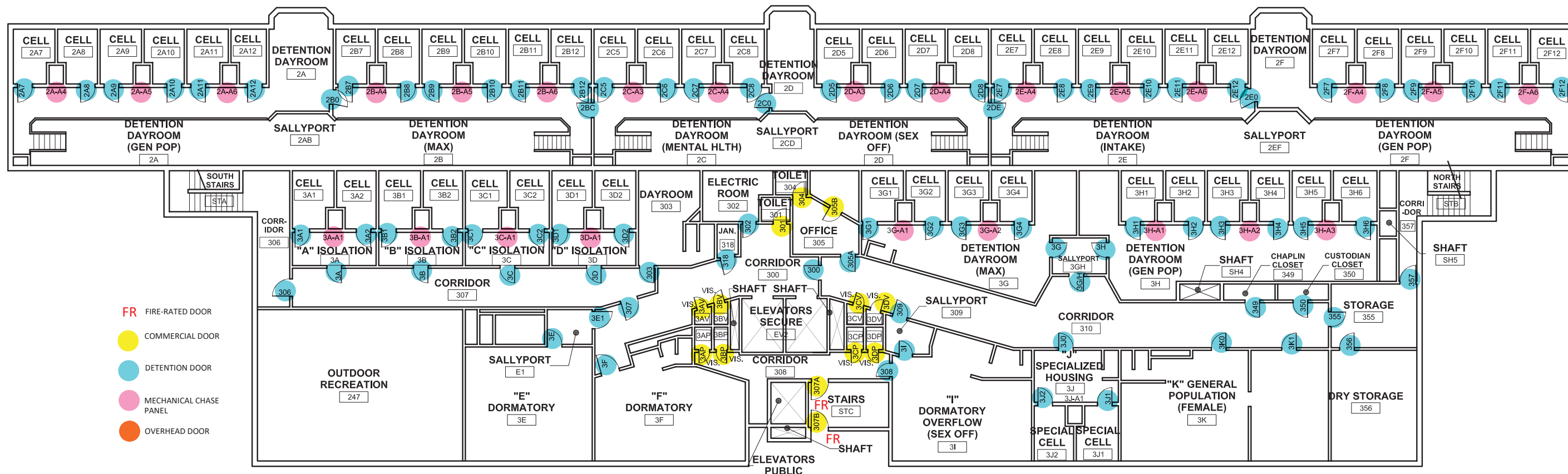
PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA



NOTE: THIS DRAWING ACCOMPANIES TASKS 9 & 10 OF THIS REPORT.

SHEET NAME  
FLOOR PLAN - SECOND FLOOR

SHEET NO.  
A9.01.03



- FR FIRE-RATED DOOR
- COMMERCIAL DOOR
- DETENTION DOOR
- MECHANICAL CHASE PANEL
- OVERHEAD DOOR

**A** **THIRD FLOOR PLAN**  
SCALE: N.T.S.

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA



NOTE: THIS DRAWING ACCOMPANIES TASKS 9 & 10 OF THIS REPORT.  
SHEET NAME  
FLOOR PLAN - THIRD FLOOR  
SHEET NO.  
A9.01.04

## DOOR ANALYSIS SCHEDULE - BASEMENT DOORS

DOOR ANALYSIS SCHEDULE - BASEMENT DOORS											
NOTES:											
1. BLUE-COLORED CELLS INDICATE DETENTION DOORS											
2. YELLOW-COLORED CELLS INDICATE COMMERCIAL DOORS											
3. PINK-COLORED CELLS INDICATE MECHANICAL HATCHES											
4. "CONDITION CODE" COLUMNS INDICATE THE CONDITION OF EACH DOOR, FRAME, AND HARDWARE AND WHETHER EACH ITEM IS ACCEPTABLE AS-IS, NEEDS TO BE REPAIRED/ ADJUSTED, OR SHOULD BE REPLACED.											
5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.											
DOOR											
NUMBER	TYPE	SIZE		REMARKS	DOOR	CONDITION CODE			TASK 9	TASK 10	RECOMMENDATION (PROJECT #)
		WIDTH	HEIGHT			FRAME	HDWR	TASK 10			
038A	11B	3'-0"	7'-0"	Panic Hardware, Closer, 3 hinges, needs gaskets	1	1	1	1	1a/ 1b/ 4/ 5		
062A	2	PR3'-0"	7'-0"	INSULATED? Card access, doors, frame and threshold rusting. No panic hardware, threshold too high for ADA. Door is indicated as being ADA entrance. Silver lever, gold deadbolt, kickplates Refer to Photographs	1	1	1	1	1b/ 2/ 3a/ 4/		
066	3	3'-0"	6'-8"	Knob Handle, Closer no gasket, door stop at floor, 3 hinges per door	0	0	0	2	1a/ 1b/ 2/ 4/ 5		
075	1	3'-0"	6'-8"	Knob hardware, kick plate, closer, no gasket, door rubs frame, dented door, 3 hinges	0	0	0	2	1a/1b/ 2/ 4/ 5		
068	2	3'-0"	6'-8"	Knob handle, closer, no gaskets, 6" stile, 7" stile at top, 3 hinges	0	0	0	2	1a/ 1b/ 2/ 4/ 5		
074	1	2'-6"	6'-8"	Silver lever handle, no closer, no rating, 3 hinges	0	0	0	0	2, 4, 5		
EV3	2	3'-0"	7'-0"	Knob handle, Fire rating listed on frame only of 90 Min, closer, need sealant at frame, kickplates	0	0	0	2	1a/ 1b/ 2/ 4		
073	3	PR3'-0"	6'-8"	Knob Handle, Closer each door, 90 min on frame, needs gaskets, gap below door (sweep needed for fire rating?)	0	0	0	2	1a/ 1b/ 2/ 4/ 5		
069A		3'-0"	6'-8"	Knob handle, needs gaskets, kickplate, closer, 3 hinges	0	0	0	2	1a/ 1b/ 2/ 4/ 5		
069B		3'-0"	6'-8"	Knob handle, needs gaskets, kickplate, closer, 3 hinges	0	0	0	2	1a/ 1b/ 2/ 4/ 5		
071	1	3'-0"	6'-8"	Knob handle, closer, kickplate, 3 hinges, dust collecting on frame, doesn't fully close-needs adjustment-maybe too much air pressure, needs gaskets	0	0	0	2	1a/ 1b/ 2/ 4/ 5		
072	1	3'-0"	6'-8"	Silver lever handle passage set, closer, kickplate, needs gaskets	0	0	0	1	1b/ 2/ 4		
024C	11	3'-0"	6'-8"	Frames at door, glazing gaskets are caulked in-needs to be removed and replaced. VCT at floor is ok, possibly replace. Needs wider threshold ? No panic hardware-assume is needed for egress, glazing appears to be 1/2" tempered, doors are Kawneer.	0	0	0	2	1a/ 2/ 3b/ 4		

## DOOR ANALYSIS SCHEDULE - BASEMENT DOORS

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DOOR									
NUMBER	TYPE	SIZE		REMARKS	CONDITION CODE			RECOMMENDATION (PROJECT #)	
		WIDTH	HEIGHT		DOOR	FRAME	HDWR	TASK 9	TASK 10
024D	12	3'-0"	6'-8"	Frames at door, glazing gaskets are caulked in-needs to be removed and replaced. VCT at floor needs replaced. Needs wider threshold ?, No panic hardware-assume is needed for egress, glazing appears to be 1/2" tempered, doors are Kawneer.	0	0	2	1a/ 2/ 3b/ 4	
070	1	3'-0"	6'-8"	Lever action	0	0	2	1a/ 1b/ 2/ 4/ 5/	
008		6'-0"		<i>Door has been abandoned, frame remains</i>	n/a	n/a	n/a		
060	4A	5'-4" PR	7'-0"	Closer on active leaf, No rating, panic hardware, fire rating label on frame-not legible, needs gaskets, 3 hinges each leaf	0	0	1	1a/ 1b/ 2/ 4/ 5	
035A	1	3'-4"	7'-0"	Knob handle, 3 hinges, (hardware is not a best lock cylinder) Door to Evidence, not able to fully assess	0	0	2	1a/ 2/ 4/ 5	
035B	2	3'-6"	6'-8"	Additional Screen door, knob handles. Door to Evidence, deadbolts, not able to fully address.	n/a	n/a	n/a	1a/ 2/ 4/ 5	
034		3'-0"		Evidence Door-Could not access door at time of assessment	n/a	n/a	n/a		
036		3'-4"	7'-0"	Knob handle, 3 hinges, needs gaskets, needs kickplate-damage on door surface, closer ok	1	0	2	1a/ 1b/ 2/ 4/ 5	
031C		2'-6"	7'-0"	Lever action handle, 3 hinges, needs silencers	0	0	2	1a/ 1b/ 2/ 4/ 5	
031A		3'-0"	7'-0"	Lever action handle office lock, 3 hinges, needs silencers	0	0	2	1a/ 1b/ 2/ 4/ 5	
030	1	3'-0"	7'-0"	No rating, lever action hardware, needs silencers, 3 hinges	0	0	2	1a/ 1b/ 2/ 4/ 5	
028C	1	3'-0"	7'-0"	Lever action hardware, needs gaskets, 3 hinges, slide bolt on inside	0	0	2	1a/ 1b/ 2/ 4/ 5	
028B	1	3'-0"	7'-0"	Lever action hardware, needs gaskets, 3 hinges	0	0	2	1a/ 1b/ 2/ 4/ 5	

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		WIDTH	HEIGHT		DOOR	FRAME	HDWR	TASK 9	TASK 10		
024B	1	3'-0"	7'-0"	Lever action hardware, needs gaskets and kickplate, 3 hinges, frame needs painted	1	1	2	1a/1b/2/4			
024A	1	3'-0"	7'-0"	Silver lever action hardware, needs kickplate, door may need refinishing, 3 hinges, missing lock cylinder, needs gaskets, door rubs on frame	1	1	1	2, 4, 5			
026	1	3'-0"	7'-0"	Lever action handle, 3 hinges	0	0	2	1a/1b/2/4/5			
025	1	3'-0"	7'-0"	Silver Lever Handle, No Gaskets, Squeaky Hinges	0	0	2	1b/2/4/5			
022A	1	3'-0"	7'-0"	Replace gaskets, replace door handle, lever, doesn't latch	0	0	2	1a/1b/2/4/5			
023A	1	3'-0"	7'-0"	Needs gaskets, 18" glazing sidelight, wire glass	1	0	1	1a/1b/2/4/5			
023B	SEE PICS	3'-0"	7'-0"	Needs kickplate, replace door & hardware, 3 Hinges, lever, Best Lock, key on payroll side	1	0	2	1a/1b/2/4/5			
021	1	3'-0"	7'-0"	Lever, replace gasket, Best Lock	0	0	2	1a/1b/2/4/5			
021A	1	2'-6"	6'-8"	Lever action, passage	0	0	2	1a/1b/2/4/5			
020	1	3'-0"	7'-0"	Lever, closer detached, Best Lock, gasket needed	0	0	2	1a/1b/2/4/5			
019A	1	3'-0"	7'-0"	Lever, closer rubbing on frame, Best Locks, needs gaskets	0	0	2	1a/1b/2/4/5			
019B	1	2'-6"	6'-8"	Best Lock, lever action	0	0	2	1a/2/4/4/5			
018	1	3'-0"	7'-0"	Best Lock, lever action	0	0	2	1a/1b/2/4/5			

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR			RECOMMENDATION (PROJECT #)
017A	1	3'-0"	7'-0"	Best Lock, lever action, needs gaskets, adjust closer (screw) tightness		0	0	2	1a/1b/2/4/5		
017B	1	6'-0" PR BIFOLD	6'-8"	Solid wood		0	0	2	4		
017C	1	3'-0"	7'-0"	Best Lock, lever action, refinish		1	0	2	1a/2/4/5		
016	1	3'-0"	6'-8"	Lever action, Best Lock, needs gaskets		0	0	2	1a/1b/2/4/5		
003A	1	6'-2" PR / 2" MULLION	7'-0"	Best Lock, lever action		0	0	2	1a/1b/2/4/5		
003B	1	3'-0"	7'-0"	Best Lock, Knob		0	0	2	1a/1b/2/4/5		
003C	1	3'-0"	7'-0"	Knob handle		0	0	2	1a/1b/2/4/5		
004	1	3'-0"	7'-0"	Knob handle, kickplate, closer, needs gasket		0	0	2	1a/1b/2/4		
006A	1	5'-4" PR	6'-8"	Doesn't lock into floor, closer both doors, knob handle, kickplates, no gaskets, no bottom threshold		0	0	2	1a/1b/2/4		
006B	1	3'-0"	5'-11"	2' off floor, rusted door frame, no paint on frame, knob action, dead bolt, might be wood core		1	1	2	1a/1b/2/4		
014		3'-0"	7'-0"	Closer detached, gaskets needed, lever action		0	0	2	1a/1b/1c/2/4/5		
013	1	2'-6"	7'-0"	Lever action, needs gaskets, self-closing hinges, passage set		0	0	2	1a/1b/2/4/5		
012		3'-0"	7'-0"	Closer detached, lever handle, needs gaskets		0	0	2	1a/1b/1c/2/4/5		

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
007		3'-0"	7'-0"	Needs gaskets, closer, lever action handle		0	0	2	1a/ 1b/ 2/ 4/ 5		
011		3'-0"	7'-0"	Lever handle, detached closer, needs gaskets		0	0	2	1a/ 1b/ 1c/ 2/ 4/ 5		
010	1	3'-0"	7'-0"	Lever action, closer, needs gaskets		0	0	2	1a/ 1b/ 2/ 4/ 5		
059		3'-0"	7'-0"	Closer, needs gaskets, lever action		0	0	2	1a/ 1b/ 2/ 4/ 5		
009	1	6'-2" PR 3'-0"	7'-0"	Silver lever action on active leaf ONLY, closer both leafs		0	0	1	1b/ 2/ 4/ 5		
057B	1	3'-0"	7'-0"	Lever action-needs replaced, closer, needs gaskets		0	0	2	1a/ 1b/ 2/ 4/ 5		
057A		3'-0"	7'-0"	Closer loose, veneer peeling, lever action, need gaskets		1	1	1	1a/ 1b/ 2/ 4/ 5		
056	1	3'-0"	7'-0"	NO ACCESS - lever action, closer		0	0	2	1a/ 1b/ 2/ 4/ 5		
057C		3'-0"	7'-0"	Silencers, no gaskets, new copper color lever action, closer		0	0	2	1a/ 2/ 4/ 5		
055	1	3'-0"	7'-0"	Closer, needs gaskets, lever action, peep hole, passage on inside		0	0	2	1a/ 1b/ 2/ 4/ 5		
054		3'-0"	7'-0"	Closer, needs gaskets, peep hole, lever action		0	0	2	1a/ 1b/ 2/ 4/ 5		
053	1	3'-0"	7'-0"	Closer, needs gaskets, peep hole, lever action		0	0	2	1a/ 1b/ 2/ 4/ 5		
052	1	3'-0"	7'-0"	No closer, lever action, no silencers		0	0	2	1a/ 2/ 4/ 5		

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
047	1	3'-0"	7'-0"	Cosmetic work, lever action, closer, needs gaskets		1	1	2	1a/1b/2/4/5		
051		3'-0"	7'-0"	No closer, lever action, no gaskets, needs silencers		0	0	1	1a/2/4/5		
049		3'-0"	7'-0"	Closer, lever action, replace gaskets		0	0	2	1a/2/4/5		
038B		3'-0"	7'-0"	Silver lever action, passage set, kickplate, door and frame worn, needs gaskets, needs rubber base		1	1	2	1b/2/3c/4		
039	1	3'-0"	7'-0"	Lever action, no closure, needs silencer		0	0	2	1a/2/4/5		
040	5A	3'-0"	7'-0"	Trim loose, silver lever, metal trim, squeaky, no closer		0	0	2	2, 4, 5		
042	2A	3'-0"	7'-0"	Knob handle		0	0	2	1a/2/4/5		
041	1	3'-0"	7'-0"	closer detached, gaskets loose, lever action		0	0	2	1a/1b/1c/2/4/5		
043	1	3'-0"	7'-0"	lever action, needs gaskets, closer loose, door slams		0	0	2	1a/1b/1c/2/4/5		
045	1	3'-0"	7'-0"	Needs gaskets, mold present on frame, lever action, closer, needs kickplate		1	1-Mold	2	1a/1b/2/4/5		
061	1	3'-0"	6'-8"	Closer needs adjustment, lever action, only rated on frame, closer, needs gaskets		0	0	2	1a/1b/2/4/5		
067A	1	3'-0"	6'-8"	Closer disconnected, needs gaskets, knob handle		0	0	2	1a/1b/1c/2/4/5		
001	1	3'-0"	6'-8"	closer needs cover, silver lever, no gaskets		0	0	2	1b/1c/2/4/5		

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
067B	1	3'-0"	6'-8"	BLOCKED DOOR, Closer on backside, door handle ???		n/a	n/a	n/a				
002	1	3'-0"	6'-8"	knob handle, needs gaskets, closer disconnected, kickplate		0	0	2			1a/ 1b/ 1c/ 2/ 4	
065B		2'-6"		DOOR ABANDONED		n/a	n/a	n/a				
065A	1	3'-0"	7'-0"	Closer disconnected, needs gaskets, knob handle, kickplate, frame not fire rated		0	0	1			1a/ 1b/ 1c/ 2/ 4	
064A	6	3'-0"		Lever		0	0	2			1a/ 2/ 4/ 5	
064B		2'-6"		DOOR ABANDONED		n/a	n/a	n/a				
005	1	3'-0"	7'-0"	Best Lock, paint, new gasket needed		1	0	2			1a/ 1b/ 2/ 4/ 5	
063		3'-0"	6'-8"	Panic hardware, closer, electric, 3 hinges, electric latch, masonry opening, 7" frame		0	0	0			1a/ 1b/ 2 4/ 5	
031B		3'-0"	6'-8"	Solid door, lever action, 3 hinges, lock outside, thumb turn inside		0	0	2			1a/ 2/ 4/ 5	
037	1	3'-0"	7'-0"	Lever action, needs gaskets, pins loose in closer		0	0	1			1a/ 1b/ 2/ 4/ 5	
1004		3'-0"	6'-8"	No closer, silver lever handle, no gaskets, self-closing hinge, no sweep		0	0	0			1b/ 2/ 4/ 5	

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
121	P-5	3'-0"	6'-8"	Kickplate, mortise, silver lever - round closer, needs sealant around frame, standard HM door, lever both sides, door fits, not rated, closes and latches		0	0	0		6a	
168B	P-5	3'-0"	6'-8"	door seal rubs on bottom, weather stripping and threshold good		0	0	0			
121A	P-5	3'-0"	6'-8"	Drip flashing seals, Key card OK, weather stripping, panic hardware, gasketing, kickplate, closer, seal, pull, door position switch, door in great shape		0	0	0			
164B	P-5	3'-0"	6'-8"	no strikeplate, good clearance		0	0	0			
124	S-5	3'-0"	6'-8"	Closer, panic hardware, handle w/push button on hall side, silencers		0	0	0		6a	
1C2		3'-0"	7b'-0"	Standard HM door, good fit		0	0	0			
120A		3'-0"	6'-8"	Closer - different than others w/cover, knob lock, kickplate		0	0	0		6a/ 6b	
167	OH-1	11'-6.5"	12'-6"	Overhead sectional door. Bottom Panels Bent. Clean. Paint		1/2	0	1		11	
108A		3'-0"	6'-8"	Standard HM door, push pull, lock on frame-electric, voice-push button control, Won't pop open from central, closer squeaks, fits well, REPLACE PIN LOCKSET AND CLOSER		0	0	2			2/9
167A	OH-1	11'-6.5"	12'-6"	Overhead sectional door.Clean. Paint		1	0	0		11	
101	P-2	2'-11"	6'-8"	OK		0	0	0			
168	OH-2	21'-5"	10'-6"	Coiling overhead door. Faded Paint. Operation ok		1	0	0		11	

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
168A	OH-3	12'-4"	12'-0"	Overhead sectional door. Clean. Paint		1	0	0		11	
164A	OH-3	13'-0 1/2"	12'-0"	Overhead sectional door. Bottom Panels Bent. Clean. Paint		1	0	0		11	
164	OH-2	21'-5"	10'-6"	Overhead door. Heavy lint buildup, overhead rolling door operates well, Paint		1	0	0		11	
103	S-2	3'-0"	6'-8"	Self-opening, door functions well, Mag Lock, aluminum storefront system		0	0	0		6a	
124A	S-1	3'-0"	6'-8"	Knob lock, no closer, no kickplate, door sweep, needs gaskets		0	0	1		6a	
115	S-1	3'-0"	6'-8"	Lever handle, mortise lock, no closer, thumb turn		0	0	0		6a	
113	SL	6'-6" OF-OFF		Anodized alum sliding door and sidelite. Good conditions		0	0	0		6a	
113A	SL	6'-6" OF-OFF		Anodized alum sliding door and sidelite. Good conditions		0	0	0		6a	
109	SL	6'-6" OF-OFF	6'-8"	Anodized alum sliding door and sidelite. Good conditions		0	0	0		6a	
120		3'-0"	6'-8"	Push-pull, has cutout in abutting wall for key access, REPLACE PIN LOCKSET		0	0	2			2
122		2'-8"	6'-8"	SC Wood door, commercial lockset deadbolt, non-detention, No frame on inside, knob handle, deadbolt, peep hole, no closer, schlage lock		0	0	0		6a	
109A		3'-0"	6'-8"	Lever handle both sides, kick-down stop, disconnected closer-no closer, smoke seals		0	0	1		6a	

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DOOR												
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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
112		3'-0"	6'-8"	Ernie's Office		0	0	0	0		6a	
111	P-1	3'-0"	6'-8"	52 series hardware, good clearance, closer works well		0	0	0	0			
139	P-4	3'-0"	6'-8"	Door fits well, Folger Adams 401 lock on top frame		0	0	0	0			
104	P-5	3'-0"	6'-8"	Cuffing hatch, fits well		0	0	0	0			6
117b		3'-0"	6'-8"	Lever handle, thumb turn, mortise lock, closer, kickplate on outside, loose hardware, standard HM door		0	0	0	0		6a	
100B	1	3'-0"	6'-8"	Silver lever handle, no closer, no gasket		0	0	0	2		6a/6d	
100A	2	3'-0"	6'-8"	Silver lever handle, no closer, no gasket		0	0	0	2		6a/6d	
100	11	4'-0"	81"	9'-6" overall, 7b' frame, locked after hours, panic hardware, closer, pull on outside, Best Lock, aluminum threshold. Needs floor stop		0	0	0	2		6a/6e	
123	2	3'-0"	6'-8"	DPS, Door fits well, screw holes through door		0	0	0	0			
125a	P-2	3'-0"	6'-8"	Frame in good shape, good clearance, could use door stop		0	0	0	1			12
125b	P-1	3'-0"	6'-8"	Door fits well, good clearance, could use door stop		0	0	0	1			12
126	P-7b	2'-6"	6'-8"	New SS butts, no DPS [TYPICAL OF HOLDING DOORS], lock bolt plate is missing, rusted frame has fabricated sheet metal support, REPAIR FRAME AND REPLACE CYLINDER		0	1	2				3/4/6

## DOOR ANALYSIS SCHEDULE - 1ST FLOOR DOORS

DOOR ANALYSIS SCHEDULE - 1ST FLOOR DOORS											
NOTES:											
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2. YELLOW-COLORED CELLS INDICATE COMMERCIAL DOORS											
3. SALMON-COLORED CELLS INDICATE OVERHEAD DOORS											
4. PINK-COLORED CELLS INDICATE MECHANICAL HATCHES											
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DOOR											
NUMBER	TYPE	SIZE		REMARKS	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	CONDITION CODE			RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
127b	P-8	2'-6"	6'-8"	Loose screws in middle butt, lock FACEPLATE IS LOOSE, REPLACE CYLINDER		0	0	2			3/6
127b.5		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
128	P-5	2'-6"	6'-8"	Cylinder loose, FACEPLATE LOOSE, good clearance		0	0	1			3/6/12
129	P-6	2'-6"	6'-8"	Cylinder loose/partially ajar, good clearance, ADJUST FACEPLATE		0	0	1			3/6/12
129.5		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
130	P-4	2'-6"	6'-8"	Faceplate protruding but tight, pass hatch door hinge rusted, good clearance, REPAIR CUFF PORT		1	0	0			5/6
131	P-2	2'-9"	6'-8"	Good clearance		0	0	0			6
131A		2'-6"	6'-8"	Door fits well. New door		0	0	0			
132	P-4	2'-6"	6'-8"	Call button faceplate bent, good clearance, door sweep rubs when door open more than 90 degrees (floor unlevel), rusted pass through door ledge, REPAIR CALL BUTTON FACEPLATE & HINGE, REPAIR CUFF PORT		1	0	1			5/6/12
132.5		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
133	P-4	2'-6"	6'-8"	good clearance, speaker port mesh bent, cylinder loose, REPAIR MESH, CUFF PORT & CYLINDER		1	0	1			3/5/6/12

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
134	P-4	2'-6"	6'-8"	cylinder loose, good clearance, REPAIR CYLINDER	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	0	0	1			3/6
134.5		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
135	P-4	2'-6"	6'-8"	Speaker port mesh bent, door edge has been grinded, door should be grinded more on outside edge of latch side of door, GRIND DOOR TO FIT OPENING		1	0	0			6/12
158	P-1	3'-0"	6'-8"	Squeaky DPS, door fits well, two screws missing in bottom butt, TIGHTEN SCREWS & REPLACE DPS		0	0	1/2			10/12
1AV	S-2	2'-6"	6'-8"	Best Lock, knob handle, no stop, kickplate on inside. Touch-up at Vision frame		1	0	0			7b/ 7c
1BV	S-2	2'-6"	6'-8"	Best Lock, knob handle, no stop, kickplate on inside. Touch-up at Vision frame		1	0	0			7b/ 7c
1CV	S-2	2'-6"	6'-8"	Best Lock, knob handle, no stop, kickplate on inside. Touch-up at Vision frame		1	0	0			7b/ 7c
1DV	S-2	2'-6"	6'-8"	Best Lock, knob handle, no stop, kickplate on inside. Touch-up at Vision frame		1	0	0			7b/ 7c
1AP	S-2	2'-6"	6'-8"	Lever action handle, no silencer, no closer, no locks, no floor bolts		0	0	0			7c/ 8
1BP	S-3	2'-6"	6'-8"	Lever action handle, no silencer, no closer, no locks, no floor bolts		0	0	0			7c/ 8
1CP	S-4	2'-6"	6'-8"	Lever action handle, no silencer, no closer, no locks, no floor bolts		0	0	0			7c/ 8
1DP	S-5	2'-6"	6'-8"	Lever action handle, no silencer, no closer, no locks, no floor bolts		0	0	0			7c/ 8

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
145	S-1	2'-6"	6'-8"	No vision panel, knob lock, kickplate inside, no cover @ closer		0	0	0			7b/ 7c	
146		2'-8"	6'-8"	NO ACCESS, Knob lock		0	0	0			7c/ 8	
147b		3'-0"	6'-8"	Door dented at knob, clearance good		0	0	0				
162		3'-0"	6'-8"	Closer-no cover, knob lock, kickplate, no lock inside		0	0	1			6a/6b	
149	1	3'-0"	6'-8"	Closer, silver round lever handle, mortise lock w/keyed lock, door position switch, door hardware is Von Duprin		0	0	0			6a	
150	2	3'-0"	6'-8"	closer w/cover, knob lock, kickplate		0	0	0			6a/6b	
151	P-5	3'-0"	6'-8"	good fit		0	0	0				
152	P-5	3'-0"	6'-8"	good fit		0	0	0				
153	S-5	3'-0"	6'-8"	Closer disconnected, knob handle, silencer		0	0	1			6a	
155	S-5	3'-0"	6'-8"	DOOR REMOVED		0	0	0				
163	S-2	3'-0"	6'-8"	Standard HM door, no locking hardware, push hardware, kickplate removed, REPAIR DOOR AT KICKPLATE		1	0	0				12
156	P-5	3'-0"	6'-8"	Cuff port not painted, dust on frame, squeaky DPS, good fit, negative air pressure on public side of door, REPLACE DPS		0	0	2				10

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
141	P-1	3'-0"	6'-8"	Dusty door frame, door sweep, no smoke seals	0	0	0	0				
157b	P-2	3'-0"	6'-8"	Fabricated bolt keeper, fits well	0	0	0	0				
148	P-2	3'-0"	6'-8"	Door sweep worn, fits well, two screws missing in bottom butt, REPLACE MISSING SCREWS	0	0	0	1				12
165	OH-1	10'-5.5"		Very loud binding, new rails?	1	1	1	1				11
165A	OH-1	11'-5.5"		Bottom bent, clean dirt from operating items, ?HVAC venting this room	1	1	1	1				11
143	S-2	3'-0"		NO DOOR FRAME ONLY	n/a	0	0	n/a				6a
161	S-1	2'-8"	6'-8"	No lock on inside, pull outside w/keyed lock, closer - no cover, kickplate, cover plate over lock	0	0	0	0				6a
160	P-2	3'-0"	6'-8"	Pull, deadbolt, closer-no cover, kickplate 1.8x30, thumb turn, high traffic, closer works well, fabricated bolt keeper	0	0	0	0				
144	S-2	3'-0"	6'-8"	worn door surface	0	0	0	0				6a
154	S-1	3'-0"	6'-8"	Lever action, closer-no cover, no lock, no silencer, bush button on back, no lock inside	0	0	0	0				6a
160C	S-2	2'-4"	6'-8"	Sweep, knob handle, lock inside, no closer, cover over plate	0	0	0	0				6a
142	S-3	2'-6"	6'-8"	closer-no cover, deadbolt, kickplate, thumb turn inside	0	0	0	0				6a

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
140	S-4	2'-10"	6'-8"	lever action, cover over door, no closer, keyed on lever	0	0	0	0	0	0	6a	
114		3'-0"	7b'-0"	2" door, no cover @ closer, combination lock, key override	0	0	0	0	0	0	6a/6c	
1006		2'-6"	6'-4"	Mezzanine door, knob handle, LCN closer, very dirty, door position indicator	0	0	0	0	0	0	6a	

## DOOR ANALYSIS SCHEDULE - 2ND FLOOR DOORS

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DOOR											
NUMBER	TYPE	SIZE		REMARKS	CONDITION CODE				RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT		DOOR	FRAME	HDWR	TASK 9	TASK 10		
282A	P-5	3'-3"	6'-8"	No strikeplate, no label, good fit, no door issues, dust around door indicates air issue, no fire smoke gasketing, no bolt keeper	0	0	0	0			
282B	P-5	3'-3"	6'-8"	No strikeplate, no label, good fit, no door issues, dust around door indicates air issue, no fire smoke gasketing, no bolt keeper	0	0	0	0			
261		3'-3"	6'-8"	Knob lock, closer, kickplates	0	0	0	0		9a	
260	P-2	2'-9"	6'-8"	Manual lockset, lock bolt indicator switch	0	0	0	0			
259	P-2	2'-9"	6'-8"	All door functions properly	0	0	0	0			
2_A/B	P-2	3'-0"	6'-8"	Good clearance, 56 series lockset	0	0	0	0			
2A	P-2	3'-0"	6'-8"	Door fits and functions	0	0	0	0			
2A1	P-5	2'-6"	6'-8"	Door scrapes floor prior to hitting wall, replacement lockset, good clearance, squeaky DPS	2	0	0	2			1
2A-A1		30"	40"	MECHANICAL ACCESS HATCH	0	0	0	0			
2A2	P-5	2'-6"	6'-8"	Door rubs on frame, pretty good operation, dented door at knob, door warped	2	0	0	2			1
2A3	P-5	2'-6"	6'-8"	Door rubs on frame at knob, squeaky DPS, replacement to butts possible, key doesn't work, replace cylinder	2	0	0	2			1
2A-A2		30"	40"	MECHANICAL ACCESS HATCH	0	0	0	0			

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
2A4	P-5	2'-6"	6'-8"	Missing screw on bolt plate, missing screw on top butt, stress in DPS, door warped		2	0	2				1
2A5	P-5	2'-6"	6'-8"	Clearances good, denting at knob, door warped at top		2	0	2				1
2A-A3		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2A6	P-5	2'-6"	6'-8"	Good clearance, door not warped		2	0	2				1
2A0	P-1	2'-6"	6'-8"	Needs interlocking threshold, manual lock in good shape, no DPS, no bolt keeper, REPLACE FLAT THRESHOLD WITH INTERLOCKING THRESHOLD		0	0	2				7
2B1	P-5	2'-6"	6'-8"	Door warped, good clearance		2	0	2				1
2B-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2B2	P-5	2'-6"	6'-8"	Door scrapes on frame, bulge at bolt keeper, door warped		2	0	2				1
2B3	P-5	2'-6"	6'-8"	Door warped, key does not work, glazing stops missing		2	0	2				1
2B-A2		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2B4	P-5	2'-6"	6'-8"	Good clearance, door warped		2	0	2				1
2B5	P-5	2'-6"	6'-8"	Good clearance, DPS squeaky, strike bolt is not fully engaged, bolt keeper hangs up on top of latch		2	0	2				1

## DOOR ANALYSIS SCHEDULE - 2ND FLOOR DOORS

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DOOR		REMARKS	CONDITION CODE				RECOMMENDATION (PROJECT #)	
NUMBER	TYPE		WIDTH	HEIGHT	DOOR	FRAME	HDWR	TASK 9
2B-A3		30"	40"	0	0	0		
2B6	P-5	2'-6"	6'-8"	2	0	2		1
2B	P-2	3'-0"	6'-8"	0	0	1/2		10/12
2C1	P-5	2'-6"	6'-8"	2	0	2		1
2C-A1		30"	40"	0	0	0		
2C2	P-5	2'-6"	6'-8"	2	0	2		1
2C3	P-5	2'-6"	6'-8"	2	0	2		1
2C-A2		30"	40"	0	0	0		
2C4	P-5	2'-6"		2	0	2		1
2C	P-2	3'-0"	6'-8"	0	0	0		
2D0	P-1	2'-6"	6'-8"	0	0	2		7
2C/D	P-2	3'-0"	6'-8"	0	0	1		12

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
2D1	P-5	2'-6"	6'-8"	Screw missing in middle butt, door fits well, PROVIDE NEW SCREWS		2	0	2				1
2D-A1		30"	40"	MECHANICAL ACCESS HATCH, No hole in floor to lower level		0	0	0				
2D2	P-5	2'-6"	6'-8"	Door warped, screws missing in faceplate of lock		2	0	2				1
2D3	P-5	2'-6"	6'-8"	Squeaky DPS, missing screw in hinge, door warped		2	0	2				1
2D-A1		30"	40"	MECHANICAL ACCESS HATCH [DUST IN ALL OF THESE MECHANICAL HATCHES]		0	0	0				
2D4	P-5	2'-6"	6'-8"	Wall damage at knob, missing screw at bottom butt, screw loose in strikeplate		2	0	2				1
2D	P-2	3'-0"	6'-8"	Door knob hits abutting window frame		0	0	0				
2E1	P-5	2'-6"	6'-8"	Door warped, dented at knob		2	0	2				1
2E-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2E2	P-5	2'-6"	6'-8"	Key does not work, door rubs on frame at strike edge		2	0	2				1
2E3	P-5	2'-6"	6'-8"	Door warped		2	0	2				1
2E-A2		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				

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					DOOR	FRAME	HDWR	TASK 9	TASK 10	
NUMBER	TYPE	WIDTH	HEIGHT							
2E4	P-5	2'-6"	6'-8"	Door warped, dented at knob	2	0	2			1
2E5	P-5	2'-6"	6'-8"	Toothpaste in door lock, warped door, cylinder does not work, key won't work	2	0	2			1
2E-A3		30"	40"	MECHANICAL ACCESS HATCH	0	0	0			
2E6	P-5	2'-6"	6'-8"	Good fit on door, damaged door knob	2	0	2			1
2E	P-2	3'-0"	6'-8"	Door and hardware function properly	0	0	0			
2F0	P-5	2'-6"	6'-8"	FLAT THRESHOLD NEEDS TO BE REPLACED WITH INTERLOCKING THRESHOLD	0	0	2			7
2E/F	P-2	3'-0"	6'-8"	Dust from apparent air movement on frame, door closer cover is missing	0	0	0			
2F	P-2	3'-0"	6'-8"	Door closer cover is missing	0	0	0			
2F1	P-5	2'-6"	6'-8"	Door bottom leading edge hits jamb, screw missing in strikeplate, strikeplate bent, middle butt is bent pushing door toward jamb, door warped, replace middle and top butt	2	0	2			1
2F-A1		30"	40"	MECHANICAL ACCESS HATCH	0	0	0			
2F2	P-5	2'-6"	6'-8"	Door is dented at strikeplate, manual lock works but bent strikeplate, repair needed, lock does not engage on closure correctly	2	0	2			1
2F3	P-5	2'-6"	6'-8"	Perfect clearance on door, door warped	2	0	2			1

## DOOR ANALYSIS SCHEDULE - 2ND FLOOR DOORS

NOTES:	
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3. PINK-COLORED CELLS INDICATE MECHANICAL HATCHES	
4. "CONDITION CODE" COLUMNS INDICATE THE CONDITION OF EACH DOOR, FRAME, AND HARDWARE AND WHETHER EACH ITEM IS ACCEPTABLE AS-IS, NEEDS TO BE REPAIRED/ADJUSTED, OR SHOULD BE REPLACED.	
5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.	

NUMBER	TYPE	SIZE		REMARKS	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	CONDITION CODE				RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
2F-A2		30"	40"	MECHANICAL ACCESS HATCH		0	0	0	0			
2F4	P-5	2'-6"	6'-8"	Two fasteners missing in middle butt, 1 missing on bottom butt, door dented		2	0	0	2			1
2F5	P-5	2'-6"	6'-8"	Little tight but good fit, door not warped, door dented at knob		2	0	0	2			1
SF-A3		30"	40"	MECHANICAL ACCESS HATCH		0	0	0	0			
2F6	P-5	2'-6"	6'-8"	3 screws missing in middle butt, DPS squeaky, door dented at knob		2	0	0	2			1
245	P-1	3'-0"	6'-8"	Cover missing on closer		0	0	0	0			
281A	P-1	3'-0"	3'-0"	Short Corridor door - Crutches storage		0	0	0	0			
281B	P-1	3'-0"	3'-0"	Short corridor door - Wheelchair Storage		0	0	0	0			
246	P-1	3'-0"	6'-8"	Cover missing on closer, air pulling through cracks in door		0	0	0	0			
247	P-5	3'-0"	6'-8"	Good clearance but no weather stripping on door, new opening for cuffing inmates		0	0	0	0			
247A		3'-0"	7'-0"	should be weather stripped, exterior door, exterior side key won't work, cylinder partially blocked with contaminant on push side, not original door, CLEAN HARDWARE		0	0	0	1			11
248	S-1	2'-4"	6'-8"	Silver lever action, no closer, passage		0	0	0	0			9a

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10			
249	P-1	3'-0"	6'-8"	Key not available. Door appears fine, REKEY CYLINDER		0	0	1					12
250	P-1	2'-9"	6'-8"	Key not available. Door appears fine, REKEY CYLINDER		0	0	1					12
251	P-2	3'-0"	6'-8"	Screw missing in middle butt, no strikeplate, REPLACE SCREW		0	0	1					12
254		3'-0"	6'-8"	Door removed		0	0	0					
257	P-5	2'-8"	6'-8"	Door OK		0	0	0					
255	P-1	2'-3"	6'-8"	Door OK		0	0	0					
209	1	3'-0"	6'-8"	No DPS, good clearance		0	0	0					
256	P-1	5'-0" PR	6'-8"	Hardware loose, silver lever handle, no gaskets, astragal, bottom bolt does not work, closer on active leaf side only, folding gate, padlock		0	0	1					9a/9c
252		2'-8"	6'-8"	FOLDING GATE, PADLOCK		0	0	0					9a
2AP	2	3'-0"	6'-8"	Knob lock, floor stop, no silencers		0	0	0					9a
2AV	S-5	3'-0"	6'-8"	Sidelite - 42x3'-4" out-out, knob handle, kick plate inside, Best Lock, recently painted, no interior button, flat plate on inside		0	0	0					7b/7c
2BP	S-2	2'-6"	6'-8"	Knob lock with push button inside, floor stop		0	0	1					7c, 8

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
2CP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2DP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2EP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2FP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2GP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2HP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2IP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2JP	S-2	2'-6"	6'-8"	Lever, no interior button, floor stop		0	0	0	0		7c/8	
2BV	S-2	2'-6"	6'-8"	Knob handle, no closer, latch @ wall is old & doesn't fit well, flat plate on inside, recently painted, no interior button		0	0	0	0		7b/7c	
2CV	S-2	2'-6"	6'-8"	Old knob handle, inside strike - new, recently painted, no interior button, flat plate on inside		0	0	0	0		7b/7c	
2DV	S-2	2'-6"	6'-8"	all door inside-some picking around glazing frame on inside, recently painted, no interior button, flat plate on inside		1	0	0	0		7b/7c	
2EV	S-2	2'-6"	6'-8"	Door edge delaminating (Check door 271) @ edge, old knob lock, recently painted, no interior button, flat plate on inside		1	0	0	0		7a/7b/7c	

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DOOR		0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE		CONDITION CODE			RECOMMENDATION (PROJECT #)		
		DOOR	FRAME	HDWR	TASK 9	TASK 10	TASK 9	TASK 10	
NUMBER	TYPE	WIDTH	HEIGHT	REMARKS	DOOR	FRAME	HDWR	TASK 9	TASK 10
2FV	S-2	2'-6"	6'-8"	all door inside - some picking around glazing, frame on inside, recently painted, no interior button, flat plate on inside	1	0	0	7b/7c	
2GV	S-2	2'-6"	6'-8"	all door inside - some picking around glazing, frame on inside, recently painted, no interior button, flat plate on inside, door dented at strike plate	1	0	0	7b/7c	
2HV	S-2	2'-6"	6'-8"	Silver knob - old strike - doesn't fit well in space, recently painted, no interior button, flat plate on inside	1	0	0	7b/7c	
2IV	S-2	2'-6"	6'-8"	Needs paint - strike doesn't fit well, recently painted, no interior button, flat plate on inside	1	0	0	7b/7c	
2JV	S-2	2'-6"	6'-8"	Needs painting, strike needs replaced, recently painted, no interior button, flat plate on inside	1	0	0	7b/7c	
2KP	P-1	3'-0"	6'-8"	Fabricated bolt keeper, door fits well	0	0	0		
2KV	S-2	3'-0"	6'-8"	Closer needs adjustment, door doesn't close and latch, ADJUST CLOSER	0	0	1		12
281	S-2	3'-0"		FRAME ONLY - NO DOOR	n/a	0	0	9a	
2LP	P-1	3'-0"	6'-8"	Good clearance	0	0	0		
2LV	P-2	3'-0"	6'-8"	Good clearance, solid latching	0	0	0		
282	P-1	3'-0"	6'-8"	116 lockset, door fits well	0	0	0		
284A	P-1	3'-0"	6'-8"	Door and hardware function properly	0	0	0		

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
284B	P-5	3'-0"	6'-8"	Door and hardware function properly		0	0	0			
285	P-2	3'-0"	6'-8"	Door and hardware function properly		0	0	0			
285A	P-4	3'-0"	6'-8"	Door and hardware function properly		0	0	0			
286	2	3'-0"	6'-8"	Closer not connected, knob handle, hardware sticks, no gaskets		0	0	0			9a/9b
287	2	3'-0"	6'-8"	Closer disconnected, no gaskets, knob handle, needs silencers		0	0	0			9a/9b
288	P-2	3'-0"	6'-8"	Door blocked, looks OK, lock works		0	0	0			
290	P-1	2'-6"	6'-8"	Door and hardware function properly		0	0	0			
290A	P-5	2'-9"	6'-8"	Door and hardware function properly		0	0	0			
289	P-1	2'-6"	6'-8"	Door and hardware function properly		0	0	0			
289A	P-5	2'-6"	6'-8"	Door and hardware function properly		0	0	0			
291A	P-5	2'-6"	6'-8"	Door and hardware function properly		0	0	0			
291	P-1	2'-6"	6'-8"	Door and hardware function properly		0	0	0			

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
292	S-5	2'-8"	6'-8"	Closer, knob handle, kickplate, kick stop, floor stop		0	0	0	0		9a/9b	
293	S-5	2'-8"	6'-8"	Silver lever action, closer removed, door needs patched & closer		0	0	0	0		9a/9b	
294	P-1	2'-8"	6'-8"	Door and hardware function properly		0	0	0	0			
295	P-5	2'-9"	6'-8"	Staff doesn't use key lock, deadbolt defunct, door fits well, padlock		0	0	0	0			
296	P-5	3'-0"	6'-8"	Key not available, padlock hinge missing screw, door appears OK, INSTALL MISSING SCREW		0	0	0	1			
295A		3'-0"	6'-8"	Door blocked, commissary on other side, large lite in door		0	0	0	0			
297		3'-0"	6'-8"	Closer needs adjustment, door doesn't close, ADJUST CLOSER, SUGGEST INSTALLING DOOR SILENCERS		0	0	0	1			
297A		3'-0"	6'-8"	Good fit, no installed factory bolt keeper, good weatherstripping, lock OK		0	0	0	0			
298		3'-0"	6'-8"	Door rubs on strike edge, REPLACE HINGES		0	0	0	2			
299		3'-0"	6'-8"	Door and hardware function properly		0	0	0	0			
1006		3'-0"	6'-8"	Mechanical mezzanine DOOR BETWEEN 2ND & 1ST IN STAIR: Knob handle, no cover on closer, electric sensor w/door position switch, Square Position Switch		0	0	0	0		9a	
1007		3'-0"	7'-0"	Old Best Lock knob - loose, needs replaced, locked on ??? Side, thumb turn on visitors side, hinges painted over, no vision lites, no gaskets, no silencers, no closer		0	0	0	1		9a/9b	

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
307A	S-5	3'-0"	6'-8"	Closer, panic hardware, lever on stair side, silencer, kickplates		0	0	0	0	10a		
2A7	P-5	2'-6"	6'-8"	Good clearance, door warped		2	0	0	2			1
2A-A4		30"	40"	MECHANICAL ACCESS HATCH		0	0	0	0			
2A8	P-5	2'-6"	6'-8"	Squaky DPS, newer lock, door warped		2	0	0	2			1
2A9	P-6	2'-6"	6'-8"	Screw loose at top butt, door sticks on frame		2	0	0	2			1
2A-A5		30"	40"	MECHANICAL ACCESS HATCH, Bent top of door, repair needed, bolt not steady in bolt keeper/allows door to move		1	0	0	0			8
2A10	P-5	2'-6"	6'-8"	Gap on hinge side, door warped, potential butt replacement, tough to operate key		2	0	0	2			1
2A11	P-5	2'-6"	6'-8"	DPS makes odd noise/rubbing		2	0	0	2			1
2A-A6		30"	40"	MECHANICAL ACCESS HATCH		0	0	0	0			
2A12	P-5	2'-6"	6'-8"	Glazing stops missing, DPS rubbing, gap at hinge, replace butts, tough to pull open, door rubbing on frame		2	0	0	2			1
2B0	P-1	2'-6"	6'-8"	Had door seals at one time, standard threshold, REPLACE FLAT THRESHOLD WITH INTERLOCKING THRESHOLD		0	0	0	2			7
2B7	P-5	2'-6"	6'-8"	Door fits well, door warped		2	0	0	2			1
2B-A4		30"	40"	MECHANICAL ACCESS HATCH		0	0	0	0			
2B8	P-5	2'-6"	6'-8"	Door edge rubs on jamb		2	0	0	2			1
2B9	P-5	2'-6"	6'-8"	Door rubs on jamb, door not warped		2	0	0	2			1
2B-A5		30"	40"	MECHANICAL ACCESS HATCH, Top of plate bent/repair		1	0	0	0			8
2B10	P-5	2'-6"	6'-8"	DPS squeaky, good clearance, door warped		2	0	0	2			1

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2B11	P-6	2'-6"	6'-8"	Good clearance, door warped		2	0	2				1
2B-A6		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2B12	P-5	2'-6"	6'-8"	Several loose fasteners in top butt, DPS clicking, door rubs on frame		2	0	2				1
2C5	P-6	2'-6"	6'-8"	Door Warped and Dented		2	0	2				1
2C-A3		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2C6	P-5	2'-6"	6'-8"	Door warped, DPS clicking, potential repair		2	0	2				1
2C7	P-5	2'-6"	6'-8"	Door warped		2	0	2				1
2C-A4		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2C8	P-5	2'-6"	6'-8"	Door warped, fill jamb at CMU with epoxy grout, newer strikeplate, fill frame edge with epoxy GROUT		2	1	2				1/12
2C0	P-1	2'-6"	6'-8"	No bolt plate, REPLACE THRESHOLD WITH INTERLOCKING THRESHOLD		0	0	2				7
2D5	P-5	2'-6"	6'-8"	Squeaky DPS, door fits well, door warped		2	0	2				1
2D-A3		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2D6	P-5	2'-6"	6'-8"	Warped door, newer lock		2	0	2				1
2D7	P-5	2'-6"	6'-8"	Needs cylinder replaced, screw missing in bottom butt, strikeplate loose		2	0	2				1
2D-A4		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
2D8	P-5	2'-6"	6'-8"	Squeaky DPS, door warped, sticky new cylinder		2	0	2				1
2E7	P-5	2'-6"	6'-8"	DPS squeaky		2	0	2				1

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		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
2E-A4		30"	40"	MECHANICAL ACCESS HATCH, Door bent slightly on corners/repair		1	0	0			8
2E8	P-5	2'-6"	6'-8"	Bent strikeplate needs repair, door sticks on frame		2	0	2			1
2E9	P-5	2'-6"	6'-8"	Detention likes this lock. 13 5/16" x 1.5" faceplate		2	0	2			1
2E-A5		30"	40"	MECHANICAL ACCESS HATCH, Feel airflow when door is open		0	0	0			
2E10	P-5	2'-6"	6'-8"	Typical denting around knob		2	0	2			1
2E11	P-5	2'-6"	6'-8"	Typical knob denting, door sticking on frame at lockset		2	0	2			1
2E-A6		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
2E12	P-5	2'-6"	6'-8"	Typical denting around knob, head broken off screw in center hinge		2	0	2			1
2E0	P-1	2'-6"	6'-8"	Threshold needs to be changed to interlocking threshold, REPLACE THRESHOLD WITH INTERLOCKING THRESHOLD		0	0	2			7
2F7	P-5	2'-6"	6'-8"	Door bowed at strikeplate, door leading edge striking at lock, possible replacement		2	0	2			1
2F-A4		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
2F8	P-5	2'-6"	6'-8"	Glazing stop is missing on both sides, glazing needs to be redone, works good, door warped		2	0	2			1
2F9	P-5	2'-6"	6'-8"	Screw missing in middle butt, glazing stop missing-needs redone, DPS clicks/binding, door warped		2	0	2			1
2F-A5		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
2F10	P-5	2'-6"	6'-8"	Door fits well, door bent at knob		0	0	0			1
2F11	P-5	2'-6"	6'-8"	Squeaky DPS, door rubs at strike, butts bent slightly causing rubbing		2	0	2			1
2F-A6		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			

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4. "CONDITION CODE" COLUMNS INDICATE THE CONDITION OF EACH DOOR, FRAME, AND HARDWARE AND WHETHER EACH ITEM IS ACCEPTABLE AS-IS, NEEDS TO BE REPAIRED/ADJUSTED, OR SHOULD BE REPLACED.											
5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.											
NUMBER	TYPE	SIZE		REMARKS	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	CONDITION CODE			RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
2F12	P-5	2'-6"	6'-8"	Screw missing in strikeplate, strikeplate jambed into edge of door		2	0	2			1
307B		3'-3"	6'-8"	Knob lock, closer, kickplates		0	0	2		10a/ 10b	
300	P-1	3'-0"	6'-8"	Fabricated bolt hole, good clearance		0	0	0			
301	1	2'-8"	6'-8"	Closer, lever action, missing closer cover, silencers		0	0	0		10a	
302	P-1	2'-6"	6'-8"	Dust accumulation on frame, large gap on hinge side, warm in room, strikeplate missing		0	0	0			
303	P-4	3'-0"	6'-8"	Lockset discontinued, manual lock only, no DPS, good clearance, door not warped		0	0	0			
3D2	P-9	2'-6"	6'-8"	DPS clicking and squeaking, cylinder needs lube, water leak at toilet obviously causing rust on these door frames, door fits well, REPLACE CYLINDER AND DPS, INSTALL DOOR PULL		0	0	2			3/4/6/10
3D-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
3D	P-2	3'-0"	6'-8"	Good clearance, adjust closer/maintenance issue, ADJUST CLOSER		0	0	1			12
3D1	P-2	2'-6"	6'-8"	Grease on latch/maintenance issue, door fits, no rust on this frame, INSTALL DOOR PULL		0	0	2			6
3C2	P-9	2'-6"	6'-8"	Frame rotting at base, DPS clicks, good clearance, INSTALL DOOR PULL, EPOXY GROUT TO FLOOR, REPLACE DPS		0	0	2			6/10
3C-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
307a(N)		3'-0"	6'-8"	Built-in closer, dust on frame, door fits well, interlocking threshold needed, metal strip on floor, INSTALL INTERLOCKING THRESHOLD		0	0	2			7
3C	P-2	3'-0"	6'-8"	Fabricated bolt keeper, good clearance, closer needs adjustment, old door stop on wall, ADJUST CLOSER		0	0	1			12
3C1	P-9	2'-6"	6'-8"	DPS clicks, latch bolt sticks/maintenance, REPLACE DPS, CLEAN & LUBE LOCKSET, INSTALL DOOR PULL		0	0	2			6/10/11
3B2	P-10	2'-6"	6'-8"	Bottom of frame rotting out, maybe replacement or fabrication, requires force to open door, sticky backside of bolt, INSTALL DOOR PULL, INSTALL SHEET METAL PATCH OVER BASE OF DOOR FRAME SIMILAR TO HOLDING CELL		0	1	2			4/6/12
3B-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			

## DOOR ANALYSIS SCHEDULE - 3RD FLOOR DOORS

NOTES:											
1. BLUE-COLORED CELLS INDICATE DETENTION DOORS											
2. YELLOW-COLORED CELLS INDICATE COMMERCIAL DOORS											
3. PINK-COLORED CELLS INDICATE MECHANICAL HATCHES											
4. "CONDITION CODE" COLUMNS INDICATE THE CONDITION OF EACH DOOR, FRAME, AND HARDWARE AND WHETHER EACH ITEM IS ACCEPTABLE AS-IS, NEEDS TO BE REPAIRED/ADJUSTED, OR SHOULD BE REPLACED.											
5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.											
DOOR											
NUMBER	TYPE	SIZE		REMARKS	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	CONDITION CODE			RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10	
3B	P-2	3'-0"	6'-8"	Good fit		0	0	0			
3B1	P-9	2'-6"	6'-8"	Good clearance, INSTALL DOOR PULL		0	0	2			6
3A2	P-9	2'-6"	6'-8"	Good clearance, privacy slider bent, INSTALL DOOR PULL		0	0	2			6
3A-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0			
3A	P-2	3'-0"	6'-8"	Closer doesn't close door, clearance good, ADJUST CLOSER		0	0	1			12
3A1	P-9	2'-6"	6'-8"	Frame rusted at bottom, rusted cuff port, good clearance, INSTALL DOOR PULL, INSTALL SHEET METAL PATCH OVER BASE OF DOOR FRAME SIMILAR TO HOLDING CELL 126, REPAIR CUFF PORT HINGE		1	1	2			4/5/6
306	P-5	3'-0"	6'-8"	Good fit		0	0	0			
307	P-2	3'-0"	6'-8"	Bent strikeplate, good clearance		0	0	0			
318		3'-0"	6'-8"	Good clearance, hinges good		0	0	0			
3E1	P-2	3'-0"	6'-8"	Good clearance, has closer		0	0	0			
3E	P-2	3'-0"	6'-8"	Closer needs replaced/spraying oil, tamper-prone lock/fabricated plate placed over outside, good clearance, REPLACE CLOSER		0	0	2			9
3F	P-2	3'-0"	6'-8"	Door fits well		0	0	0			
3AV	S-2	2'-6"	6'-8"	Detached closer, 4 3/4" hinges		0	0	0			7b/ 7c
3BV	S-2	2'-6"	6'-8"	Detached closer, 4 3/4" hinges		0	0	0			7b/ 7c
3AP	S-3	2'-6"	6'-8"	Lever action handle hits screws on frame		0	0	0			8
3BP	S-4	2'-6"	6'-8"	Lever action handle hits screws on frame, floor stop		0	0	0			8
308	P-2	3'-0"	6'-8"	THIS DOOR NOT USED - NO ANALYSIS BUT DOOR APPEARS IN GOOD SHAPE		0	0	0			

## DOOR ANALYSIS SCHEDULE - 3RD FLOOR DOORS

NOTES:												
1. BLUE-COLORED CELLS INDICATE DETENTION DOORS												
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5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.												
DOOR												
NUMBER	TYPE	SIZE		REMARKS	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	CONDITION CODE			RECOMMENDATION (PROJECT #)			
		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
3CP	S-2	2'-6"	6'-8"	Lever action, large frame & ?lite action hits screws on frame?, floor stop		0	0	0			8	
328a(N)		3'-0"	78.5"	Door stop, butts OK, concealed closer, no gap at threshold, 56 series control lock, dust accumulation on roller and strike, REPLACE METAL STRIP WITH INTERLOCKING THRESHOLD		0	0	2				7
3DP	S-2	2'-6"	6'-8"	Lever action, large frame & ?lite action hits screws on frame?, floor stop		0	0	0			8	
309	P-2	3'-0"	6'-8"	No DPS, door fits well, CLEAN AND LUBRICATE LOCKSET		0	0	1				11
3DV	S-2	2'-6"	6'-8"	Silver knob, large vision frame (1 1/2")		0	0	0			7b/ 7c	
3CV	S-3	2'-6"	6'-8"	Best Lock knob handle outside only, closer, no silencers, 1/2" vision stop (small frame around glass), standard hinges		0	0	0			7b/ 7c	
305A	P-2	3'-0"	6'-8"	Lockset needs to be lubed, missing screw at top butt, 2 loose screws, good fit, CLEAN AND LUBE LOCKSET, INSTALL MISSING SCREWS		0	0	1				11/12
304	1	2'-6"	6'-8"	knob handle, no closer, silencers need replaced		0	0	0			10a	
305B	S-2	2'-6"	6'-8"	Detached closer, 4 3/4" hinges		0	0	1			10a/ 10c	
3G1	P-9	2'-6"	6'-8"	Door warped badly, good clearance		2	0	2				1
3G-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
3G2	P-9	2'-6"	6'-8"	Good clearance, door warped		2	0	2				1
3G3	P-9	2'-6"	6'-8"	DPS squeaky, good clearance, door slightly warped		2	0	2				1
3G-A2		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
3G4	P-9	2'-6"	6'-8"	Loose screws in middle butt not seated, door not warped		2	0	2				1
3G	P-2	3'-0"	6'-8"	Good clearance, REPLACE DOOR SWEEP		0	0	2				12
3G/H	P-3	3'-0"	6'-8"	Good clearance, DPS squeaky, REPLACE DPS		0	0	2				10

## DOOR ANALYSIS SCHEDULE - 3RD FLOOR DOORS

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5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.												
DOOR												
NUMBER	TYPE	SIZE		REMARKS	0=GOOD 1=REPAIR/ADJUST 2=REPLACE/PROVIDE	CONDITION CODE				RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT			DOOR	FRAME	HDWR	TASK 9	TASK 10		
3H1	P-9	2'-6"	6'-8"	New lock and cylinder, DPS clicks/squeaks, door not warped		2	0	2				1
3H-A1		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
3H2	P-9	2'-6"	6'-8"	Good door clearance, warped door, bolt pocked plate is bent		2	0	2				1
3H3	P-10	2'-6"	6'-8"	Grout missing on inside of door frame, bolt plate jammed into door face, DPS clicks, door warped, cylinder moves when door locked		2	0	2				1
3H-A2		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
3H	P-2	3'-0"	6'-8"	Good clearance, REPLACE DOOR SWEEP		0	0	2				12
349	P-1	2'-9"	6'-8"	Chaplain supply room, good fit, knob missing 2 screws in faceplate, INSTALL MISSING SCREWS IN KNOB		0	0	1				12
350	P-1	2'-9"	6'-8"	Lock face plate is bent and not seated correctly, not latching, 1/8" too low, REPAIR LOCKSET		0	0	1				12
3H4	P-9	2'-6"	6'-8"	Squeaky DPS, door warped, good clearance		2	0	2				1
3H5	P-9	2'-6"	6'-8"	Newer lock, doors in this block all have dented knobs, door warped		2	0	2				1
3H-A3		30"	40"	MECHANICAL ACCESS HATCH		0	0	0				
3H6	P-9	2'-6"	6'-8"	Good clearance		2	0	2				1
357	P-1	3'-0"	6'-8"	Good fit		0	0	0				
355	P-2	3'-0"	6'-8"	Faceplate screw loose, good clearance, [ALL LATCHING NEEDS LUBRICATED]		2	0	2				11/12
3K1		3'-0"	6'-8"	Dust in door latch, good clearance, Good latch, TIGHTEN SCREWS, CLEAN & LUBE LOCKSET		0	0	1				11/12
3K0	P-5	3'-0"	6'-8"	Door engages well, tamper-prone lockset with fabricated enclosure, dust in latch, CLEAN & LUBE LOCKSET		0	0	1				11
3J1	P-9	2'-6"	6'-8"	Good clearance, door warped, REPLACE DOOR BUTTS & ADD DOOR PULL		2	0	2				6

## DOOR ANALYSIS SCHEDULE - 3RD FLOOR DOORS

DOOR ANALYSIS SCHEDULE - 3RD FLOOR DOORS											
NOTES:											
1. BLUE-COLORED CELLS INDICATE DETENTION DOORS											
2. YELLOW-COLORED CELLS INDICATE COMMERCIAL DOORS											
3. PINK-COLORED CELLS INDICATE MECHANICAL HATCHES											
4. "CONDITION CODE" COLUMNS INDICATE THE CONDITION OF EACH DOOR, FRAME, AND HARDWARE AND WHETHER EACH ITEM IS ACCEPTABLE AS-IS, NEEDS TO BE REPAIRED/ADJUSTED, OR SHOULD BE REPLACED.											
5. "RECOMMENDATION (SCOPE OPTION #)" COLUMNS INDICATE THE SCOPE OPTION FROM THE REPORT THAT APPLIES TO EACH DOOR.											
DOOR											
NUMBER	TYPE	SIZE		REMARKS	DOOR	CONDITION CODE			RECOMMENDATION (PROJECT #)		
		WIDTH	HEIGHT			FRAME	HDWR	TASK 9	TASK 10		
3J2	P-9	2'-6"	6'-8"	Fabricated hinge, good clearance, REPLACE DOOR BUTTS & ADD DOOR PULL	2	0	2				6
3J0	P-2	3'-0"	6'-8"	Good clearance	0	0	0				
3I	P-2	3'-0"	6'-8"	Dust in frame, good clearance, electric lockset, no central control	0	0	0				
356		3'-0"	7'-0"	Good fit	0	0	0				
306B				NO INFORMATION ON THIS DOOR							

## TASK 12 - EMERGENCY LIGHTING ...TAB H



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## Task 12 – **Emergency Lighting and Branch Wiring**

### SUMMARY:

The scope of Task 12 includes the existing emergency power system supporting emergency lighting throughout the Jail facility, to address the safety concerns associated with the 10 second time delay between loss of utility power, and operation of the emergency generator power system.

Based on review of the available record documents and non-invasive field observation, building emergency egress and exit lighting is existing throughout the facility. Emergency lighting is powered via a single 250kW packaged diesel engine generator and automatic transfer switch (ATS) system. Upon loss of normal utility power, the emergency (and other) lighting in the facility goes dark for approximately 10 seconds while the emergency generator system starts and transfers over to power the building's emergency electrical system. Use of an emergency generator system for this purpose meets National Electrical Code (NEC) requirements, as long as the transfer time is 10 seconds or less.

In a correctional environment, with offenders mixing with corrections officers and staff, 10 seconds of darkness while a generator system comes on line can present significant safety and security concerns. While not code-required, implementation of some form of UL (Underwriters Laboratories) listed emergency battery system would be a significant improvement over the existing installation. Areas within the jail such as dayrooms, sally ports, corridors, and support spaces where offenders and staff mix should be considered the highest priority.

### GENERAL FINDINGS:

- 1) Basement Floor program areas primarily consist of spaces associated with the following:
  - a) Sheriff Department
  - b) Utility Spaces including Main Electrical and Emergency Generator Rooms.  
Emergency egress and exit lighting is provided within egress corridors, critical utility spaces and select program spaces. Emergency lighting for this floor appears to be circuited primarily to emergency electrical panelboard "EHB" at 277 Volts and backed up by the emergency generator system.
  
- 2) First Floor program areas primarily consist of jail spaces including the following:
  - a) Booking
  - b) Dormitories
  - c) Kitchen
  - d) Laundry
  - e) Vehicle Sally port
  - f) Jail Support Spaces  
Emergency egress lighting is provided within corridors and stairwells, booking, kitchen, dormitories, and many support spaces. Emergency lighting for this floor appears to be circuited primarily to emergency electrical panelboard "EHB" at 277 Volts and backed up by the emergency generator system.

3) Second Floor program areas primarily consist of jail spaces including the following:

- a) Housing Units (lower level of 2-tier units)
- b) Dormitories
- c) Central Control
- d) Medical
- e) Courtroom
- f) Visitation
- g) Outdoor Recreation
- h) Jail Support Spaces

Emergency egress lighting is provided within most spaces on this floor. Emergency lighting for this floor appears to be circuited primarily to emergency electrical panelboard "EH1" at 277 Volts and backed up by the emergency generator system.

4) Third Floor program areas primarily consist of jail spaces including the following:

- a) Housing Units (upper level of 2-tier units)
- b) High Security Housing Unit
- c) Dormitories
- d) Jail Support Spaces

Emergency egress lighting is provided within most spaces on this floor. Emergency lighting for the upper tier housing units on this floor appears to be circuited primarily to emergency electrical panelboard "EH1" at 277 Volts and backed up by the emergency generator system. Emergency lighting for the remainder of this floor appears to be circuited primarily to emergency electrical panelboard "EH2" at 277 Volts and backed up by the emergency generator system.

5) Limited building emergency lighting was observed to be circuited at 120 Volts, including the following:

- a) Visitation Booths
- b) Elevator Cabs

6) The majority of interior light fixtures appear to be original equipment installed in the 1980's, however all fluorescent fixtures have been relamped with new T8 fluorescent bulbs. From records received, this was completed in 2015. Fixtures in the outdoor recreation and third floor food storage areas are original high-pressure sodium (HPS) light fixtures with quartz restrike. In general, light fixtures are in fair condition considering their age and the environment within which they operate.

7) Individual jail cells have night lights (15" T8 fluorescent lamps) integrated with the general light fixtures circuited to the emergency lighting system. Similarly, dormitories also have night lights (15" T8 fluorescent lamps) in select light fixtures circuited to the emergency lighting system; however, these fixtures provide limited light output in these larger multi-occupant spaces.

8) Illuminance levels were measured (spot-checked) with emergency lighting only operating in a couple of locations.

- a) Day Room 2E: With only emergency lighting operating, illuminance values ranging from 2.0 footcandles (fc) to 7.5 fc at the floor level within the primary egress path, which is above the code-minimum required average light level.
- b) Corridor 317 (Maximum Security Housing Unit): With only emergency lighting operating in the hallway, illuminance values of 15.0 fc at the floor level which is above the code-minimum required average light level.

- 9) The emergency power distribution system was reviewed, specifically related to panels and circuits serving facility emergency lighting. Refer to electrical sketch for a partial power one-line diagram of this system. The following panels and circuits serving emergency lighting were observed:
- a) Panelboard "EHB": 100 Amp main lug only panelboard at 480Y/277 Volts, 3-phase, 4-wire located in the Basement Generator Room serving emergency lighting at 277 Volts including the following:
    - i) Circuit 1: Lighting - basement, including generator room
    - ii) Circuit 3: Lighting - first floor booking, hallway, stairs
    - iii) Circuit 5: Lighting - basement hallway and sheriff spaces
    - iv) Circuit 2: Lighting - first floor holding cells
    - v) Circuit 4: Lighting - first floor rooms 113, 114, 124, 125, 136
    - vi) Circuit 6: Lighting - first floor kitchen
  - b) Panelboard "ELB": 100 Amp main circuit breaker panelboard at 208Y/120 Volts, 3-phase, 4-wire located in the Basement Generator Room serving emergency lighting at 120 Volts including the following:
    - i) Circuit 5: Lighting - elevator cab
    - ii) Circuit 7: Lighting - elevator cab
    - iii) Circuit 9: Lighting - elevator cab
    - iv) Circuit 6: Lighting - first floor visitation booths
  - c) Panelboard "EH1": 100 Amp main lug only panelboard at 480Y/277 Volts, 3-phase, 4-wire located in the Mechanical Mezzanine serving emergency lighting at 277 Volts including the following:
    - i) Circuit 1: Lighting - utility tray (mezzanine)
    - ii) Circuit 3: Lighting - second floor central control room
    - iii) Circuit 5: Lighting - second floor hallway
    - iv) Circuit 19: Lighting - second floor (lower tier) cells, units A, B, C
    - v) Circuit 21: Lighting - second floor (lower tier) cells, units D, E, F
    - vi) Circuit 2: Lighting - second floor rooms 251 - 255
    - vii) Circuit 4: Lighting - second floor hallway
    - viii) Circuit 6: Lighting - second floor transfer, hallway
    - ix) Circuit 20: Lighting - third floor (upper tier) cells, units A, B, C
    - x) Circuit 22: Lighting - third floor (upper tier) cells, units D, E, F
  - d) Panelboard "EL1": 100 Amp main circuit breaker panelboard at 208Y/120 Volts, 3-phase, 4-wire located in the Mechanical Mezzanine serving emergency lighting at 120 Volts including the following:
    - i) Circuit 21: Lighting - second floor visitation booths
    - ii) Circuit 23: Lighting - second floor visitation booths
    - iii) Circuit 24: Lighting - second floor central control room
  - e) Panelboard "EH2": 100 Amp main lug only panelboard at 480Y/277 Volts, 3-phase, 4-wire located in the Third Floor Electrical Room serving emergency lighting at 277 Volts including the following:
    - i) Circuit 2: Lighting - third floor south
    - ii) Circuit 4: Lighting - third floor outdoor rec
    - iii) Circuit 6: Lighting - third floor north
    - iv) Circuit 8: Lighting - third floor north

- f) Panelboard "EL2": 100 Amp main circuit breaker panelboard at 208Y/120 Volts, 3-phase, 4-wire located in the Third Floor Electrical Room serving emergency lighting at 120 Volts including the following:
  - i) Circuit 7: Lighting – third floor visitation booths

OPTIONS FOR IMPROVEMENTS AND UPGRADES:

- 1) Scope Option 12-1A: Provide UL924 listed central emergency lighting inverter/battery system and electrical panelboard to deliver uninterrupted power to emergency lighting fixtures in critical jail areas where offenders and jail staff mix. Refer to equipment cut sheets and attached sketch (Figure 12.01.01 through 12.01.08 and sketches E12.01.01 and E12.01.02).

This option would provide a central location for system equipment and batteries, allowing for easier maintenance and monthly testing outside of the secure environments. Space would be required to house this equipment in the basement, likely by removing the existing abandoned generator system. A new generator would need to be provided. The scope would include new branch circuits from a central inverter system, and intercept/refeed of the following existing emergency lighting circuits:

- a) Panel EHB, circuits 3, 2, 4, 6: Estimated electrical load of 6,300 Watts
- b) Panel EH1, circuits 5, 19, 21, 2, 4, 6, 20, 22: Estimated electrical load of 13,500 Watts
- c) Panel EH2, circuits 2, 6, 8: Estimated electrical load of 8,200 Watts

Total Estimated Electrical Load: 28,000 Watts

Recommended Central Emergency Lighting Inverter Size: 33,000 Watts at 480Y/277 Volts, 3-phase, 4-wire

- 1) Scope Option 12-1B - Provide UL924 listed "bugeye" emergency lighting fixtures with integral batteries in critical jail spaces where offenders and jail staff mix to provide uninterrupted emergency lighting. Since the existing generator is at capacity, the "bugeyes" will be connected to normal power within the individual spaces to charge the batteries; this will provide uninterrupted light when transferring to generator power but may not provide uninterrupted light when transferring back to utility, since the batteries may be low at that point.
  - a) Ideally, the "bugeyes" would be connected to an emergency generator circuit serving light fixtures in the individual spaces to provide uninterrupted light when transferring to generator power and also when transferring back to utility power once restored. *A new generator would be required to include the emergency electrical system.*
  - b) Refer to equipment cut sheets for a representative light fixture type (Figure 12.02.01). This option will provide a distributed approach to equipment and batteries utilizing a vandal resistant product,, requiring that these new fixtures be installed within the desired spaces and wired back to the panelboard to bypass any switches. This option is the least expensive first-cost option, and does provide more flexibility to deliver battery lighting in specific spaces desired by the owner. However, there are drawbacks to this approach, including the requirements to install the light fixtures within offender areas, vandalism, higher maintenance and testing impacts, and costs, etc.

Scope Options 12-1A and 12-1B are mutually exclusive. The County may elect to do one or the other to accomplish a similar outcome.

- 2) Scope Option 12-2: Provide UL924 listed "bugeye" emergency lighting fixtures with integral batteries (Figure 12.02.01) within elevator cabs where offenders and jail staff mix to provide uninterrupted emergency lighting. These fixtures would be connected to circuiting as described in Project 1B above. Since lighting in these spaces is served at 120 Volts, integrating this with the central lighting inverter described in Project 1A is not cost effective and is not included in the estimate.
- 3) Scope Option 12-3: Provide UL924 listed "bugeye" emergency lighting fixtures with integral batteries (Figure 12.02.01) within exterior recreation areas where offenders and jail staff mix to provide uninterrupted emergency lighting. These fixtures would be connected to circuiting as described in Project 1B above. Since the lighting load in these spaces is relatively large, integrating this with the central lighting inverter described in Project 1A would require increasing that inverter system size and offer fewer manufacturer options.
- 4) Scope Option 12-4: Recircuit existing lighting in the housing unit spaces to provide additional emergency lighting beyond the current single lamp "night lights".

*The cost for a new generator is **NOT** included in the estimate for scope option 12-1a or 12-1B. The cost for a new generator for the food service equipment is given in scope option 8-4. Ideally, if that option is accepted, the generator would be sized to allow this system to be connected as well. To further maximize the cost/benefit of a new generator, a package unit generator could be specified, then be relocated with other equipment, and used at the new jail upon its completion.*

ATTACHED DOCUMENTS:

Sketches for scope option 12-1A – E12.01.01 and E12.01.02  
Catalog cuts – Figure 12.01.01 through 08 and Figure 12.02.01

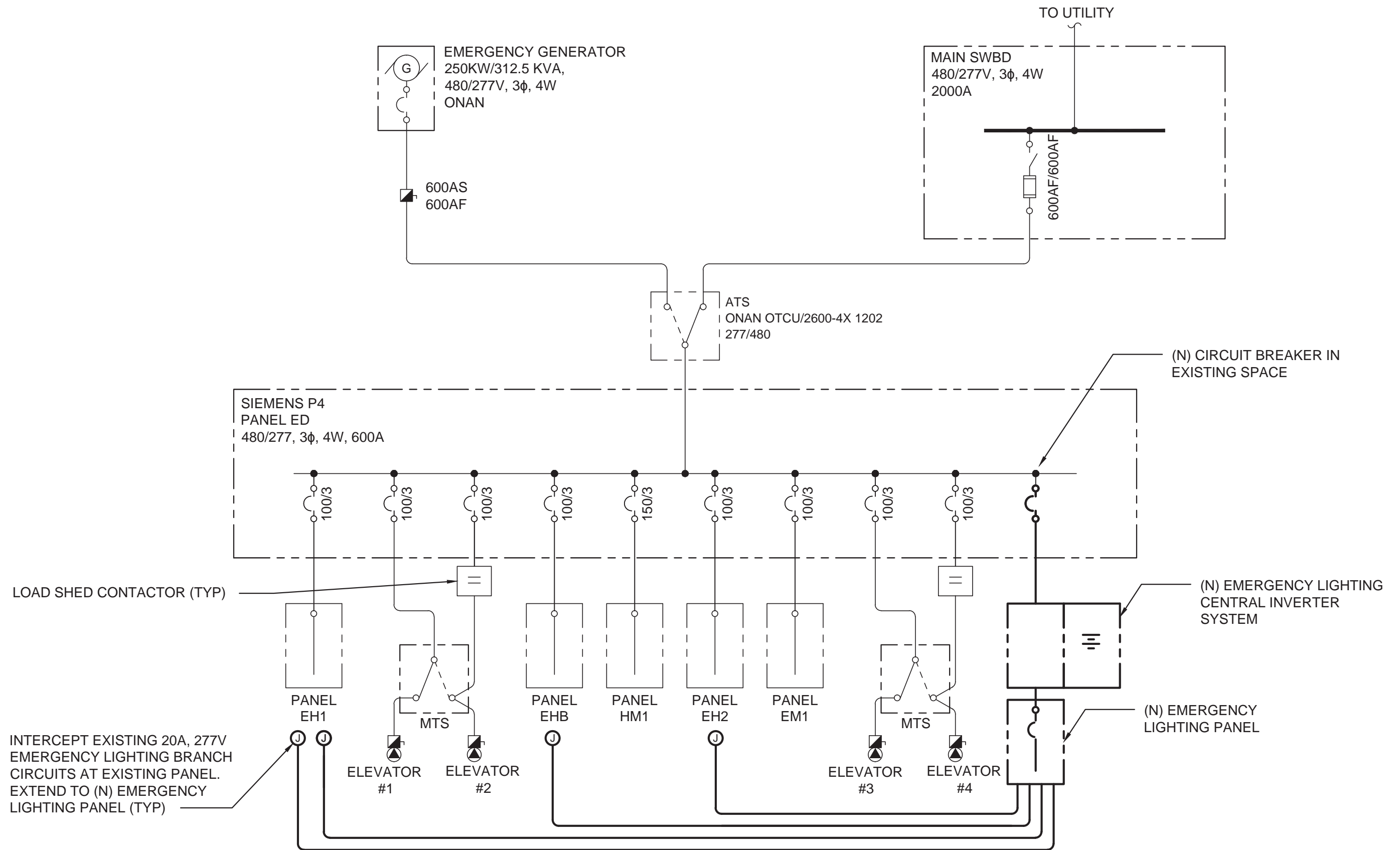
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**1 PARTIAL POWER ONE-LINE DIAGRAM - CONCEPT**  
 ESK-12-1 SCALE: NONE

SCOPE OPTION 12-1A - Provide UL924 listed central emergency lighting inverter/battery system and electrical panelboard

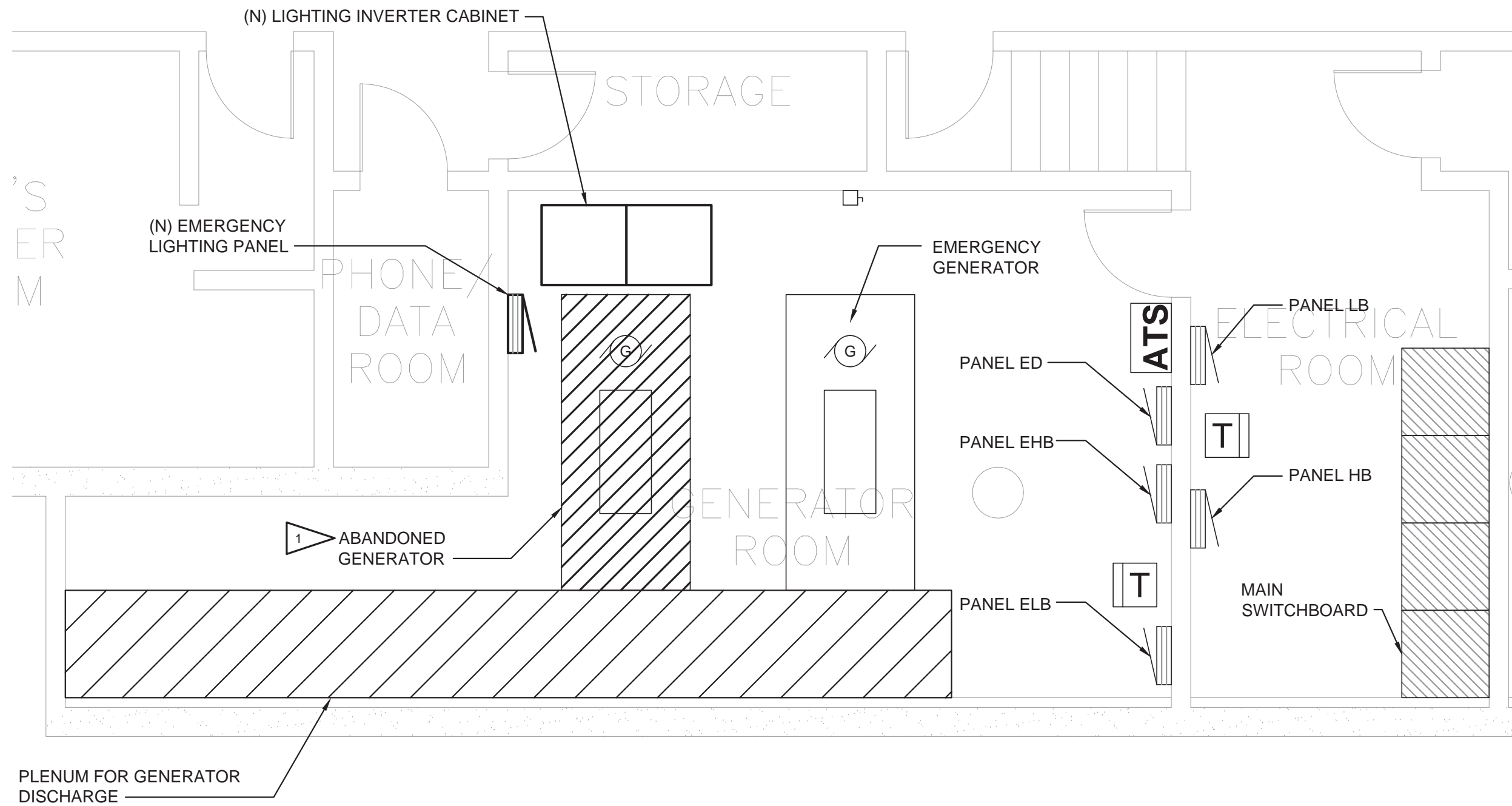
PHASE 1B - JAIL ASSESSMENT  
 WHATCOM COUNTY  
 BELLINGHAM, WA



SHEET NAME TASK 12 PROJECT 1 ELECTRICAL ONE LINE DIAGRAM
SHEET NO. <b>E12.01.01</b>

# FLAG NOTES:

1 REMOVE GENERATOR TO CREATE PHYSICAL SPACE FOR NEW INVERTER.



## PARTIAL BASEMENT POWER FLOOR PLAN - CONCEPT

SCALE: 1/4" = 1'-0"



KEY PLAN

SCOPE OPTION 12-1A - Provide UL924 listed central emergency lighting inverter/ battery system and electrical panelboard

PHASE 1B - JAIL ASSESSMENT  
WHATCOM COUNTY  
BELLINGHAM, WA



SHEET NAME  
TASK 12 PROJECT 1  
PARTIAL BASEMENT  
GENERATOR ROOM  
SHEET NO.  
**E12.01.02**

# 10 kW - 33 kW THREE PHASE

## EON™ MODEL EL3

### Centralized Emergency Lighting Inverters

Featuring one of the smallest three phase cabinet footprints in the industry!

Meets NFPA 101, 111, NEC, IBC and local codes.



UL 924 Listed

C-UL Listed to CSA C22.2 No. 141-10

#### Applications:

- Theaters / Concert Halls
- Auditoriums
- Worship Facilities
- Conference / Banquet Centers
- Shopping Malls
- Casinos
- Sports Facilities
- University Buildings
- Healthcare Facilities
- Correctional Facilities
- Subway / Train Stations
- Industrial Manufacturing
- Warehouses



**CONTROLLED POWER COMPANY** FIGURE

*"World's recognized authority in power treatment"* 12.01.01

# EMERGENCY LIGHTING REQUIREMENTS

Controlled Power Company engineers and manufactures the industry's highest quality **centralized emergency lighting inverters**, capitalizing on over 40 years of expertise. We have an enviable reputation for quality, which is reflected in the design, workmanship, and performance of our products.

## The "EON Model EL3" = Life Safety

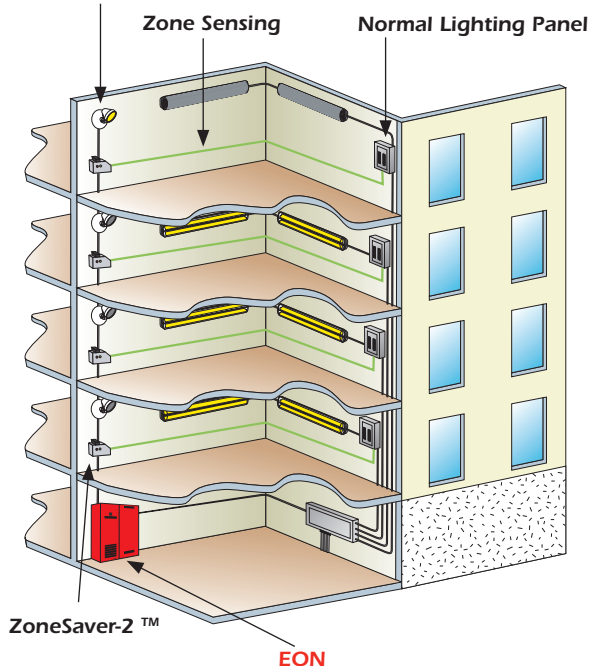
Apart from the existing emergency lighting codes, many U.S. cities and states have adopted legislation that requires buildings with 5 or more units of occupancy to have a **centralized emergency lighting system**, where single-point operation controls a facility's many smaller circuits, and all testing and record-keeping of the emergency power equipment is performed from one location.

Meeting stringent requirements in construction and performance, Controlled Power Company's self-diagnostic, self-testing **EON Model EL3 centralized emergency lighting inverter** is UL 924 listed as "Emergency Lighting Equipment" and "Auxiliary Lighting and Power Equipment", as well as NFPA compliant as "Life Safety Equipment".

The **EON** offers more security and versatility to meet illumination requirements, and is the perfect complement for all life safety and lighting applications.

Our inverter technology effectively maintains critical equipment with extended brownout protection, tight voltage regulation, and power conditioning. Tight voltage regulation assures that facility egress lumens are maintained 100% at emergency lighting fixtures, in all modes of operation, and also extends ballast, LED driver, and lamp life.

"Normally Off" Emergency Lights



NOTES: For illustration purposes only; drawing not to scale.

## "EON Model EL3" Advantages

### Design Flexibility

Using existing fixtures for emergency lighting and egress assures compliance with minimum illumination code requirements. Extensive combinations of input and output voltages, timed off bus with remote "command on" control, automatic battery testing, and control device override options make the **EON** one of the most versatile and dependable lighting inverter systems in the market.

### Single Point Operation / Maintenance

One central inverter controls many smaller circuits. Cost-effective, single-point operation provides a common battery pack, and enables all maintenance to be performed and records to be logged from a single location. Additional benefits include:

- Egress lighting integrity test.
- Hot-swappable battery replacement.
- Standard internal bypass.
- Maintenance-free, standard 15-year pro-rated batteries.

### Premium Power And Voltage Regulation

Maintains proper operating voltage for HID and high-pressure sodium lighting, as well as electronic ballasts and LED lighting, resulting in:

- Voltage sag and surge protection.
- Longer wire runs without upsizing the wire. Regulated voltage source minimizes voltage drop.
- Less-frequent replacement of ballasts, LED drivers, and lamps.
- Facility egress lumens are maintained 100% (will not diminish) over the full 90 minutes of emergency power.

### Generator Compatible

The **EON** is listed "UL 924 Auxiliary Lighting and Power Equipment", and is suitable to provide uninterrupted back-up power, until a generator starts. Even with an extremely distorted input waveform, the output of the **EON** delivers a clean sinewave, with no more than 3% THD, without switching to batteries. This feature also extends ballast, LED driver, and lamp life.

### Reduced Utility Expense

Energy conservation continues to be a prevalent issue. The **EON** provides several energy-saving solutions without compromising life safety requirements. Use of our optional **ZoneSaver-2™**, "emergency lighting control unit":

- Allows for local control of emergency lighting fixtures to reduce / eliminate unnecessary night-light circuits and "always on" lighting loads.
- Allows for automatic bypassing of the local control device during NFPA-mandated test periods.
- Provides multiple, independent zone sensing abilities to reduce / eliminate unnecessary multiple-floor and multiple building-wing illumination. (Refer to the illustration to the left.)

**All of these advantages result in the best reliability and net performance of your lighting system! FIGURE**

**12.01.02**

# EON DESIGN BENEFITS

As an owner or specifying engineer... why choose the **EON Model EL3** over competing brands? It's a fair question. **We believe that the answer is found in (4) key objectives which needed to be met when we designed this product ... and we would like to share those with you:**

## ✓ Full Compliance With NFPA 101

The **EON** meets the NFPA 101 definition of a **computer-based, self-testing / self-diagnostic emergency lighting system with data-logging**. Both periodic and annual tests are performed automatically, and the results are logged with a date and time stamp. Both alarm and test logs provide a history of events, and the ability to generate an NFPA-compliant report. The **EON's** online design allows for continuous local and remote monitoring of all internal systems. Any abnormal condition is identified, logged, and immediately communicated.

## ✓ Reliability, Plus Compatibility

Reliability is the most important feature of any emergency power source! Without it, all the other features and benefits are meaningless. This is why state-of-the-art, DSP-controlled, IGBT circuitry is used for the **EON's** rectifier and inverter power sections. Also essential to the design, are the fiber optic cables for control and communications. Fiber optics allow for better isolation; and faster, more accurate, noise-free signals between processors. The **EON** provides reliable, regulated voltage during normal and emergency power modes.

The **EON** is designed to be compatible with all lighting fixture types, including LED. The **EON** also allows for full design flexibility, used to power both normally on and normally off emergency lighting loads, in any combination. The **EON's** off bus option includes user-programmable transfer on delay, transfer off delay, and a proprietary soft start feature. (See Page 7 for details.)

## ✓ Smallest Footprint

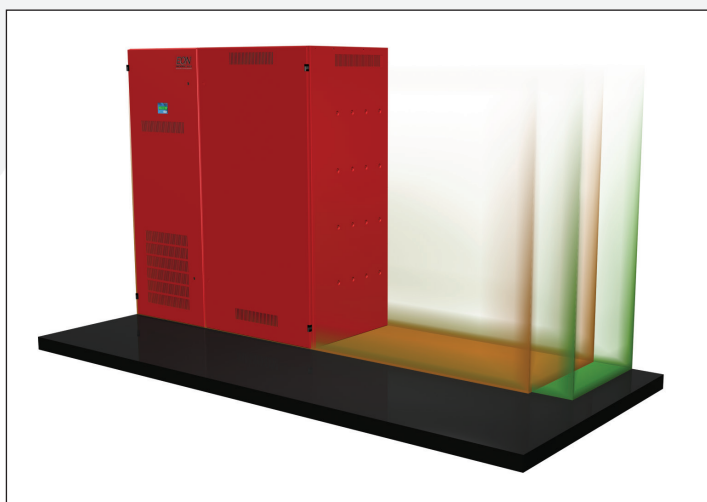
Facility floor space is hard to come by, and is always at a premium. With this in mind, the **EON's** front access cabinet design and single battery cabinet configuration save space! The **EON's** inverter control cabinet and battery cabinet may be installed side-by-side, and up against a wall. **Can you imagine saving 5-6 feet of wall space, making it available for other essential equipment?**

**The illustration on this page certainly puts things into perspective!**

## ✓ Easy Installation & Low Cost Of Ownership

The **EON's** 90 minute configuration requires only one (1) battery cabinet, and only batteries with front access terminals are used. This makes installation easy and less time consuming — installation is straightforward and DC connections are easily made.

Cost of ownership is greatly reduced because of single point operation and maintenance, as well as the automatic testing, logging of results, and reporting that are performed. Also know that the **EON** provides the required 90 minutes of run time using a lower number of batteries as compared to most competitors' products. This often results in a lower replacement cost — both time and material.



**Note:** Illustration depicts product without standard floor channels.

## Compact Footprint

The **EON** is thoughtfully designed to be physically smaller than comparable emergency lighting inverter products, without compromising performance or serviceability. In fact, competing products don't even come close! The **EON's** "front access" cabinet design does not require any side or rear access for system installation, operation, or service.

	Output Rating	Width (in.)	Depth (in.)	Height (in.)
<b>EON</b>	33 kW	70	33	77
<b>Competitor A</b>	32 kW	130	32.5	71
<b>Competitor B</b>	33 kW	140	31	72

**Note:** Dimensions include 90 minutes of battery at full load.

**FIGURE  
12.01.03**

# ADVANCED DIGITAL MONITORING

## Advanced Digital Monitoring — The Intellistat TS™

The **EON** includes a user-friendly **Intellistat TS™** monitor, which provides quick, full-access to all of the inverter's features, allows all programming to be done directly from the touchscreen display, and provides complete system diagnostics and testing. A color, TFT, high resolution touchscreen display indicates all the electrical parameters, as well as the functional status of the inverter. The touchscreen display allows the entry of the date / time values, system setpoints, and password information into the monitor, without the need for an external computer and cable.

The **Intellistat TS**s features include:

- LCD display of all electrical parameters.
- NFPA-compliant automatic battery testing / logging.
- User-programmable automatic system testing.
- System alarm annunciation.
- Audible alarm with alarm silence.
- Alarm status display.
- Programmable alarm set-points.
- Date and time display.
- Auto-logging of test results and abnormal events.
- Multi-layer password protection.
- Logs up to 75 events.
- Non-volatile clock and memory.
- Remote monitoring capabilities.
- Optional reporting of test results via e-mail / voice / webpage.
- Optional status notification via e-mail / cell phone.

### Monitored Parameters

The **Intellistat TS** monitors **3-phase input and output** parameters, and inverter status indicators:

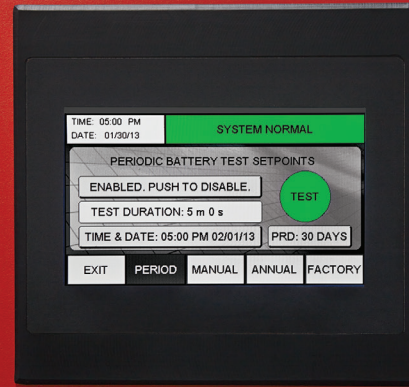
- Voltage
- Frequency
- Current
- VA
- Watts
- Power factor
- kVA and kW totals
- Output percent load L-N (% kVA)
- Output percent load total (% kVA)
- Battery voltage
- Battery charge / discharge current
- Battery time (minutes) remaining

### Alarms & Status

The **Intellistat TS** announces multiple alarms, including:

- Input phase rotation error
- High / low input voltage
- High / low input frequency
- High / low output voltage
- High / low output frequency
- High output VA (overload)
- \* Low output VA
- High / low battery voltage
- High battery charger current
- System normal
- IGBT fault
- Overtemp shutdown
- System on battery
- Low battery warning
- Low battery shutdown
- Battery test in progress / time remaining
- Auto battery test failed
- Off bus status
- DC charger fail / DC open
- Output circuit breaker open
- REPO shutdown
- Manual restart required
- Static bypass status / alarms
- System in manual bypass

\* User-programmable limit referenced during automatic battery testing, to verify integrity of egress lighting.



The color touchscreen display on the **Intellistat TS** provides all electrical parameters, inverter status, programmable inverter and battery testing, and data-logging. Optional **NetMinder™** communications allow for remote monitoring and reporting via **BACnet/IP** or **BACnet MS/TP**, **Ethernet TCP/IP**, **MODBUS TCP**, or **MODBUS RS485**. For more details, see the **Remote Communications** description on Page 7.

### Egress Lighting Integrity Test

This feature provides the industry's most advanced life safety system test available. To satisfy NFPA-mandated periodic and annual requirements, the **Intellistat TS** automatically initiates the testing of all life safety circuits, regardless of egress lighting design ("always on" or "normally off"). The **Intellistat TS** then compares power consumption during the test period with user-defined load capacity, analyzes the data, and advises if service is required.

During these NFPA-mandated tests, an optional "test activated" contact may be used to activate one or more remotely installed **ZoneSaver-2** emergency lighting control units. When activated, the **ZoneSaver-2** will feed emergency power to egress lighting that is normally off, or dimmed / turned off via a local control device. This option allows for automatic testing of the locally controlled life safety circuit and the **ZoneSaver-2** control unit.

### Automatic System Tests

The **Intellistat TS** automatically performs a user-defined (date and time) 5-minute system test every 30 or 90 days. It also performs user-defined (date and time) 30-, 60-, or 90-minute, or 2- or 4-hour annual system tests. For all of these tests, the **Intellistat TS** logs the test results with date and time, as well as a "pass" or "fail" indication.

### Manual System Tests

The **Intellistat TS** also allows the user to manually invoke a user-defined system test for 30-, 60-, or 90-minutes, as well as 2- or 4-hours. A 1-minute or 5-minute manual test is also available for "spot inspections".

FIGURE  
12.01.04

# SPECIFICATIONS

## Power

Ratings (kVA/kW)	10, 13, 14, 15, 16, 17, 20, 22, 24, 26, 28, 30, 32, 33 at 1.0 (unity) power factor
Topology	True online double-conversion, uninterruptible power

## Electrical Input

Nominal Voltage	208/120V, 480/277V or 600/347V Wye, 60Hz. Consult factory for 50Hz models
Voltage Range	+10%, -15% at full load
Operating Frequency	+/-5% from nominal
Power Factor	> .98 typical
Current Distortion	< 10% THD

## Electrical Output

Nominal Voltage	208/120V, 480/277V or 600/347V Wye, 60Hz. Consult factory for 50Hz models
Voltage Regulation	+/-3% from nominal typical
Frequency	+/-0.5% while in battery operation mode
Overload	Up to: 110% for 2 minutes, 125% for 30 seconds, 150% for 10 seconds, 500% for 1/2 cycle (without use of static bypass)
Voltage Distortion	3% maximum THD with a linear load
Efficiency	90% typical

## Battery

Type	Valve-regulated, sealed lead calcium, maintenance-free. Front access terminals
Testing	Manual: Password-protected Automatic: User-programmable
Standard Runtimes	UL 924 Emergency Lighting Equipment - 90 min. C-UL Emergency Lighting Equipment - 30 min.
Optional Runtimes	UL 924 Auxiliary Lighting and Power Equipment - 15, 30, 60, 120, and 240 minutes. Consult factory for other UL / C-UL listed runtimes.
Nominal Voltage	Factory-programmable from 216-384 VDC, or from 132-168 VDC, kW, model, and runtime dependent
Charger	3-stage, temperature compensated
Recharge Time	UL 924 and NFPA 101, 111 compliant
Battery Replacement	Hot-swappable batteries — replaced without interrupting power to the load

## Certifications

Safety	UL 924 Listed - Emergency Lighting Equipment C-UL Listed to CSA C22.2 No. 141-10 - Emergency Lighting Equipment UL 924 Listed - Auxiliary Lighting and Power Equipment NFPA 101, 111, NEC, and local codes
EMI Compliance	FCC Class A limits, 47 C.F.R. Part 15, Subparts A, B
Quality	ISO 9001:2008

## General

Diagnostics	Continuous system self-check, including battery health
Static Bypass	Automatic bypass on overload or system failure
Internal Bypass	Integral, make-before-break switch with a secure push-to-turn function that provides an uninterrupted bypass of the inverter system
Maintenance Bypass	Optional external, wall-mounted, wrap-around, 4 pole BBM or MBB switch with a secure push-to-turn function, available for models where input-output nominal voltages are the same
Remote Emergency Power Off (REPO)	Optional input relay interface allows external contact closure to shut off the inverter system
Normally Off Bus	Optional standby output for use with "normally off" emergency lighting fixtures (See Page 7 for details)
Output Distribution	Optional output circuit breakers (See Page 7 for details)
Dimensions/Weight	See model number matrix on Back Cover for weights, and Page 6 for cabinet dimensions

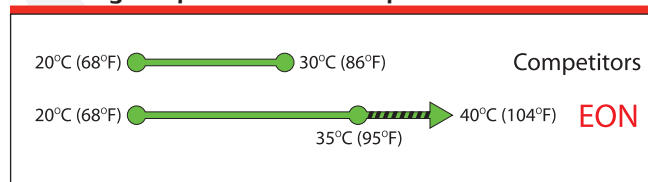
## Communications

LCD Display	High resolution, color touchscreen display for monitoring system status and parameters, and to access programmable inverter and battery testing
Communication Port	RS232 serial communications for factory setup and authorized field service access
Network / Web	Remote monitoring and reporting via optional BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485. Includes notification of alarms via SNMP, e-mail, and network broadcast messaging, or user's building management system
Relay Interface	Optional potential-free isolated status and alarm contacts via hardwired terminal strip. Contacts rated for 2A at 30 VDC, or 1A at 120 VAC

## Environmental

Operating Temperature	20°C to 35°C for UL 924 Listed models <b>(See illustration and note below.)</b> 20° C (10° C optional) to 40° C for C-UL Listed models Optimum battery performance and life at 25°C
Storage Temperature	Inverter at -20°C to 50°C Battery storage at 25°C for 6 months before charging is required. For each 9°C rise, reduce storage time by half
Relative Humidity	0 to 95% non-condensing
Audible Noise	< 60 dBA at 1 meter
Altitude	6600 feet (2000 meters) without derating

## UL Rating Temperature Test Comparison

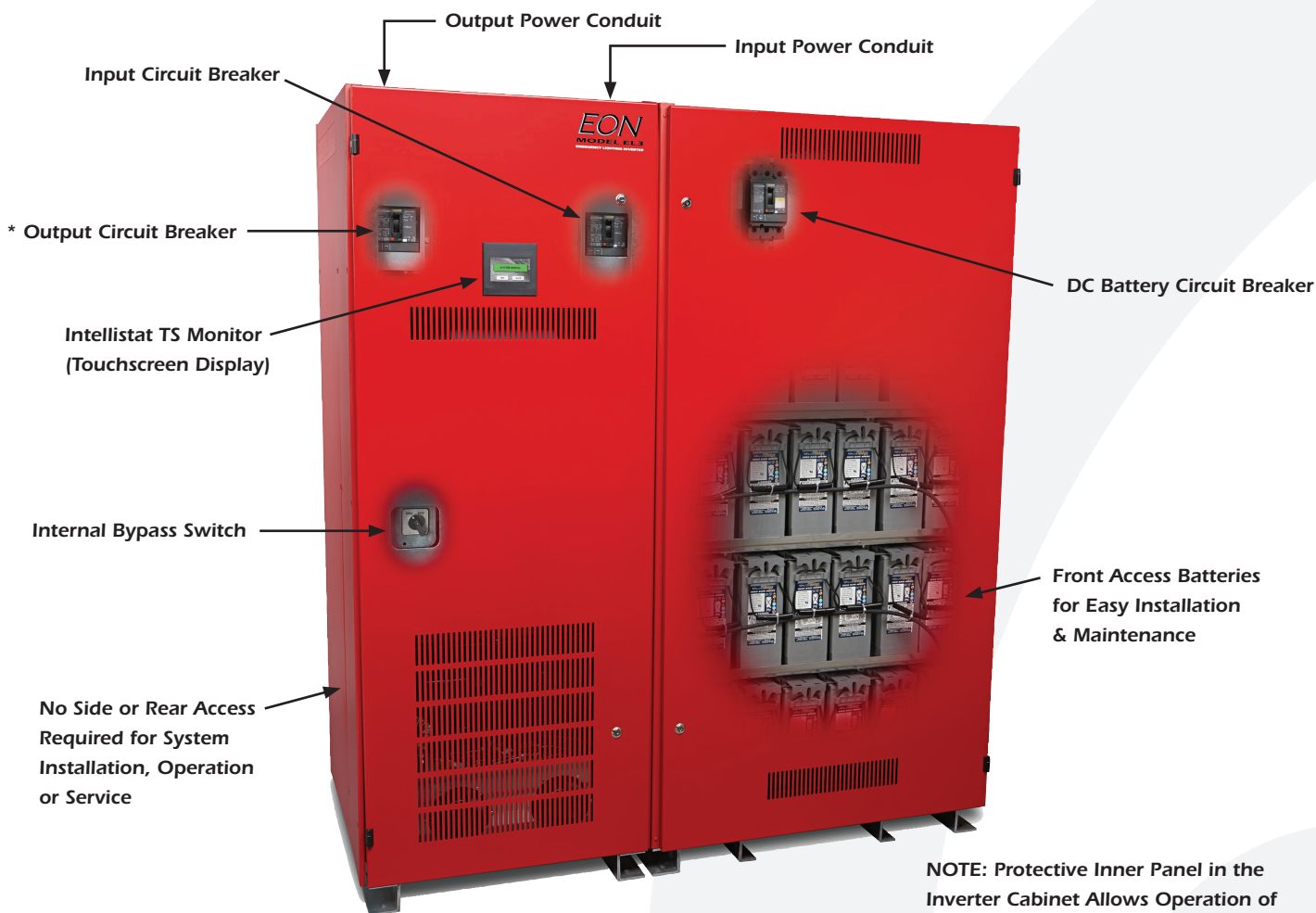


**NOTE:** To satisfy UL 924 requirements for a performed in a 40°C ambient environment, wit and at low line input voltage.

**FIGURE**  
**12.01.05**

# PRODUCT LAYOUT & DIMENSIONS

## Advantages of the Front Access "EON Model EL3"



NOTE: Protective Inner Panel in the Inverter Cabinet Allows Operation of Breakers & Bypass, But Prevents Physical Contact with Live Connections

NOTES: The callouts above reflect standard features.

\* Monitored output circuit breaker standard on C-UL listed models, optional on UL 924 listed models.



Cabinet Configuration A

Cabinet Configuration B

Cabinet Configuration C

FIGURE  
12.01.06

See Back Cover for specific inverter models and their cabinet configuration.

# INVERTER OPTIONS

## Battery Run Times

All UL 924 models listed as Emergency Lighting Equipment are provided with a standard 90 minutes of battery backup; and C-UL models are provided with a standard 30 minutes. Consult factory for other C-UL listed run times. Optional run times include 15, 30, 60, 120, and 240 minutes at full rated load. When optional run times are provided, the emergency lighting inverter is UL 924 listed as "Auxiliary Lighting and Power Equipment". Consult factory for battery option weights and cabinet configurations.

## Maintenance Bypass

On systems in which the nominal input and output voltages are the same, an optional external, wall-mounted, push-to-turn, 4 pole Break-Before-Make (BBM) or Make-Before-Break (MBB) wrap around maintenance bypass switch is available. When in bypass mode, the switch bypasses the system to allow for isolation of the inverter's input and output, and to enable the inverter to be fully serviced (including the complete maintenance and replacement of circuit cards or components). The bypass switch includes an auxiliary contact to indicate the position of the switch (normal or bypass) for remote monitoring purposes.

The MBB bypass switch has a second auxiliary contact which is wired to the inverter system. This contact enables the switch's push-to-turn function to invoke the static bypass before the switch is turned to the bypass position. With the static bypass engaged, no interruption of power to the load will occur during transfers and retransfers.

## Output Distribution

Provided in a side-mounted, 14" wide, front access distribution cabinet, a total of 12 pole positions per phase (36 total) are available to accommodate 1, 2, and 3 pole circuit breakers fed from an inverter system output of 208/120 VAC or 480/277 VAC. These circuit breakers are located behind a secured, lockable, hinged door; and can be factory-wired to the "Normally On" bus and/or "Normally Off" bus in any combination specified.

Monitored output circuit breakers are available, reducing the number of pole positions to 8 per phase (24 total). If a circuit breaker is open, the **Intellistat TS** monitor sounds an alarm. Optional alarm relay contacts are also available.

## Normally Off Bus

Provides standby power to "normally off" emergency lights when utility power is lost or inadequate, or if energized via a remote alarm contact. This option includes:

### User-Programmable Settings

Transfer On Delay (0 – 8 seconds)  
Transfer Off Delay (0 – 15 minutes)  
Soft Start Control (0 – 172 cycles)

### Remote Input "Command On"

Allows a remote alarm contact signal to energize the "Normally Off" bus, thus illuminating the "normally off" emergency lights.

## Status / Alarm Relay Contacts

Isolated, potential free (Form C) relay contacts, rated for 2A at 30 VDC or 1A 120 VAC, are available via a terminal strip for customers' hardwired connections to building monitoring and security systems. Status / alarm contacts include inverter on, on battery power, low battery, general alarm, in bypass, periodic or annual test activated, output circuit breaker open, battery test pass, and battery test fail.

## Remote Communications

The **EON's Intellistat TS** monitor is available with optional **NetMinder** communications. **NetMinder** integrates the **EON** into a BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485 network with a specific IP address for Ethernet connected systems. **NetMinder** provides remote monitoring of the inverter status, battery test pass/fail results, alarm conditions, and electrical measurements via a web browser, without the need for any external software. Remote notification of alarms and status are available via SNMP, e-mail, and network broadcast messaging, or the user's building management system.

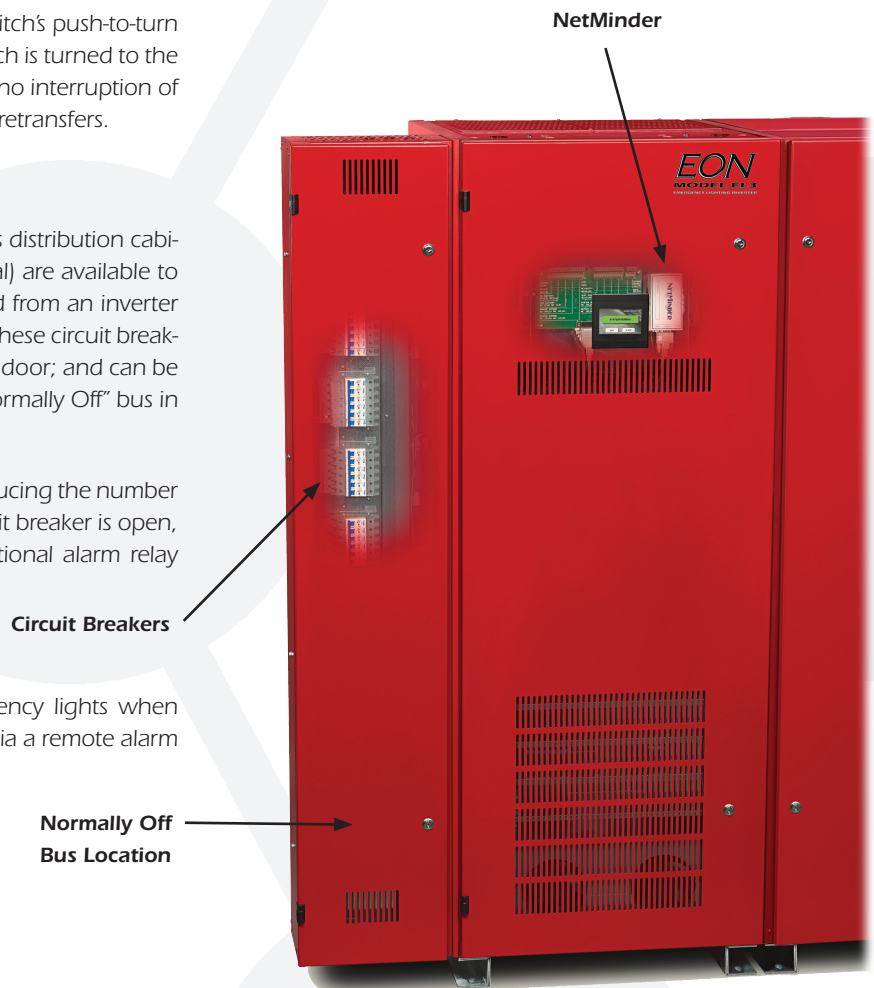


FIGURE  
12.01.07

# PRODUCT SELECTION GUIDE

## MODEL NUMBER GUIDE

PRODUCT	INPUT	OUTPUT	FREQ	OUTPUT kVA / kW	MONITOR	BATTERY	OUTPUT DISTRIBUTION	RELAY INTERFACE OPTIONS
EON	L = 208/120V N = 480/277V V = 600/347V	L = 208/120V N = 480/277V V = 600/347V	X = 60Hz	10   22 13   24 14   26 15   28 16   30 17   32 20   33	0 = Intellistat Intellistat with 1 = TCP/IP or MODBUS TCP 2 = MODBUS RS 485 3 = BACnet/IP 4 = BACnet MS/TP	S = 90 min C = 30 min N = Other Battery Option	0 = Integral Main CB Only 1 = Distribution Cabinet 2 = Distribution Cabinet w/Normally Off Bus	0 = None Provided 1 = Output Alarm Relay Contacts, and Off Bus "Command On" & REPO Inputs 2 = Off Bus "Command On" & REPO Inputs Only

Model Number Example: EON - NNX - 33KW - 2S11

**NOTES:** 30 minute battery option available on C-UL Listed models. Consult factory for output branch circuit breaker options provided within the distribution cabinet.

EON MODEL NUMBERS						
UL 924 MODELS WITH 90 MINUTE BATTERY	kVA / kW	WEIGHTS (LBS) <sup>1</sup>			BTU'S / HOUR <sup>2</sup> FULL LOAD	CABINET CONFIGURATION <sup>3</sup>
		208/120V IN 208/120V OUT	480/277V IN 208/120V OUT	480/277V IN 480/277V OUT		
EON—**X—10KW—*S**	10	2828	3708	3120	3410	208/120 VAC Input = A 480/277 VAC Input = B
EON—**X—13KW—*S**	13	3200	4068	3642	4433	
EON—**X—14KW—*S**	14	3350	4306	3880	4774	
EON—**X—15KW—*S**	15	4634	4416	3642	5115	B
EON—**X—16KW—*S**	16	4634	4416	4118	5456	
EON—**X—17KW—*S**	17	4872	4654	4356	5797	
EON—**X—20KW—*S**	20	5502	5168	4356	6820	480/277 VAC Output = B 208/120 VAC Output = C
EON—**X—22KW—*S**	22	5702	5368	5270	7502	C
EON—**X—24KW—*S**	24	5940	5606	5270	8184	
EON—**X—26KW—*S**	26	6267	5934	5508	8866	
EON—**X—28KW—*S**	28	6159	5826	5400	9548	
EON—**X—30KW—*S**	30	6659	6326	5900	10230	
EON—**X—32KW—*S**	32	6959	6626	6200	10912	
EON—**X—33KW—*S**	33	7259	6926	6200	11253	

VOLTAGE CONFIGURATIONS		
**X = INPUT — OUTPUT VAC, 60 Hz		
LL = 208/120 - 208/120	LN = 208/120 - 480/277	LV = 208/120 - 600/347
NL = 480/277 - 208/120	NN = 480/277 - 480/277	NV = 480/277 - 600/347
VL = 600/347 - 208/120	VN = 600/347 - 480/277	VV = 600/347 - 600/347

**NOTES:** Each model includes 90 minutes of battery back-up time, per UL 924 Emergency Lighting Equipment. Battery run times other than 90 minutes are available under UL 924 (Auxiliary Lighting and Power Equipment) and C-UL (for Canada) – consult factory.

<sup>1</sup> Unit weights include the weight of the batteries for standard 90 minute runtime. Battery weights vary according to desired runtimes – consult factory for runtimes other than 90 minutes.

<sup>2</sup> Stated full load BTU's for 480/277 VAC input – output models. Consult factory for BTU's of other models.

<sup>3</sup> Cabinet configurations reflect 90 minutes of battery back-up time, and are determined by the number and model of batteries used. Consult factory for cabinet configurations of models with other runtimes. (See Page 6 for cabinet configuration dimensions.)

Contact us and/or consult our website for additional details about this product and other Controlled Power Company **emergency lighting inverters.**

[www.controlledpwr.com/EON](http://www.controlledpwr.com/EON)

**WARRANTY:** Controlled Power Company guarantees the inverter to be free from defects in material and workmanship for a period of (2) years following shipment from the factory. Inverters installed within the contiguous United States (lower 48 states) and Canada include a startup service, after which a 1st year factory authorized on-site labor warranty is provided. Batteries are covered under a 1-year full, 14-year pro-rated warranty. Consult factory for details.

 **CONTROLLED POWER COMPANY**  
"World's recognized authority in power treatment"

1955 Stephenson Hwy., Troy MI 48083

[www.controlledpwr.com](http://www.controlledpwr.com)

email: [info@controlledpwr.com](mailto:info@controlledpwr.com)

Phone: (800) 521-4792 Fax: (248) 528-0411

All information and data within this brochure is subject to change without notice.

Represented by:



**FIGURE**  
**12.01.08**

# MILLENIUM METREX™

## METEL SERIES

### PRODUCT FEATURES:

- » Surface wall mount
- » Self contained emergency light
- » Self diagnostic testing features
- » High impact polycarbonate construction



### PROJECT INFORMATION

Job Name \_\_\_\_\_

Fixture Type \_\_\_\_\_

Catalog Number \_\_\_\_\_

Approved by \_\_\_\_\_

### SPECIFICATIONS

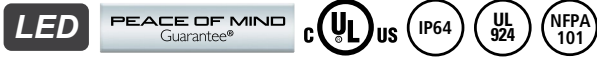
**SHIELD:** UV-stabilized, high impact, injection molded clear polycarbonate. Nominal thickness .120". Captive stainless steel Torx® with center pin fasteners secure shield to housing. Continuous closed cell silicone gasket seals shield to housing.

**HOUSING:** High impact, injection molded polycarbonate. Housing provided with four-point mounting holes, one wireway hole and temporary junction box mounting drill points – see Cross Section/Details. Closed cell die-cut Neoprene gasket seals housing to mounting surface.

**ELECTRICAL:** Electrical components mounted to removable chassis. Sealed nickel-cadmium Emergency Battery Pack with standard deep cycle battery conditioning, self test and self diagnostic circuitry, remote laser activated test switch, protected mechanical test switch and status indicator. Suitable for 10°C to 45°C (50°F to 113°F). Cold Weather Emergency Battery Pack (CL) suitable for -30°C to 45°C (-22°F to 113°F). Remote Exit Ready – can power one or two Kenall METESS Satellite Exits. Can also power Kenall METER Emergency Remote Unit(s); selected total lamp wattage – including all remotes – cannot exceed unit output rating; consult Output Rating chart

**INSTALLATION:** Standard four-point mounting required for Peace of Mind Guarantee®. Drill points provided for optional surface conduit entry.

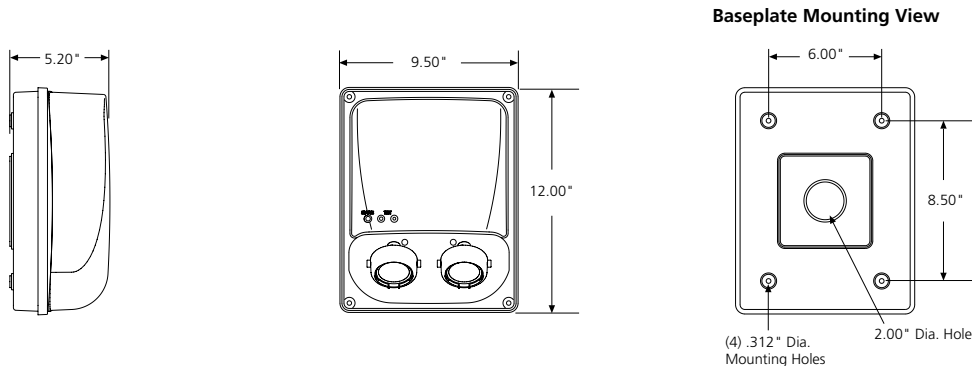
**LISTINGS:** UL and CUL listed for Wet Location. UL certified IP64 per IEC 60598. Meets or exceeds UL924 and NFPA 101 standards. Meets or exceeds CSA and NRCAN requirements.



### ORDERING INFORMATION (Ex: METEL-24N-MW-2-6.5L-120)

Model	Battery Capacity	Finish	Lamp Qty	Lamp Wattage/Type	Voltage	Options	Accessories
<b>METEL</b>				<b>6.5L</b>			
<b>Battery Capacity</b>		<b>Finish</b>		<b>Voltage</b>		<b>Accessories</b>	
24N	24W Nickel Cadmium	MB	Matte Black	120	120 Volts	LP	Laser Pointer
40N	40W Nickel Cadmium	MW	Matte White	DT	120/277 Volts	9500	Torx® with center pin Screwdriver
				DTC	120/347 Volts		
<b>OUTPUT RATING</b>		<b>Lamp Quantity</b>		<b>Options</b>		* Selected total lamp wattage cannot exceed unit output rating. Consult Output Rating Chart on left ** n/a with 40N battery capacity or DTC voltage	
Battery *½ hr *1 hr 1½ hr 2 hr 3 hr 4 hr		2 2 Internal Lamps		CEL** Cold Weather Emergency Battery Pack			
24N 48W 32W 24W 18W 12W 9W		4 4 Internal Lamps (LED only – fixed optics)		PH Phillips Head Fasteners			
40N 80W 53W 40W 30W 20W 15W							
*per Canadian code		<b>Lamp Wattage/Type*</b>					
		6.5L 6.5W LED					

### DIMENSIONAL DATA



www.kenall.com

P: 800-4-Kenall

F: 262-891-9701

10200 55th Street Kenosha, Wisconsin 5

When you see this image, you will know the Kenall product shown or described is designed and manufactured in the USA with components purchase American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents used at www.kenall.com/patents. Content of specification sheets is subject to change; please consult www.kenall.com for current product details. © 2016 K

**FIGURE**  
**12.02.01**

# TASK 17 - SANITARY WASTE PIPE SYSTEM ...TAB I



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## Task 17 - **Sanitary Sewer System**

### SUMMARY:

The facility is provided with a traditional waste and vent system to meet the sanitary drain requirements of the plumbing fixtures in the building. The waste piping system connects drains from the upper floors together at the basement level in the ceiling space over the sheriff's offices before existing the building.

This task was to evaluate the sanitary sewer piping at the basement connections and determine if the installation of powerful, high-flow sewage grinders (i.e. Muffin Monsters) to breakup any foreign matter that enters the waste pipe system is possible. The scope also included investigating known locations where the sanitary piping system regularly backs up and causes leaks above the ceiling of the sheriff's offices.

Investigation of these locations involved looking at the known locations with the guidance of a facilities representative and discussing the symptoms of the issue, the frequency of the occurrence, any remedies that have already been attempted, and a proposed solution to the issue. Some of the issues appear to be installation issues while others appear to be operational caused by inmate behavior.

### GENERAL FINDINGS:

The following are areas of concern involving piping leaks or pipe backups that were discussed prior to the field surveys with facilities staff, or were discussed on-site with facility personnel.

- 1) There is a section of sanitary pipe on the north end of the basement level that serves the east drains from the kitchen. The cleanout for this section of pipe is through the exterior wall near the north stair that leads into the basement. This section of pipe backs up with food particles and needs to be jetted out about once every 2-3 months. Inmates are the main cause of this problem as they remove the floor drain screens and sweep/wash all the debris on the floor into the drains.
  - a) Facilities personnel say the issue arises when soy or rice is swept in to the floor drain. Those particles collect in the drain due to improper drainage and expand to the point that it blocks other food particles and eventually water from flowing in the proper direction.
  - b) The pipe appears to be installed by code based on the number of fixtures connected to it. However, facilities personnel claim that the pipe slope is toward the cleanout and away from the pipe main leaving the building.
- 2) There are 12 drains on the second floor that come from the inmate cells and connect to the sanitary system through a system of wye fittings over the sally port. There are small access doors currently provided in the ceiling of the sally port for access to the cleanout for cleaning the wye fittings.
  - a) Facility personnel explained that these drains are only a problem when inmates flush debris into the toilets in their cell.
  - b) Installing high-flow sewage grinders for all the cell drains at the cells themselves was discussed with facilities staff and determined there is not enough space available.
  - c) Installing high-flow sewage grinders for all the cell drains in the sally port was discussed with facilities staff and determined there was not enough space available.
  - d) Because the issues arise from inmate behavior and the fact there is not space for a high-flow sewage grinders to be installed either in the pipe chase of the inmates cell or the sally port, the recommendation at this time is to keep items out of the inmates possession that they could flush

- down the toilet and cause the system to back up. There are no projects currently proposed for this item. This is an important design consideration that should be included in the design of a new facility.
- 3) Some shower drains in the cells are beginning to fail.
    - a) The showers and drains in the cells do not show obvious signs of problems when viewed from inside the cells.
    - b) Access to view the drain pipe connection to the shower drains was not available.
  - 4) Drain pipe from mop sinks in the janitor rooms are failing.
    - a) Facilities personnel, and notes from previous discussions, indicate the issue is caused when non-diluted cleaning solutions used by inmates who do the cleaning is dumped down the sink drain. The non-diluted solution is causing pipe deterioration.
    - b) Upon inspection of a janitor room it was discovered the cleaning solution is simply kept open and accessible on the shelf in the janitor's room. In addition, the chemical dispensing assembly is not secured and inmates could remove the concentrate from the dispensing machine if desired.
    - c) Upon further correspondence with facilities staff, we confirmed that the failing traps and pipes have been replaced. Drain pans have been installed under the traps to catch any future spills. There are no projects currently proposed for this item.
  - 5) Overflowing fixtures from Restroom 154 have caused leaks into the sheriff's office below. Room 154 is located on the first floor next to the shower room in the northeast corner of the building.
    - a) Facilities personnel explained this also occurred in the adjacent shower room until the floor was resealed.
  - 6) The facilities staff has expressed concern with regards to the existing piping design and the condition of the basement's miscellaneous storage room, where the drains for the jail's clothes washers discharge to drain.
    - a) The clothes washer drains have an indirect drain connection where the water pours out of the drain and falls about 18" into an area drain. The water/chemical mixture splashes around the room when it discharges to the drain.
    - b) The pipe is leaking and the outside of the pipe is covered with dried chemical residue.
    - c) The room walls are deteriorating from all the moisture in the space. There is no ventilation air supplied to nor exhaust air being taken from the space.
    - d) The clothes washer room appears to be in good condition, with no signs of leaking in the room.
    - e) The new clothes washer has a reducer on the drain line before it penetrates the floor.

#### OPTIONS FOR IMPROVEMENTS AND UPGRADES:

- 1) Scope Option 17-1 – Modifications to the kitchen's east sanitary drain piping.
  - i) Remove the sanitary drain pipe from the east kitchen drains from the mechanical room to the north end of the Archives room. Install a cleanout and seal the end of remaining sanitary pipe to be left in service. Leave the kitchen floor drains in place.
  - ii) Route new sanitary pipe main and connect to the existing east kitchen drain. Slope the sanitary pipe to a surface mounted sump with an integral duplex solids handling pump system similar to Zoeller model 267 with associated polyethylene sump. The sump and pump will be located on the floor of the existing mechanical room below the kitchen.
  - iii) Provide a new electrical connection and disconnect switch to the solids pump from basement panel.
  - iv) Remove the cleanout from the exterior wall and patch the opening.

- v) Route the discharge of the pump to the existing sanitary pipe over the archives room and connect into the top of the existing sanitary pipe.
  - vi) Route new 2" vent line to existing 2" vent line in the kitchen. This will require a new floor penetration, rework to the existing wall of the kitchen, and rework of the ceiling in the kitchen to make the tie-in. Provide construction barriers to limit the spread of construction dust and debris.
  - vii) During the rework of the kitchen provide temporary food service from a third party vendor.
  - viii) Clean the entire kitchen after construction is complete.
- 2) Scope Options 17-2 – Modifications to shower drains in the housing units.
- a) Remove the shower drains and drain traps from the existing housing unit showers (10). Refer to drawing M17.02.01.
  - b) Install new shower drains and drain traps in the existing housing unit showers (10). Provide recommended sealant at the shower drains based on a correction center installation.
  - c) Reseal drain trap, accessed through the ceiling of the first floor.
- 3) Scope Option 17-3 – Leaking floor of the first floor restroom next to the shower room in the north east corner of the building (Room 154 per as-built drawings). Refer to drawing M17.04.01.
- a) Replace the floor finish.
    - i) Replace the floor (approximately 110sf) with a poured epoxy floor system similar to the adjacent shower room. Wraps up the walls to provide a 6" integral cove base.
    - ii) Remove and reinstall all floor mounted fixtures (typical 3) and drains (typical 1) and seal around the fixtures and drains.
- 4) Scope Option 17-4 – Revisions in the clothes washing machine drain room.
- a) Increase the size of the drain pipe through the floor slab from the new clothes washer to eliminate the need for the existing reducer at the floor penetration (see Figure 17.08 and 17.09).
    - i) Core drill a larger hole through the floor.
    - ii) Provide code required fire stop assembly at the new larger floor core.
    - iii) Extend new drain pipe independently from the washer to the existing indirect drain (approximately 15ft of pipe and 3 elbows).

Figure 17.08: Clothes washer equipment on the First Floor (new washer in foreground)



Figure 17.09: New clothes washer drains transition at floor slab



- b) Repair/replace the drain connection for the older clothes washer to eliminate the existing leak visible in the drain room (see Figure 17.10 through 17.12).
  - i) Extend new drain pipe from the floor penetration to the existing indirect drain (approximately 15ft of pipe and 3 elbows).

Figure 17.10: Clothes washer drain discharge (Basement Floor) inside drain room



Figure 17.11: Older clothes washer drain leak damage (Basement Floor) inside the drain room



Figure 17.12: New clothes washer drain leak damage ( Basement Floor) inside the drain room



- c) Provide exhaust air service to the drain room (refer to drawing M17.05.01).
  - i) Measure the existing airflow in the existing exhaust ductwork in the storage room.
  - ii) Extend a new 6" round ductwork from existing exhaust system in the storage room to the drain room (approximately 22ft of duct and 3 elbows).
  - iii) Adjust fan sheaves and pulleys as required to reestablish existing airflow downstream of new 6" duct connection and to establish 100cfm of exhaust at the new drain room.
- d) Clean the inside of the room to remove chemical residue and any mold that exists.

ATTACHED DOCUMENTS:

Scope Option 17-1

M17.01.01 – Modifications to the Kitchen's East Sanitary Drain Piping.

Scope Option 17-2

M17.02.01 – Modifications to Shower Drains in the Housing Units

Scope Option 17-3

M17.03.01 – Leaking Floor of the First Floor Restroom

Scope Option 17-4

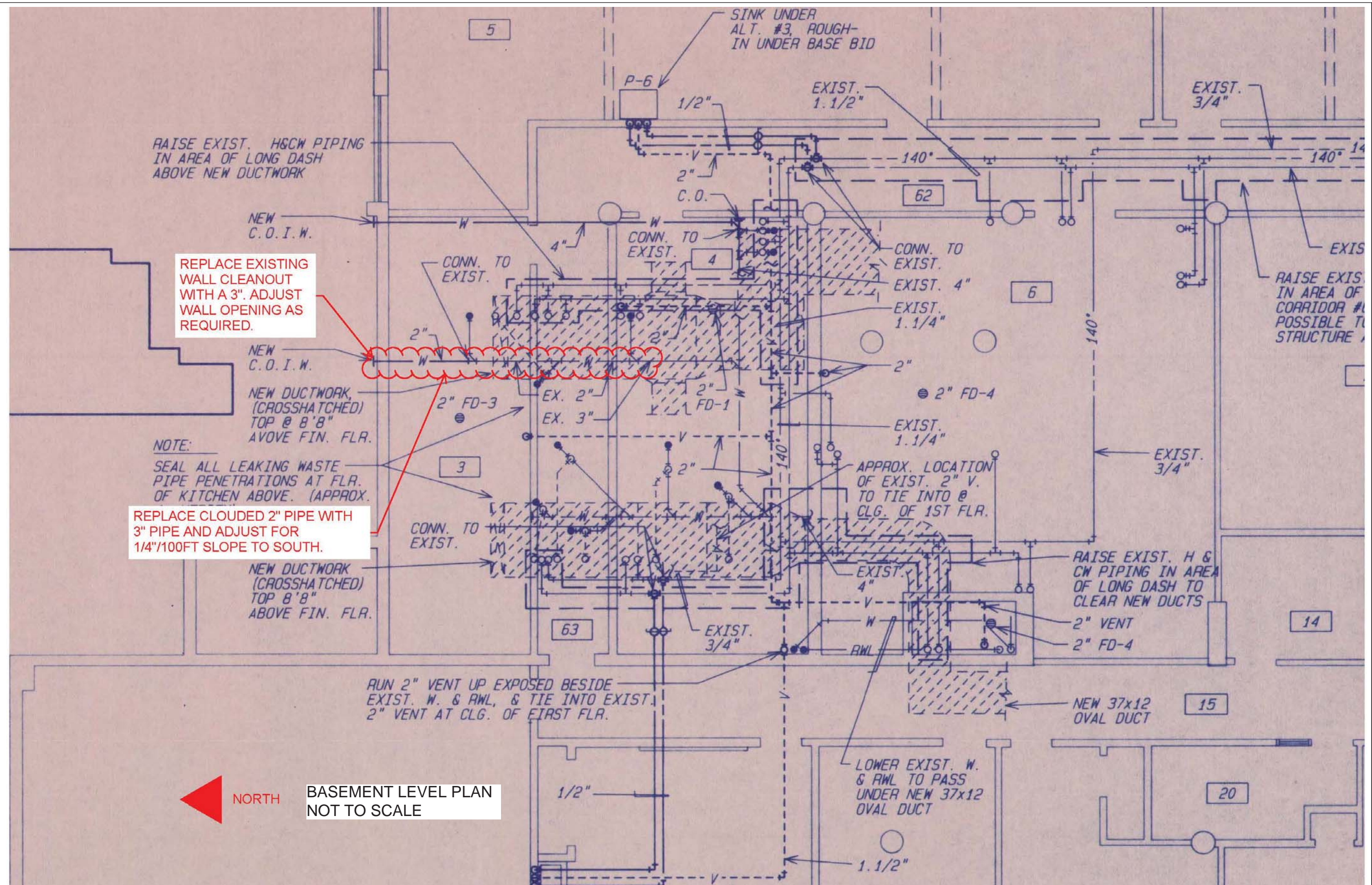
M17.04.01 – Adding Exhaust Ductwork to the Washer Drain Room

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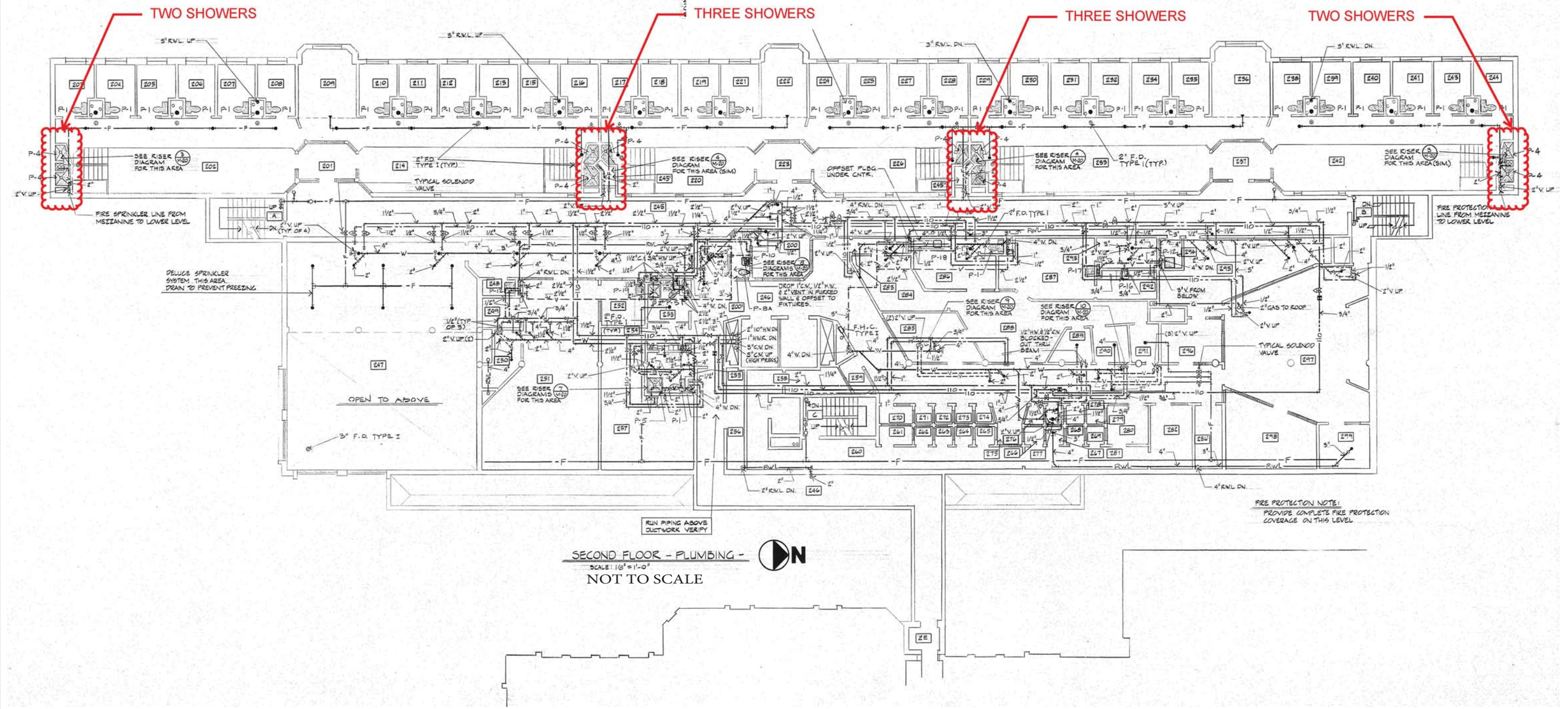


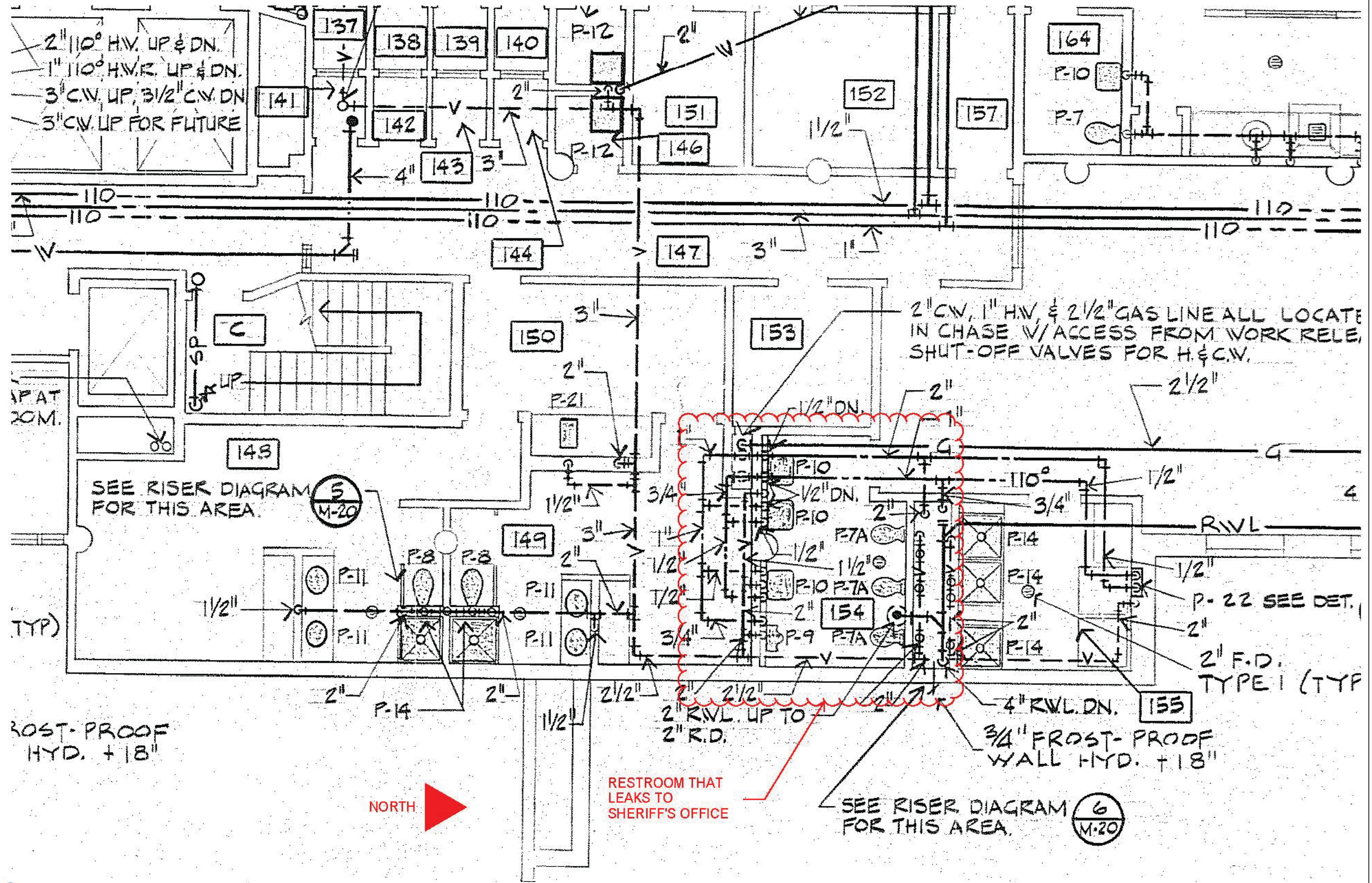
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**BASEMENT LEVEL PLAN**  
NOT TO SCALE





2" 110° H.V. UP & DN.  
 1" 110° H.V.R. UP & DN.  
 3" C.W. UP, 3/2" C.W. DN  
 3" C.W. UP FOR FUTURE

2" C.W., 1" H.V. & 2 1/2" GAS LINE ALL LOCATED  
 IN CHASE W/ ACCESS FROM WORK REL.  
 SHUT-OFF VALVES FOR H. & C.W.

SEE RISER DIAGRAM FOR THIS AREA.

SEE RISER DIAGRAM FOR THIS AREA.

ROST-PROOF HYD. + 18"

3/4" FROST-PROOF WALL HYD. + 18"

RESTROOM THAT LEAKS TO SHERIFF'S OFFICE





APPENDICES ...TAB J



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# COST ESTIMATE APPENDIX A



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**INTRODUCTION**

**Purose of Estimate**

To determine conceptual cost for individual work packages for various upgrades to existing Whatcom County Jail facility in support of recent Facility Condition Assessment.

**Project Description**

Work scope includes 43 individual work packages focused on none classifications for several building subsystems. Work includes Seismic support and bracing of existing equipment, piping and conduits, repair of water leaks, improvements to fire sprinkler systems, installation of new smoke evacuation system, replacement and repair of some kitchen equipment, repairs to existing doors both commercial grade and correctional grade doors including hardware and improvements to emergency lighting.

**Basis of Estimate**

Documents provided by design2LAST.

- Results of field observations of facility condition assessment conducted earlier this year, 2017
- Narritive from final report preparation, Building Assessment Studies and Cost Estimates for Capital Improvements, Whatcom County, Phase 1B dated June 20, 2017
- Various emails and comments from assessment engineers review:

Schedule: Schedule is not included. Estimate represents conceptual costs only, packaging and schedule presumed to be established at a later date.

Construction procurement: competitive quote

Construction escalation: Escalation unable to detirmine without anticipated construction schedule

Class 5 Estimate Classification, (AAEI RP58R-08 Classification System), semi-parametric modeling

Owner should take into account cost increase for small projects, additional fees may include other cost including trip fees

Cost summary includes construction cost and markups at each individual project task. Overall summary not included, several work packages mutually exclusive

Markups represent uniform application of contingency, contractor markups and baseline application of owner's softcost.

Project Soft Costs include:

Design Fees	13%
Permitting	2%
Art	
*Whatcom County Management Cost	10%
Project Contingency	15%
Temporary Housing, swing space	10%
Sales Tax	8.70%
	S/T 58.70%

Construction contract to be negotiated with a goal of achieving market competitive pricing

Prevailing wage, Davis Bacon Act, labor rates apply

**Basis of Pricing**

Please see the exclusions section to be aware of what is assumed to be carried in budgets outside of this construction cost estimate.

Estimated labor is based on an 8 hour per day shift 5 days a week. Accelerated schedule or non first shift labor factor are not included

Quantity take off using traditional, non-electronic methods, engineer's quantities reprinted.

## INTRODUCTION

### Contingencies

Design contingency reflects maturity level of completion of project documents to the data date of documents listed above.

Estimating contingency not included

Risk is included in design contingency. We recommend development of project risk register to reflect the following possible projects risks: breakdown of bid packaging, size of projects, availability of local/ regional subcontractors, number of available subcontractors, working in occupied facility, variance in equipment pricing.

### Exclusions

Project phasing or combination of work tasks outside of specific listing in detailed estimate line items

Off site improvements, outside of property area

Budget Contingency (Assumed By Owner)

Building and land acquisition fees

Legal and accounting fees

Removal of unforeseen underground obstructions

Owner's furniture, furnishings and equipment

Owner supplied materials

Work outside the construction site boundary

Moving owners equipment and furniture

Compression of schedule, premium or shift work, and restrictions on the contractor's working hours

Cost escalation beyond the start dates stated in this report

Builder's risk, project wrap-up and other owner provided insurance program

### Items that may affect the cost estimate:

Modifications to the scope of work included in this estimate.

Special phasing requirements other than mentioned above.

Restrictive technical specifications or excessive contract conditions

Any non-competitive pricing situations

**SUMMARY**

**Whatcom County Jail Facility**

TASK		
03&06	DOMESTIC WATER DISTRIBUTION & MECHANICAL EQUIPMENT SEISMIC BRACING - Project 1	
	Scope Option 1	\$600,092
	Scope Option 2	\$1,178,759
04	PLUMBING SYSTEM	
	Scope Option 1	\$62,010
	Scope Option 2	\$155,025
05	FIRE PROTECTION SPRINKLER SYSTEMS REPAIRS	
	Scope Option 1	\$810,595
	Scope Option 2	\$277,784
	Scope Option 3	\$23,316
07	HVAC DISTRIBUTION SYSTEMS SMOKE EVACUATION	
	Scope Option 1	\$4,096,123
08	INSTITUTIONAL EQUIPMENT	
	Scope Option 1	\$132,342
	Scope Option 2	\$98,311
	Scope Option 3	\$4,465
	Scope Option 4	\$245,655
09&10	COMMERCIAL DOORS	
	Scope Option 1	\$84,892
	Scope Option 2	\$38,198
	Scope Option 3	\$7,468
	Scope Option 4	\$58,289
	Scope Option 5	\$18,811
	Scope Option 6	\$26,186
	Scope Option 7	\$67,839
	Scope Option 8	\$11,162
	Scope Option 9	\$13,642
	Scope Option 10	\$11,906
	Scope Option 11	\$48,616
09&10	DETENTION DOORS	
	Scope Option 1	\$1,188,851
	Scope Option 2	\$28,301
	Scope Option 3	\$6,399
	Scope Option 4	\$28,525
	Scope Option 5	\$12,650
	Scope Option 6	\$21,877
	Scope Option 7	\$9,723
	Scope Option 8	\$2,232
	Scope Option 9	\$3,820
	Scope Option 10	\$15,106

**SUMMARY**

**Whatcom County Jail Facility**

**TASK**

09&10	<b>DETENTION DOORS cont.</b>	
	Scope Option 11	\$8,867
	Scope Option 12	\$29,765
12	<b>EMERGENCY LIGHTING &amp; BRANCH WIRING</b>	
	Scope Option 1A	\$350,406
	Scope Option 1B	\$118,067
	Scope Option 2	\$5,581
	Scope Option 3	\$6,945
	Scope Option 4	\$45,267
17	<b>SANITARY SEWER SYSTEM</b>	
	Scope Option 1	\$78,877
	Scope Option 2	\$118,563
	Scope Option 3	\$13,072
	Scope Option 4	\$39,468

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
<b>03&amp;06 DOMESTIC WATER DISTRIBUTION &amp; MECHANICAL EQUIPMENT SEISMIC BRACING - Scope Option 1</b>							
<b>B3010</b>	<b>Roof Coverings</b>					<b>\$0.07</b>	<b>\$4,750</b>
1ai	Repairs at roof structure - allowance	1	LS	3500	\$3,500.00		
1ai	Pipe support stanchions	5	EA	250	\$1,250.00		
<b>D3010</b>	<b>Energy Supply</b>					<b>\$0.01</b>	<b>\$500</b>
1ai	Replace natural gas line	20	LF	25.00	\$500.00		
<b>D3040</b>	<b>Distribution Systems</b>					<b>\$1.93</b>	<b>\$125,227</b>
	Gas piping, supports, 5" pipe to Cooling Tower, seismic restraints - allowance	1	LS	6000	\$6,000.00		
1aiii	Piping supports, supports & engineering only	1	LS	42800	\$42,800.00		
1biii	Piping support installation, labor	349	EA	80.96	\$28,256.44		
	Piping support installation, equip - allowance	349	EA	4.50	\$1,570.50		
	Piping support Mfr Engineering - allowance	1	LS	46600	\$46,600.00		
<b>D3050</b>	<b>Terminal &amp; Package Units</b>					<b>\$0.55</b>	<b>\$35,607</b>
	Make Air Unit - new bolts, equipment to roof stanchion - allowance	1	LS	7000	\$7,000.00		
	Cooling Tower - Reinforce restraint - allowance	1	LS	8000	\$8,000.00		
	Equipment Supports, supports & engineering only	1	LS	3800	\$3,800.00		
	Equipment support installation, labor	20	EA	84.34	\$1,686.75		
	Equipment support install, equip - allowance	20	EA	6.00	\$120.00		
1biii	Relocate systems overhead - allowance	1	LS	15000	\$15,000.00		
<b>D3090</b>	<b>Other HVAC Systems and Equipment</b>					<b>\$0.54</b>	<b>\$35,000</b>
1bi & 1ci	Survey, record drawings	1	LS	35000	\$35,000.00		
<b>D5010</b>	<b>Electrical</b>					<b>\$0.46</b>	<b>\$30,000</b>
	Conduit hangers, replace with seismic supports - allowance	1	LS	30000	\$30,000.00		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**03&06 DOMESTIC WATER DISTRIBUTION & MECHANICAL EQUIPMENT SEISMIC BRACING - Scope Option 1**

<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.17</b>	<b>\$10,850</b>
	Selective Building Demolition						
1c	Demo misc. - allowance	1	LS	10000	\$10,000.00		
1a	Demo gas piping	1	LS	400	\$400.00		
1a	Demo associated roofing	1	LS	450	\$450.00		
				<b>S/T</b>	<b>\$241,934</b>		
				<b>Contingency 30%</b>	<b>\$72,580</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$62,903</b>		
				<b>Total</b>	<b>\$377,417</b>		
				<b>Total with Softcosts 59%</b>	<b>\$600,092</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**03&06 DOMESTIC WATER DISTRIBUTION & MECHANICAL EQUIPMENT SEISMIC BRACING - Scope Option 2**

<b>B1010</b>	<b>Floor Construction</b>					<b>\$0.15</b>	<b>\$10,000</b>
2cvi	Enlarge openings at pipe penetrations - allowance	1	LS	10000	\$10,000.00		
<b>C3030</b>	<b>Ceiling Finishes</b>					<b>\$0.69</b>	<b>\$45,000</b>
2	Ceiling finish restoration - allowance	1	LS	45000	\$45,000.00		
<b>D3040</b>	<b>Distribution Systems</b>					<b>\$4.33</b>	<b>\$281,182</b>
2aii	Piping supports, supports & engineering only	1	LS	151600	\$151,600.00		
	Piping support installation, labor	985	EA	80.96	\$79,749.54		
	Piping support installation, equip - allowance	985	EA	4.50	\$4,432.50		
	Piping support Mfr Engineering - allowance	1	LS	45400	\$45,400.00		
<b>D3050</b>	<b>Terminal &amp; Package Units</b>					<b>\$0.49</b>	<b>\$32,047</b>
	Equipment Supports, supports & engineering only	1	LS	19400	\$19,400.00		
	Equipment support installation, labor	140	EA	84.34	\$11,807.25		
	Equipment support install, equip - allowance	140	EA	6.00	\$840.00		
<b>D3090</b>	<b>Other HVAC Systems and Equipment</b>					<b>\$0.54</b>	<b>\$35,000</b>
2ai	Survey, record drawings	1	LS	35000	\$35,000.00		
<b>D4010</b>	<b>Fire Protection</b>					<b>\$0.49</b>	<b>\$32,000</b>
2cv	Reroute fire main, 6" - allowance	1	LS	32000	\$32,000.00		
2ci	<i>See D3040 above for pipe support work</i>						
<b>D5010</b>	<b>Electrical</b>					<b>\$0.46</b>	<b>\$30,000</b>
2bi	Conduit hangers, replace with seismic supports - allowance	1	LS	30000	\$30,000.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.15</b>	<b>\$10,000</b>
	Selective Building Demolition						
	Demo misc. - allowance	1	LS	10000	\$10,000.00		

S/T \$475,229

Contingency 30% \$142,569

GC Mark-ups, OH&P 20% \$123,560

Total \$741,358

Total with Softcosts 59% \$1,178,759

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**04 PLUMBING SYSTEM - Scope Option 1**

<b>D2020</b>	<b>Domestic Water Distribution</b>					<b>\$0.38</b>	<b>\$25,000</b>
1b	Test domestic water system	1	LS	10000	\$10,000.00		
1c	Repairs, minor, isolated - allowance	1	LS	15000	\$15,000.00		
				S/T		<b>\$25,000</b>	
				Contingency 30%		<b>\$7,500</b>	
				GC Mark-ups, OH&P 20%		<b>\$6,500</b>	
				<b>Total</b>		<b>\$39,000</b>	
				<b>Total with Softcosts 59%</b>		<b>\$62,010</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**04 PLUMBING SYSTEM - Scope Option 2**

<b>D3050</b>	<b>Terminal &amp; Package Units</b>					<b>\$0.96</b>	<b>\$62,500</b>
2a	Replace condensate drain pans	5	EA	7500	\$37,500.00		
2c	Temporary fresh/ exhaust air system -allowance	1	LS	25000	\$25,000.00		
				S/T		\$62,500	
				Contingency 30%		\$18,750	
				GC Mark-ups, OH&P 20%		\$16,250	
				Total		\$97,500	
				Total with Softcosts 59%		\$155,025	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**05 FIRE PROTECTION SPRINKLER SYSTEMS REPAIRS - Scope Option 1**

<b>C1030</b>	<b>Specialties</b>					<b>\$0.89</b>	<b>\$57,600</b>
	Pipe concealment, 2nd Floor, pre-manufactured						
3aii	soffit, mtl - allowance	900	LF	32.00	\$28,800.00		
	Pipe concealment, 3rd Floor, pre-manufactured						
3aii	soffit, mtl - allowance	900	LF	32.00	\$28,800.00		
<b>D4010</b>	<b>Fire Protection</b>					<b>\$3.48</b>	<b>\$226,200</b>
	Wet pipe system, 2nd Flr Housing	5,190	SF	5.50	\$28,545.00		
	Premium, existing structure, detention facility	5,190	SF	6.00	\$31,140.00		
3ai	Wet pipe system, 3rd Flr Housing	13,610	SF	5.50	\$74,855.00		
	Premium, existing structure, detention facility	13,610	SF	6.00	\$81,660.00		
3av	Allowance for phased construction work	1	LS	10000	\$10,000.00		
	Remove items from sprinkler lines by owner						
<b>D5030</b>	<b>Communication and Security</b>					<b>\$0.15</b>	<b>\$10,000</b>
	Fire Alarm System modifications - allowance	1	LS	10000.00	\$10,000.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.51</b>	<b>\$33,000</b>
	Selective Building Demolition						
	Demo floor area & restore - allowance	1	LS	8000	\$8,000.00		
3aiv	Demo piping - allowance	1	LS	15000	\$15,000.00		
3av	Allowance for phased demolition work	1	LS	10000	\$10,000.00		
				<b>S/T</b>	<b>\$326,800</b>		
				<b>Contingency 30%</b>	<b>\$98,040</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$84,968</b>		
				<b>Total</b>	<b>\$509,808</b>		
				<b>Total with Softcosts 59%</b>	<b>\$810,595</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**05 FIRE PROTECTION SPRINKLER SYSTEMS REPAIRS - Scope Option 2**

<b>D4010</b>	<b>Fire Protection</b>					<b>\$1.14</b>	<b>\$73,992</b>
4a	Extend system, Basement	1,000	SF	5.50	\$5,500.00		
	Premium, small area, existing structure	1,000	SF	1.50	\$1,500.00		
4b	Wet pipe system, 1st Flr, Sallyport	3,700	SF	5.50	\$20,350.00		
	Premium, small area, existing structure	3,700	SF	1.50	\$5,550.00		
4c	Wet pipe system, Mezzanine	1,340	SF	5.50	\$7,370.00		
	Premium, limited access, existing structure	1,340	SF	4.50	\$6,030.00		
4d	Dry pipe system, 2nd Flr, Skybridge	2,260	SF	6.50	\$14,690.00		
	Compressor, valves, components	1	LS	8000	\$8,000.00		
	Premium, existing structure	1	SF	1.50	\$1.50		
	Allowance for phased construction work	1	LS	5000	\$5,000.00		
	Remove items from sprinkler lines by owner						
<b>D5030</b>	<b>Communication and Security</b>					<b>\$0.15</b>	<b>\$10,000</b>
	Fire Alarm System modifications - allowance	1	LS	10000.00	\$10,000.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.43</b>	<b>\$28,000</b>
	Selective Building Demolition						
	Demo floor area & restore - allowance	1	LS	8000	\$8,000.00		
	Demo piping - allowance	1	LS	15000	\$15,000.00		
	Allowance for phased demolition work	1	LS	5000	\$5,000.00		
				<b>S/T</b>	<b>\$111,992</b>		
				<b>Contingency 30%</b>	<b>\$33,597</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$29,118</b>		
				<b>Total</b>	<b>\$174,707</b>		
				<b>Total with Softcosts 59%</b>	<b>\$277,784</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**05 FIRE PROTECTION SPRINKLER SYSTEMS REPAIRS - Scope Option 3**

<b>D4010</b>	<b>Fire Protection</b>					<b>\$0.11</b>	<b>\$6,900</b>
5b	Allowance for adjust heads, escutcheons	1	LS	2500	\$2,500.00		
5c	Allowance for adjust heads, Mezz, ductwork	3	EA	300	\$900.00		
	Allowance for soffits, wall penetrations, etc.	1	LS	3500	\$3,500.00		
5a	Remove exercise equipment - owner						
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.04</b>	<b>\$2,500</b>
	Selective Building Demolition						
	Demo piping - allowance	1	LS	2500	\$2,500.00		
				<b>S/T</b>	<b>\$9,400</b>		
				<b>Contingency 30%</b>	<b>\$2,820</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$2,444</b>		
				<b>Total</b>	<b>\$14,664</b>		
				<b>Total with Softcosts 59%</b>	<b>\$23,316</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
<b>07 HVAC DISTRIBUTION SYSTEMS SMOKE EVACUATION - Scope Option 1</b>							
<b>A1010</b>	<b>Standard Foundations</b>					<b>\$0.21</b>	<b>\$13,500</b>
1j	Foundation wall - allowance	1	LS	13500	\$13,500.00		
<b>B1020</b>	<b>Roof Construction</b>					<b>\$6.53</b>	<b>\$424,350</b>
1k	Roof structure, conc., 12"	8200	SF	42.25	\$346,450.00		
1k	<i>premium for phased work</i>	8200	SF	9.50	\$77,900.00		
<b>B2010</b>	<b>Exterior Walls</b>					<b>\$3.67</b>	<b>\$238,500</b>
1c	Cut openings, exterior wall, 24"x48" <i>includes scaffold, sawcut, ledger, demo &amp; removal</i>	32	EA	750.00	\$24,000.00		
1i	Shotcrete, 4"-6" thick - allowance	9,750	SF	22.00	\$214,500.00		
<b>B3010</b>	<b>Roof Coverings</b>					<b>\$2.05</b>	<b>\$133,000</b>
1k	New roofing	8,200	SF	11.75	\$96,350.00		
1k	New roof insulation	8,200	SF	3.25	\$26,650.00		
1k	Patch and Repair	1	LS	10000	\$10,000.00		
<b>C1010</b>	<b>Partitions</b>					<b>\$1.61</b>	<b>\$104,906</b>
1d	Pipe chase modifications	1	LS	30000	\$30,000.00		
1e	Draft curtain, premium ceiling	45	EA	1500	\$67,500.00		
1b	Duct chase, soffit, gypsum	230	LF	32.20	\$7,406.00		
<b>D3040</b>	<b>Distribution Systems</b>					<b>\$4.57</b>	<b>\$296,870</b>
1b	Duct, 48x18, ceiling	230	LF	350.00	\$80,500.00		
1c	Grilles, 48"x24", detention, isolation damper	32	EA	820.00	\$26,240.00		
1d	Intake penthouse, 34x34, curb	16	EA	1800.00	\$28,800.00		
1d	Isolation damper, 34x34	16	EA	480.00	\$7,680.00		
1d	Exhaust hoods, 34"x34"	16	EA	750.00	\$12,000.00		
1d	Grilles, 24"x24", detention	16	EA	365.00	\$5,840.00		
1d	Balancing damper, 24"	16	EA	240.00	\$3,840.00		
1b	Grilles, 18"x15", detention	142	EA	335.00	\$47,570.00		
1a	Exhaust fans, 7.5 HP. 42"	12	EA	6600	\$79,200.00		
1d	Motorized dampers, 20"	16	EA	325.00	\$5,200.00		
<b>D3060</b>	<b>Controls &amp; Instrumentation</b>					<b>\$0.15</b>	<b>\$10,000</b>
	HVAC controls modifications - allowance	1	LS	10000	\$10,000.00		
<b>D3070</b>	<b>Systems Testing &amp; Balancing</b>					<b>\$0.23</b>	<b>\$15,000</b>
	Balancing - allowance	1	LS	15000	\$15,000.00		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
<b>D5010</b>	<b>Electrical</b>					<b>\$1.09</b>	<b>\$70,770</b>
1f	Equipment connections - allowance	1	LS	20000	\$20,000.00		
1o	Emergency lighting panel	1	EA	2970	\$2,970.00		
1o	New circuit breaker	1	EA	4800	\$4,800.00		
1o	Panel, 600A, new	1	EA	15000	\$15,000.00		
1o	Panelboard feeders - allowance	1	LS	12000	\$12,000.00		
1o	Conduit, wire - allowance	1	LS	16000	\$16,000.00		
<b>D5030</b>	<b>Communication and Security</b>					<b>\$0.55</b>	<b>\$36,000</b>
1g	Fire Alarm System modifications - allowance	1	LS	36000	\$36,000.00		
<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$1.63</b>	<b>\$106,000</b>
1m & n	Emergency generator, ATS, 300kW, feeders	1	LS	106000	\$106,000.00		
<b>F1050</b>	<b>Special Controls and Instrumentation</b>					<b>\$0.15</b>	<b>\$9,500</b>
1h	Modifications, interface with security controls - allowance	1	LS	9500	\$9,500.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$2.97</b>	<b>\$193,000</b>
	Selective Building Demolition						
1j	Demo misc. @ foundation	1	LS	5000	\$5,000.00		
1i	Demo ext. wall finish - allowance	1	LS	20000	\$20,000.00		
1k	Demo roof structure, premium - allowance	8200	SF	17.50	\$143,500.00		
	Demo Misc. interior structure/ wall - allowance	1	LS	10000	\$10,000.00		
	Demo Misc. piping/ duct - allowance	1	LS	10000	\$10,000.00		
1l	Demo generator	1	LS	4500	\$4,500.00		
				<b>S/T</b>	<b>\$1,651,396</b>		
				<b>Contingency 30%</b>	<b>\$495,419</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$429,363</b>		
				<b>Total</b>	<b>\$2,576,178</b>		
				<b>Total with Softcosts 59%</b>	<b>\$4,096,123</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
<b>08 INSTITUTIONAL EQUIPMENT - Scope Option 1</b>							
<b>D2020</b>	<b>Domestic Water Distribution</b>					<b>\$0.02</b>	<b>\$1,000</b>
	Plumbing connection to equipment - allowance	1	LS	1000	\$1,000.00		
<b>D5010</b>	<b>Electrical Service</b>					<b>\$0.24</b>	<b>\$15,500</b>
3h & 3j	Replace branch circuit, panelboard - allowance	1	LS	13000	\$13,000.00		
3i	Electrical connection to equipment - allowance	1	LS	2500	\$2,500.00		
<b>E1020</b>	<b>Institutional Equipment</b>					<b>\$0.46</b>	<b>\$29,655</b>
	Replace Equipment						
3a	Dishwasher (Single, Door Type)	1	EA	11545	\$11,545.00		
3b	Clean Dishtable	1	EA	2060	\$2,060.00		
3c	Soiled Dishtable	1	EA	2400	\$2,400.00		
3d	Disposer @ Dishwashing	1	EA	1825	\$1,825.00		
3e	Worktable @ Dishwashing	1	EA	1875	\$1,875.00		
3f	Walk-In Shelving	1	EA	4950	\$4,950.00		
	Equipment installation, delivery	1	LS	5000	\$5,000.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.11</b>	<b>\$7,200</b>
	Selective Building Demolition						
	Remove equipment, haul, dispose	6	EA	1200	\$7,200.00		
						<b>S/T</b>	<b>\$53,355</b>
						<b>Contingency 30%</b>	<b>\$16,007</b>
						<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$13,872</b>
						<b>Total</b>	<b>\$83,234</b>
						<b>Total with Softcosts 59%</b>	<b>\$132,342</b>

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**08 INSTITUTIONAL EQUIPMENT - Scope Option 2**

<b>D5010</b>	<b>Electrical Service</b>					<b>\$0.04</b>	<b>\$2,500</b>
	Electrical connection to equipment - allowance	1	LS	2500	\$2,500.00		
<b>E1020</b>	<b>Institutional Equipment</b>					<b>\$0.52</b>	<b>\$33,535</b>
	Replace Equipment, (next 5 years)						
4a	Hot Holding Cabinet	1	EA	4,165.00	\$4,165.00		
4b	Hot Holding Cabinet	1	EA	4,165.00	\$4,165.00		
4e	Tilting Braising Pan	1	EA	19,705.00	\$19,705.00		
	Equipment installation	1	LS	5500	\$5,500.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.06</b>	<b>\$3,600</b>
	Selective Building Demolition						
	Remove equipment, haul, dispose	3	EA	1200	\$3,600.00		
					<b>S/T</b>	<b>\$39,635</b>	
					<b>Contingency 30%</b>	<b>\$11,891</b>	
					<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$10,305</b>	
					<b>Total</b>	<b>\$61,831</b>	
					<b>Total with Softcosts 59%</b>	<b>\$98,311</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**08 INSTITUTIONAL EQUIPMENT - Scope Option 3**

<b>E1020</b>	<b>Institutional Equipment</b>					<b>\$0.02</b>	<b>\$1,300</b>
	Repair Equipment						
5a	Walk-In Cooler/Freezer	1	EA	800	\$800.00		
5b	Disposer At Pot Wash	1	EA	200	\$200.00		
5c	Hot Top Range	1	EA	300	\$300.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.01</b>	<b>\$500</b>
	Selective Building Demolition						
	Misc demolition	1	LS	500	\$500.00		
				<b>S/T</b>	<b>\$1,800</b>		
				<b>Contingency 30%</b>	<b>\$540</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$468</b>		
				<b>Total</b>	<b>\$2,808</b>		
				<b>Total with Softcosts 59%</b>	<b>\$4,465</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
<b>08 INSTITUTIONAL EQUIPMENT - Scope Option 4</b>							
D5010	<b>Electrical Service</b> Electrical connection to equipment - allowance	1	LS	2500	\$2,500.00	\$0.04	\$2,500
E1020	<b>Institutional Equipment</b>  60kW indoor generator with belly tank	1	EA	100,000	\$100,000.00	\$1.54	\$100,000
F2010	<b>Building Element Demolition</b> Selective Building Demolition Misc demolition	1	LS	500	\$500.00	\$0.01	\$500
				S/T	\$103,000		
				Contingency 30%	\$30,900		
				GC Mark-ups, OH&P 20%	\$20,600		
				<b>Total</b>	<b>\$154,500</b>		
				<b>Total with Softcosts 59%</b>	<b>\$245,655</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 1**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.53</b>	<b>\$34,225</b>
	Basement level - Sheriff						
1a	Replace door handle, lever	70	EA	200.00	\$14,000.00		
1b	Replace smoke seal, fire rated doors	67	EA	275.00	\$18,425.00		
1c	Re-connect closures, fire rated doors	9	EA	200.00	\$1,800.00		
				<b>S/T</b>	<b>\$34,225</b>		
				<b>Contingency 30%</b>	<b>\$10,268</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$8,899</b>		
				<b>Total</b>	<b>\$53,391</b>		
				<b>Total with Softcosts 59%</b>	<b>\$84,892</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 2**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.24</b>	<b>\$15,400</b>
	Basement level - Sheriff						
2ai1	Replace lock cylinder, core only	88	EA	175.00	\$15,400.00		
				S/T	\$15,400		
				Contingency 30%	\$4,620		
				GC Mark-ups, OH&P 20%	\$4,004		
				<b>Total</b>	<b>\$24,024</b>		
				<b>Total with Softcosts 59%</b>	<b>\$38,198</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 3**

<b>B2030</b>	<b>Exterior Doors</b>					<b>\$0.03</b>	<b>\$1,815</b>
	Basement level - Sheriff						
3ai4	Replace threshold, ADA, door 1	1	EA	105	\$105.00		
3ai2	Clean & prep area for new threshold	1	EA	150	\$150.00		
3ai2	Prep and paint doors	1	EA	450	\$450.00		
3bi3	Replace threshold, ADA, door 024C & 024D	2	EA	105	\$210.00		
3bi3	Clean & prep area for new threshold	2	EA	150	\$300.00		
3bi3	Remove, replace damaged VCT	2	EA	300	\$600.00		
<b>C1030</b>	<b>Specialties</b>					<b>\$0.00</b>	<b>\$196</b>
3ci4	Wall corner guard, steel	7	lf	28.00	\$196.00		
<b>C3010</b>	<b>Wall Finishes</b>					<b>\$0.01</b>	<b>\$400</b>
3ci2	Wall repair, base molding replacement - allowance	1	LS	400	\$400.00		
<b>C3020</b>	<b>Floor Finishes</b>					<b>\$0.01</b>	<b>\$600</b>
3ai3	Patch, repair wall finish - allowance	1	LS	600	\$600.00		
					<b>S/T</b>	<b>\$3,011</b>	
					<b>Contingency 30%</b>	<b>\$903</b>	
					<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$783</b>	
					<b>Total</b>	<b>\$4,697</b>	
					<b>Total with Softcosts 59%</b>	<b>\$7,468</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 4**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.36</b>	<b>\$23,500</b>
	Basement level - Sheriff						
4ai	Door maintenance, commercial doors, check working condition - allowance	94	EA	250.00	\$23,500.00		
					<b>S/T</b>		<b>\$23,500</b>
					<b>Contingency 30%</b>		<b>\$7,050</b>
					<b>GC Mark-ups, OH&amp;P 20%</b>		<b>\$6,110</b>
					<b>Total</b>		<b>\$36,660</b>
					<b>Total with Softcosts 59%</b>		<b>\$58,289</b>

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 5**

C1020	Interior Doors					\$0.12	\$7,584
	Basement level - Sheriff						
5a	Door kick plate, plastic	79	EA	96.00	\$7,584.00		
				S/T		\$7,584	
				Contingency 30%		\$2,275	
				GC Mark-ups, OH&P 20%		\$1,972	
				<b>Total</b>		<b>\$11,831</b>	
				<b>Total with Softcosts 59%</b>		<b>\$18,811</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 6**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.16</b>	<b>\$10,557</b>
	1st Floor - Non-Visitation Rooms						
	Door maintenance, detention doors, check working						
6ai1	condition - allowance	29	EA	300.00	\$8,700.00		
6b	Replace door handle, lever	3	EA	200.00	\$600.00		
6c	Prep and paint door, #114	1	EA	450	\$450.00		
6d	New door closer, #100A & 100B	2	EA	366.00	\$732.00		
6e	New door stop, #100	1	EA	75.00	\$75.00		
				<b>S/T</b>	<b>\$10,557</b>		
				<b>Contingency 30%</b>	<b>\$3,167</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$2,745</b>		
				<b>Total</b>	<b>\$16,469</b>		
				<b>Total with Softcosts 59%</b>	<b>\$26,186</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 7**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.42</b>	<b>\$27,350</b>
	1st, 2nd & 3rd Floor, Visitation Rooms						
	Remove and replace door face, replace hardware,						
7ai1,2,3	#2EV	1	EA	4,650	\$4,650.00		
7bi1	Prep and paint door, new seal at lite	18	EA	600	\$10,800.00		
7c	Door maintenance, detention doors, check working condition - allowance	34	EA	350.00	\$11,900.00		
						S/T	\$27,350
						Contingency 30%	\$8,205
						GC Mark-ups, OH&P 20%	\$7,111
						Total	\$42,666
						Total with Softcosts 59%	\$67,839

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 8**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.07</b>	<b>\$4,500</b>
	1st, 2nd & 3rd Floor, Visitation Rooms						
8aii	Replace door handle, lever	18	EA	250.00	\$4,500.00		
				S/T	\$4,500		
				Contingency 30%	\$1,350		
				GC Mark-ups, OH&P 20%	\$1,170		
				<b>Total</b>	<b>\$7,020</b>		
				<b>Total with Softcosts 59%</b>	<b>\$11,162</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 9**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.08</b>	<b>\$5,500</b>
	2nd Floor - Non-Visitation Rooms						
	Door maintenance, detention doors, check working						
9ai1	condition - allowance	11	EA	350.00	\$3,850.00		
9b	Replace door handle, lever	5	EA	250.00	\$1,250.00		
9c	Replace door handle, lever, repair bolt, #256	1	EA	400.00	\$400.00		
					S/T		\$5,500
					Contingency 30%		\$1,650
					GC Mark-ups, OH&P 20%		\$1,430
					Total		\$8,580
					Total with Softcosts 59%		\$13,642



**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 COMMERCIAL DOORS - Scope Option 11**

**C1020 Interior Doors \$0.30 \$19,600**

1st Floor, Sallyport

	Door maintenance, clean track/ chain, check working condition, coiling doors, lg - allowance	2	EA	850.00	\$1,700.00		
11ai	Prep and paint, HP coating, panel doors, lg	2	EA	2200.00	\$4,400.00		
	Door maintenance, clean track/ chain, check working condition, panel doors - allowance	6	EA	750.00	\$4,500.00		
11aii	Prep and paint, HP coating, panel doors	6	EA	1500.00	\$9,000.00		

**S/T \$19,600**

**Contingency 30% \$5,880**

**GC Mark-ups, OH&P 20% \$5,096**

**Total \$30,576**

**Total with Softcosts 59% \$48,616**

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 1**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$6.06</b>	<b>\$394,198</b>
1ai	New HM door, 30x80, 12 ga., opening for lite	74	EA	1382.00	\$102,268.00		
1ai	New door hardware, detention	74	EA	3245.00	\$240,130.00		
1ai	Install existing lite, epoxy seal	74	EA	350.00	\$25,900.00		
1ai	Connect to electrical	74	EA	100.00	\$7,400.00		
1ai	Prep & repaint frame	74	EA	250.00	\$18,500.00		
<b>F1050</b>	<b>Special Controls and Instrumentation</b>					<b>\$0.68</b>	<b>\$44,400</b>
	Programming, replacement door interface with security controls - allowance	74	EA	600	\$44,400.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.63</b>	<b>\$40,700</b>
	Selective Building Demolition						
	Demo door	74	EA	400	\$29,600.00		
	Salvage lite to re-use in new doors	74	EA	150	\$11,100.00		
				<b>S/T</b>	<b>\$479,298</b>		
				<b>Contingency 30%</b>	<b>\$143,789</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$124,617</b>		
				<b>Total</b>	<b>\$747,705</b>		
				<b>Total with Softcosts 59%</b>	<b>\$1,188,851</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 2**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.08</b>	<b>\$5,410</b>
2a	Replace electric pin lock	2	EA	2705.00	\$5,410.00		
<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$0.09</b>	<b>\$6,000</b>
2a	Pin set connection to circuit	2	EA	3000	\$6,000.00		
				<b>S/T</b>	<b>\$11,410</b>		
				<b>Contingency 30%</b>	<b>\$3,423</b>		
				<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$2,967</b>		
				<b>Total</b>	<b>\$17,800</b>		
				<b>Total with Softcosts 59%</b>	<b>\$28,301</b>		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 3**

C1020	Interior Doors					\$0.04	\$2,580
3a	Replace lock cylinder, mogul key	6	EA	430.00	\$2,580.00		
				S/T		\$2,580	
				Contingency 30%		\$774	
				GC Mark-ups, OH&P 20%		\$671	
				Total		\$4,025	
				Total with Softcosts 59%		\$6,399	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 4**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.18</b>	<b>\$11,500</b>
4a	Door frame repair, 12 ga. stl cover, thru bolts - allowance	5	EA	2,300	\$11,500.00		
				S/T		\$11,500	
				Contingency 30%		\$3,450	
				GC Mark-ups, OH&P 20%		\$2,990	
				<b>Total</b>		<b>\$17,940</b>	
				<b>Total with Softcosts 59%</b>		<b>\$28,525</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 5**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.08</b>	<b>\$5,100</b>
5a	Reinforce hinges @ pass thru/ ports, repair rust, prep & repaint - allowance	6	EA	850	\$5,100.00		
				S/T		<b>\$5,100</b>	
				Contingency 30%		<b>\$1,530</b>	
				GC Mark-ups, OH&P 20%		<b>\$1,326</b>	
				<b>Total</b>		<b>\$7,956</b>	
				<b>Total with Softcosts 59%</b>		<b>\$12,650</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 6**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.14</b>	<b>\$8,820</b>
6a	Door pull, stop, security doors	21	EA	420	\$8,820.00		
				S/T		\$8,820	
				Contingency 30%		\$2,646	
				GC Mark-ups, OH&P 20%		\$2,293	
				<b>Total</b>		<b>\$13,759</b>	
				<b>Total with Softcosts 59%</b>		<b>\$21,877</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 7**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.06</b>	<b>\$3,920</b>
7a	Replace threshold, epoxy anchors	8	EA	490	\$3,920.00		
				S/T		\$3,920	
				Contingency 30%		\$1,176	
				GC Mark-ups, OH&P 20%		\$1,019	
				<b>Total</b>		<b>\$6,115</b>	
				<b>Total with Softcosts 59%</b>		<b>\$9,723</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 8**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.01</b>	<b>\$900</b>
8a	Repair access doors - allowance	3	EA	300	\$900.00		
				S/T		\$900	
				Contingency 30%		\$270	
				GC Mark-ups, OH&P 20%		\$234	
				<b>Total</b>		<b>\$1,404</b>	
				<b>Total with Softcosts 59%</b>		<b>\$2,232</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 9**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.02</b>	<b>\$1,540</b>
9a	Replace door closer, correctional grade	2	EA	770	\$1,540.00		
				S/T		\$1,540	
				Contingency 30%		\$462	
				GC Mark-ups, OH&P 20%		\$400	
				<b>Total</b>		<b>\$2,402</b>	
				<b>Total with Softcosts 59%</b>		<b>\$3,820</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 10**

C1020	Interior Doors					\$0.09	\$6,090
10a	Replace door position switch	7	EA	870	\$6,090.00		
				S/T		\$6,090	
				Contingency 30%		\$1,827	
				GC Mark-ups, OH&P 20%		\$1,583	
				Total		\$9,500	
				Total with Softcosts 59%		\$15,106	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 11**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.06</b>	<b>\$3,575</b>
11a	Maintain security locksets, clean & lube	11	EA	325.00	\$3,575.00		
				S/T		\$3,575	
				Contingency 30%		\$1,073	
				GC Mark-ups, OH&P 20%		\$930	
				<b>Total</b>		<b>\$5,577</b>	
				<b>Total with Softcosts 59%</b>		<b>\$8,867</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**09&10 DETENTION DOORS - Scope Option 12**

<b>C1020</b>	<b>Interior Doors</b>					<b>\$0.18</b>	<b>\$12,000</b>
12a	Door maintenance, detention doors, check working condition - allowance	1	LS	12000	\$12,000.00		
					S/T	\$12,000	
					Contingency 30%	\$3,600	
					GC Mark-ups, OH&P 20%	\$3,120	
					<b>Total</b>	<b>\$18,720</b>	
					<b>Total with Softcosts 59%</b>	<b>\$29,765</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**12 LIGHTING & BRANCH WIRING, EMERGENCY LIGHTING - Scope Option 1A**

<b>D5010</b>	<b>Electrical Service</b>					<b>\$0.35</b>	<b>\$22,770</b>
1	Emergency lighting panel	1	EA	2970	\$2,970.00		
1	New circuit breaker	1	EA	4800	\$4,800.00		
1	Conduit, wire - allowance	1	LS	15000	\$15,000.00		
<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$1.59</b>	<b>\$103,500</b>
1a	Emergency lighting central inverter, 20A, 277V	1	EA	68500	\$68,500.00		
1	Connect new inverter to existing lighting - allowance	1	LS	35000	\$35,000.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.23</b>	<b>\$15,000</b>
	Selective Building Demolition						
1	Remove abandoned generator	1	EA	15000	\$15,000.00		

S/T \$141,270

Contingency 30% \$42,381

GC Mark-ups, OH&P 20% \$36,730

Total \$220,381

Total with Softcosts 59% \$350,406

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**12 LIGHTING & BRANCH WIRING, EMERGENCY LIGHTING - Scope Option 1B**

<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$0.73</b>	<b>\$47,600</b>
Proj 1b	Emergency fixtures, "bug-eye" type, throughout	136	EA	350	\$47,600.00		
				S/T		\$47,600	
				Contingency 30%		\$14,280	
				GC Mark-ups, OH&P 20%		\$12,376	
				<b>Total</b>		<b>\$74,256</b>	
				Total with Softcosts 59%		\$118,067	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**12 LIGHTING & BRANCH WIRING, EMERGENCY LIGHTING - Scope Option 2**

<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$0.03</b>	<b>\$2,250</b>
Proj 2	New emergency fixtures, "bug-eye" @ elevator cabs, detention fixtures	5	EA	450	\$2,250.00		
				S/T		\$2,250	
				Contingency 30%		\$675	
				GC Mark-ups, OH&P 20%		\$585	
				<b>Total</b>		<b>\$3,510</b>	
				<b>Total with Softcosts 59%</b>		<b>\$5,581</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**12 LIGHTING & BRANCH WIRING, EMERGENCY LIGHTING - Scope Option 3**

<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$0.04</b>	<b>\$2,800</b>
Proj 3	New emergency fixtures, "bug-eye" @ recreation areas, detention fixtures	8	EA	350	\$2,800.00		
					S/T	\$2,800	
					Contingency 30%	\$840	
					GC Mark-ups, OH&P 20%	\$728	
					<b>Total</b>	<b>\$4,368</b>	
					<b>Total with Softcosts 59%</b>	<b>\$6,945</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**12 LIGHTING & BRANCH WIRING, EMERGENCY LIGHTING - Scope Option 4**

<b>D5040</b>	<b>Other Electrical Services</b>					<b>\$0.28</b>	<b>\$18,250</b>
Proj 4	Recircuit existing lighting, additional lighting	1	LS	18250	\$18,250.00		
					S/T		\$18,250
					Contingency 30%		\$5,475
					GC Mark-ups, OH&P 20%		\$4,745
					<b>Total</b>		<b>\$28,470</b>
					Total with Softcosts 59%		\$45,267

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**17 SANITARY SEWER SYSTEM - Scope Option 1**

<b>B1010</b>	<b>Floor Construction</b>					<b>\$0.02</b>	<b>\$1,500</b>
1vii	Patch and repair at openings - allowance	1	LS	1500	\$1,500.00		
<b>C3020</b>	<b>Floor Finishes</b>					<b>\$0.03</b>	<b>\$2,000</b>
1vii	Patch and repair flooring - allowance	1	LS	2000	\$2,000.00		
<b>C3030</b>	<b>Ceiling Finishes</b>					<b>\$0.02</b>	<b>\$1,500</b>
1vii	Patch and repair ceiling - allowance	1	LS	1500	\$1,500.00		
<b>D2030</b>	<b>Sanitary Waste</b>					<b>\$0.10</b>	<b>\$6,500</b>
1ii	New cleanout, 3", ext. wall	1	EA	800	\$800.00		
1iii	Adjust slope of existing 3" piping - allowance	1	LS	500	\$500.00		
1vi	Route pump discharge piping	1	LS	2600	\$2,600.00		
1vii	Route vent piping, 2" kitchen	1	LS	2600	\$2,600.00		
<b>D5010</b>	<b>Electrical</b>					<b>\$0.08</b>	<b>\$5,500</b>
1iv	Electrical connection, pump at Basement	1	LS	5500	\$5,500.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.10</b>	<b>\$6,800</b>
	Selective Building Demolition						
1v	Remove existing ext wall cleanout, patch	1	LS	1800	\$1,800.00		
	Misc. demo - allowance	1	LS	5000	\$5,000.00		
<b>Z1020</b>	<b>Project Conditions</b>					<b>\$0.12</b>	<b>\$8,000</b>
1ix	Final Clean, Kitchen	1	LS	8000	\$8,000.00		

S/T \$31,800

Contingency 30% \$9,540

GC Mark-ups, OH&P 20% \$8,268

**Total \$49,608**

**Total with Softcosts 59% \$78,877**

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**17 SANITARY SEWER SYSTEM - Scope Option 2**

<b>B1010</b>	<b>Floor Construction</b>					<b>\$0.02</b>	<b>\$1,500</b>
	Patch and repair at openings - allowance	1	LS	1500	\$1,500.00		
<b>C3030</b>	<b>Ceiling Finishes</b>					<b>\$0.12</b>	<b>\$7,500</b>
3d	Patch and repair ceiling - allowance	10	EA	750	\$7,500.00		
<b>D2010</b>	<b>Plumbing Fixtures</b>					<b>\$0.03</b>	<b>\$1,800</b>
Proj 5	Remove & reinstall, seal fixtures rm 154	3	EA	600	\$1,800.00		
<b>D2030</b>	<b>Sanitary Waste</b>					<b>\$0.46</b>	<b>\$30,000</b>
3c	New sanitary drains, traps @ showers	10	EA	2500	\$25,000.00		
3d	Reseal drain trap	10	EA	500	\$5,000.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.11</b>	<b>\$7,000</b>
	Selective Building Demolition						
3b	Remove existing shower drains	10	EA	400	\$4,000.00		
	Misc. demo - allowance	1	LS	3000	\$3,000.00		
					<b>S/T</b>	<b>\$47,800</b>	
					<b>Contingency 30%</b>	<b>\$14,340</b>	
					<b>GC Mark-ups, OH&amp;P 20%</b>	<b>\$12,428</b>	
					<b>Total</b>	<b>\$74,568</b>	
					<b>Total with Softcosts 59%</b>	<b>\$118,563</b>	

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**17 SANITARY SEWER SYSTEM - Scope Option 3**

<b>C3020</b>	<b>Floor Finishes</b>					<b>\$0.03</b>	<b>\$1,870</b>
3a	New flooring, epoxy, restroom 154	110	SF	12.50	\$1,375.00		
	<i>Small project premium</i>	110	SF	4.50	\$495.00		
<b>D2010</b>	<b>Plumbing Fixtures</b>					<b>\$0.03</b>	<b>\$1,800</b>
3a	Remove & reinstall, seal fixtures rm 154	3	EA	600	\$1,800.00		
<b>D2030</b>	<b>Sanitary Waste</b>					<b>\$0.01</b>	<b>\$600</b>
3b	Reconnect plumbing fixtures - allowance	1	LS	600	\$600.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.02</b>	<b>\$1,000</b>
	Selective Building Demolition						
	Misc. demo - allowance	1	LS	1000	\$1,000.00		
				S/T	\$5,270		
				Contingency 30%	\$1,581		
				GC Mark-ups, OH&P 20%	\$1,370		
				Total	\$8,221		
				Total with Softcosts 59%	\$13,072		

**ESTIMATE DETAIL**

UNI NUM.	BUILDING COMPONENT	QTY	UNITS	UNIT COST	TOTAL COST	COST/ SF	DIVISION SUBTOTAL
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**17 SANITARY SEWER SYSTEM - Scope Option 4**

<b>B1010</b>	<b>Floor Construction</b>					<b>\$0.07</b>	<b>\$4,500</b>
6bi	Enlarge drain hole in floor structure - allowance	1	LS	3000	\$3,000.00		
6bii	Fire stopping	1	LS	1500	\$1,500.00		
<b>D2030</b>	<b>Sanitary Waste</b>					<b>\$0.01</b>	<b>\$675</b>
6biii	Extend washer drain pipe, new washer	15	LF	22.50	\$337.50		
6ci	Extend washer drain pipe, older washer	15	LF	22.50	\$337.50		
<b>D3040</b>	<b>Distribution Systems</b>					<b>\$0.01</b>	<b>\$737</b>
6dii	New exhaust duct, 6" round	22	LF	8.50	\$187.00		
	<i>Premium, small space, existing structure</i>	22	LF	25.00	\$550.00		
<b>D3070</b>	<b>Systems Testing &amp; Balancing</b>					<b>\$0.04</b>	<b>\$2,500</b>
6diii	Adjusting existing equipment to allow air flow to Laundry - allowance	1	LS	2500	\$2,500.00		
<b>F2010</b>	<b>Building Element Demolition</b>					<b>\$0.05</b>	<b>\$3,000</b>
	Selective Building Demolition						
	Misc. demo - allowance	1	LS	3000	\$3,000.00		
<b>Z1020</b>	<b>Project Conditions</b>					<b>\$0.07</b>	<b>\$4,500</b>
6e	Clean Laundry room	1	LS	4500	\$4,500.00		

S/T \$15,912

Contingency 30% \$4,774

GC Mark-ups, OH&P 20% \$4,137

Total \$24,823

Total with Softcosts 59% \$39,468

# Phase 1A – LIST OF TASKS    APPENDIX B



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Task No.	Item	Description/Observation	Summary of Work Required (FCA team recommends action on the items shown in bold red)	Probable Cost (hard & soft costs)	Jack Authorized
3	Domestic Water Distribution	Lack of seismic bracing on equipment	Determine which equipment needs to be braced and provide bracing	\$48,571.00	YES
4	Domestic Water Distribution	Multiple failures have been reported and continue	Replace entire domestic water distribution piping system <i>(would eliminate renewal #9)</i>	\$1,103,860.00	PARTIAL
5	Fire Protection Sprinkler Systems	Sprinkler coverage in the stairwells and Sky Bridge does not appear to meet current standards. Some signs of leaks. Seismic bracing not observed.	Extend system to stair wells and sky bridge, repair leaks, add seismic bracing as needed	\$190,585.00	YES
6	Heat Generating Systems	Lack of seismic bracing on equipment	Determine which equipment needs to be braced and provide bracing	\$72,857.00	YES
7	HVAC Distribution Systems	The jail does not contain a smoke evacuation system, a mandatory code requirement. This system was required but not installed in the original construction.	<b>Complete a feasibility analysis to design and install a smoke evacuation system in the Jail</b> i. Identify system type best suited for renovation and building construction type ii. Identify, using the existing drawings, where the roof hatches need to be placed iii. Do a structural analysis of roof opening locations to determine the best location for the hatches iv. Evaluate the fire protection system to determine if the hatch alarms can be added or if a new system will be required v. Provide conceptual sketches and narrative to describe the installation vi. Provide cost estimate for construction including hard and soft costs of upgrades	\$817,280.00	YES UNLESS WE CAN FIND AN ORIGINAL WAIVER OF THIS REQUIREMENT
8	Institutional Equipment	At 35 years old, the kitchen and laundry equipment has reached the end of useful life.	Replace equipment items that have exceeded expected useful life <i>(would eliminate renewal #5)</i>	\$714,692.00	YES ONLY EQUIPMENT THAT CAN BE MOVED TO NEW JAIL
9	Interior Doors	Doors and door locks are damaged and in disrepair	Repair all doors and hardware i. Remove existing doors from frames - strip paint, patch and repair damage, refinish, rehang door ii. Remove hardware - clean, repair, and/or adjust <i>(would eliminate renewal #6)</i>	\$490,755.00	YES

10	Interior Doors	Doors and door locks are failing due to inmate abuse which is a major safety and security problem	<p><b>Complete investigation of door security infrastructure of the jail</b></p> <ul style="list-style-type: none"> <li>i. Provide an inventory of the doors and hardware and identify which need to be replaced and which need to be repaired.</li> <li>ii. Provide a narrative opinion of which doors are currently in working order but may need repair in the 2-4 year time frame.</li> <li>iii. Provide cost estimate including hard and soft costs for the door and hardware construction upgrades (would eliminate renewal #6)</li> </ul>	\$1,529,995.00	YES
12	Lighting and Branch Wiring	There is a 10 to 15 second delay before emergency lighting comes on because this lighting is on "house" power and does not have battery backup power. This could represent a serious safety problem.	<p><b>Identify and fix the delay issue with the emergency lights at the Jail and the Work</b></p> <ul style="list-style-type: none"> <li>i. Inventory the existing light fixtures and generator at each facility</li> <li>ii. Perform light meter testing to determine if existing lighting meets code, and/or if more light is needed for safe operation of the facility.</li> <li>iii. Interview the maintenance and staff personnel and review operation of the facility to verify which existing emergency lights need to be addressed and which areas need emergency lights but currently do not have them.</li> <li>iv. Provide a narrative opinion of changes to be implemented to ensure lights remain on during a power outage</li> <li>v. Provide cost estimate of construction upgrades including hard and soft costs for the lighting, UPS, Generator, and/or controls.</li> </ul>	\$ 572,652.00	YES, PARTIAL
17	Sanitary Waste	Sanitary sewer near basement level reported problems with piping system	Replace sanitary sewer piping at basement level to building connections, install muffin monster.	\$ 279,285.00	YES, PARTIAL

3	Ambient noise alarms	There are no ambient noise level alarms in either facility. These can be valuable tools to help direct observation of the camera monitors to outbursts or escalating disputes before they get out of hand.	<p><b>Determine if/how ambient noise alarms can be installed at the Jail</b></p> <ul style="list-style-type: none"> <li>i. Complete inventory of alarm and camera security infrastructure</li> <li>ii. Provide conceptual narrative to describe the upgrades</li> <li>iii. Provide cost estimate including hard and soft costs for the ambient noise alarm upgrades</li> </ul>	This item requires additional scope definition in order to provide an estimate of probable cost.	Maybe after 2017
4	Medical Area	Design of the medical area gives little thought to privacy with limited space for normal functions and does not comply with HIPAA privacy requirements.	<p><b>Re-design medical area at the Jail to include the space identified as the commissary</b></p> <ul style="list-style-type: none"> <li>i. Interview Medical operations management personnel regarding space use and requirements</li> <li>ii. Provide conceptual sketches and narrative to describe the renovations</li> <li>iii. Provide cost estimate for construction including hard and soft costs of changes</li> </ul>	This item requires additional scope definition in order to provide an estimate of probable cost.	Maybe after 2017