

# **FIRE STATION NO. 3 LONG TERM NEEDS ASSESSMENT**

## **INTRODUCTION**

The City of Novi, in continuing its efforts to monitor and evaluate the present facilities of the Department of Public Service and Department of Public Safety, commissioned the firm of Sidock Architects to conduct an inspection and evaluation of the conditions of those physical plant facilities. This inspection and evaluation included the physical assessment of each facility’s capability to accomplish the operational needs of the Department and to recommend short and long term improvements to further that mission.

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## EXISTING FACILITY ASSESSMENT



### SITE VISIT

On November 8, 2013, Sidock Architects conducted an on-site inspection and analysis of Fire Station No. 3 with the assistance of the Novi Fire Department administration and staff, and representatives from the City of Novi Facility Operations. The inspection included brief discussions with the fire fighters and staff at the station and a general inspection tour of the facility.

### Brief Building History and Operations

Fire Station No. 3 was built in 1978 to serve the southern area of the City of Novi. The station is located in an industrial district on the south side of Nine Mile Road between Novi Road and Meadowbrook on the west side of Roethel Drive.

The station is staffed as follows:	Monday – Friday	12 Hour Shifts
- Unit #1	2-4 fire fighters	Monday – Friday
- Unit #2	2 fire fighters	Wednesday, Thursday, Friday
- Unit #3	2 fire fighters	Saturday, Sunday
		6 am to 6 pm
		6 pm to 6 am
		8 am to 8 pm

### Facility Description

Station No. 3 is a 2-bay drive through station with a one story area adjacent to the apparatus bay housing support spaces and administration and living quarters. The building is approximately 3,880 sq. ft.

It is constructed with concrete masonry exterior bearing walls with a brick veneer. The apparatus bay walls are composed of 8" concrete masonry units (CMU) and a 4" brick veneer. The one story support and living area is composed of an 8" concrete masonry unit, a 2" rigid cavity insulation and 4" brick

vener. The roof is a single ply roof membrane over rigid insulation on metal roof decking on structural steel joist and beams bearing on the masonry walls with a pre-finished sheet metal coping on the entire perimeter.

- Interior walls are either CMU or metal stud with gypsum wallboard, all painted.
- Interior floor finishes include carpeting in the Watch Room and Living Area, vinyl tile in the Kitchen/Dining area, ceramic tile in the toilet/shower areas and concrete floors in the Apparatus, Mechanical and Hose Drying/Work/Exercise Area.
- Clear height to the underside of the metal decking in the Apparatus Bay is 15'-4", 11'-0" in the support areas and 10'-6" in the living areas.
- The floor slab in the Apparatus Bay is 6" lower than that of the Living Area and has cast-in-place trench drains with removable painted metal grating centered in each bay.
- Ceilings in the Living Areas are 2' x 2' acoustical ceiling tile and are 8'-0" high. Toilet rooms have painted gypsum wallboard ceilings.
- Windows are aluminum framed with insulated glass.
- The station has fire protection sprinklers located only in the mechanical and storage rooms.

**Summary of Areas**

<u>EXISTING PROGRAM AREAS</u>	<u>APPROXIMATE AREA</u>
Apparatus Bays (2@17'-3" x 58')	2,000
Hose Drying/Work Space/Exercise	260
Watch Room	128
Living Area/Kitchen/Dining	556
Locker Rooms	129
Men's Toilet and Shower Room	150
Women's Toilet and Shower Room	90
Outdoor Storage Room	93
Mechanical Room	113
Corridors	122
Entry	<u>48</u>
Sub-Total	3,470 Sq. Ft.
Circulation Space/Walls	<u>418</u>
TOTAL AREA	3,880 Sq. Ft.

## Site Description

The site is trapezoidal in shape and is approximately 1.2 acres in size. The site is located in an industrial district. The north side of the property slopes steeply to Nine Mile Road, and there is a tendency for storm drainage and flooding problems. The building is set back approximately 120 ft. from the right-of-way of Nine Mile Road and approximately 90 ft. from the right-of-way of Roethel Drive to the east. The apparatus drive enters and exits on Roethel Drive. The east side apron is poured concrete and there is no west apron at the apparatus bay. The drive is asphalt paving. The fire station has a main entrance on the east side and secondary entrance on the west and south elevations.

The site has four (4) parking spots located at the west side for staff and 11 parking spaces on the north side for staff and visitors. There is one (1) barrier free space among the north parking spaces. The station has grass/landscaped areas on the immediate north side of the building and to the west beyond the drive. An emergency generator and electrical transformer are located on the north side of the station on concrete pads.

## ARCHITECTURAL ASSESSMENT

### A. Site and Access

1. Parking is adequate for the current staffing.
2. The concrete apron at the egress side of the Apparatus Bay is adequate in length and in reasonably good condition.
3. The asphalt drive is in fair condition given the heavy vehicle traffic. The City has conducted a paving assessment and schedule for repair and/or replacement.



4. The asphalt paved area for the apparatus returning to the Apparatus Bay appears to be adequate for the present vehicles. Larger vehicles, if assigned to the station, would require a larger radius than can be provided at this station due to the site size.

5. An existing light pole is located in the paved area on the west side of the site which needs to be replaced and relocated out of the vehicle drive area.



6. The emergency generator and the electrical transformer are located close to the drive on the north side of the station, and should have bumper posts added for protection from vehicles backing out of the parking spaces on the north side of the site and from vehicle traffic along the drive.



7. There is some cracking of concrete curbs adjacent to the overhead doors.



8. Existing bumper posts at the overhead doors restrict the ingress and egress openings to and from the Apparatus Bays.

B. Exterior Building Envelope

1. Exterior Walls

- a. Brick veneer appears to be in good condition except for small area on north elevation needing to be tuckpointed.
- b. Some minor cracking at steel lintel at south entry door.
- c. Steel angles and channels at overhead doors show some signs of rusting.

2. Exterior Doors and Windows

- a. Overhead doors are new and in very good condition. They are insulated metal panels with insulated glazing units.
- b. Aluminum framed main entry door on the east elevation meets ADA guidelines for barrier free access.
- c. Exterior doors are key and key card access.
- d. Exterior aluminum framed windows are in good condition. Screen needs to be replaced on the north elevation window in the Living Area.

3. Exterior Soffits and Lighting

- a. Exterior building soffit under canopy in good condition, but needs scraping and repainting.
- b. There are three (3) exterior light poles on the site. The west light located in the drive area needs to be replaced and relocated out of the traffic flow.

4. Roofing

- a. Roof appears to be in good condition with no reported leaks.

C. Interior Construction

- 1. Interior masonry walls are in good condition with no major cracking.
- 2. Interior door hardware is not barrier free. Lever handles are required.
- 3. Carpeting in Living/Dining and in Office areas is worn and needs to be replaced.
- 4. Acoustic ceiling panels are in poor condition and need to be replaced.

D. Functional Assessment

1. Apparatus Bays

- a. Apparatus Bay overhead doors are 12 ft wide x 12 ft high with a 2 ft. wide pier between them. On the exterior, the curb and the bumper posts reduce this width to approximately 10 ft. wide. This is too narrow, especially for vehicles backing into the bay.
- b. There is an emergency vehicle exhaust system in place – by Plymovent. One (1) additional drop is needed to complete the coverage for this station.

- c. The existing speaker system works intermittently and is audible only when no vehicles or equipment are operating.
  - d. The turnout gear is stored in wall-mounted gear racks. With the narrow bays, there is barely enough clearance to open doors on the vehicles, especially with an Engine or larger vehicle. The clearance is sufficient for ambulances and small Rescue vehicles.
  - e. The floor finish is sealed concrete and has no slip resistant finish.
  - f. Currently there are one (1) Engine, one (1) Rescue, one (1) command SUV and, occasionally, a CEMS ambulance.
2. Work Room
- a. This space incorporates multiple activities:
    - (1) Laundry – washer, dryer and laundry tub
    - (2) SCBA tank storage
    - (3) Roof hatch ladder access
    - (4) Work counter
    - (5) Exercise space and equipment
    - (6) Miscellaneous storage
3. Watch Room/Control Room
- a. Includes computer and communications equipment.
  - b. Carpeted floor is worn and needs replacement.
  - c. Viewing window into Apparatus Bay with fire shutter.
  - d. Counter top edges and cabinets are worn and need replacement.
  - e. Ceiling tiles are stained and require replacement.
4. Living Area/Kitchen/Dining
- a. Carpeted floor in the Living Area is worn and needs replacement.
  - b. Kitchen cabinets and counters are showing signs of wear and need replacement.
  - c. Need Kitchen exhaust fan.
  - d. Ceiling tiles are stained and require replacement.
5. Locker/Sleeping Room
- a. The locker room is combined with the sleeping area.
  - b. The locker room has small lockers requiring the fire fighters to use multiple lockers. There is no separation of male and female lockers.
  - c. Ceiling tiles are stained and require replacement.

- 6. Men's Toilet/Shower Room
  - a. Ceramic tiles are cracked and/or missing in multiple locations – both wall tile and base.



- b. Overall condition is worn and requires updating of materials and finishes.
- 7. Women's Toilet/Shower Room
  - a. Overall condition is worn and requires updating of materials and finishes.
  - b. Ceramic tiles are missing.
- 8. Entry/Corridor
  - a. Ceiling tiles are stained or cracked and require replacement.
  - b. Carpeted floor is worn and needs replacement.
- 9. General
  - a. Sleeping quarters are combined with lockers with no separation of function.
  - b. There is limited storage and many rooms take on multiple uses including storage.
  - c. The Apparatus Bay sizes are small for modern emergency vehicles and minimal clearances are available for circulation and storage of gear and equipment.
  - d. The Apparatus Bay storage area is multi-functional, restricting the dedicated use of the area for laundry, exercise, maintenance & repair, or storage functions.

E. Mechanical Assessment

The mechanical systems have been well maintained and are functioning properly with no serious reported problems.

F. Electrical Assessment

The electrical systems are functioning properly. Updated lighting and power systems are needed, particularly with potential expansion of the facility.



## G. Summary/Evaluation

Station No. 3 is over 30 years old, but remains in good physical condition. There are signs of the wear and tear of an older facility and a general updating of materials and finishes is required. The station is small for modern equipment and functions. It is located on a small site with little room for expansion that could upgrade the station to a fully functional, 24 hours per day, 7 days per week, emergency response station. There is some room for expansion at the north side and the west end of the station, but it is not as viable due to the existing mechanical room and work room locations/functions to add needed living or locker room or sleeping quarters space. Due to the overall small size, many of the rooms are multi-functional and are cluttered with storage overflow.

### Cosmetic Flaws

- The asphalt paving has cracking, standing water ponding and is in poor condition. This may be addressed in the City's pavement assessment/replacement program.
- Exterior lintels, doors and windows need repainting.
- Minor brick tuck pointing is needed on the north elevation.
- Acoustical ceilings should be replaced throughout the station.
- Carpeting should be replaced throughout the station.
- Countertops and cabinets are in need of replacement.
- Toilet/shower rooms need to be updated and ceramic tile needs to be replaced. Toilet fixtures and partitions should also be replaced at the same time.

### Design/Functional Flaws

- A non-slip epoxy floor system should be applied in the Apparatus Bays.
- The site light in the rear drive should be replaced and relocated out of the driveway.
- Additional space should be added to provide a separate locker room or a separation concept to divide the locker room area from the sleeping area.
- Additional space should be added to provide and consolidate storage.



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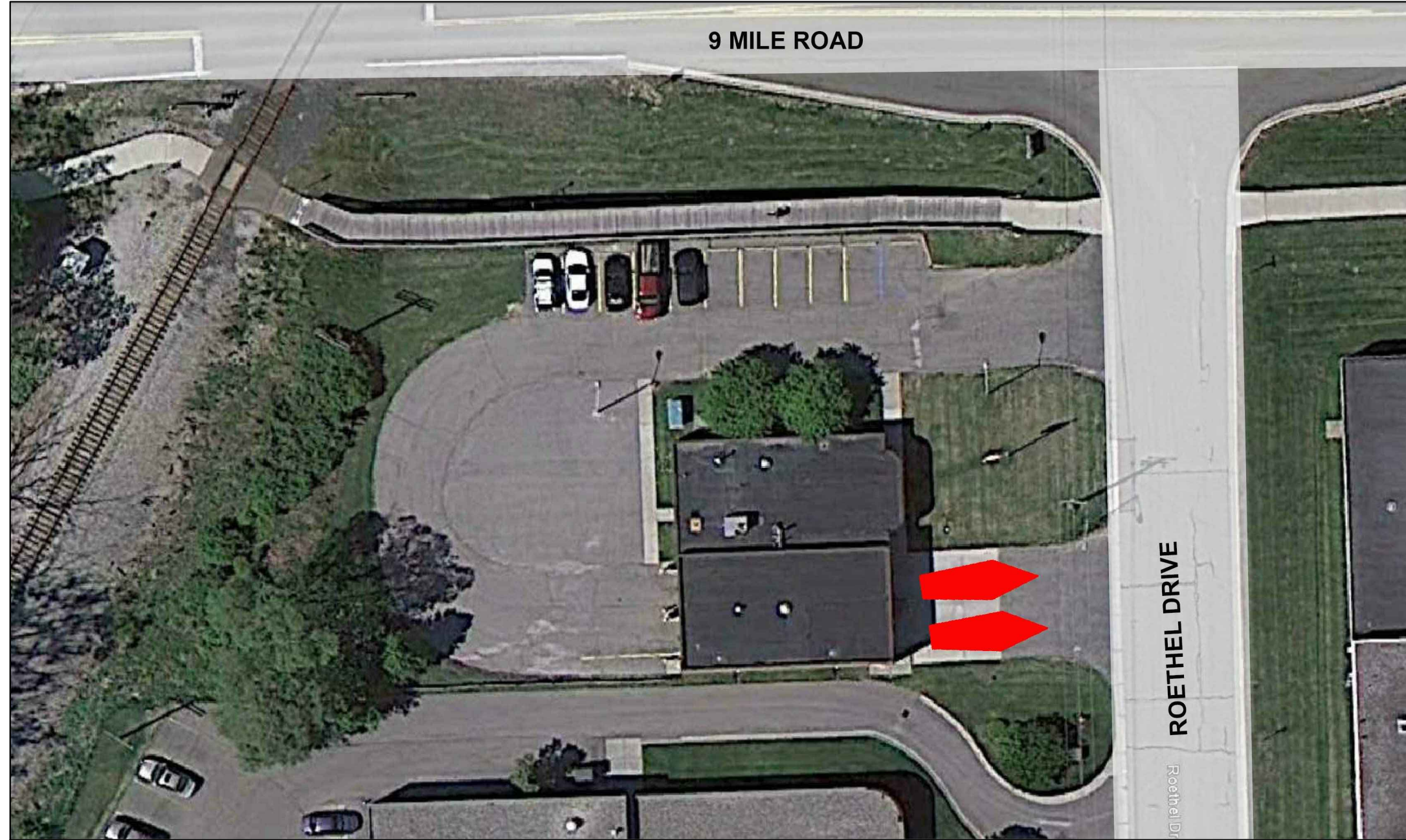
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Key Plan: NO SCALE



Client:  
CITY OF NOVI  
MICHIGAN

Project:  
NEEDS ASSESSMENT

Seal:

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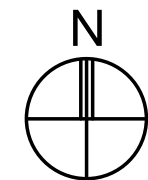
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FIRE STATION #3  
AERIAL VIEW

Project Number: 1343C

Sheet Number: FS3-AV

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# FIRE STATION #3 - AERIAL VIEW



## **FIRE STATION NO. 3 – RECOMMENDATIONS**

Fire Station No. 3, constructed in 1978 has been well maintained and generally is in good physical condition. Due to the changes in the fire service in the last 30 years, the station exhibits the pressures of a building not capable of accommodating those changes. Combined with necessary maintenance/replacement of building elements is a need for reconfiguration and expansion to meet the requirements of day-to-day 24/7 operations and the mission of the Novi Fire Department.

Our evaluation of Fire Station No. 3 has identified the following items requiring maintenance and/or replacement based on the physical inspection of the facility, discussions with Fire Department staff and our experience with the design of fire stations:

### **HIGH PRIORITY ITEMS**

1. <b>Vehicle Exhaust Drop</b>	\$ 5,000.00
New Plymovent exhaust drop	
2. <b>Epoxy Floor in Apparatus Bay</b>	\$ 15,000.00
Non-slip finish applied to concrete floor	
3. <b>Parking Lot/Drive Repair</b>	\$ 84,900.00*
HMA Overlay and drainage	
High Priority Total	<u>\$ 104,900.00</u>

### **MEDIUM PRIORITY ITEMS**

1. Repaint balance of station	\$ 5,000.00
2. Kitchen renovation	\$ 15,000.00
3. Update Watch Room finishes/cabinets	\$ 7,500.00
4. Overband crack seal	<u>\$ 1,800.00*</u>
Medium Priority Total	\$ 29,300.00

\*-As per URS Parking Lot Inventory and Maintenance Plan report dated January 17, 2014

**ADDITION/RENOVATION**

In reviewing the site limitations, there is no room for substantial additions to Fire Station No. 3. There is, however, need for increased storage and adequate locker room areas and a separate sleeping area. A diagrammatic floor plan is included at the end of this section to account for separate locker and sleeping areas and upgrading the shower rooms.

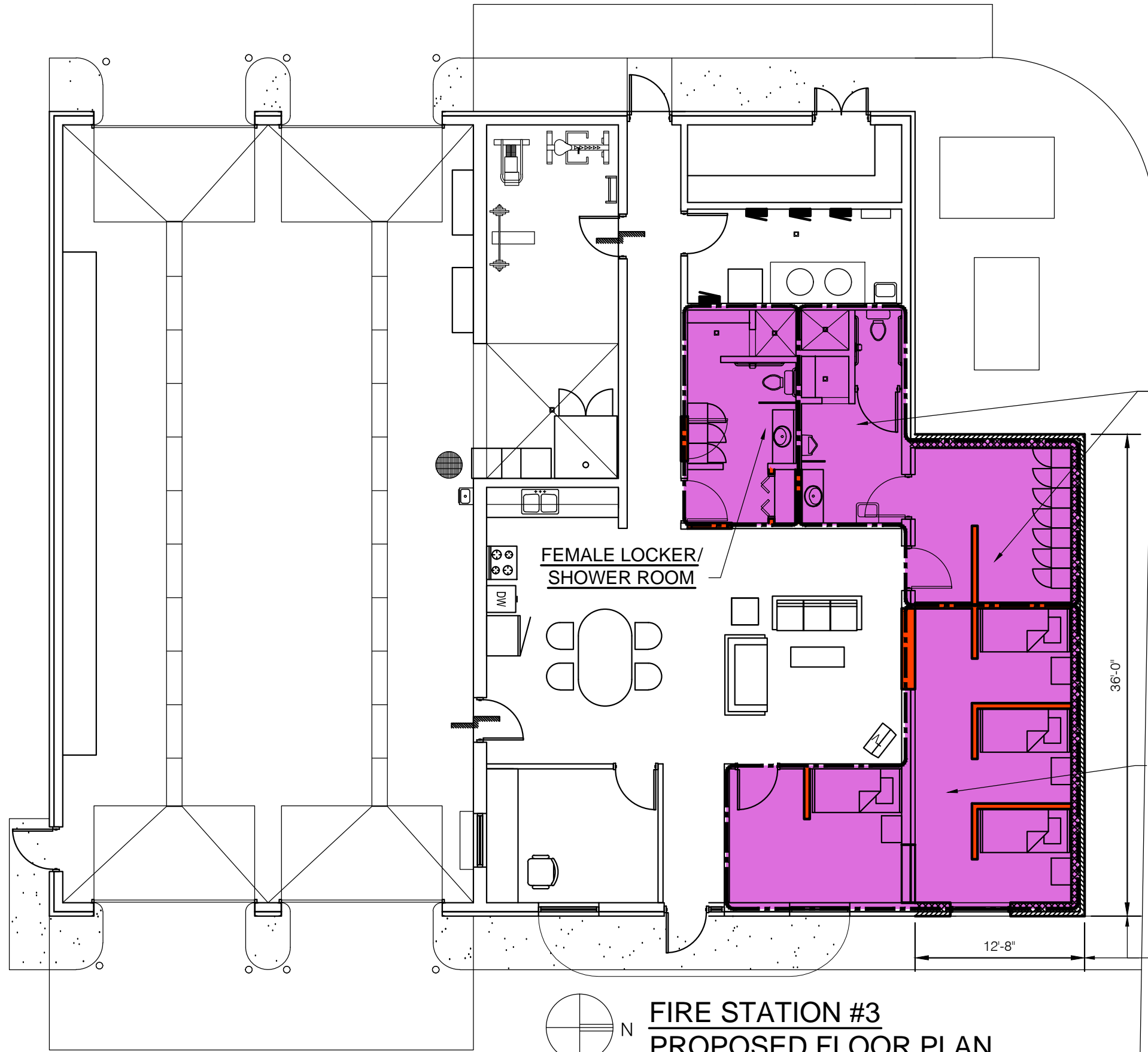
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| <b>1. Addition/Renovation</b>  | <b>\$ 236,900.00</b> |
| Divided sleeping area and lockers. Relocation of site light in parking lot area. |                      |

**ALTERNATIVES**

Given the site limitations, the age of the facility, the limited viability of expanding the station to provide needed functions, serious consideration should be given to construct a new satellite station to replace this station. From a program of area requirements, a satellite station of 6,000 sq. ft. could satisfy the Department’s needs with an estimated project cost of \$ 1,875,000.00.

For comparison purposes, the following is the estimated construction cost for a new satellite fire station along with an estimate of “soft costs” for a total project cost. Soft costs are exclusive of land acquisition costs, but include soils investigation, special testing during construction as an “essential building”, architectural/engineering fees, move costs, telephone equipment, loose furniture/furnishings, utility company service charges, legal/financial fees, permits & fees by other agencies and a project contingency. A “rule of thumb” is that soft costs run 25 to 30% of the construction costs. 25% was used for this estimate.

New Fire Station	\$ 1,500,000.00
6,000 sq ft @ \$250/sq ft	
Soft Costs	\$ 375,000.00
@ 25% of construction cost	<hr/>
 TOTAL ESTIMATED PROJECT COST	 \$ 1,875,000.00



**FIRE STATION #3  
PROPOSED FLOOR PLAN**



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 FIRE STATION #3  
 PROPOSED  
 FLOOR PLAN

Project Number: 13439

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**MALE LOCKER/  
SHOWER ROOM**

EXISTING  
DRIVE

**NEW BUNK ROOM**

**PROPOSED  
NEW ADDITION**

36'-0"

12'-8"