

# Fire Station Restoration

## Interior Renderings and Current Interior Pictures



Figure 1: Proposed new west entrance



Figure 2: Existing interior



Figure 3: Proposed open plan work space



Figure 4: Existing truck bay and overhead door



Figure 5: Proposed new conference room (in old truck bay)



Figure 6: Existing truck bay area



Figure 7: Proposed work open plan work area



Figure 8: Existing Hose tower and well pump (west wall)

## Structural Cross Sections and Details

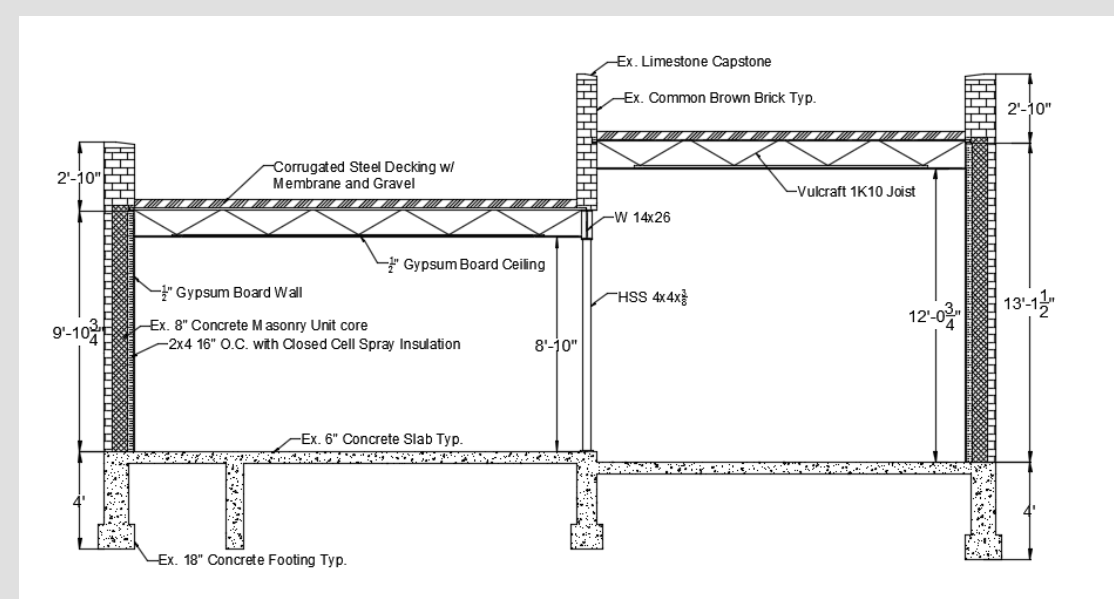


Figure 15: Structural cross-section of new roof and bearing beam



Figure 16: Current structural roof section



Figure 17: Structural cross-section of new roof

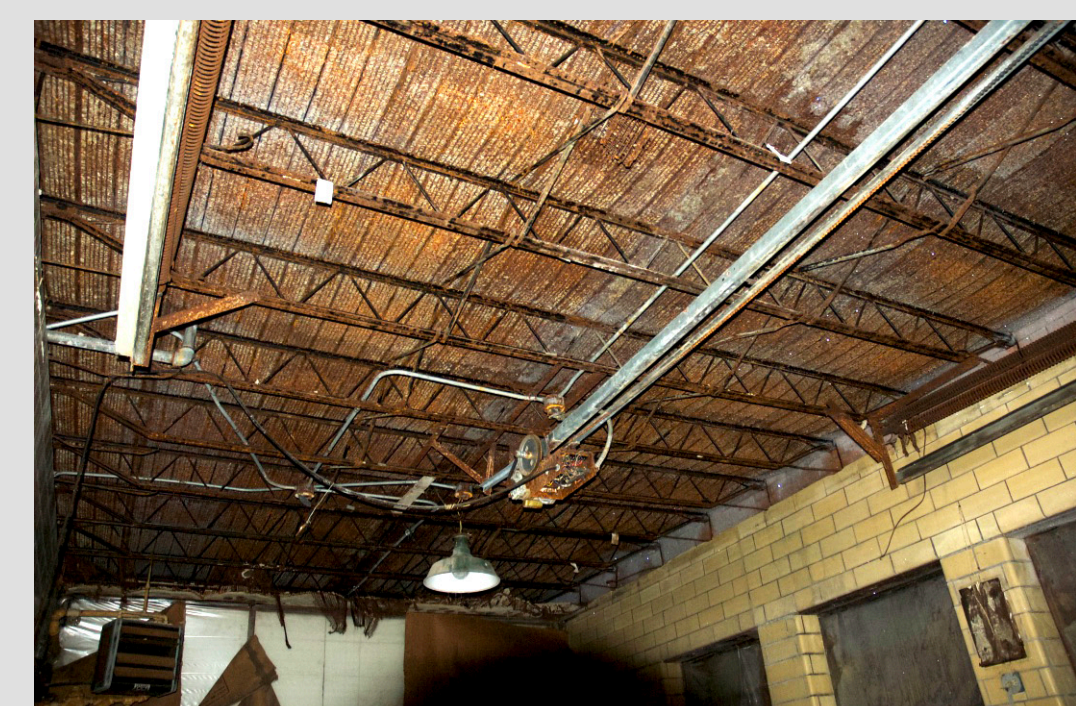
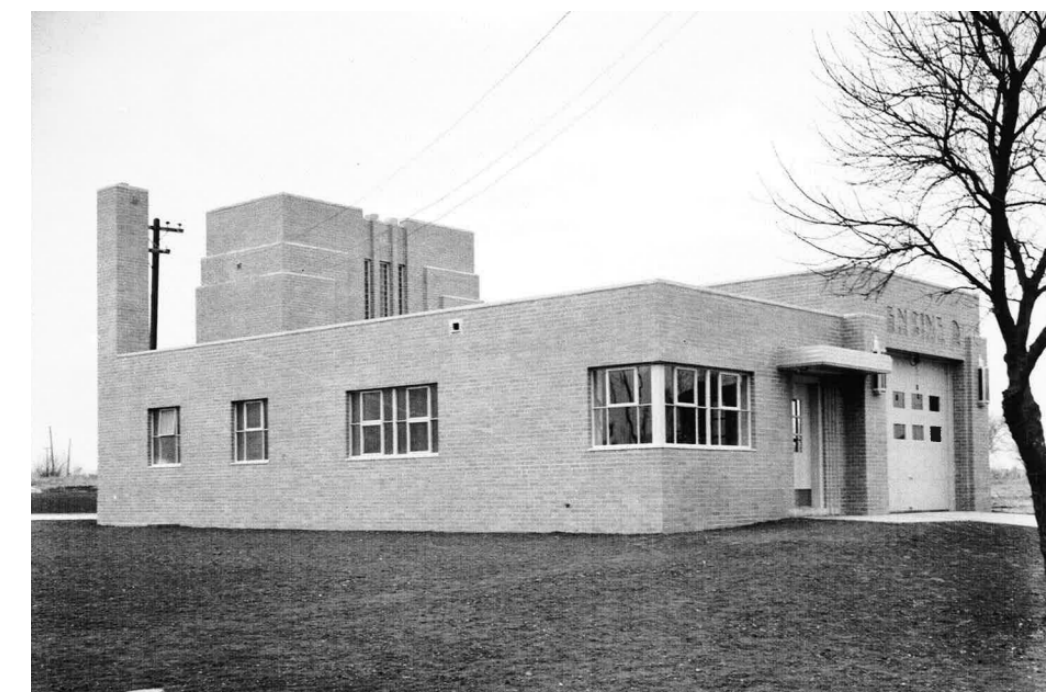


Figure 18: Current structural roof section



## Mason City, IA

### Design Objective:

The goal of this project was to design a plan to restore and repurpose an abandoned firehouse station in Mason City, IA while honoring the style of the building and minimizing negative societal impacts.

### Completed Design:

The completed design is a proposed office space with an open floor plan, allowing for the interior space to be rearranged based on the use of the building. Some key features of the completed design include a renovated brick exterior, a renovated interior space with removal of load bearing walls replaced with load bearing columns, an expanded parking lot, a newly designed roof system, and all new doors and windows.

The top left area of the poster features the current state of the interior shown in Figures 2, 4, 6, and 8. The newly renovated interior space with possible furniture layout is shown in Figures 1, 3, 5, and 7. The interior finishes are brick veneer, gypsum board, and polished concrete floor. The interior includes a kitchen/breakroom area and bathrooms. A suggested area for a conference room is also seen.

The top right area of this poster features the newly renovated brick exterior. The current brick exterior can be seen in Figures 10, 12, and 14. The building will be replaced with the same color and type of brick to sustain the original design. Figures 9, 11, and 13 show exterior renderings of the site with replaced brick, the replacement of the overhead truck door on the east side of the building with a new wall to close the opening, and the new main entrance on the west side.

The bottom left shows interior renderings of the structural cross sections in Figures 15 and 17. Figures 16 and 18 show the current structural cross sections. The renderings show the newly renovated roof as well.

The bottom right area of this poster shows the project location in Figure 19 and the proposed site layout with utilities and a bio retention cell in Figures 20, 21, and 22. The site layout also displays the expanded parking lot along the west side of the building.

### Conclusion/Recommendation:

D3 Consultants believes that renovating and repurposing the Fire Station into an open layout office space is the best option for the City of Mason City. Some of the key points of this option include a redesigned roof, an expanded parking lot, a renovated brick exterior, and a modern open space interior. This design stresses the importance of the exterior look of the building, and we believe that is how this building will stay historically significant. The estimated cost of construction shown below is reasonable and worth the cost. The Fire House Station is an iconic building in Mason City and honoring its significance will be achieved with this restoration.

## Engineer's Opinion of Probable Cost

FIRE HOUSE RENOVATION 2020 SOUTH FEDERAL AVE MASON CITY, IA APRIL 28, 2017	
SUBTOTAL SITE WORK	\$35,000
SUBTOTAL EXTERIOR RENOVATION	\$103,000
SUBTOTAL INTERIOR RENOVATION	\$83,000
SUBTOTAL SELECTIVE DEMOLITION	\$28,000
PROJECT SUBTOTAL	\$249,000
CONTINGENCY @25%	\$62,250
<b>TOTAL BUILDING COST</b>	<b>\$311,500</b>

## References

International Building Code (IBC) 2015  
Fire Code 2012  
AISC Steel Design Manual 2015  
Iowa DOT Standards

Weatherization Assistance Program Technical Assistance Center (WAPTAC)  
RSMeans Online Construction Estimating Data, [www.rsmeans.com](http://www.rsmeans.com)  
Whole House Online Load Calculator, [www.loadcalc.net](http://www.loadcalc.net)  
Iowa Department of Natural Resources (DNR)  
City of Mason City Zoning Ordinances

## Exterior Renderings of Site and Current Pictures of Exterior



Figure 9: North and West side new rendered exterior



Figure 10: North and West side current exterior



Figure 11: East side new rendered exterior



Figure 12: East side current exterior



Figure 13: South west exterior render



Figure 14: South side current exterior

## Site and Location Map

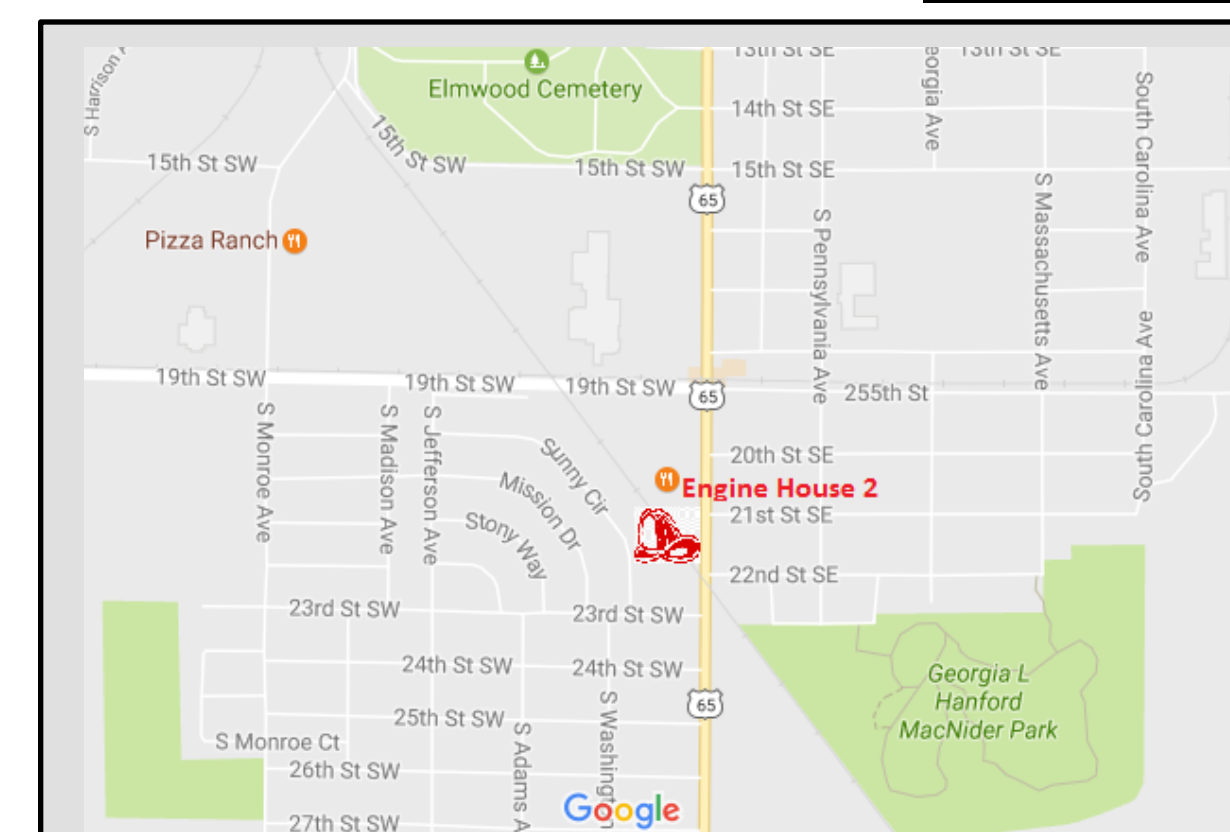


Figure 19: Project location

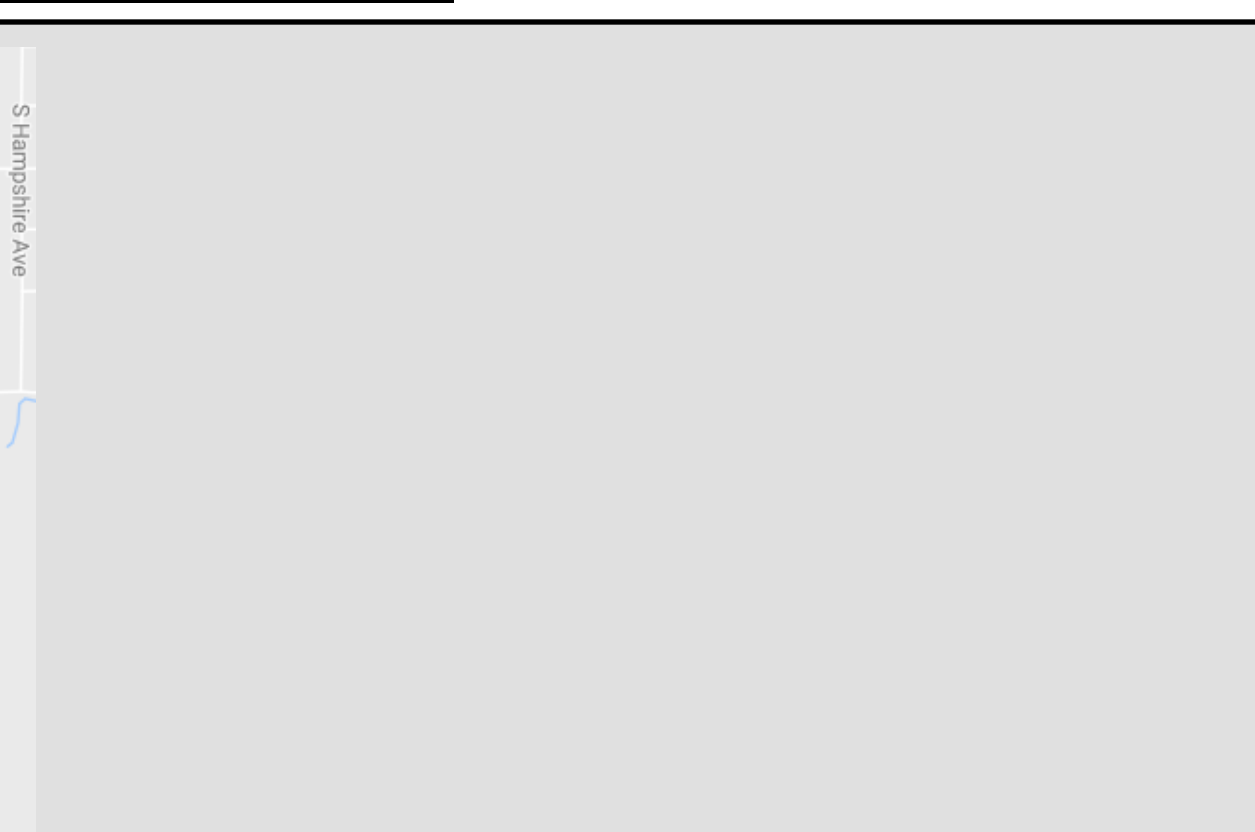


Figure 20: Proposed design of site layout



Figure 21: Dimensionalized site layout, along with utilities

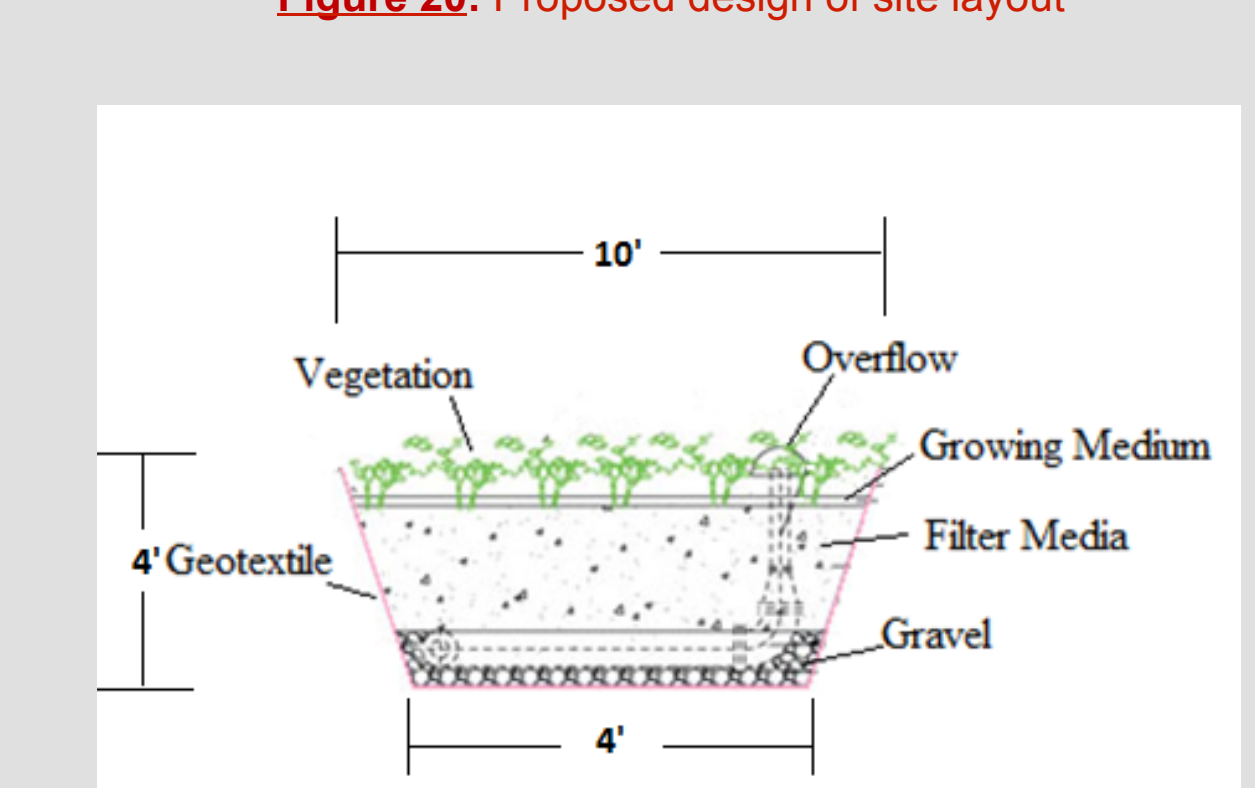


Figure 22: Proposed design of bio retention cell



Figure 23: Polyhedral hollow ball void ratio of 90-95%, this is the trickling media