City of Austin
Fire Station No. 3

Introductions and Context

Alex Jenota, Project Manager
Flintco – General Contractor

Historic Landmark Commission – Design Overview Presentations
24 May 2021

Outline

Introductions and Context
Alex Janota, Project Manager
Flintco – General Contractor

Structural Damage
Barry Krieger, Principal
JQ Infrastructure – Structural Engineer

Cost Implications and Alternatives
Michelle Noriega, Project Manager
City of Austin – Client

Design Proposal
Rob Robbins, Studio Director
WestEast Design Group – Architect

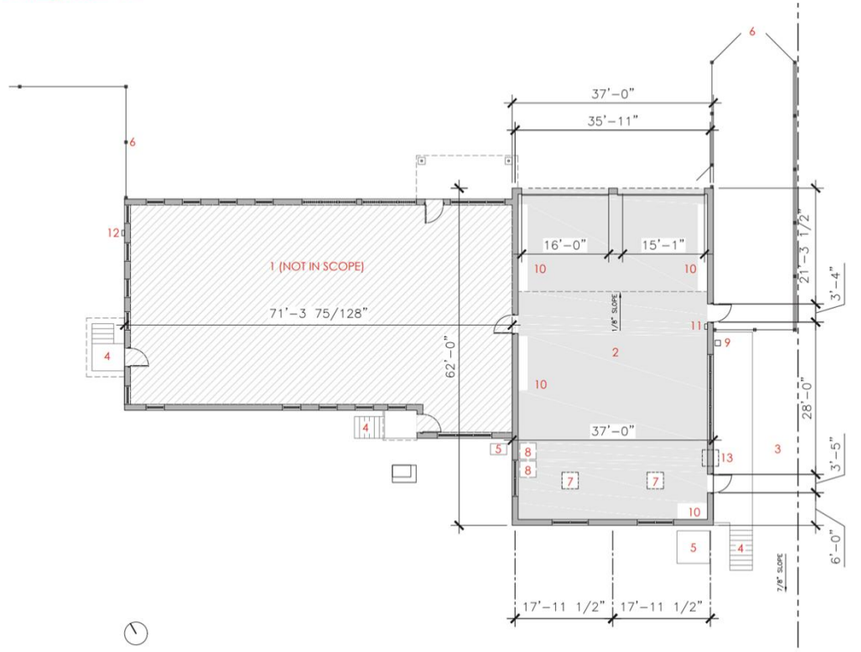
The Plan Forward
Tony Haden, Division Chief
Austin Fire Department – End User

Context

Location: 201 West 30th St

Currently, all fire trucks are being parked outside the apparatus bay.

Recent changes to the floodplain maps cause a significant portion of the building to be in the floodplain.



Overview

Construction completed on February 21, 1957

Architect:
Roy Thomas

Does not have any Landmark designations at present

Adjacent to the Aldridge Place Historic District

Historic

An historic survey of the area was conducted.

This building was identified in the survey.

Recommendations for landmark were included.

Reasoning: Possesses integrity and significance in Postwar Infrastructure Expansion.

INTENSIVE-LEVEL FORM

HHM ID No. 111516 **201 W 30 ST**

Wed, 20 Nov 2019

Wed, 20 Nov 2019

IDENTIFICATION

Address	201 W 30 ST 78705	Legal Description	ALL OF BLK 4,ALLEY * & ADJ W25FT OF STREET OLT 73 DIV D FRUTH ADDN
Property Category	Primary resource	Acreage	2.8635999999999999

CLASSIFICATION

Resource Type	Building		
Property Type	Fire station	No. of Stories	1
Form/Plan	Box	Exterior Material(s)	Brick
Stylistic Influence(s)	Mid-century Modern	Exterior Features	
Classification Notes			

ROOF AND CHIMNEYS

Roof Form/Type	Flat	No. of Chimneys	
Roof Materials	Not visible	Chimney Features	

DOORS AND WINDOWS

Door type(s)	Single door(s) primary entrance, Garage doors	Window type(s)	Fixed, Single-hung
Door Material(s)	Wood	Window Material(s)	Metal
Door Features		Window Features	Sills

PORCH

Porch type(s)	Full width, Flat roof	Porch Features	Plain wood posts

COMMERCIAL AND INSTITUTIONAL FEATURES

Signage location		Canopy features	
Parapet		Ground level bays	

LANDSCAPE AND GROUNDS

Ancillary Buildings		Landscape Features	

HHM ID No. 111516 **201 W 30 ST** **Page 2**

HISTORY

Current Name	Fire Station No. 3	Historic Name	
Current Use	Governmental	Historic Use	Governmental
Year Built	1956	Architect	Roy L. Thomas
Source Year Built	Austin American-Statesman, 20 Jul 1956, p. 20	Builder	
Associated People			
History Notes			
Other historical sources			
Occupant History	1954/55: Not listed; 1959/60: Fire Dept Station No 3; 1965-70: Follow up - Pending AHC Reopening		

INTEGRITY

Alterations		Relocation	
Additions		Notes	

PRIOR DOCUMENTATION

Designations	
Prior Survey Data	

LOCAL RECOMMENDATIONS		**NATIONAL REGISTER (NRHP) RECOMMENDATIONS**	
Recommendation	Local landmark	Recommendation	Individually eligible
Justification	Possesses integrity and significance	Justification	Possesses integrity and significance
District Name	N/A	District Name	N/A
Status (N/C)	N/A	Status (N/C)	N/A
Criteria	Architecture, Historical Associations (Section 5.1.5.5. Postwar Infrastructure Expansion)	Criteria	A, C
		Area of Significance	Community Planning and Development, Architecture
		Level of Significance	Local

OTHER RECOMMENDATIONS

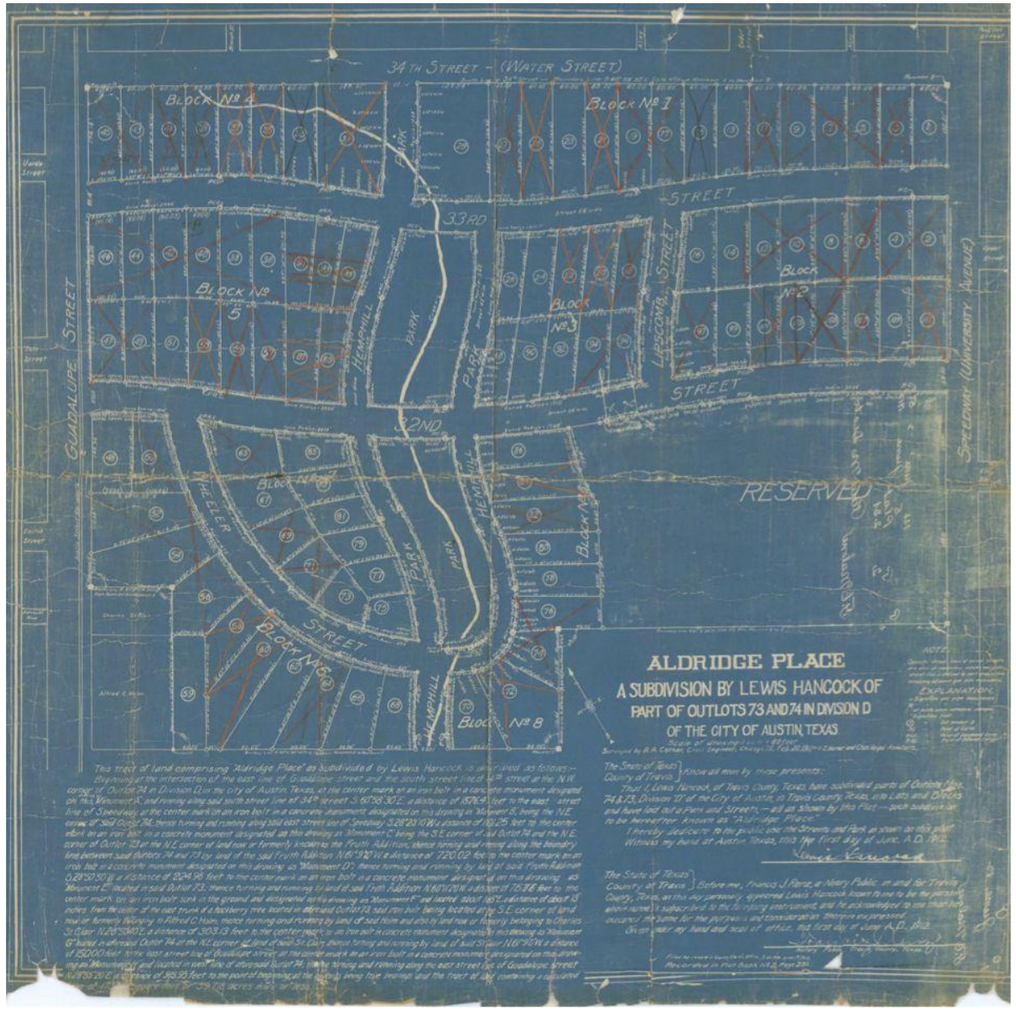
Tourism Tag	

Neighborhood Engagement

We presented the design proposal to the North University Neighborhood Association (NUNA) and the Aldridge Place Historic District.

Meeting conducted through Zoom on May 3, 2021.

Follow up questions were answered through email.

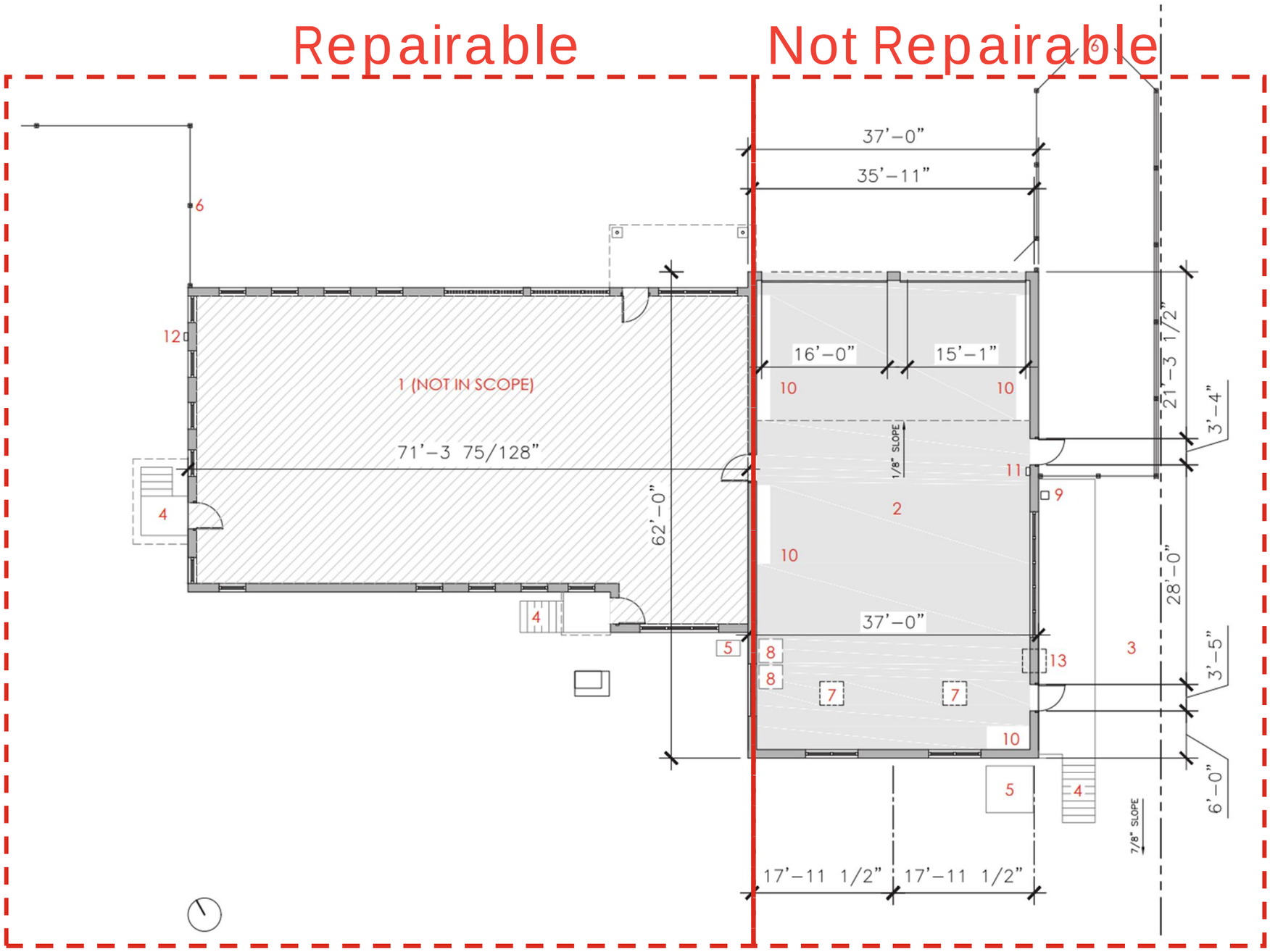


Damage

The building has suffered two types of structural damage:

1) General wear and tear based on age. (entire structure)

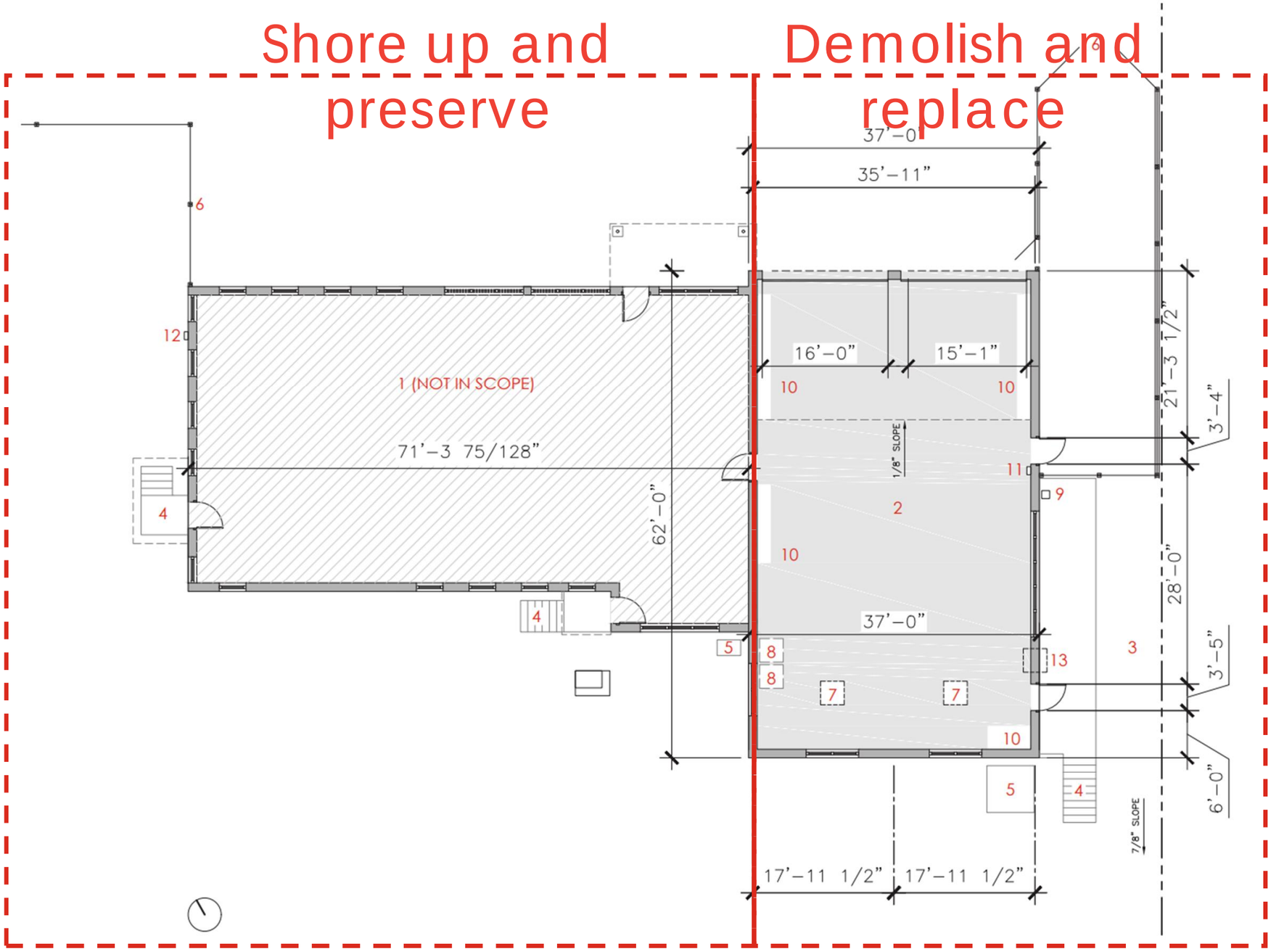
2) Overstressing of the foundation due to parking trucks that are heavier than the original design load. (apparatus bay only)



Intent

For the areas that have just suffered age-related wear and tear, the intent is to shore up that portion of the structure and preserve it.

For the apparatus bay, the intent is to demolish the portion of the building that is beyond repair and replace it with a new structure that is sensitive but of its time.



Goals and Objectives

1) Save the historic fabric that can be saved and put it in good structural standing for the future.

2) Preserve the original historic use/function of the building.

3) Provide the Fire Department and EMS with the modern facility they need to operate effectively and efficiently for decades to come thus providing vital life-safety services to the area.

4) Get the fire trucks parked indoors for protection of the equipment, speed of response times, and aesthetic improvement of the neighborhood.

5) Create an addition that is respectful of the original, but not a false recreation of mindless mimicry.

City of Austin
Fire Station No. 3

Structural Damage

Barry Krieger, Principal
JQ Infrastructure – Structural Engineer

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Documents and Studies

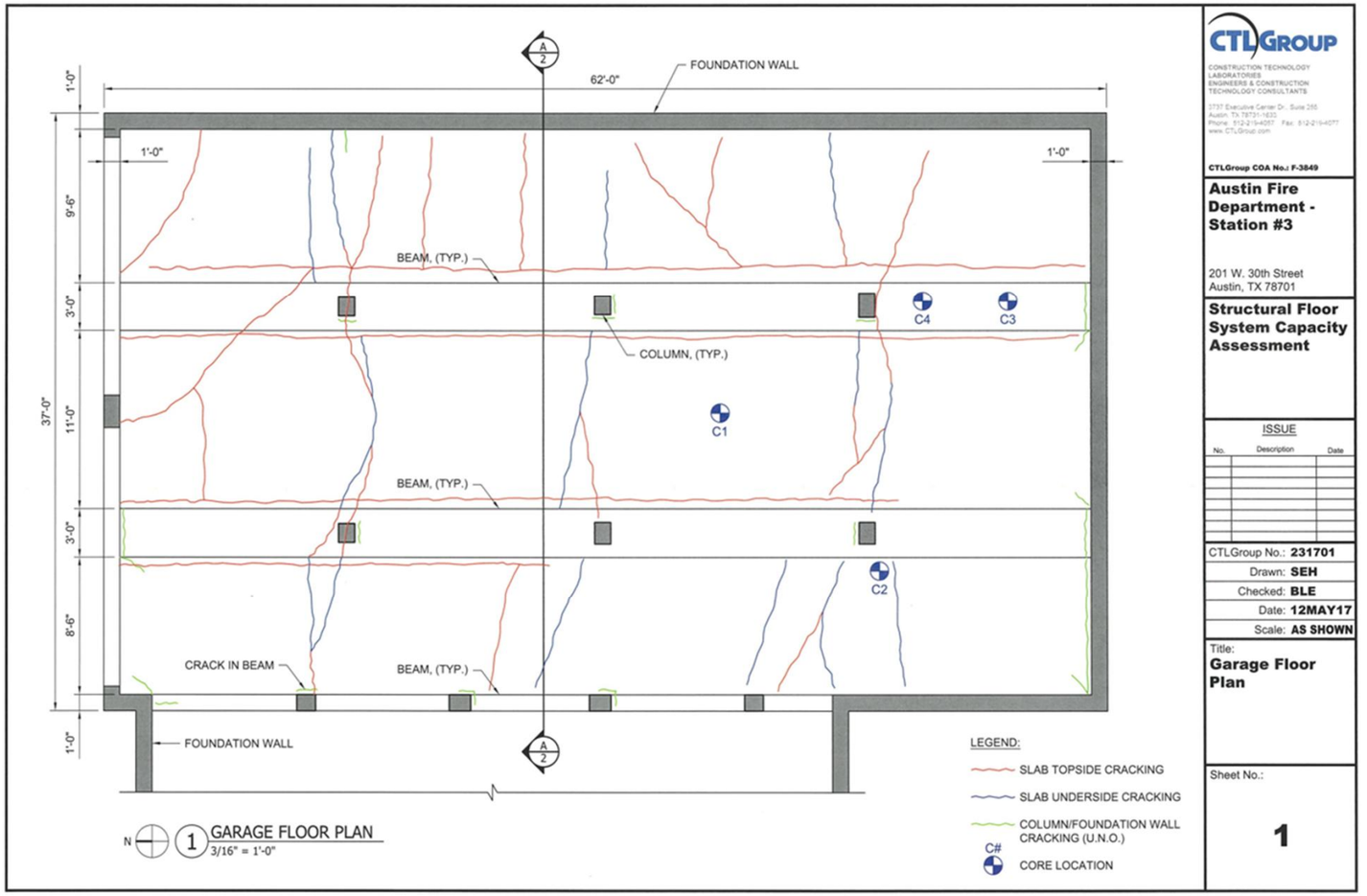
Phase One – Structural Floor System Capacity Assessment
- CTL Group
- May 2017

Phase Two – Feasibility Study
- CTL Group
- August 2017

Letter of Recommendation
- Karim Helmi, P.E., City Structural Engineer, CoA Public Works Department
- September 2017

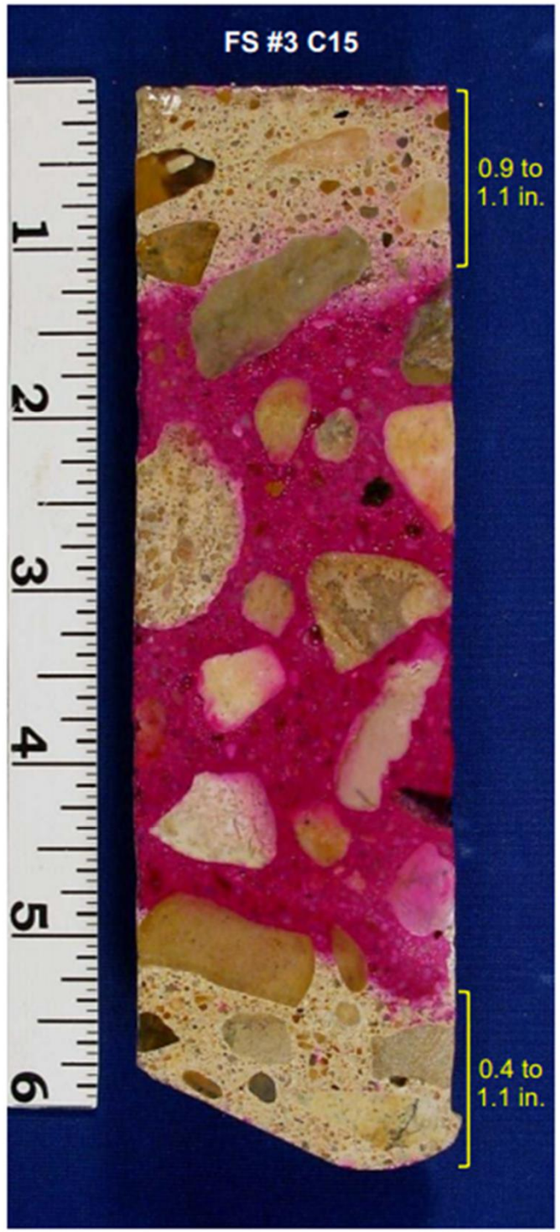
Geotechnical Report
- Kleinfelder
- October 2018

Total of 164 pages



Methodologies

- Ground Penetrating Radar
- Localized Concrete Removal
- Visual Observation
- Core Samples
- Compressive Strength Testing
- Carbonation Depth Testing
- Geotechnical Borings



Deficiencies

- Cracks
- Spalling
- Exposed, rusted reinforcing steel
- Carbonation depths exceed the depth to the reinforcing steel
- Calculations of necessary design loads far exceed that of the current structure
- All options for repair were considered costly, risky, and/or ineffectual

Conclusions

- Trucks cannot be parked on the slab
- Misalignment of one of the trucks could cause failure of the slab
- Demand Capacity Ratio for the middle beam in shear is 3.86 meaning it is overloaded by almost 300%
- The city's Structural Engineer concluded that demolition and replacement was the best option

The forensic investigations that were performed by CTL Group of the existing elevated foundations of Fire Station 22 and Fire Station 3 revealed that the existing suspended foundations cannot safely support the vehicular loading from the new fire trucks. It is recommended that selective demolition be performed and replace the entire bays of Fire Station 3 and Fire Station 22. The new bays could be designed to accommodate the new vehicular loading requirements of the Fire Stations and anticipated future needs of the Austin Fire Department.

Please feel free to contact me if you have any questions.

Thanks

Karim Helmi, P.E.
City Structural Engineer - Quality Management Division
Public Works Department
City of Austin
Phone: (512) 974-6539

City of Austin
Fire Station No. 3

Cost Implications and Alternatives

Michelle Noriega, Project Manager
City of Austin – Client

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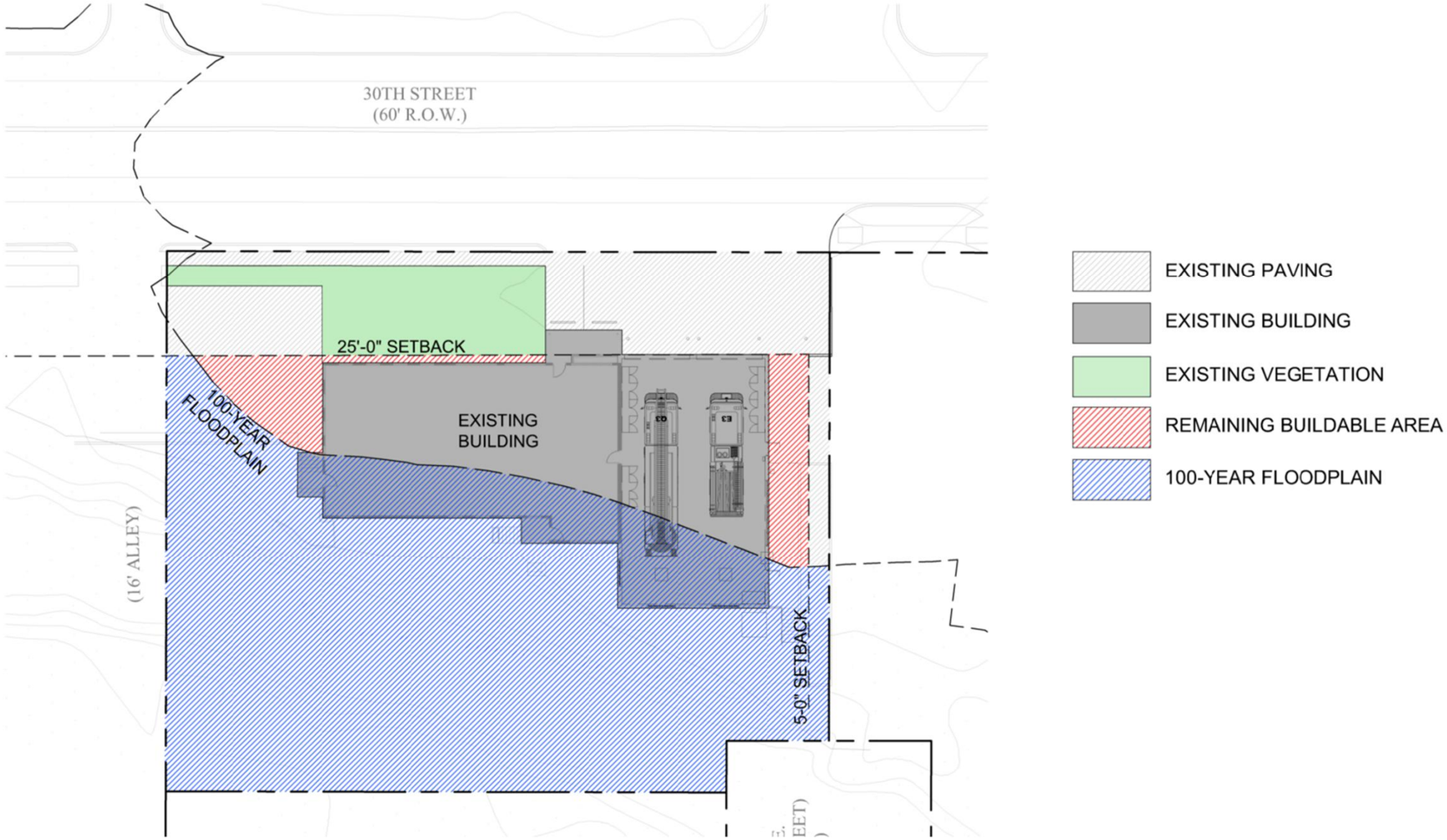
Alternate

With the designation of the new 100-year floodplain, the remaining buildable area is extremely limited.
(Shown in red)

This means the only available land for a new apparatus bay is the land where the existing damaged one stands.

Expansion is limited to the red area to the right of the current bay.



Original Recommendation

"Due to the degree to which the slab and middle beams are overloaded in conjunction with the presence of carbonation-induced corrosion, we do not believe that repair/strengthening of the garage floor system at Fire Station No. 3 can be accomplished in a cost-effective manner without substantial replacement of framing elements."

From page 42 of the unedited reports provided for commission review

CTL Group, August 31, 2017

DISCUSSION OF REPAIR OPTIONS

FIRE STATION NO. 3

The underside of the slab was spalled at several locations. At several spalled areas, the reinforcing steel was exposed and visibly corroded/rusted, likely indicative of carbonation-induced corrosion. Carbonation depth testing performed by CTLGroup further confirms that carbonation is an issue of concern in the garage area at Fire Station No. 3. Due to the depth of carbonation, the future service life of the garage floor system could be limited. However, additional testing and service life modeling would be needed to more accurately estimate the functional lifespan of the garage floor system.

Considering the slab thickness, it would be difficult to repair existing areas of corroded reinforcing without the repair extending through the full depth of the slab. Additional NDT work would also be needed to determine the full extent of existing corroded reinforcing. Additionally, preventing future carbonation-induced corrosion (such as with cathodic protection) would add considerable cost to any repair/strengthening program.

The slab and middle beams at Fire Station No. 3 are considerably deficient with respect to supporting the anticipated vehicular loads (see Table 4). The slab is overloaded by nearly 150% in flexure. The middle beams are overloaded by nearly 300% in shear and nearly 100% in flexure. Due to the degree to which the slab and middle beams are overloaded in conjunction with the presence of carbonation-induced corrosion, we do not believe that repair/strengthening of the garage floor system at Fire Station No. 3 can be accomplished in a cost-effective manner without substantial replacement of framing elements.

CTLGroup proposes two (2) options to address the strength deficiency and carbonation issue, which includes the following:

1. Remove and replace large portions of the existing floor system, or
2. Fill the crawlspace beneath the garage area with a cementitious flowable fill material.

With regard to removal and replacement, this will require the removal of the slab and middle beams in the garage area. The west beam, perimeter foundation walls, and columns can likely remain in place. A new monolithic slab/beam system would be designed and constructed such that it would tie into these existing elements. In lieu of a cast-in-place monolithic slab/beam system, structural precast members could also be considered. If the City of Austin decides to replace the garage floor system, CTLGroup is available to design its replacement and provide details and drawings for construction phase services. This work would be performed as part of Phase 3 of this project. Some geotechnical investigation may be necessary to demonstrate adequacy of existing foundations. As an alternative to this repair option, the City may also consider replacement of the entire bay area of the fire station. This would allow other upgrades including increasing overhead clearance.

With regard to Option 2, the existing garage floor system at Fire Station No. 3 would remain in place and the crawlspace area beneath the garage would be filled with a cementitious flowable fill material. In this scenario, the garage floor system would generally function as a slab-on-grade type system. The slab and middle beams would no longer be suspended, and as a result the strength deficiencies in these elements would no longer be a concern. This is likely the

Cost Confirmation

- The CTL Group determined that the repair could not “be accomplished in a cost-effective manner” but never cited any cost analysis to back up the conclusion.
- A line-item costing model was developed to quantify the terms in the 2017 report.
- The additional costs associated with repairing the apparatus bay was determined to be $864,099.

Owner - City of Austin, Texas
CoA Fire & EMS Stations
8/18/2020

ITEM #	DESCRIPTION
2	Retain Existing Façade and Roof of FS #3 Apparatus Bay

Add / Deduct	Description	+/-	Qty	Unit	Unit Price	Cost
	Demolition					
D	Existing Building Demolition	-	2,084	SF	$23.00	($47,932)
A	Existing Interior Slab and Piers Demolition	+	2,084	SF	$30.00	$62,520
	Structure					
D	Wall Footing/Gradebeam & Excav/Backfill	-	123	CY	$850.00	($104,550)
A	Wall Footing/Gradebeam & Excav/Backfill	+	84	CY	$1,500.00	$126,000
D	Concrete Elevated Slab	-	3,121	SF	$25.00	($78,025)
A	Concrete Elevated Slab	+	2,900	SF	$35.00	$101,500
D	Drilled Piers - 26 each x 44' to 66' Depth	-	1,430	LF	$125.00	($178,750)
A	Drilled Piers - Interior 15 each x 44' to 66' Depth (Includes flowable fill for prevent water infiltration)	+	828	LF	$788.00	$652,464
A	Drilled Piers - Exterior Buttress 8 each x 44' to 66' Depth (Includes flowable fill for prevent water infiltration)	+	447	LF	$738.00	$329,886
D	Brick Veneer Masonry	-	2,307	SF	$25.00	($57,675)
A	Brick Veneer Masonry - Increase Bay Door Heights	+	448	SF	$500.00	$224,000
A	Brick Veneer Masonry - Cut in OH Door & Windows	+	100	SF	$500.00	$50,000
D	Unit Masonry - CMU	-	3,585	SF	$26.00	($93,210)
D	Structural Steel Roof Framing	-	18	TN	$6,500.00	($117,000)
A	Structural Steel Support Steel	+	3	TN	$6,500.00	$19,500
	Façade/Roof					
D	TPO Roofing	-	3,200	SF	$15.00	($48,000)
D	Pre-Finished Flat-Lock Metal Panel	-	737	SF	$20.00	($14,740)
D	Pre-Finished Metal Panel Soffitt	-	540	SF	$20.00	($10,800)
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0

Subtotal		$815,188
Markup	6.00%	$48,911
TOTAL		**$864,099**

Funding and Cost Analysis

- The funded budget for the current project, which includes the demolition of the apparatus bay is:
  $3,133,168 (2,859 SF @ $1,096/SF)

- Costs to repair the existing bay is:
  $3,997,267 (2,246 SF @ $1,780/SF)

- Repairing the bay verses replacing it represents an unfunded cost overrun of:
  $864,099 (28% by project cost calculation)
  or
  $684/SF (62% by cost-per-square-foot calculation)

City of Austin
Fire Station No. 3

Design Proposal

Rob Robbins, Studio Director
WestEast Design Group – Architect

WESTEAST
DESIGN GROUP

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Existing

With the designation of the new 100-year floodplain, the remaining buildable area is extremely limited.
(Shown in red)

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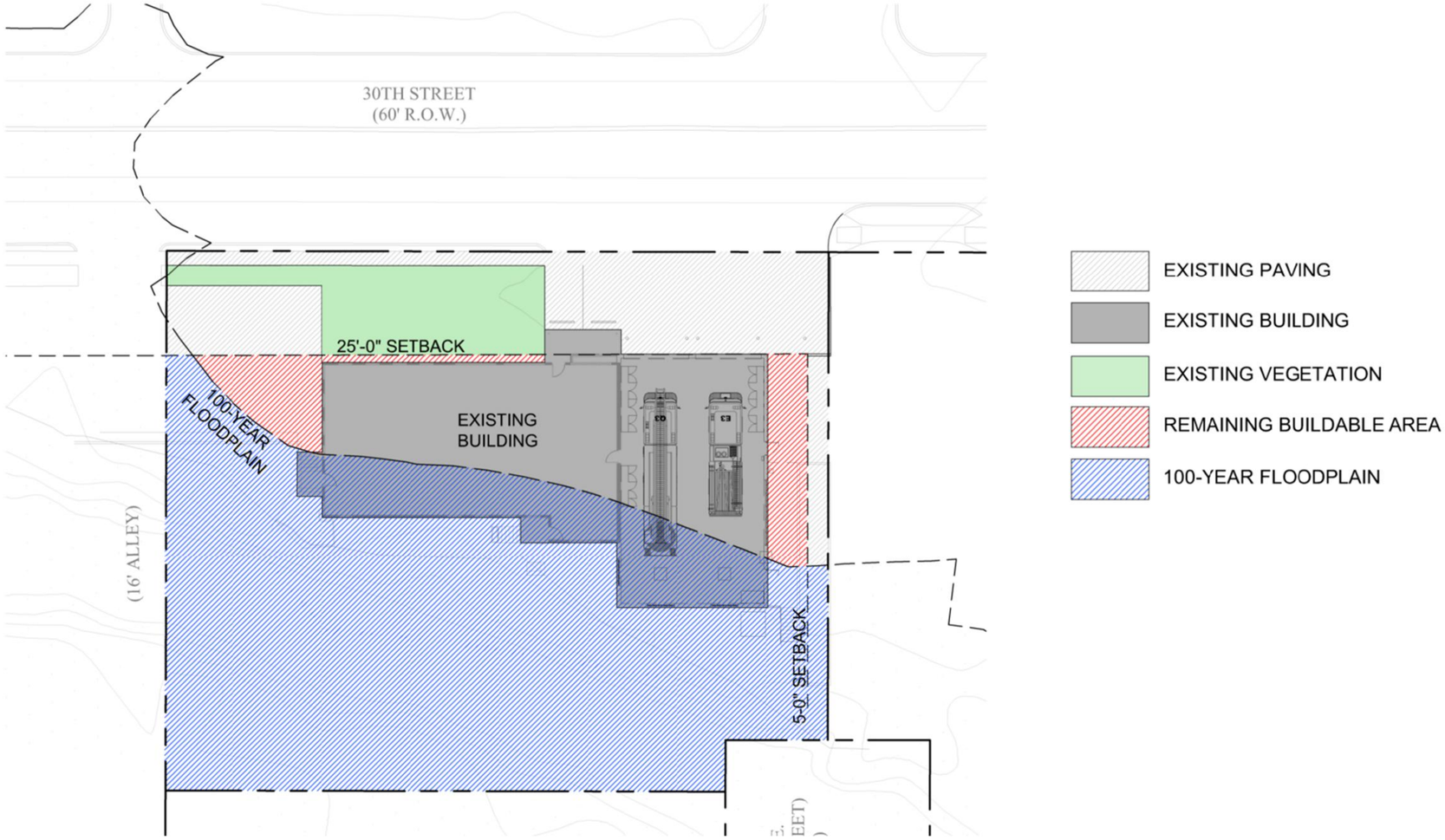
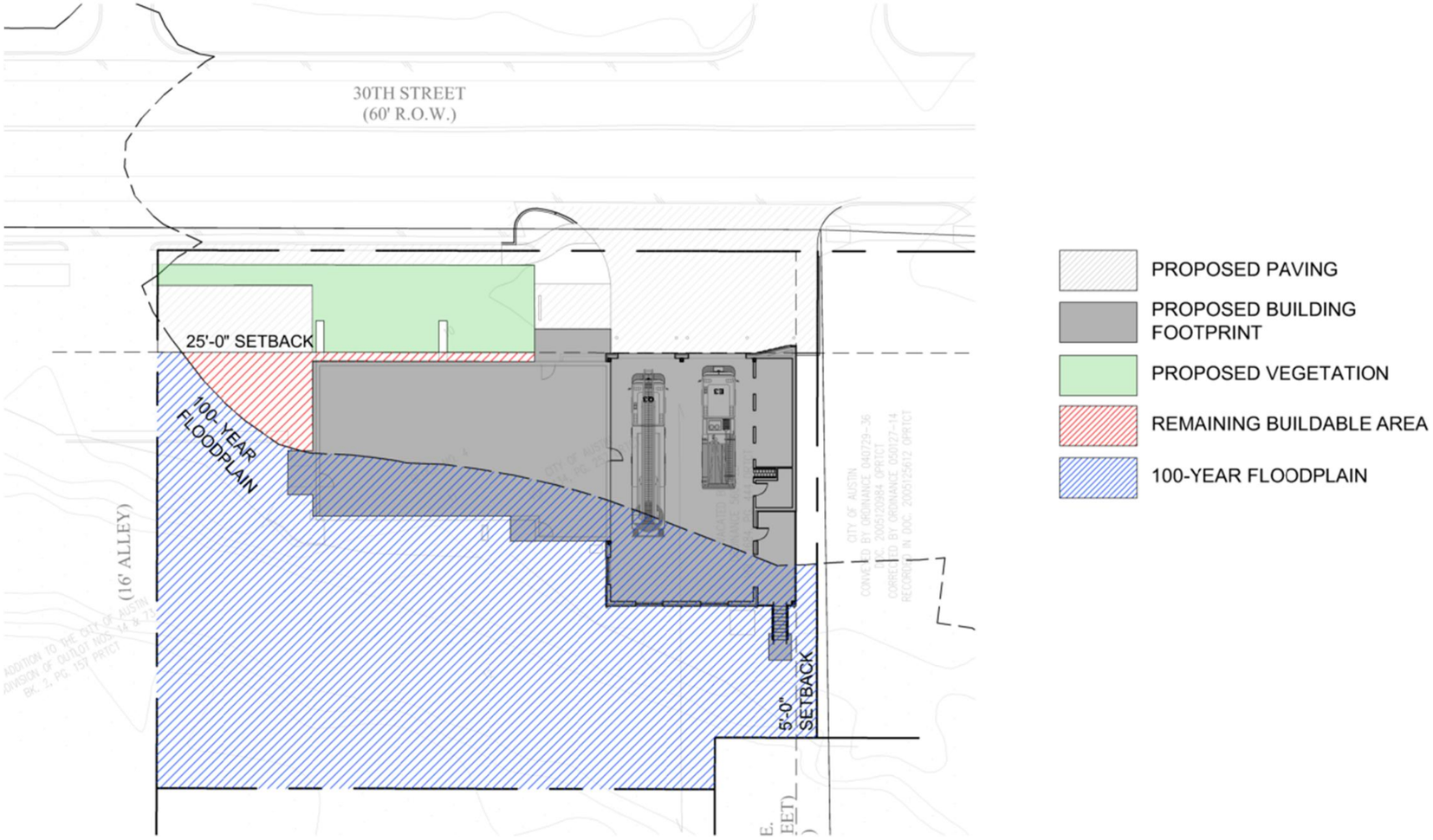


Proposed

Apparatus bay is expanded into the building area to the right of the plan.

Parking in front is reconfigured to meet ADA.

Site lighting is added for safety, convenience, and function.



Design

Importance of roof line

Use of brick, but in an obviously different blend to distinguish old from new

Reuse of original signage

Compatible massing

Use of period-appropriate detailing

Addition of “UT Burnt Orange” elements to tie into area pride

Improvements

Faster operating bay doors to improve response times.

Addition of spaces to provide for operational requirements.

Significantly stronger structure accommodating the weight of both current and future vehicles.

Slightly higher apparatus bay allowing for the height of new vehicles and the maintenance clearances they require.

Improved site lighting and ADA compliance.


FIRE STATION NO. 3
AUSTIN FIRE DEPARTMENT


JOHN M. AND SUE B. McCOY HOUSE
FIRE
STATION
NO.3


FIRE
STATION
NO.3

City of Austin
Fire Station No. 3

The Plan Forward

Tony Haden, Division Chief
Austin Fire Department – End User

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The Need

1) The apparatus bay is structurally compromised and cannot be reasonably repaired.

2) We need to be able to park our trucks inside.

3) The land is not big enough to locate a new apparatus bay elsewhere on the site.

4) We do not have another site to move to.

5) For life safety and operational efficiency, we need to be able to bring this facility up to current standards.

6) The funds to repair the bay are not available, and even if they were, the current bay does not provide adequate facilities for the future.

What We Are Asking For

1) We need approval for the demolition of the apparatus bay.

2) Without landmark designation, we need the commission to allow the building department to issue a demolition permit.

3) If landmark designation is initiated, we still need the demolition permit, but we will also need a certificate of appropriateness for the new structure.

4) We are asking for a timely decision such that construction can proceed and delays to the fire department's needs are not unduly extended.

5) We are asking for advice and counsel as to anything we may do on our end to help facility the requests we are making.

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Fire Station No. 3

Thank You

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