

Existing Building Investigation & Evaluation Report

Work Area – Alteration Level 3 Compliance Method

456 Main Street
Anywhere, MA 00002

Prepared by:

Massachusetts Registered Design Professional (RDP)

August 31, 2016



Note:

This report was developed for education purposes and is to be referenced only as a sample of what **may be provided** as part of an existing building investigation and evaluation report. Each building renovation project is unique and should be treated as such. Depending on the project, a greater or lesser level of detail may be required. This sample report may help to establish parameters for a project report, but should not be used as a gauge for code compliance. Photos contained herein were excerpted from internet public images. Information contained in this report is hypothetical and does not reflect actual conditions of internet images used.

Part A.

Existing Building General Information:

- | | |
|------------------------------|---|
| 1. Use Group Classification: | Mixed Use of Office (B) and Assembly (A-3) |
| 2. Type of Construction: | IIA |
| 3. Area: | 32,000 square feet per floor (<i>with a 650 square foot mezzanine above the fourth floor</i>) |
| 4. Height above grade plane: | 52 feet |
| 5. Stories above grade: | 4 stories with mezzanine , slab on grade |
| 6. Sprinkler System: | NFPA 13 system |

The existing building was originally designed and constructed in March, 1997 in accordance with 780 CMR (The Massachusetts Building Code), Fifth Edition as a professional office building. The uppermost, mezzanine floor, is dedicated to company functions and is considered an assembly use under the former and current version of the code; otherwise the building is purely a business use with incidental storage areas for typical office supplies and files. According to the original building permit application, associated plans and specifications, the mixed used building was designed utilizing the separated use option. According to building department records, there have not been any additions or major renovations made to the structure since its original occupancy.



Ariel View of Site

The building sits on a ten acre parcel of land with full perimeter access, shared with 3 other existing retail buildings of similar construction type, with 6 points of fire department access to the site. Ample parking is available on site. A typical office floor plan is depicted below.



Typical Office Floor Plan Layout
(Floors 1 through 4)

Part B.

Renovated Building General Specifications:

Approximately 60% of the existing building will be renovated to accommodate a new tenant (*roughly 20,000 square feet per floor – see highlighted area of typical floor plan*). Renovations will include, at minimum:

- Reconfiguring existing office and cubicle layout, floors 1 through 4;
- New entry, greeting and waiting area on the first floor;
- New tenant separation between existing engineering firm (who will continue to occupy the west side of the building, floors 1 through 4) and the new, legal consortium tenant;
- New carpet, painting and interior trim in both new and existing tenant spaces, mezzanine (*which will remain as an assembly gathering space for the new tenant*);
- New elevator cabs in each of the three existing banks; and
- New EPDM adhered roof.

The building will be renovated in compliance with **780 CMR, Ninth Edition, Existing Building Code - Work Area, Level 3 Compliance Methods**. The renovated structure shall continue to serve as a professional office building with limited assembly and storage space.

This report is prepared to assess existing conditions for the current use; identify any and all current code deficiencies requiring attention as part of the renovation project; and to generally assess the suitability of the structure for new use conditions. As required by 780 CMR Section 104.2.2.1 and further enhanced by Work Level Chapters 7, 8 and 9, the report shall assess:

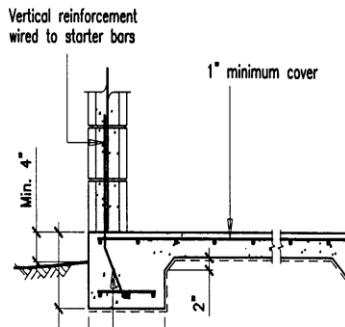
- Building elements, materials and finishes;
- structural conditions;
- means of egress conditions and requirements;
- fire protection systems;
- energy conservation conditions and requirements;
- lighting and ventilation conditions;
- hazardous materials;
- accessibility to, in and around the building;
- Reroofing provisions; and
- Electrical, mechanical and plumbing conditions.

Part C.

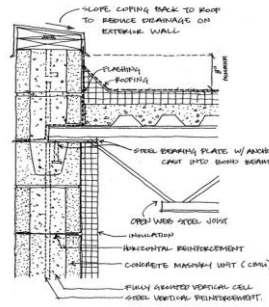
Existing Structural Conditions (*Construction Type, Height & Area Requirements*):

The existing building conforms to Type IIA as established by 780 CMR, Ninth Edition, comprised of:

- Eight (8) inch split-faced, concrete masonry unit (CMU) exterior bearing walls, fully grouted and reinforced with #5 bars @ 4'-0" o.c.;
- Interior 8" x 8" nominal steel tube columns support, wide flange steel beams in 20'-0" bays;
- Open-web, steel bar joists @ 2'-0" o.c. roof structure with corrugated metal decking, light-weight concrete surface, rigid insulation and adhered, EPDM roof membrane (*see typical details below*).
- Interior walls are non-bearing, steel studs with ½" g.w.b. and skim coat of plaster.



Typical Exterior Wall Detail



Typical Roof Detail

Ninth Edition 780 CMR Section 602.2 establishes that “Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code”. Type IIA construction shall achieve fire resistance ratings for structural elements as detailed in Table 601 (copy of current table appended below).

**TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)**

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A	B	A	B	HT	A	B
Primary structural frame ^f (see Section 202)	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls									
Exterior ^{e, f}	3	2	1	0	2	2	2	1	0
Interior	3 ^a	2 ^a	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions	See Table 602								
Exterior									
Nonbearing walls and partitions							See		
Interior ^d	0	0	0	0	0	0	Section 602.4.6	0	0
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and associated secondary members (see Section 202)	1 1/2 ^b	1 ^{b, c}	1 ^{b, c}	0 ^c	1 ^{b, c}	0	HT	1 ^{b, c}	0

For SI: 1 foot = 304.8 mm.

- Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
- Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
- In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
- Not less than the fire-resistance rating required by other sections of this code.
- Not less than the fire-resistance rating based on fire separation distance (see Table 602).
- Not less than the fire-resistance rating as referenced in Section 704.10.

Assessment: The general condition of the structure appears to be in good shape. Construction documents on file at the building department indicate that appropriate live and dead loads were anticipated in the design and construction of the building and there have not been any significant building code changes affecting design loads that would necessitate change.

Height & Area Requirements: The existing building stands four (4) stories high, 52 feet above grade plane, with a 650 square foot mezzanine about the 4th level. **Tables 504.3** and **504.4** allow a maximum of 6 stories, 85 feet in height above grade plane for business occupancy buildings. **Table 506.2** allows a building area of 112,500 square feet per floor for a fully-sprinklered, multi-story B-Use. One-hundred percent (100%) perimeter access established by 780 CMR Section 506.3.2 allows for an area increases. However, the existing 32,000 square foot footprint is well within table limits; available area increases are not necessary.

TABLE 504.4^{a, b}—continued
ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION									
	SEE FOOTNOTES	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
B	NS	UL	11	5	3	5	3	5	3	2
	S	UL	12	6	4	6	4	6	4	3

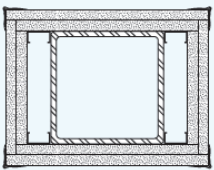
TABLE 504.3^a
ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION									
	SEE FOOTNOTES	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
A, B, E, F, M, S, U	NS ^b	UL	160	65	55	65	55	65	50	40
	S	UL	180	85	75	85	75	85	70	60

TABLE 506.2^{a, b}
ALLOWABLE AREA FACTOR (A_f = NS, S1, S13R, or SM, as applicable) IN SQUARE FEET

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
B	NS	UL	UL	37,500	23,000	28,500	19,000	36,000	18,000	9,000
	S1	UL	UL	150,000	92,000	114,000	76,000	144,000	72,000	36,000
	SM	UL	UL	112,500	69,000	85,500	57,000	108,000	54,000	27,000

Deficiencies: Table 601 requires a one (1) fire resistance rating at tube columns. According to construction documents on file at the building department, column ratings are achieved in accordance with *Underwriters Laboratory* Design Number X528. Significant damage has occurred at 2 columns at the first level. All column enclosures will be examined and repaired as necessary to achieve ratings intended by the noted design. .

	<ul style="list-style-type: none"> • 2 layers 3/4" SHEETROCK ULTRACODE Core panels – 1-5/8" 25 gauge steel studs – No. 28 MSG 1-1/4" leg corner bead fastened to wallboard with No. 6x1" screws – joints finished 	UL Des X528	Structural member tested: Tube steel column 8 x 8 x 0.25"	E-14
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Part D.

Means of Egress Conditions:

Assessment: The maximum design occupant load for the building is 495 occupants. Two (2), fully enclosed, fire-rated stairways, remotely located are provided in accordance with Table 1006.3.1. However, noticeable concrete spawling was observed at the north stair posing tripping hazards under normal use. Additionally, stair lighting levels do not meet minimums required by 780 CMR, Section 1008.2.1 which establishes that ". . . means of egress illumination level shall be not less than 1 footcandle at the walking service". Each deficiency is due to lax maintenance and each will be appropriately remedied during the project renovation.

TABLE 1006.3.1
MINIMUM NUMBER OF EXITS OR
ACCESS TO EXITS PER STORY

OCCUPANT LOAD PER STORY	MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS FROM STORY
1-500	2
501-1,000	3
More than 1,000	4



Damage at North Stair

Part E.

Fire Protection Systems:

Assessment: The building is protected with a fire sprinkler system installed in accordance with NFPA Standard 13. 780 CMR Section 903 establishes criterion for automatic sprinkler systems. Although the section does not require sprinkler systems in business use buildings, Massachusetts General Law (MGL) Section 26G indicates that *“Every building or structure, including any additions or major alterations thereto, which totals, in the aggregate, more than 7,500 gross square feet in floor area shall be protected throughout with an adequate system of automatic sprinklers in accordance with the provisions of the state building code. No such sprinkler system shall be required unless sufficient water and water pressure exists. For purposes of this section, the gross square footage of a building or structure shall include the sum total of the combined floor areas for all floor levels, basements, sub-basements and additions, in the aggregate, measured from the outside walls, irrespective of the existence of interior fire resistive walls, floors and ceilings. This section shall not apply to buildings used for agricultural purposes as defined in section 1A of chapter 128”*.

Tests indicate that the existing sprinkler system is in good working order. However, the system will need to be reconfigured to accommodate new office layouts. Renovation construction documents will establish new design distribution requirements in accordance with NFPA 13 and the system will be fully tested prior to occupancy.

Additionally, the building is equipped with a fully functional manual alarm system as required by 780 CMR, Section 907.2.2(2). This system will also require some redesign to accommodate new office layout which will be reflected in construction documents. The system will be fully tested prior to occupancy.

Part F.

Energy Conservation Conditions and Requirements:

Assessment: Construction documents on file at the building department indicate that the insulation values for the existing roof system were designed and constructed in excess of code requirements when originally constructed and meet enhanced values established by 780 CMR, Ninth Edition, for the area. A new EPDM roof was installed in 2012. Construction documents for this roof replacement project indicate, in part that *“all existing R-values shall be maintained at the roof assembly and all damaged, missing and/or otherwise compromised existing rigid insulation shall be replaced as new . . .”*.

Deficiencies: There is no intent to replace or disturb the existing insulation assembly during the renovation. Therefore, there is no need to upgrade existing insulation values for the assembly.

Part G.

Lighting and Ventilation Conditions:

Assessment: With the exception of illumination levels noted in Part D. of this report, existing lighting and ventilations are appropriately sized and in good working order. However, systems will need to be reconfigured to accommodate new layouts. Construction documents for the renovation project will establish new lighting and ventilation conditions.

Part H.

Hazardous Materials:

Assessment: Neither does the existing building nor will the new building contain hazardous materials.

Part I.

Accessibility to, in and around building:

Interior Assessment: New accessible ingress and egress patterns as well as exit and entry doors will be established to accommodate renovated layouts. Existing bathrooms facilities layouts are in full compliance with 780 CMR, Ninth Edition, and 521 CMR, do not require any work and are not part of the renovation project.

Exterior Assessment: There are over 500 available parking spaces on site for use by patrons of the four existing structures. The lot was recently repaired and re-striped. All spaces are clearly delineated and 8 accessible spaces are dedicated to each of the 4 existing structures for a total of 32 available spaces. **521 CMR Section 23.2** establishes that parking facilities accommodating 501 – 1000 shall provide at least 2 percent of total as accessible spaces. Additionally, **Section 23.2.2** requires *“One in every eight accessible spaces, but not less*

than one, shall be van accessible". Two (2) of the 8 spaces provided for each building are van accessible. All curbs, walkways and exterior accessible routes are in compliance with applicable provisions of 521 CMR.

Deficiencies: None

Part J.

Electrical, mechanical and plumbing conditions:

With exceptions noted herein, all electrical, mechanical and plumbing systems are suitably sized and in good working order.

This report is respectfully submitted in accordance with **Ninth Edition, 780 CMR, Section 104.2.2.1 *Existing Building Code, Level 3 Work Alteration Methods.***

Registered Design Professional 

Signed by:

August 31, 2016
Date: