DRAWING KEY / SYMBOLS / ABBREVIATIONS:

- 1. Indicates span of structural element including but not limited to framed slabs, walls, metal deck & fascia.
- 2. Indicates direction of "called North" for the project. See Civil Drawings for geographic North.

(E) or (EXIST)

- Pounds or Number Diameter Plus Angle
- Indicates moment connection at end of member

Indicates diagonal bracing member

Abbreviations: American Concrete Institute American Institute of Architects
American Institute of Steel Construction Allowable Stress Design
American Society for Testing and Materials

Exterior Floor Drain

Foundation
Far Face
Finished Floor

Footing Gage Galvanized Grade Beam Horizontal

Mezzanine Moment Frame Millimeters

Metal Not in Contract

On Center Outside Diameter

Number
Near Side
North South
Not To Scale
Normal Weight
Normal Weight Concrete

Pounds per cubic foot Penetration

Plate Plate Girder

Post Tension

Reference

Steel Deck Institute
Steel Joist Institute
Steel Joist Institute

Sheet Similar Slab on Grade

Top Long Top Short To Be Determined

Temperature Top Each Way Thick or Thickness

Tons per square foot Typical Unless Noted Otherwise

Vapor Barrier Vertical Each Face Verify in Field Vertical Outside Face

Welded Wire Fabric

Top of Deck Top of Steel Top of Wall

Pressure injected Footing

Pounds per square foot Pounds per square inch

Horizontal Each Face

Horizontal Inside Face Horizontal Outside Face

High Point Hollow Structural Shape

Kips (1000 pounds) per square foot Kips (1000 pounds) per square inch

Long
Long Leg Horizontal
Long Leg Vertical
Low Point
Load and Resistance Factor Design

Opposite Hand Occupational Safety and Health Administration Powder Actuated Fastener

- American Welding Society Bottom Each Way
- Beam Cast-in-Place Clear
 Concrete Masonry Uni
 Column
 Construction
 Continuous
 Cooling Tower
 Drill & Epoxy
- and the contract documents shall be brought to the attention of the Architect and Engineer no movement of any kind occurs to any existing structures. Temporary supports shall be
- 7. The Contractor shall compare the structural drawings with the architectural drawings for floor/roof elevations, slopes, and locations of depressed or raised floor or roof areas and
- 8. Primary openings through the framing are shown on these drawings, The General Contractor shall examine the structural, architectural and mechanical drawings for the required opening and shall verify size and location of all openings with the Mechanical contractor. Providing the openings required by all trades shall be a part of the General Contract, whether or not shown in the structural drawings. Framing details are given in these drawings for such openings. Any deviation from the openings shown on the structural drawings shall be brought to the Architect's and Engineer's attention for review.
- 9. Where these General Notes are in conflict with project specifications, information shown on these General Notes governs.
- 10. Structural work not specifically indicated on these drawings that can reasonably be implied to be the same or similar to other work shown at corresponding places, shall be included in the contractor's work for the affected trade(s).

Offices and administration	
First floor lobbies, public area and corridors u.n.o.	s190 psf
Slab on grade u.n.o	
Storage	125 psf
Stairs and landings	
Library reading room	
Library stacks	150 psf

2. Concentrated Live Loads:

Floors have been designed to support the uniformly distributed live loads prescribed

the torrowing concentrated	rodas'	AINCH	ever	produces	rne	greater	sires
<u>Location</u>				Con	cent	rated Lo	<u>ad</u>
Stair treads (on 2.0 inches square)				300	lbs	-	
Hatches, skylight ribs, accessible ceilings (on 1.0 inch square)	and			200	lbs		
Roofs w/o concrete (on 6 inches square)				200	lbs		

Ground Snow Load, Pg = 40 psf (Table 1604.11). Additional loadings due to snow drift applied in accordance with Section 1608.3 to 1608.10.

```
Snow Density = 0.13Pq + 14 \le 30 pcf
Pf = 0.7Ce x Ct x is x Pq
 Ce = 1.0
  Ct = 1.0 heated
  ls = 1.0
  Pf = 35.0 psf heated
```

SECTION AND DETAIL MARKS:

GENERAL NOTES:

- 1. All work shall conform to the requirements of the State Building Code of the Commonwealth
- 2. Structural drawings may represent construction with a reference scale. Due to the process of drawing development and revision, not all work may be shown "exact" in scale. Do not "scale" drawings to obtain missing information or to interpret any information not specifically dimensioned for "exact" detailing, fabrication or construction purposes.
- 3. Electronic versions of structural drawings may represent construction with a reference scale and dimensions. Due to the process of drawing development and revision, not all work may be drawn electronically to exactly match reference dimensions or scale.
- 4. The Contractor is completely responsible for the safety of adjacent structures, property, his workmen, and the general public, as affected by the construction of this project.
- 5. All Contractors are required to examine the contract documents, visit the site and fully inform themselves as to all existing conditions and limitations, prior to agreeing or bidding to perform work. Failure to visit the site and become familiar with the existing conditions and limitations of the site will not relieve the Contractor from furnishing materials or performing work in accordance with the drawings and specifications without additional cost to the Owner. It is the Contractor's responsibility to make field measurements in time for their incorporation in the Shop Drawings of new work. Any discrepancies that exist between existing conditions
- 6. Furnish and place all supports, temporary and permanent, whether shoring, bracing, needling, underpinning, and/or sheet piling, necessary to brace existing construction to remain, so that maintained in place until permanent supports are installed. Design of these supports shall be by an engineer registered in the state of construction and in the employ of the Contractor.
- report any discrepancy to the Architect and Engineer prior to fabrication.

DESIGN LOADS:

Uniformly Distributed Floor Live Loads:

Offices and administration	EA.			40	£		allavana
Offices and administration	180	psr	. *	D	psr	partition	atrowanc
and corridors u.n.o.	טעו	hzi					
Slab on grade u.n.o.	125	nei	:				
Storage							
Stairs and landings							
Library reading room		hzi					

e	following concentrated loads, which ever	produces the greater stress
	<u>Location</u>	Concentrated Load
	Stair treads (on 2.0 inches square)	300 lbs.
	Hatches, skylight ribs, and accessible ceilings (on 1.0 inch square)	200 lbs.
	Roofs w/o concrete (on 6 inches square)	200 lbs.

3. Roof Live Load: (Commonwealth of Massachusetts State Building Code, 9th edition)

DESIGN LOADS CONT.:

For design live loads of 100 psf or less, except for buildings of Use Group A (assembly) o Use Group E (educational) and for garages or open parking structures and for one-way stabs and for roofs, a structural member having an influence area of 400 square feet or more may be designed for a reduced live load determined by the following formula:

- L = L. (0.25 + 15 / V K..A.)
- L = reduced design live load (psf) L₁ = basic design live load (psf) Ar = tributary area (square feet) KuAr = Influence area

Ku per table below:

Element	KLL
Interior columns	4
Exterior columns without cantilever slabs	4
Edge columns with cantilever slabs	3
Corner columns with cantilever slabs	2
Edge beams without cantilever slabs	2
Interior beams	2
Cantilever hours	1

Maximum reduction multiplier = 0.4 for members supporting more than one floor and 0.5 for members supporting one floor.

Earthquake Loads:

Risk Category I

Site Class C

Section 1613.0 Seismic Base Shear = Vu = CsW Seismic Response Coefficient Cs =

- Cs = SDs / (R/le)but not > SD1 / T(R/le) not < 0.044SDs(le)
- Ss = 0.196 St = 0.066Fa = 1.2 Fv = 1.6 SDs = 2/3 FaSs = 0.157
- SD1 = 2/3 FvS1 = 0.070R = 6.5 (light framed walls sheathed with wood structural panels rated for shear resistance)
- T = Building period W = effective seismic weight of the structure Seismic design category = B
- Analysis Type = Equivalent Lateral Force

6. Foundation walls are designed for the following equivalent fluid pressures:

Cantilevered Walls Walls Laterally Supported at Top

Above elevation 00'-0" Below elevation 00'-0 Lateral surcharge

Risk Category II - Vult = 129 mph, Vaso = 99.9 mph Wind pressures and distributions in accordance with Section 1609

Component & Claddina

Wind Pressure					
Wind speed V _{MB} = mph Mean Roof height, h = Exposure = Method 2					
Zone	Zone Effective wind Pressure area (ft²) (psf)				
1	10	-47.0	10.0		
	20	-44.4	10.0		
	50	-40.9	10.D		
	100	-38.3	10.0		
2	10	-73.8	10.0		
	20	-70.1	10.0		
	50		10.8		
	100	-61.6	10.0		
3	10	-100.6	10.0		
	20	-95.9	10.0		
	50		10.0		
	100	-84.8	10.0		
4	10	-32.2	32.2		
	20	-32.2	32.2		
	50 100		29.6		
			27.7		
5	10	-58.9	32.2		
	20		32.2		
	50	-52.2	29.6		
	100	-47.0	27.7		

STRUCTURAL STEEL:

- Structural steel design conforms to "Specification for Structural Steel Buildings" (AISC Fourteenth Edition) and "Seismic Provisions for Structural Steel Buildings" (AISC 341-10)
- 2. Structural steel rolled shall conform to the following ASTM designations:

ASTM A-572, Grade 50

and bars unless noted otherwise ASTM A-500, Grade B or C..... . Square or Rectangular HSS sections

. All other rolled shapes, individual plates

3. Do not paint structural steel unless otherwise specified.

ASTM A-36 or A-572 (any grade).......

ASTM A-53, Grade B

- 5. Cuts or burning of holes in or splicing of structural steel members in the field will not be permitted, unless specifically approved in each case by the Structural Engineer prior to
- 6. All structural steel, including baseplates and anchor bolts, to be exposed to soil in the finished work, are to be coated with an approved coal tar epoxy. 16 mils minimum thickness

STRUCTURAL STEEL CONNECTIONS:

- 1. All shop and field welds shall be made by certified welders, and shall conform to "Structural Welding Code - Steel" (AWS D1.1-11), using electrodes conforming to (AWS E-70 series).
- 2. All bolted connections between structural steel members shall be made with ASTM A325 or A490 bolts with appropriate nuts and washers.
- 3. ASTM A325 or A498 bolts shall be installed with the bolt tension (pre-tensioned) specified in table J3.1 of the AISC Specification (Fourteenth Edition), shall be used for all connections. Where tension control (TC) bolts are used and access to the bolt spline cannot be obtained to tighten the bolt, replace the bolt with a standard hex type bolt to allow tightening per this note.
- 4. Details and connections completely detailed in the Contract Drawings may not be altered without written approval by the Structural Engineer.
- 5. Unless otherwise noted, all connections at HSS sections shall be designed and detailed in accordance with the AISC "Hollow Structural Sections Connections Manual", Latest Edition. All rectangular HSS members to be oriented long side vertical u.n.o.
- 6. Flat bar stock of equal thickness and material grade may be substituted for "fitted" stiffener plates at all locations. Width of bar may be within (-0", +3(") of "fitted" plate dimension.
- Weld sizes not shown in details herein shall be the minimum required size based on thickness of thinn part as per AISC Fourteenth Edition, Tables 12.3 & 12.4. Where the thinner material is 2" or less use
- 8. Discontinue all around welds at the flange tips of open sections. Do not weld along the "length" of a
- 9. Minimum connection plate thickness shall be 💥 u.n.o.
- 10. All holes called out to be slotted are to be short slotted holes as defined by AISC u.n.o.

SUBMITTALS:

- 1. Submit substantiating data for each concrete mix design contemplated for use to the Structural Engineer not less than six weeks prior to first concrete placement. Data for each mix shall, as a minimum, include the following:
- a. Mix identification designation (unique for each mix submitted).
- b. Statement of intended use for mix. c. Mix proportions, including all admixture used. d. Manufacture's data and/or certifications verifying conformance of all mix materials.
- including admixtures, with specified requirements.
- e. Wet and dry unit weight. f. Entrained air content.
- g. Design slump.
- h. Required average strength qualification data per ACI 301 3.9.1 and 3.9.2. Submit separate qualification data for each production facility which will supply concrete to the project.
- Submit shop drawings for fabrication, bending and placement of concrete and masonry reinforcement. Comply with ACI Detailing Manual (SP 66). 3. Submit Structural Steel Shop Drawings. Clearly indicate profiles, sizes, spacing and location
- of structural members, connections, attachments, anchorages, framed openings, size and type of fasteners, cambers, and clearances. Indicate welded connections using standard AWS welding symbols. Clearly indicate net weld lengths, sizes and welding sequences. Clearly identify all high strength bolts not required to be tensioned (installed "snug tight" and
- 4. Submit Metal Deck Shop Drawings. Indicate decking plan, deck profile, dimensions, gage, anchorage, supports, projections, openings and reinforcement, finishes, applicable details and accessories, type, locations and size of welds.
- Furnish wood truss shop drawings. Indicate truss framing plans, pitch, span and spacing of trusses, gauge thickness, nominal sizes and location of connectors at joints, bearing and anchored details, framed opening, permanent bracing and bridging and all related items. Submit Manufacturer's instructions on lateral bracing with shop drawings. Submit calculations performed by (Massachusetts) professional engineer.

INSPECTION - STRUCTURAL STEEL:

- 1. Testing and inspection will be made by an approved testing laboratory selected and paid by the owner. Contractor shall furnish testing agency access to work, facilities and incidental Labor required for testing and inspection. Retention by the Owner of an independent testing agency shall in no way relieve the Contractor of responsibility for performing all work in accordance with the contract requirements.
- 2. Furnish the Testing Agency with the following
- a. A complete set of shop and erection drawings
- b. 48 hour advance notice of complete work prior to spray fireproofing (where
- Full and ample means and assistance for testing all material.
- d. Proper facilities, including scaffolding, temporary work platforms, etc., for inspection of the
- 3. Each person installing connections shall be assigned an identifying symbol or mark, and all shop and field connections shall be identified so that the inspector can refer back to the person making the connection.
- 4. The Testing Agency's inspector will perform his duties in such a way that neither fabrication nor erection is unnecessarily delayed or impeded. In no case will the inspector recommend or prescribe the method of repair of a defect.
- 5. Field inspection by the Testing Agency of erected steel will be such as to assure that the work conforms to specified requirements and will include:
- a. Inspection of welding as required herein
- b. Ascertainment of proper fit and alignment.
- c. Ascertainment that the welding is performed only by welding operators and welders who are properly certified. The Testing Agency shall witness such qualification testing of welding operators and welders, as may be required.

Inspection of welding by the Testing Agency will be such as to assume that the work conforms to specified requirements, and will include:

- a. Ascertainment that electrodes used for manual shielded metal-arc welding and electrodes used for submerged arc welding conform to the requirements of this section.
- b. Ascertainment that the approved welding procedure and the approved welding sequence is

c. Ascertainment that the welding is performed only by welding operators and welders who

- are properly certified. The Testing Agency shall witness such qualification testing of welding operators and welders, as may be required.
- d. Ascertainment that the fit-up, joint preparation, size, contour, extent or reinforcement, and length and location of welds conform to specified requirements of the contract drawings, and that no specified welds are omitted or unspecified welds added without approval
- 7. The Testing Agency shall test field welds in accordance with AWS D1.1 as follows
- a. All welds 100% visual.
- b. Fillet Welds (u.n.o.): One spot test per member: magnetic particle.
- c. Partial Penetration Welds: One spot test per weld; magnetic particle.
- d. Full Penetration Welds: All completed penetration grove welds contained in joint and splices shall be tested one hundred percent (100%) by ultrasonic testino
- 8. Additional testing will be required:
- a. If more than 10 percent of the tested welds are rejected, then an additional 10 percent of all such welds shall be tested using the same method. This 10 percent additional
- testing process shall be repeated until the rejection rate drops below 1 to 10. b. All cost of additional inspection required by this paragraph shall be done at the Contractor's expense.
- 9. In addition, if defective welds are discovered, the remaining uninspected welds shall receive

such ultrasonic or magnetic particle inspection as may be required by the Structural Engineer

- 10. The welding inspector will have the authority to reject weldments. Such rejection may be based on visual inspection where in his opinion the weldment would not pass a more detailed
- 11. Reports by the Testing Agency's inspector will contain, as a minimum, an adequate description of each weld tested, the identifying mark of the welder responsible for the weld, a critique of any defects noted by visual inspection or testing, and a statement regarding the acceptability of the weld tested, as judged by current A.W.S. standards. Reports shall be distributed as early as possible but not later than one work week after the tests have been performed. The Structural Engineer shall be notified, in the judgment of the inspector, test results require immediate comment.
- 12. High Strength Bolts:
- a. The inspector shall determine the appropriate requirements of Sections 13 and M2 of the AISC "Specifications" are met.
- b. Standard Bolts:
- 1) Verify Contractor's testing of installation procedures (turn of the nut) to achieve specified bolt tensions for each lot of bolts. Contractor to provide a calibrated device capable of indicating bolt tension.
- 2) Verify required bolt tension for all bolts.
- 3) If rejectable bolts are found in any connection all the remaining bolts in that connection shall be inspected for tightness. Inspection procedure shall be in accordance with "Specification for Structural Joints Using ASTM A325 or A490 Bolts" approved by Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation (Research Council on Structural Connections). Cost of additional inspection required by this paragraph shall be borne by the contractor
- c. Tension Control (self-indicating) Bolts:
- 1) Verify Contractor's testing of bolt capacity to achieve specified tensions for each lot
- 2) Perform a visual inspection of all high strength bolted connections to assure that

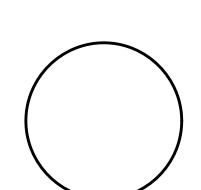
Wentworth Hall **Building Relocation BID # ECON-20-B-005 280**

Washington Street Westwood, MA

OWNER

mckay

35 Bryant Street Dedham, MA 02026 ph:781.326.5400



REV#	DATE	ISSUANCE

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> dimensions in the field prior to start of construction and is to notify McKay Architects of any discrepancies

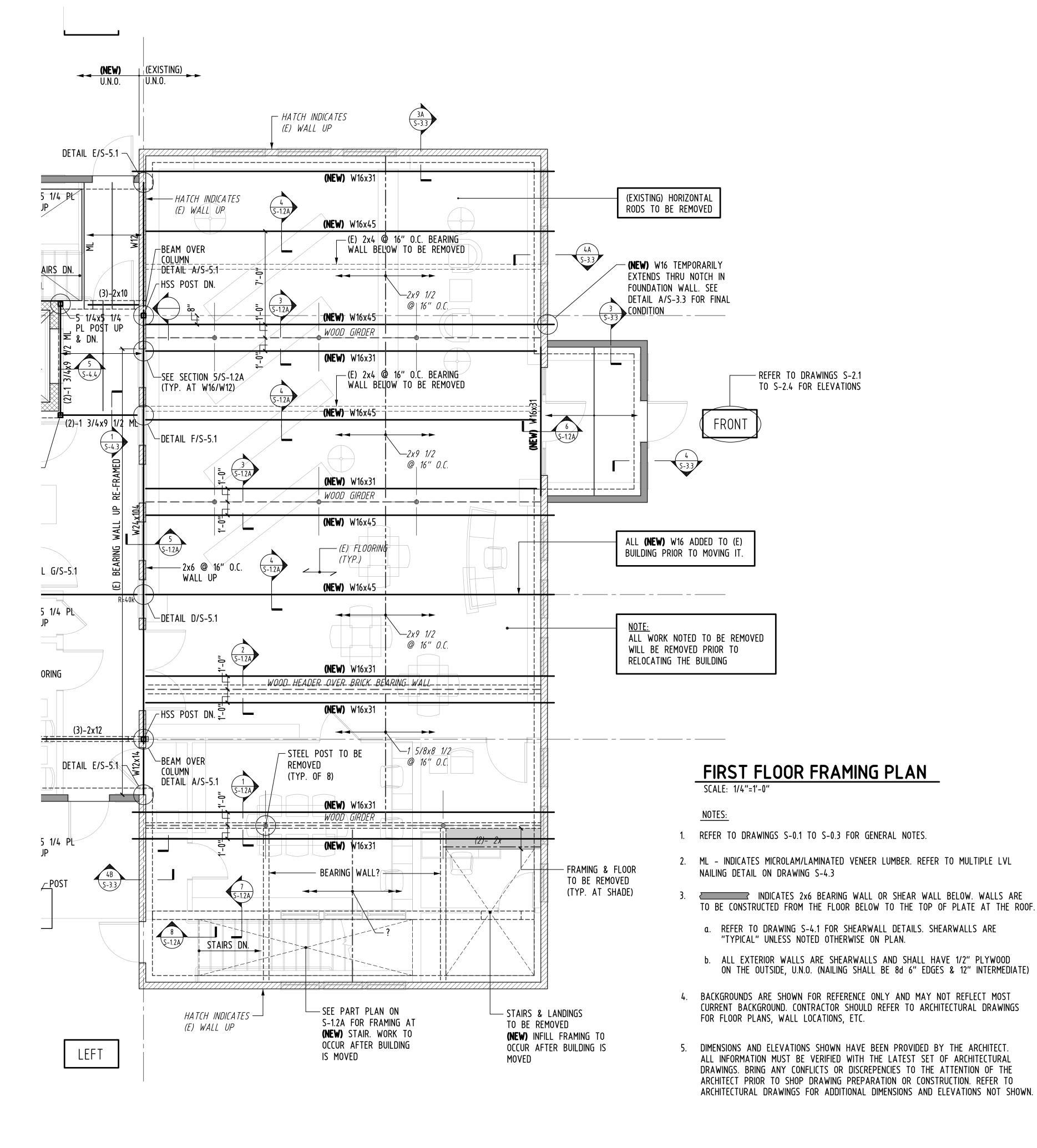
Contractor to verify all information and

STRUCTURAL SPECIFICATIONS

JOB NO

DATE 10.23.19 DWG BY RJM CKD BY MLM

SCALE



Wentworth Hall **Building Relocation BID # ECON-20-B-005 280**

Washington Street Westwood, MA

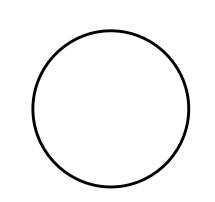
OWNER

REFER TO DRAWINGS S-2.1

TO S-2.4 FOR ELEVATIONS

mckay

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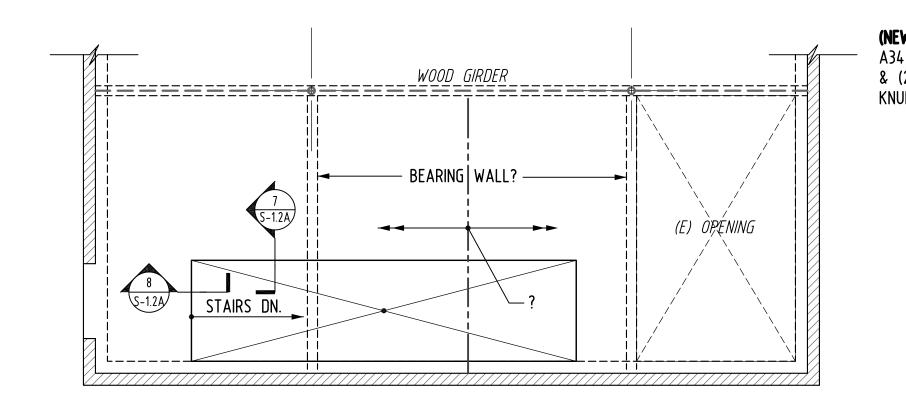
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DATE 10.23.19 DWG BY RJM CKD BY MLM SCALE

S-1.1

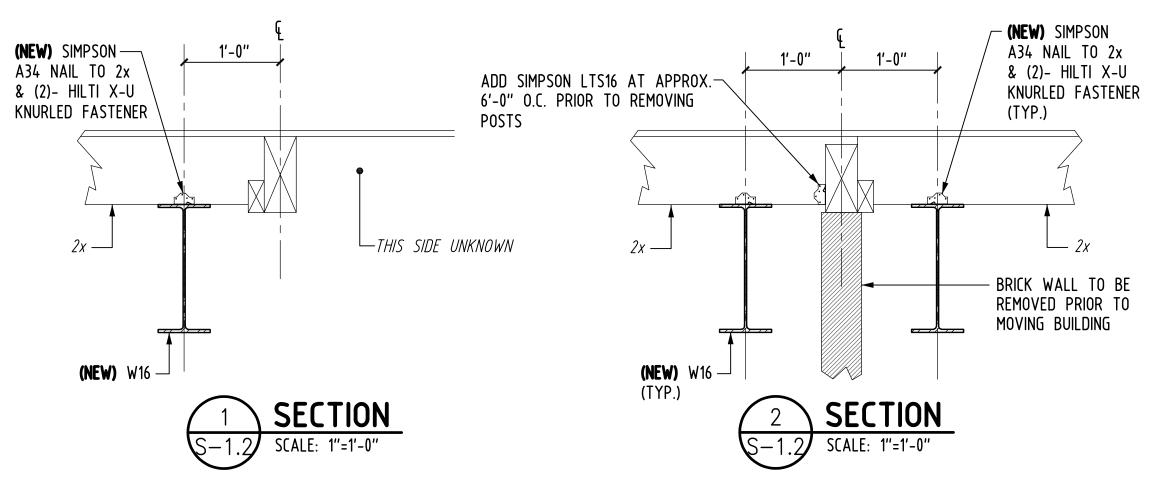


PART PLAN AT (NEW) STAIR

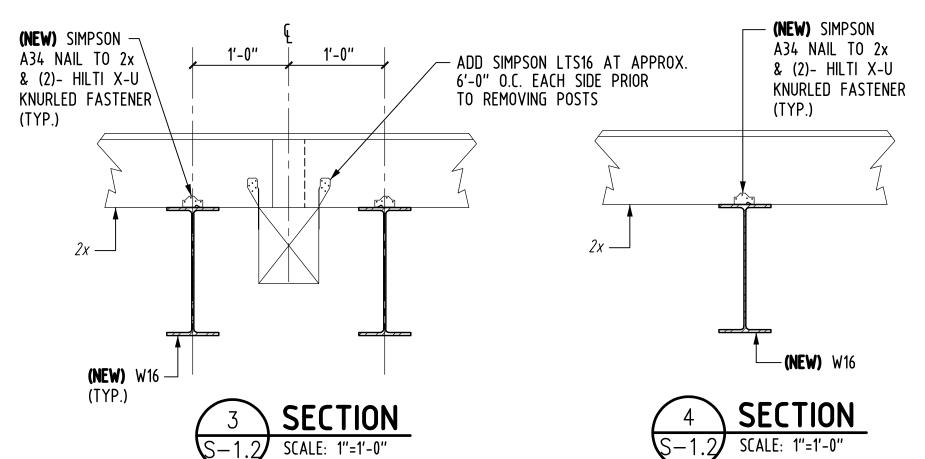
SCALE: 1/4"=1'-0"

NOTES:

1. REFER TO DRAWINGS S-0.1 TO S-0.3 FOR GENERAL NOTES.



ALL CONSTRUCTION EXISTS UNLESS NOTED OTHERWISE.



ALL CONSTRUCTION EXISTS UNLESS NOTED OTHERWISE.

ALL CONSTRUCTION EXISTS UNLESS NOTED OTHERWIS

Expansion 918 **Washington Street**

Wentworth Hall

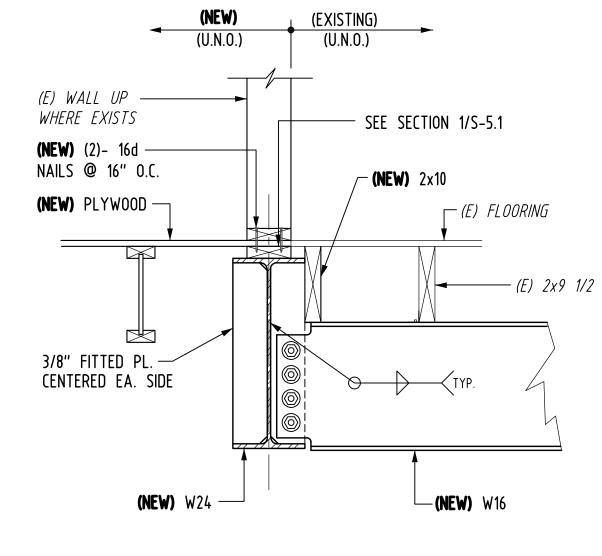
Library

Islington, MA

OWNER

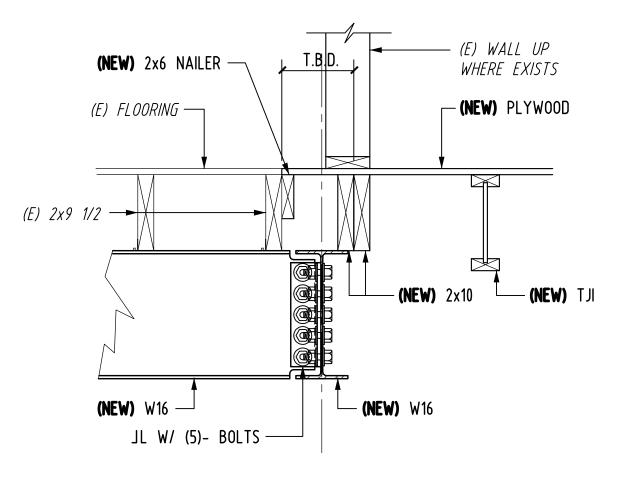
mckay 35 Bryant Street Dedham, MA 02026

ph. 781.326.5400 www.mckayarchitects.net www.mckayarchitects.net

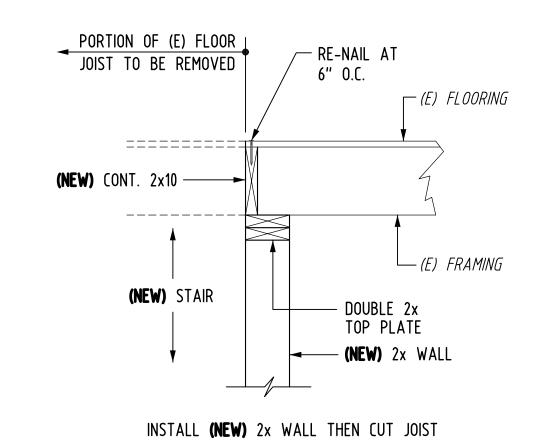


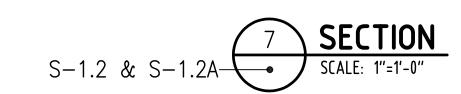
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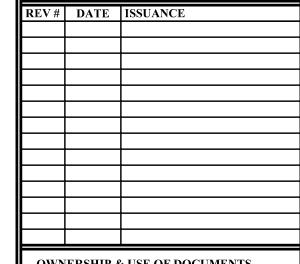












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construction and is to notify McKay

Architects of any discrepancies

Part Plan, Sections & Details

JOB NO 18197.00 05.29.19 DWG BY DAD CKD BY SCALE AS NOTED

