

# 3. Layout Development



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# Option 1

<b>First Floor</b>	Mall Concourse, Public Restroom, Shelter Program <i>Surplus Storage and Parks Storage are relocated</i>
<b>Ground Floor</b>	City of Madison Police remain as existing
<b>Basement</b>	Parking Enforcement to remain as existing

Option 1 attempts to take full advantage of underutilized square footage on the first floor, while retaining most existing tenants. In this option, a 24 hour public restroom, whose entry doubles as the shelter entrance, is situated within the northeast corner of the building along Fairchild Street. Because the restroom will be operating during the day as well as at night, unlike the shelter, it must function as its own entity, bringing with it challenges of security and maintenance. Ultimately the implementation of a public restroom necessitates that a party separate from the shelter take responsibility for its management. However, not every plan option in this report contains a public restroom space.

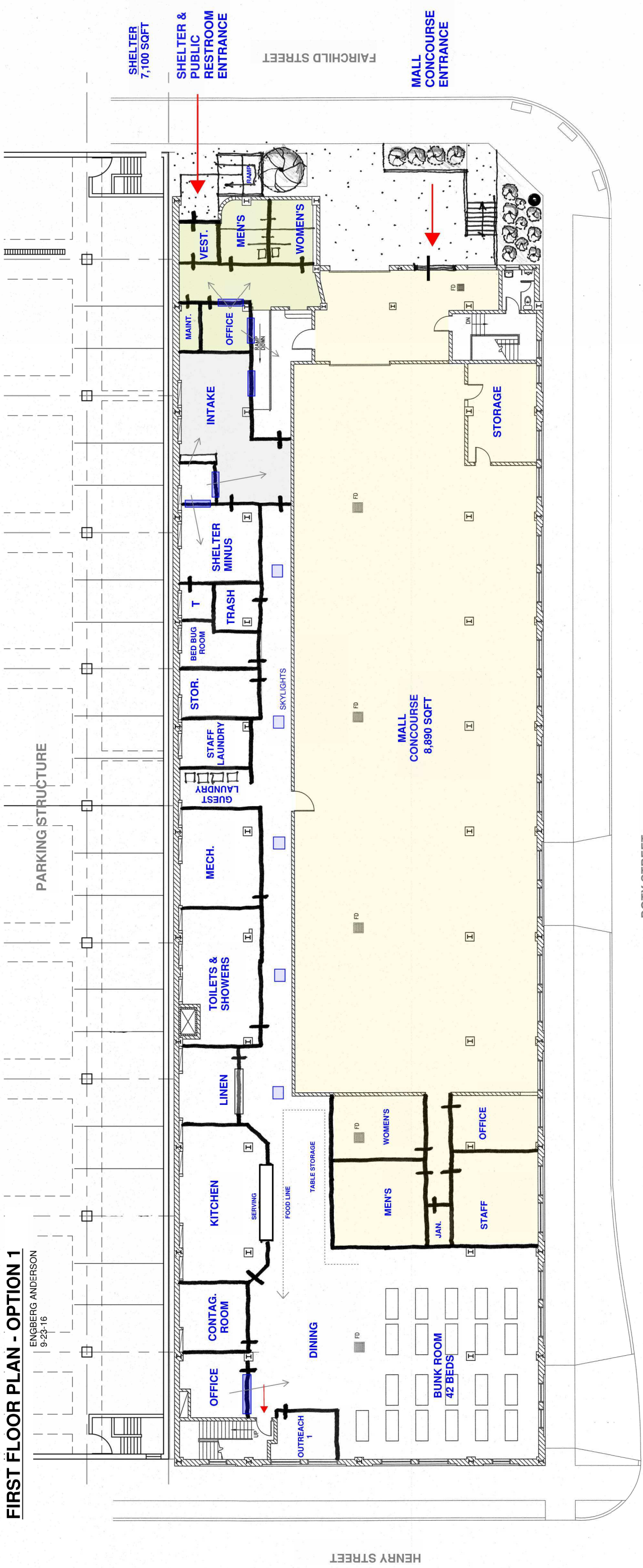
While separate from the Mall Concourse drive entrance, the close proximity of the shelter entrance on the limited façade would further hinder the ability of Mall Concourse staff to safely enter and exit their space. Furthermore, Mall Concourse would lose a portion of their current area, and despite gaining new staff offices and restrooms, the resulting space falls short of their program requirements. In this option, City of Madison Parks Storage, Surplus storage, and Madison Police bike storage would need to find alternative locations.

Similarly, the shelter space fits only the basic components of their program, essentially replicating their current spaces and bed capacity (43 beds) at Grace Episcopal Church, but with the addition of shelter minus and bedbug rooms. To meet the needs of the homeless men’s population in Madison, Porchlight would need to retain both of their overflow shelter locations. It should be noted that while the Grace Episcopal Church location only shelters 43 guests, all guests sheltered by Porchlight over the three locations come to Grace Episcopal for intake and an evening meal each night. The shelter space lacks key program components, including a safe room, additional outreach rooms, and a secure smoking area. The “L” shape, which funnels all users through a single corridor does not provide for an efficient layout of space and is not conducive to the security or monitoring of guests or the effective movement of volunteers, staff, guests, deliveries, and trash.



# FIRST FLOOR PLAN - OPTION 1

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9-23-16







## **Option 2A**

<b>First Floor</b>	Shelter and Public Restroom
<b>Ground Floor</b>	City of Madison Police or Mall Concourse
<b>Basement</b>	Parking Enforcement to remain as existing

In Option 2A, shelter program occupies the majority of the first floor, with a small portion reserved for the public restroom at the northeast corner of the building. With its own entry and potential supervising office, the restroom functions its own entity separate from shelter operations.

The shelter guest entrance would be located in the center of the Fairchild Street façade, leading into a large secure intake space intended to reduce queuing directly outside the building. The intake area would be monitored by a main office that is used for evening check-in for guests coming to the shelter. The centralized office space also provides visual supervision to multiple areas around the shelter including the public restroom and the shelter minus. The smoking enclosure, to the left of the entrance, is screened from the street and ventilated from above, but can also serve as a small outdoor waiting area to alleviate additional queuing.

The kitchen has its own exterior ramp and entry at the southeast corner, allowing volunteers to arrive and deliver food easily. While the limited Fairchild façade contains three distinct entrances, the elimination of vehicle traffic in and out of the building at this location greatly improves safety at this intersection.

All options will require necessary renovations to the exterior concrete area at the east side entries in order to meet code and ADA requirements. The loading dock will be eliminated and will be replaced by the enclosed smoking area, a ramp and stairs to the southwest corner entrance, and adding landscaping to soften the edge to the public sidewalk. The northeast entrance concrete will also need to be replaced in order to meet ADA access requirements and further facilitate the access of guests, staff and volunteers.

In this option, all program elements required by the shelter are included in a layout that makes the most of available daylight by locating principal spaces such as sleeping and dining along the windows, and supportive spaces such as restrooms, storage, and laundry along the north edge.

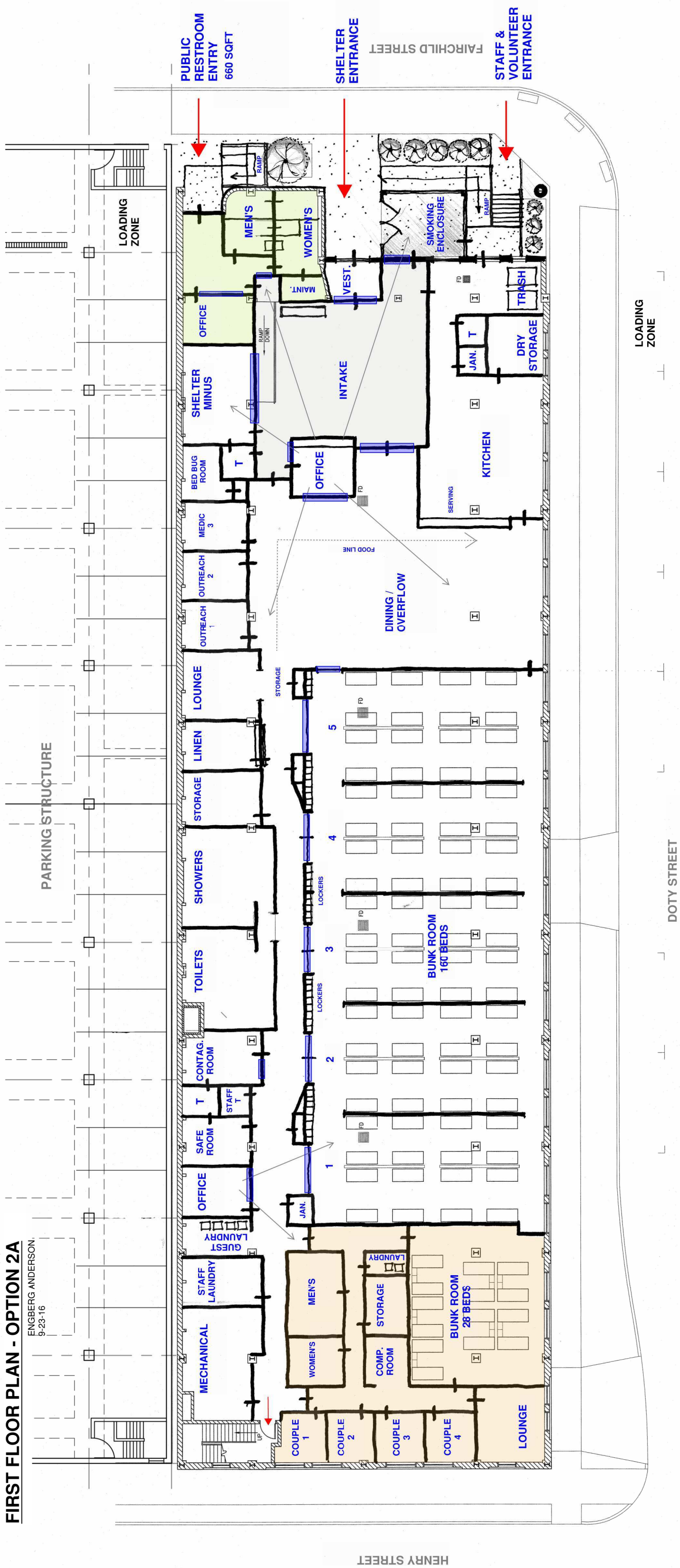
The bunk room is divided from the main hallway by banks of lockers, and the sleeping area is further partitioned by both full height and partial height walls. While maintaining visual access by staff into the space, these divisions establish equity between all bunks, add to the feeling of security within the space, and allow for installation of electrical outlets for guests to charge phones and other electronic devices. These divisions also allow portions of the bunk room to be closed off when operating below full capacity. This layout allows for 160 beds, which would shelter all Porchlight’s guests currently divided between three locations. It should be noted that while the existing Grace Episcopal Church location only shelters 43 guests, all guests sheltered by Porchlight over the three locations come to Grace Episcopal for intake and an evening meal each night.

A “Pay to Stay” program is included at the west end of the building and contains space for either 28 guests arranged in bunks, or 14 guests in single beds, in addition to four couple’s rooms. Somewhat more private, the “Pay to Stay” area has its own lounge, computer room, storage, and restroom. At stay lengths of up to seven days, this program offers guests added stability as they work towards transitioning out of homelessness.



**FIRST FLOOR PLAN - OPTION 2A**

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## **Option 2B & 2C**

<b>First Floor</b>	Shelter
<b>Ground Floor</b>	City of Madison Police or Mall Concourse
<b>Basement</b>	Parking Enforcement to remain as existing

### **Option 2B**

Option 2B removes the public restroom program and allows for a designated staff and volunteer core in the northeast corner of the building instead. In this case, the kitchen abuts the parking garage, granting shelter minus and lounge spaces access to daylight and views. The bunk room is laid out in much the same way as Option 2A, except that there is no separation from the corridor. While this arrangement makes it more difficult to close off unused bunk space, it affords staff increased visibility, and supportive rooms more space.

In this option, the “Pay to Stay” area increases slightly in size, supporting either 34 guests arranged in bunks or 17 in single beds, and includes additional storage and restroom space. However, both this layout, with the corridor open to the bunk room, and Option 2A to a lesser extent, may introduce conflict as women staying in the couple’s rooms must pass through the men’s shelter on their way from intake, and in order to access the dining room for meals.

### **Option 2C**

Option 2C seeks to eliminate the concerns related to the couple’s shelter by relocating couples to the front of the building, near intake. In this manner, couples can access the intake and dining areas without passing through the men’s bunk room, and staff can maintain better supervision of the space. The “Pay to Stay” program remains at the west end of the building, and accommodates 26 guests in single beds, while the main bunk room still accommodates 160. Offering single beds in the “Pay to Stay” area instead of bunks increases the incentive for guests to move up to the next step on their path toward permanent housing. This option shelters the greatest number of those in need, as well as providing the opportunity to accommodate the public restroom at the northeast corner instead of the couple’s shelter, whichever need is greater.



**FIRST FLOOR PLAN - OPTION 2B**

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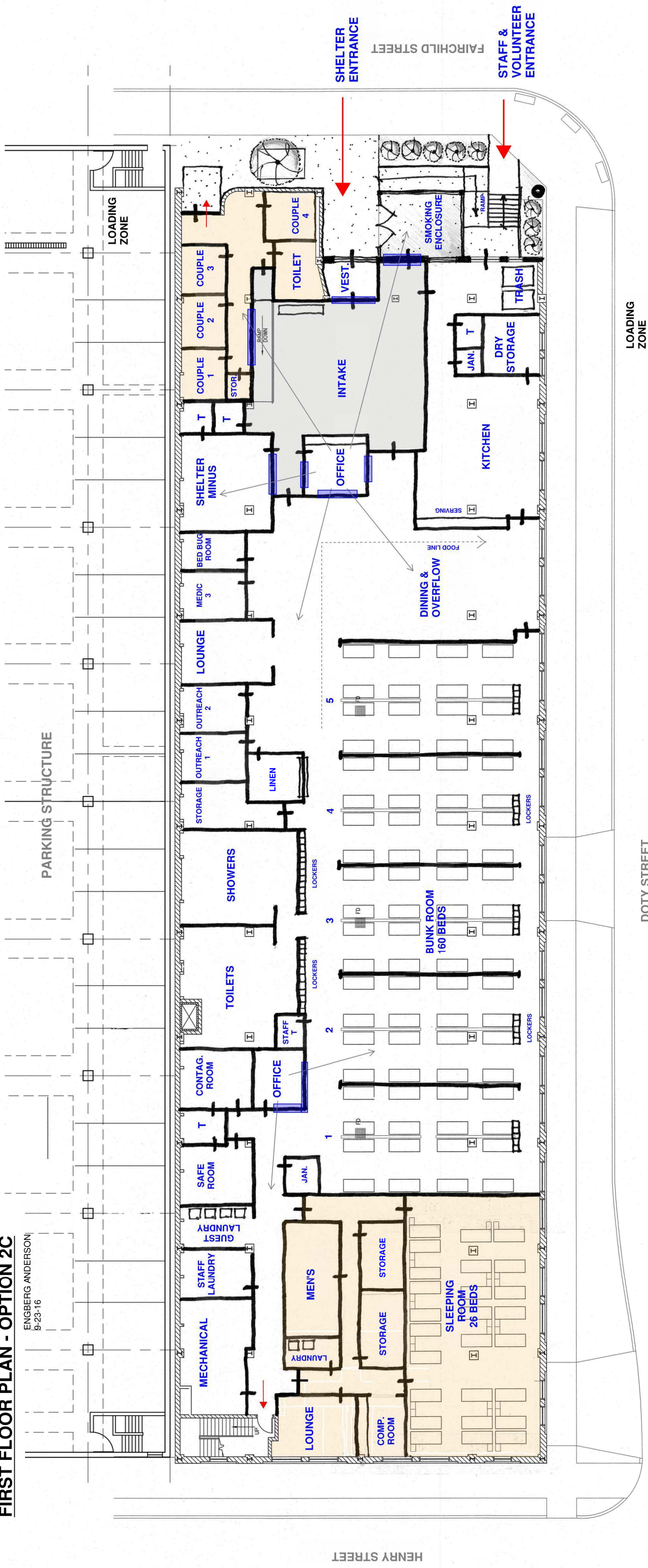






**FIRST FLOOR PLAN - OPTION 2C**

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HENRY STREET

DOTY STREET

FAIRCHILD STREET



## **Option 2 – Ground Floor**

<b>First Floor</b>	Shelter
<b>Ground Floor</b>	Mall Concourse, Police Bike Parking, City of Madison Surplus Storage <i>City of Madison Police are relocated</i>
<b>Basement</b>	Parking Enforcement to remain as existing

With shelter program occupying the first floor, the ground floor could either continue to be utilized as police parking and storage, or, if a suitable alternative tenant space was found for Madison Police services, Mall Concourse could occupy the space instead. While the current Mall Concourse space on the first floor meets most of their needs, a move to the ground floor offers a number of benefits for their expanding operations.

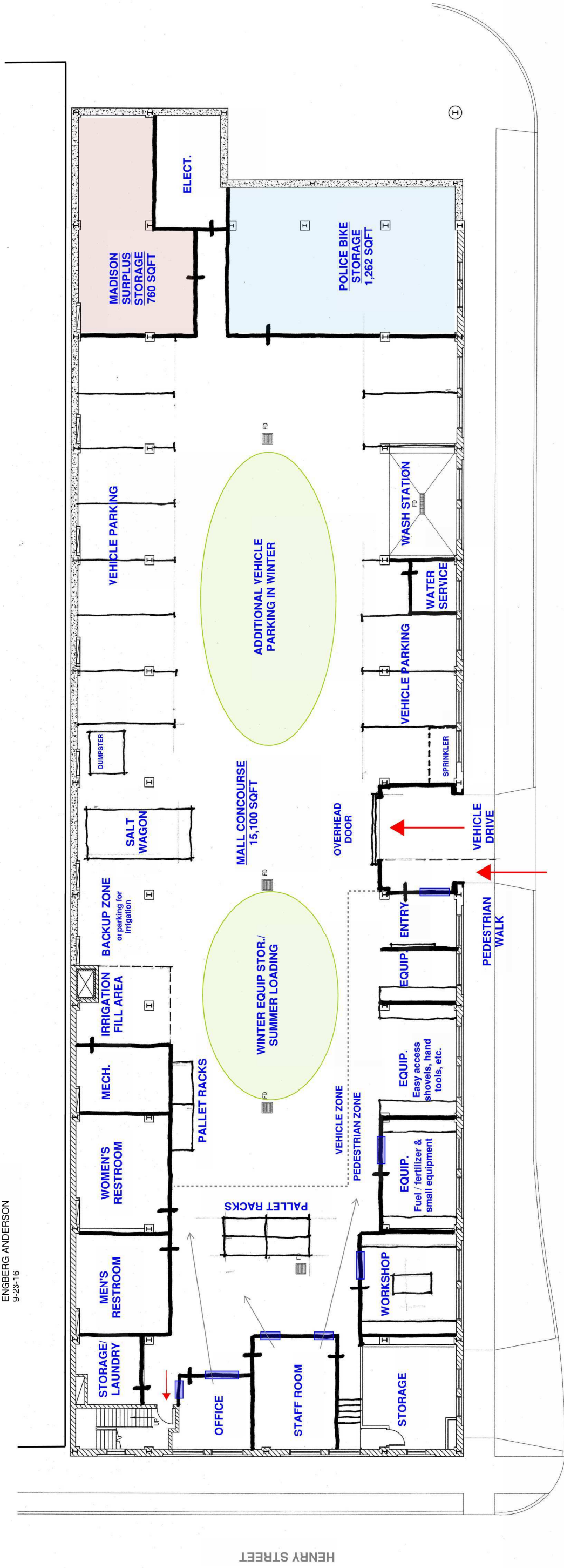
The existing drive entrance walls would be demolished creating a new enlarged entrance that would accommodate pedestrians as well as the sizable Mall Concourse equipment. Its location along the less crowded Doty Street would improve the ability of Concourse vehicles to enter and exit the space safely, however, concrete work at the entry as well as at the steep apron from street to sidewalk would need to be completed to meet ADA requirements and improve ease of access respectively. With the goal of reducing internal congestion and improving efficiency, the new layout creates distinct areas, separate from vehicle circulation, for loading equipment, filling irrigation trucks, and washing vehicles, activities which currently take place directly in the drive aisle.

The layout also offers improved staff, breakroom, and workshop areas near windows, and includes ample floor space for pallet racks and increased seasonal storage without impeding everyday workflow. In addition, both Madison Surplus Storage and Police Bike Parking program needs can be accommodated along the east side of the ground floor.



**GROUND FLOOR PLAN - OPTION 2**

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9-23-16



HENRY STREET

DOTY STREET



## **Option 3**

<b>Second Floor</b>	Shelter
<b>First Floor</b>	Mall Concourse, City of Madison Surplus Storage, Police Bike Parking
<b>Ground Floor</b>	City of Madison Police to remain as existing
<b>Basement</b>	Parking Enforcement to remain as existing

Option 3 adds a second level to the building, allowing both Mall Concourse and Police tenants to remain, although a portion of the first floor’s northeast corner would be reserved for use as the shelter entry, small intake space, and vertical circulation. This is the only option that would require the installation of an elevator and an additional stair. Mall concourse could continue to use their remaining space as is (which is reflected in the cost estimate) or renovate to better meet their needs as shown in the alternate layout plan.

Above, a secondary intake space adjoins the shelter minus area, “Pay to Stay”, and kitchen. In this case, all users enter through the same space, potentially increasing conflict or adding to security concerns. With reduced intake space, queuing outside the building and in front of the Mall Concourse entry becomes a greater concern, as it may interfere with both vehicle and pedestrian traffic.

Despite this challenge, the additional floor provides ample room for the shelter’s remaining program. A large south-facing dining space separating the “Pay to Stay” from the bunk room area is accompanied by an outdoor patio, which also serves as a secure smoking area.

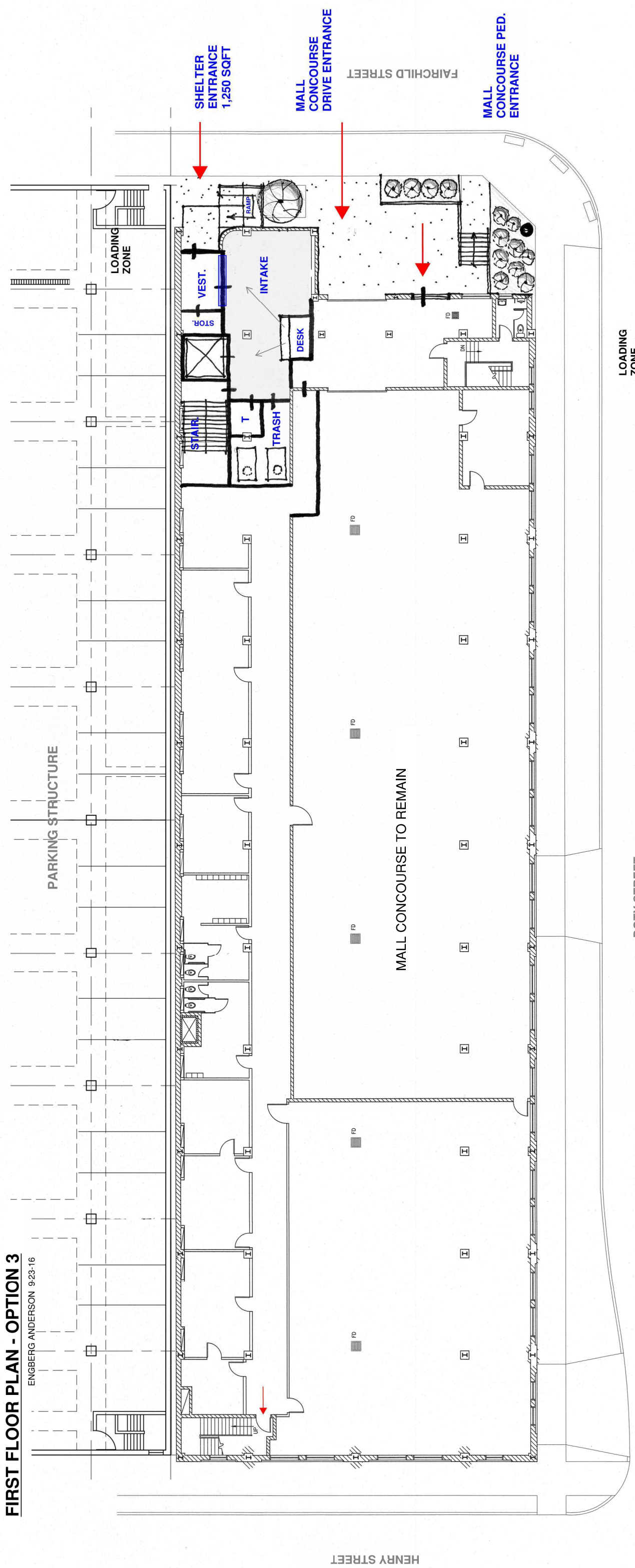
The “Pay to Stay” area can accommodate 32 guests in a bunk arrangement, or 16 in single beds, and couples are located in a way that they can access dining and lounge spaces without traveling through the men’s bunk space. The remaining shelter spaces are organized in much the same way as in Option 2B and 2C with supportive spaces along the north wall, but in this case, the bunk room is slightly larger, accommodating a maximum of 176 guests.





**FIRST FLOOR PLAN - OPTION 3**

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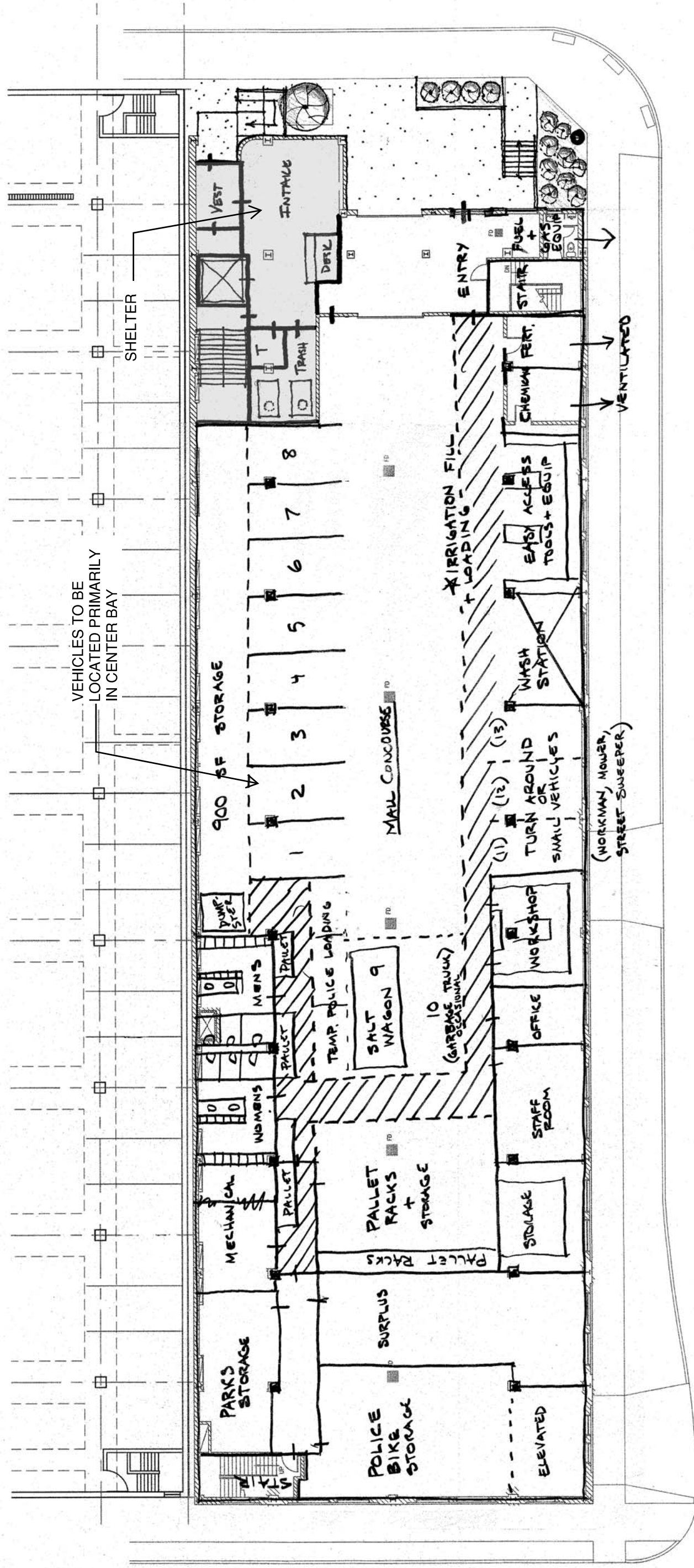




**\*\* NOTE THIS OPTION IS NOT PART OF THE COST ESTIMATE**

**FIRST FLOOR PLAN - OPTION 3 (ALTERNATE SKETCH LAYOUT)**

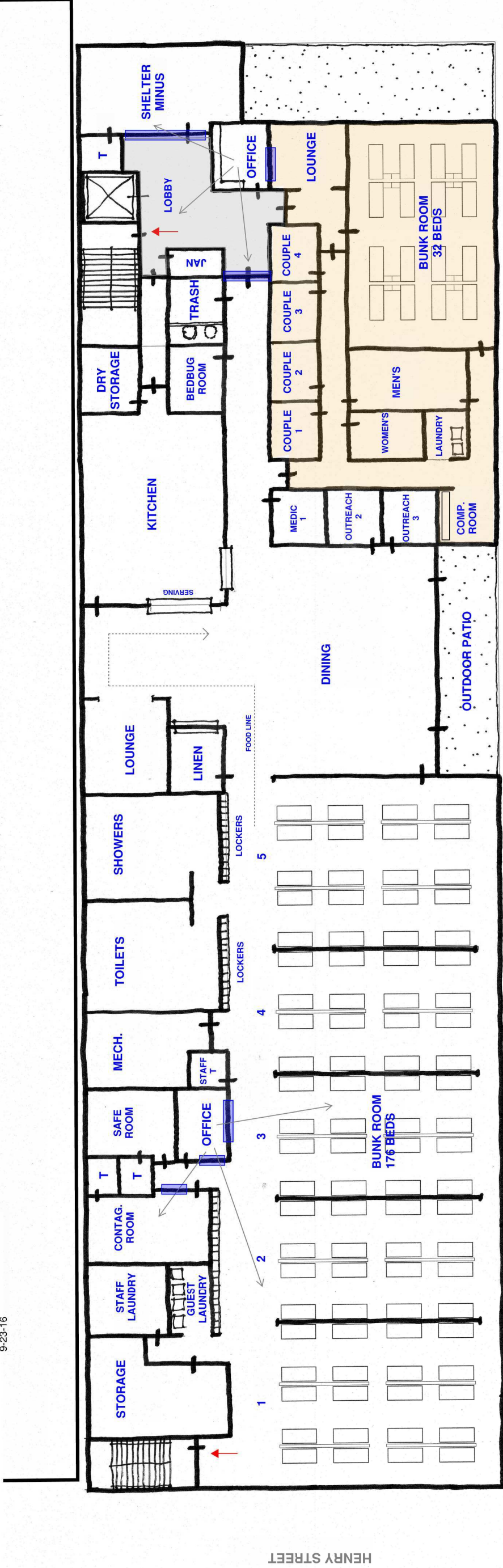
**- MALL CONCOURSE RENOVATED / SHELTER INTAKE**





**SECOND FLOOR PLAN - OPTION 3**

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FAIRCHILD STREET

HENRY STREET

DOTY STREET



## **Plan Option Summary**

The location of the Fairchild Building just a short distance from the existing downtown shelter, with access to transportation and other services, combined with the fact that the city already owns the parcel, makes the site an attractive option for the potential relocation of Porchlight's Men's Shelter.

However, the building is not without challenges. Its long narrow shape, along with the slope of the site leaves only a limited area in which to locate the multiple entries to the first floor required in most proposed options, and leads to inefficiency in program layouts. In some cases, this inefficiency leads to more square footage needed than outlined in the program, though egress requirements are satisfied with both the existing west stair and east on grade exit. A near-zero lot line, proximity to a busy intersection and pedestrian way, and the proclivity for shelter guests to gather in advance of the intake period only add to the dilemma.

Most of these issues, however, can be sufficiently addressed through the interior layout. A larger intake space and more equity between bunks reduces external queuing, and utilizing the first floor for shelter program eliminates the conflict between the building's vehicle traffic and both the heavily used sidewalk and busy Fairchild Street intersection. The neighboring Dane County parking structure could potentially be used for staff parking and by volunteers for deliveries. An on-street loading zone parking stall at the southeast corner of Doty Street could also be used for deliveries.

Option 1 solves the immediate problem of relocating the services currently provided at Grace Episcopal Church, but neglects the larger needs of the organization. Option 3 provides plenty of space for the shelter's program and maintains all current tenants but with the additional construction costs and the requirement for a new elevator and stair, the expense may prove prohibitive. Neither of these options fully address the safety and congestion caused by both vehicular and pedestrian traffic along Fairchild Street.

While a new location would need to be found for one of the existing tenants, Option 2 offers the best opportunity to meet the full needs of both the shelter and the ground floor tenant. It maintains separate entries for guests, volunteers and food delivery off Fairchild Street, and 2C in particular grants the most flexibility at the northeast corner, allowing it to function as either a public restroom or couples shelter. The arrangement of the bunk room and pay to stay allow for flexible use as needs change. It also eliminates the Fairchild Street Drive entrance to the building, improving the circulation and safety of both pedestrians and vehicles. However, the implementation of this option, with its couple's shelter, pay to stay, and shelter minus spaces would require some operational adjustment to Porchlight's current services. Yet to be determined is how the 24 hour public restroom would be supervised, secure, and maintained in this location.





# Code Analysis



## Code Analysis

Building Code - To comply with the Wisconsin Commercial Building Code enacted at the time of the State of Wisconsin review. It is expected to be the 2009 edition of the International Building Code subject to modifications specified in the Wisconsin Administrative Code chs. Comm 361 and 362.

Additional codes include:

Accessibility Code: ICC/ANSI A117.1 – 2003, ADAAG 2004.

Fire Code: International Fire Code – 2009 subject to modifications specified in Wisconsin Administrative Code ch. Comm 361.

Mechanical: International Mechanical Code – 2009 subject to modifications specified in Wisconsin Administrative Code chs. Comm 361 and 364.

Electrical: Wisconsin Administrative Code ch. Comm 316 (NEC – 2011).

Plumbing: Wisconsin Administrative Code chs. Comm 381 to 387.

Elevator: Wisconsin Administrative Code ch. Comm 318. (ASME A17.1 – 2013).

Energy: International Energy Conservation Code – 2009 subject to modifications specified in Wisconsin Administrative Code chs. Comm 361 and 363.

Fuel Gas Code: International Fuel Gas Code – 2009 subject to modifications specified in Wisconsin Administrative Code chs. Comm 361 and 365.

Fire Prevention: Wisconsin Administrative Code ch. Comm 314 (NFPA 1, Fire Code – 2009).

### Zoning:

City of Madison Zoning: UMX – Urban Mixed Use

- Maximum height: 6 Stories

### Building Use Classification:

Existing tenants: Storage S1 & S2.

Shelter: Residential Occupancy – R-1

- Mixed use occupancy – R-1 is most restrictive of uses.

1-HR Occupancy separations would be required between R-1 and S-1/S-2.

- The building will be protected throughout by an automatic sprinkler systems.
- Incidental use areas will be separated or protected as required by the building code.

### Allowable Heights & Area:

R-1: Type IIIB construction

- 4 floors & 16,000 sqft per floor (allowable) : area increase for sprinklers = 48,000 sqft per floor
- The building is allowed to be 55-feet in height.

## **Fire-Resistance Rating:**

Building elements (excluding any exterior bearing walls that are required to be 2-HR rated) do not need to be fire resistance rated as outlined in Table 601 in accordance with Chapter 6 of the International Building Code.

## **Means of Egress:**

Occupants:

- Shelter Occupants R-1 – 236 estimated max. (numbers based on actual occupancy)
- Mall Concourse Occupants – 54

Exits required in renovated areas: 2

- Option 1 & 2: (one in 1 hour rated enclosure, one on grade exit discharge)
- Option 3: (two in 2 hour rated enclosures)

Exit access travel distance:

- R & S-1= 250 feet with sprinklers, S-2 = 400 feet with sprinklers

Stair Width required: Min 44” required (actual  $(118 \times .3 = 35.4$ ” per exit))

## **Toilet Fixture Requirements:**

Water Closets

- Residential Occupancies – 1 water closets per 10 occupants
- Storage Occupancies – 1 water closet per 100 occupants.

Lavatories

- Residential Occupancies – 1 lavatories per 10 occupants.
- Storage Occupancies – 1 lavatory per 100 occupants.

Showers

- Residential Occupancies – 1 shower per 8 occupants.
- Storage Occupancies – NA

Drinking Fountains

- Residential Occupancies – 1 drinking fountain per 100 occupants.
- Storage Occupancies – 1 drinking fountain per 1,000 occupants.

Service Sinks

- Residential Occupancies – 1 service sink.
- Storage Occupancies – 1 service sink.

# Proposed MEP systems



## **Proposed New Building Systems**

### **Mechanical**

- 40 Ton air-cooled DX condensing unit on Roof to support the upper renovation for Shelter area.
- Indoor Air Handling DX unit will provide ventilation, heating/cooling to the Shelter areas.
  - Airflow 17,000 cfm
  - Dx Coil and Pumped Hot Water Coil
  - MERV 13 Filtration
  - Variable Volume with Variable Frequency Drives
  - Return Fan
  - Refrigeration cooling coil with digital or variable speed compressor
- Demand ventilation control for outside air requirements.
- Enclosure parking and service garage to be served with direct gas-fired makeup air units for Basement/Ground floor areas.
  - Ventilation and heating only. Basement and Ground floor Make-up air units. One for One replacement.
- Enclosure parking and service garage areas will need to maintain a minimum of 0.75 cfm/sq.ft.
  - Operates 5 hours over a 24 hr period.
  - Sensors are for parking garages for nitrogen dioxide (NO<sub>2</sub>) and for carbon monoxide (CO).
- Exhaust Systems: Exhaust from the toilet rooms, laundry, wet areas, housekeeping spaces, storage, and other similar spaces will be exhausted through the energy recovery unit located on roof. Mechanical rooms, Electrical room, Penthouse, Kitchen, Elevator Room(s) and similar spaces which require exhaust will be exhausted through the roof using individual exhaust fan(s) located in the penthouse.
- Heating will be provided by two natural gas-fired seal combustion condensing hot water. Each boiler will be sized for approximately 1/2 of the load to provide for redundancy. Each boiler will have an approximate input of 2,610 MBH. For future expansion of third floor will include space allocation for third boiler.
- Heating hot water will be distributed throughout the building with two (2) base mounted secondary pumps.
- The secondary pumps will be provided with variable frequency drives to control the pump speed based on system load requirements. The secondary pumps will be arranged in a lead-standby control mode. The heating hot water system will distribute water at 140°F.
- The hot water system will supply finned tube radiation, convectors, unit heaters, cabinet unit heaters, VAV box reheat coils. All terminal devices will be provided with 2-way modulating control valves with electric actuators.
- The maintenance mall offices and support rooms will be served by "Split Ductless" system. "Split Ductless" served by associated outdoor heat pump.
- City of Madison's Honeywell control systems will extend to control all new reheat coils, boilers, pumps, perimeter radiation serving the remodeling areas. A building-wide BACnet Direct Digital Control (DDC) system with graphics will control all HVAC equipment, including the air handling unit, make-up air units, boilers, pumps and all terminal units.

### **Plumbing**

- All existing domestic water supply piping will be removed back to the new meter/water service entrance location. The existing water heater will be removed completely. The existing plumbing fixtures will be removed completely.
- The existing storm piping and drains will remain as is.
- The existing 2-1/2" water service will be removed and a new combined domestic / fire protection 6" water service will be installed from the city main at the street. This new water service will supply water to all plumbing fixtures within the building. A new water meter with full sized bypass will be provided. New water distribution piping including cold water, soft cold water, hot water, and hot water return will be connected to all plumbing equipment, fixtures and appliances through piping route, generally above the ceiling.
- Water heating demand and storage to be considered for any change in occupancy use.

- Domestic hot water will be produced by a single, 120 gallon, stainless steel, storage type gas-fired water heater.
- The building's domestic water heater providing hot water to plumbing fixtures is in a remote location that will require a hot water recirculation system to be installed throughout the building to assure quick hot water response time at all plumbing fixtures requiring hot water supply.
- A water softening system will be installed upstream of the water heaters to condition the hot water supply and extend the life of the hot water equipment.
- Hot water system temperature will be maintained by continuous re-circulation of the hot water with an in-line circulating pump which will re-circulate the building's hot water distribution loop.
- Plan for water-efficient toilets and urinals that flush thoroughly. Water closets should be Cimarron model from Kohler. Flush levers shall be located on open side of room/stall. Urinals shall be Bardon model from Kohler.
- Sensor-operated faucets and flushing mechanisms at restroom plumbing fixtures will help thwart pranksters and vandals.
- Plumbing systems for the Bldg will be designed in compliance with the Wisconsin Plumbing Code, SPS Chapters 381-384.
- Non-potable water system will provide make-up water to mechanical (HVAC) systems.
- The existing gas service with existing gas meter and supply piping will continue to serve the building.

#### PLUMBING FIXTURES

Fixtures will comply with ADA Accessibility Guidelines where required.

- Lavatory drains will have a grid strainer and offset tailpiece. Sink drains will have a basket strainer and tailpiece. P-traps will be cast brass or 17 gauge tubular brass, slip nuts, polished chrome finish. Supplies will be brass angle stops with loose key handles, 3/8" copper risers, polished chrome finish. Wall-hung vitreous china fixtures will have a cast iron chair type carrier.
- Water Closets: Elongated floor-mounted 1.28 gpf high efficiency fixture with white finish, open front seat and flush tanks.
  - Manufacturer: Kohler, American Standard, Zurn, or equal
- Urinals: Wall-hung, wash down 0.125 gpf (one pint per flush) high efficiency (HEU) fixture with white finish, top spud and sensor-operated flush valve.
  - Manufacturer: Kohler, American Standard, Zurn, or equal
  - Flush Valve Manufacturers: Kohler, Sloan, Zurn, or equal
- Lavatories: Wall-hung vitreous china with white finish, sensor-operated faucets, flow controlled to 0.5 gpm.
  - Fixture Manufacturer: Kohler, American Standard, Zurn, or equal
  - Faucet Manufacturer: Kohler, Chicago Faucet, Sloan, or equal
- Sinks: Single or double-compartment, self-rimming counter-mount, 18 gauge, 304 stainless steel.
  - Sizes will vary to accommodate casework dimensions
  - Flow rates will vary to accommodate designation of fixture use
  - Sink Manufacturer: Elkay, Just, or equal
  - Faucet Manufacturer: Chicago Faucet, Zurn, or equal
- Mop Basins: 24" x 24" x 10" molded stone with mixing faucet with hose connection vacuum breaker, and stainless steel wall guards.
  - Fixture Manufacturer: Fiat, Mustee, or equal
  - Faucet Manufacturer: Chicago Faucet, Zurn, or equal
- Water Coolers: Wall-mounted electric, two-basin design, with recessed-in-wall refrigeration unit.
  - Manufacturer: Elkay, Halsey Taylor, Oasis, or equal
- Tank-Type Water Heaters
  - Manufacturers: A.O. Smith, Bradford-White, Rheem/Ruud
  - GWH-1: Gas storage-type water heater will be provided to supply adequate hot water to all plumbing fixtures and appliances. Water heater shall be equal to A.O. Smith Cyclone.



- Water Softeners
  - Manufacturers: Hellenbrand, Capitol, Culligan
  - WS-1: Duplex alternating ion exchange water softener with meter-initiated regeneration and brine recovery. The unit will be providing soft water supply to water heater and all plumbing fixtures.
- Indoor Hose Bibbs: 3/4" size, with hose connection vacuum breaker.
- Exterior Wall Hydrants: 3/4" size, freezeless-type with loose key operation and hose connection vacuum breaker.

### **Fire protection**

- The fire sprinkler wet system to be considered for any change in occupancy use for fully functional system.
- Sprinkler system; smoke detectors that connect directly with alarm monitoring service.
- Sprinklers in areas with finished ceilings will be UL listed semi-recessed or concealed quick response pendant type. Finish of sprinkler and escutcheon/cover plate shall be white.
- Sprinklers in unfinished areas or rooms without ceilings will be brass quick response upright type.
- The renovated building will be provided with an Automatic Fire Sprinkler System per NFPA 13. A combined domestic / fire protection water service, double check valve assembly, one system riser for the renovated areas of the building, sprinklers through the renovated areas of the building, inspectors' tests, and a 2 way fire department inlet connection per Madison Fire Department requirements.
- The automatic sprinkler system design will be based upon a sprinkler discharge density of 0.15 gpm/square foot over the most hydraulically remote 1500 square feet for the shelter area, parking garage, mall maintenance areas, mechanical rooms, and storage rooms.
- Standpipes in stairwells. Sprinkler system design will include a 250-gpm hose allowance.

### **Electrical**

#### FIRE ALARM SYSTEM

- No remote annunciator was found. As part of the renovation project, a remote annunciator will be added in the main vestibule or location determined by fire department.
- One main fire alarm panel will serve the entire building. Location of the fire panel should be carefully considered.
- Audible and visual signaling devices should be provided in all public areas including occupancy offices. Additional signaling devices should be provided in mechanical equipment rooms. Audio/visual signals should be placed to cover all areas of the building for alarm signaling. Fire alarm pull stations and visual and audible devices should be located to comply with public mode operations
- A sprinkler system is being added to the building to increase the protection level. The sprinkler system shall be monitored by the fire alarm system.
- System smoke detectors are not required by code and should be discussed with the owner as to whether they see value in having them.

#### LIGHTING

- All lighting and controls should comply with local code requirements and city's standards. Lighting layouts will provide an average of 5 fc maintained ambient light level in parking and service garage areas.
- A complete lighting system for all indoor illumination will be provided. The indoor lighting system will consist primarily of energy-efficient LED or fluorescent lighting fixtures for area lighting. Lighting strategies will evolve as part of the interior architecture design which an emphasis placed on using simple products integrated into architectural elements to create a pleasant interior environment.
- Indoor lighting controls shall be simple and standalone. We do not anticipate the need for a low voltage relay based lighting control system. Occupancy sensors shall be used to comply with automatic shut off requirements. If the budget allows, automatic daylight sensors shall be used to control lighting within areas deemed to have sufficient natural light.

- “Daylight” harvesting will be considered based on architectural layouts. When adequate levels of daylight is available, the daylight zones should be controlled to a preset level using automatic dimming controls.

#### POWER

- The existing electrical service currently serving the building is fed from feeders from MG&E utility vault at 208Y/120V which then feeds the power to the building. The main distribution system is 208Y/120V, 3ph, 400A electrical service.
- The 400 Amp service will be replaced as changes for any significant renovation system are made to building. System is beyond it’s useful life expectancy.
- A surge protection device shall be provided at the main distribution panel. This devices aids in protecting the electrical system and connected components from energy surges associated with lightning, utility events and internally generated surges like those from motors and compressors.
- Emergency power shall be provided to lighting and fire alarm system through the use of batteries.
- New branch circuit panels shall be provided on each level to serve lighting, equipment and plug loads.
- Point-of-use power connection devices will include specification grade receptacles (120 V, 20 A, single phase), power receptacles and surface raceway if necessary.
- Floor boxes or poke-thru devices will be provided as required to serve free standing equipment if power poles or another means is not permitted.
- All circuit wiring will be routed concealed within walls, partitions, or ceiling spaces. Surface-mounted conduit or raceway will be minimized and used only in non-finished spaces.
- Further discussion should occur with the building owner regarding the use of a small natural gas generator which could be mounted outside.

#### LOW VOLTAGE SYSTEMS (VOICE/DATA AND ACCESS CONTROL

- Provide junction boxes, floor boxes, conduit and other elements as necessary to support installation and routing of conductors by others for all low voltage systems. All low voltage cabling, terminations, and devices are provided and installed by the owner.