

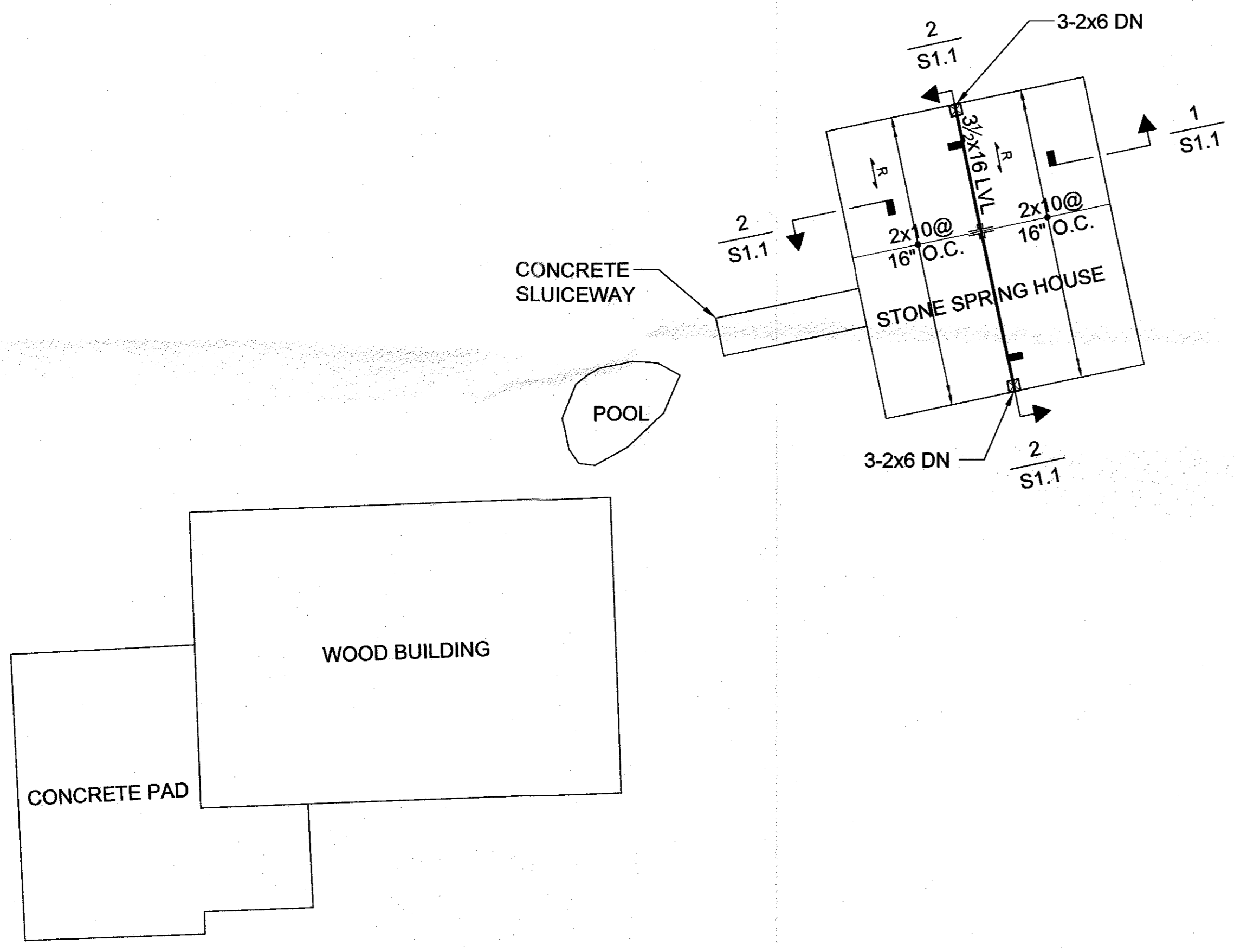
NO.	DATE	DESCRIPTION

project: **165 LOWELL STREET
LYNNFIELD, MA**

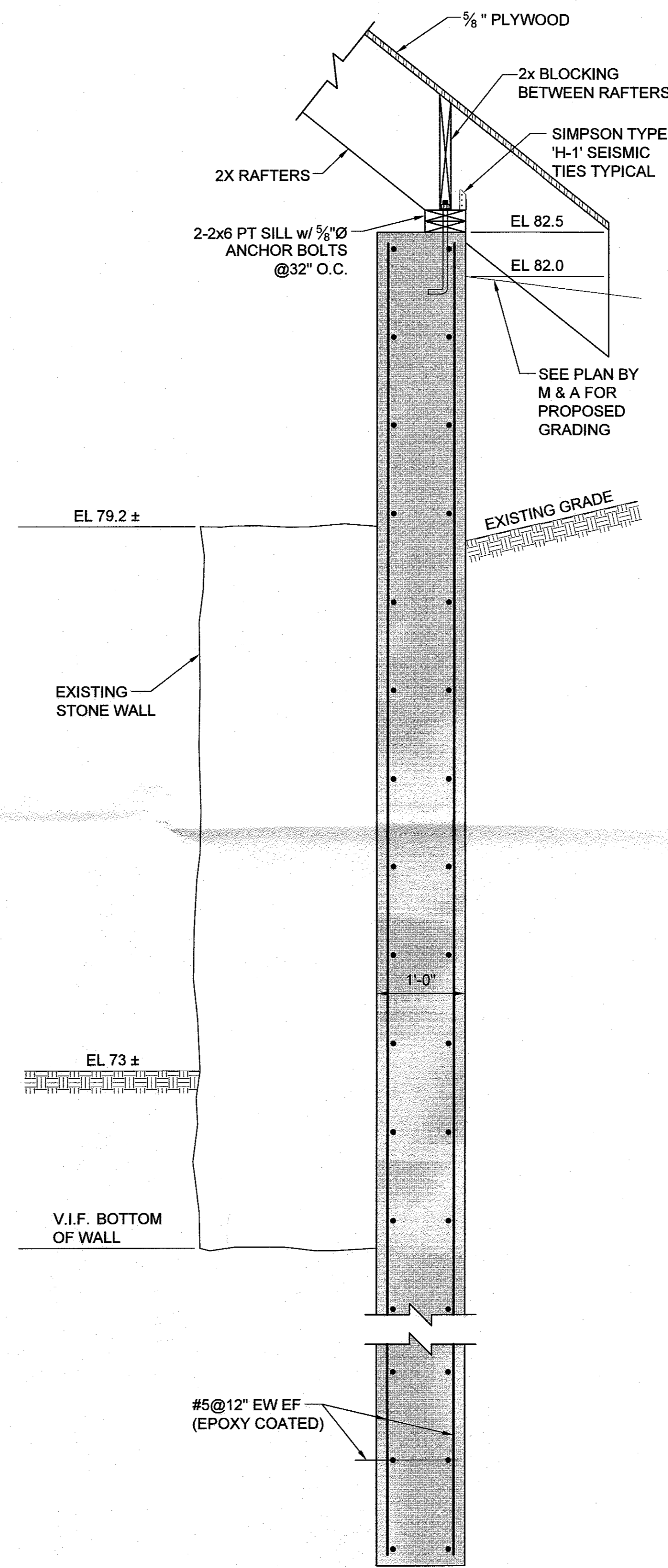
drawing title: **PLAN, SECTION, TYPICAL
DETAILS, & GENERAL NOTES**

scale: AS NOTED
date: 07/24/2019
drawn: BSM

dwg no: **S1.1**

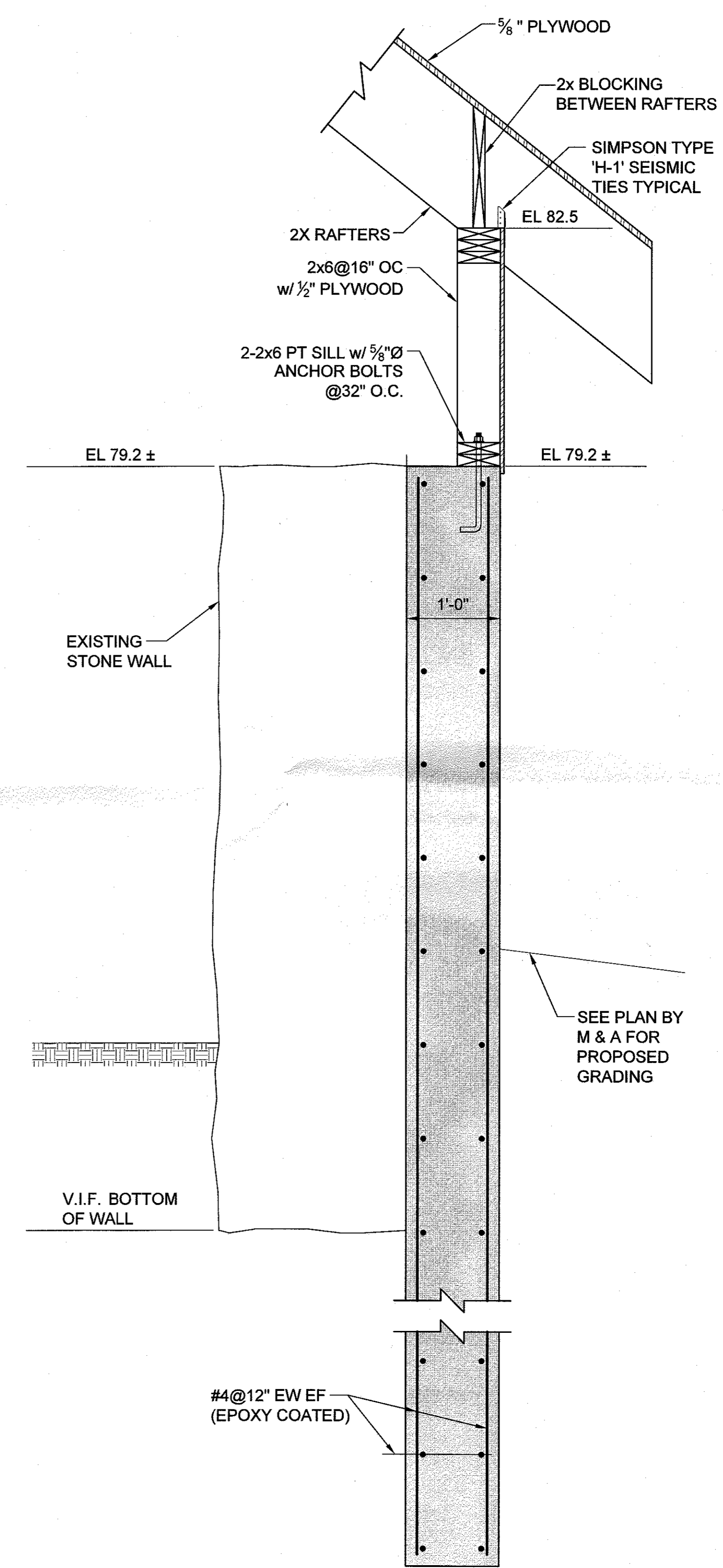


PLAN
SCALE: NTS



1

SCALE: 1" = 1'-0"



2

SCALE: 1" = 1'-0"

GENERAL

- Structural work shall conform to the requirements of "The Commonwealth of Massachusetts State Building Code", 9th Edition, "The International Building Code" (IBC 2015), and ASCE 7-10.
- Verify and coordinate dimensions related to this project.
- Typical details and notes shown on structural drawings shall be applicable to all parts of the structural work except where specifically required otherwise by contract documents.
- Details not specifically shown shall be similar to those shown for the most nearly similar condition as determined by the architect.
- The contractor shall submit complete shop drawings for all parts of the work, including description of demolition and construction methods and sequencing where applicable. No performance of the work including, but not limited to, demolition and construction methods and sequencing where applicable to, demolition of existing structure or fabrication or erection of new structural elements, shall commence without review of the shop drawings by the engineer of record EOR.

FOUNDATIONS

- Foundations for this project consist of new foundation trench walls. Allowable bearing pressure is assumed to be 2 tons per square foot.
- Carry out continuous control of surface and subsurface water during construction such that foundation work is done in dry and on undisturbed subgrade material, as applicable.
- Bottom 3 inches of excavations for footings shall be finished by hand shovel.
- Backfill under any portion of the structure shall be compacted in 6" lifts per specifications requirements.
- No foundation concrete shall be placed in water or on frozen subgrade material.
- Protect in-place foundations and slabs from frost penetration until the project is completed.

CONCRETE

- Concrete work shall conform to "Building Code Requirements for Reinforced Concrete" (ACI 318-14), and "Specifications for Structural Concrete for Buildings" (ACI 301-14).
- Concrete shall be controlled concrete, proportioned, mixed and placed in the presence of a representative of an approved testing agency.
- Unless noted otherwise, concrete shall have a minimum 28 day compressive strength and be of a type as follows:
(A) Trench Walls 4000 PSI (Normal weight)
- Concrete to be exposed to the weather in the finished project shall be air entrained.
- Size of concrete placements, unless noted otherwise, shall be as follows:

	Max Length (Feet)	Max Area (Sq. Feet)
(A) Footings and walls	30*	-

- Minimum of 72 hours shall elapse between adjacent concrete placements.
- Concrete shall be placed without horizontal construction joints except where shown or noted. Vertical construction joints and stops in concrete work shall be made at midspan or at points of minimum shear.

REINFORCEMENT

- Reinforcement work of detailing, fabrication and erection shall conform to "Building Code Requirements for Reinforced Concrete" (ACI 318-14), "ACI Detailing Manual - 1994" (SP-66), "CRSI Manual of Standard Practice" (MSP 1-97), and "Structural Welding Code - Reinforcing Steel" (AWS D1.4-92).
- Steel reinforcement, unless noted otherwise, shall conform to the following:

- (A) Bars, ties and stirrups ASTM A615 Grade 60 (FY=60 KSI)
- (B) Welded wire fabric (WWF) ASTM A185

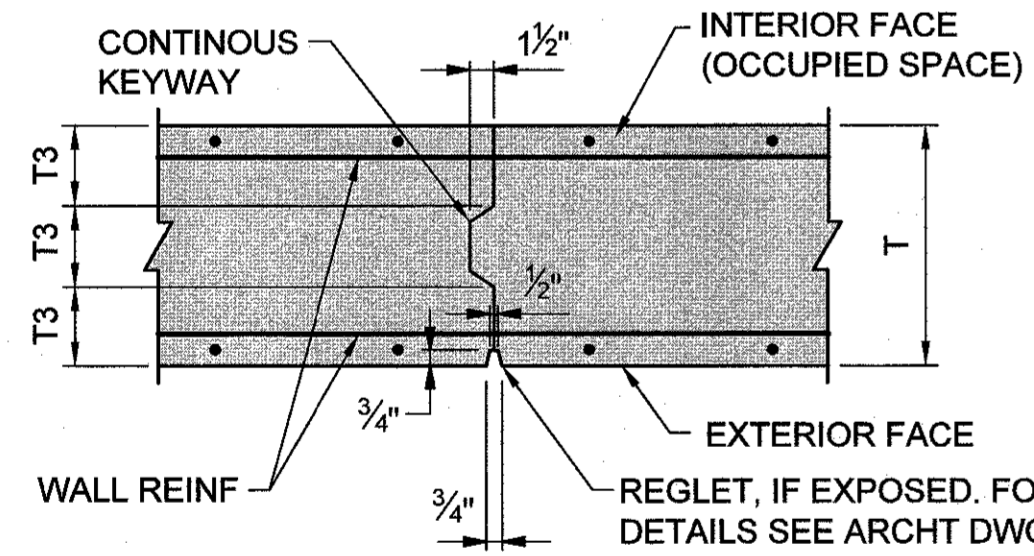
- Provide and schedule on shop drawings the necessary accessories to hold reinforcement securely in position. Minimum requirements shall be: high chairs, 4'-0" O.C. with continuous #5 support bar; slab bolsters, continuous and 3'-6" O.C.; beam bolsters, 5'-0" O.C.
- Minimum concrete protective covering for reinforcement, unless noted otherwise, shall be as follows:

- (A) Unformed surfaces cast against and permanently in contact with earth: 3.0"
- (B) Formed surfaces in contact with earth or exposed to weather:
 - #6 through #18 bars 2.0"
 - #5 bars, 5/8" wire and smaller 1.5"

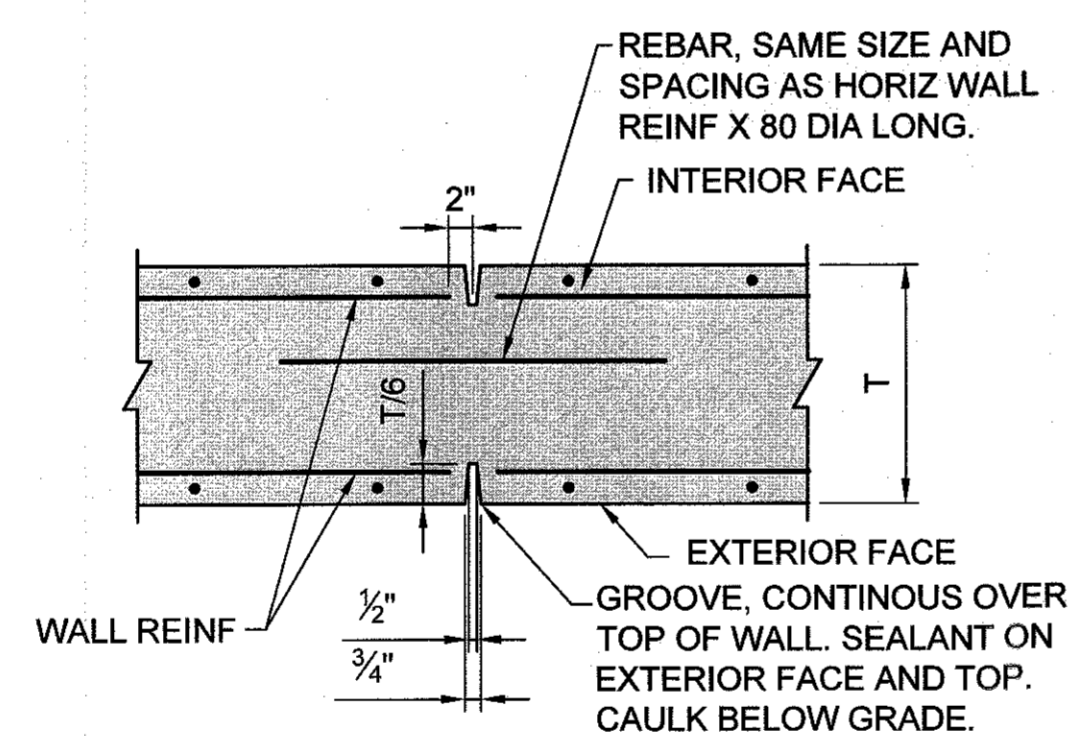
- (C) Surfaces not in contact with earth or exposed to weather - walls, slabs, joists:
 - #14 and #18 bars 1.5"
 - #11 bars and smaller 1.0"

Beams, girders and columns - principal reinforcement, ties, stirrups or spirals: 1.5"

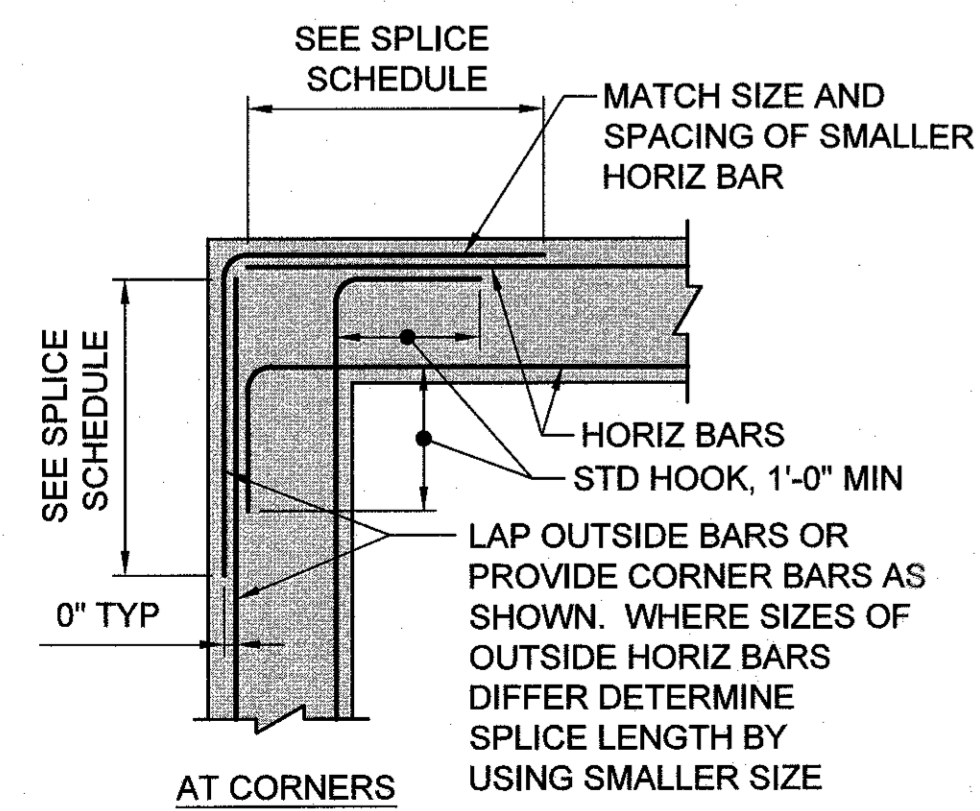
- Where continuous reinforcement is called for, it shall be extended continuously around corners and lapped at necessary splices or hooked at discontinuous ends. Laps shall be Class B tension lap splices, unless noted otherwise.
- Where reinforcement is not shown on drawings, provide reinforcement in accordance with applicable details as determined by the architect. In no case shall reinforcement be less than the minimum reinforcement permitted by the applicable codes.
- Where reinforcement is required in section, reinforcement is considered typical wherever the section applies.
- Reinforcement shall be continuous through construction joints.
- Dowels shall match bar size and number, unless noted otherwise.
- Reinforcement shall not be tack-welded.
- Installation of reinforcement shall be completed at least 24 hours prior to the scheduled concrete placement. Notify architect of completion at least 24 hours prior to the scheduled completion of the installation of reinforcement.



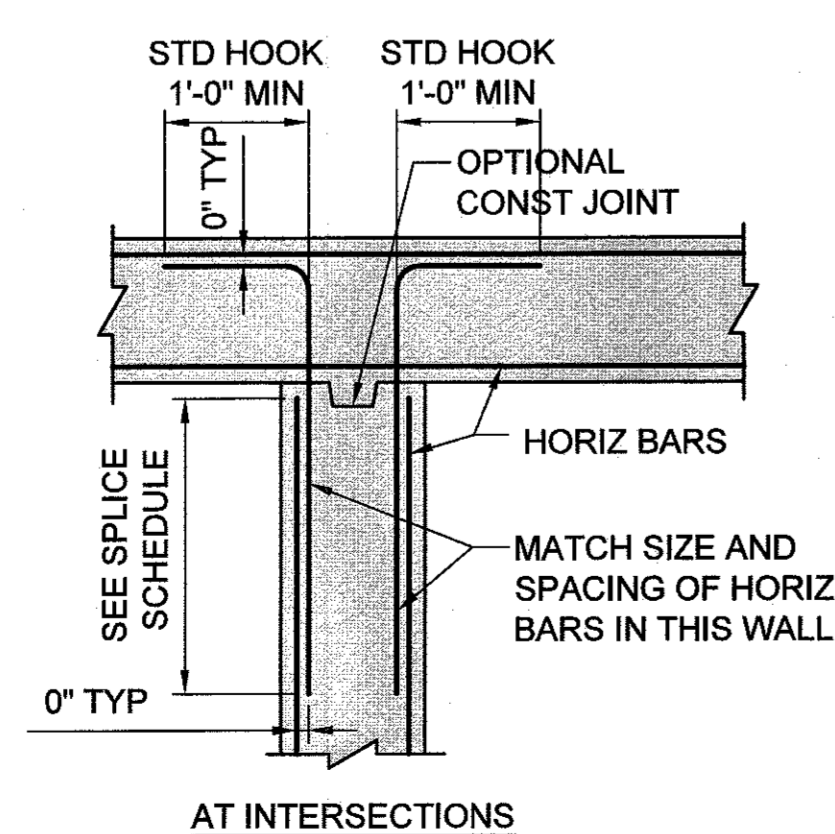
1 VERTICAL CONSTRUCTION JOINT IN CONCRETE WALLS



2 VERTICAL CONTROL JOINT IN CONCRETE WALLS



4 HORIZONTAL WALL REINFORCEMENT PLANS



3

STRUCTURAL ELEMENT	CONCRETE COVER	CATEGORY ACCORDING TO CENTER-TO-CENTER BAR SPACING			
		≤3DIA _b	>3DIA _b <4DIA _b	≥4DIA _b <6DIA _b	≥6DIA _b
BEAMS, COLUMNS, AND INNER LAYER OF WALLS OR SLABS	≤DIA _b >DIA _b	1 1	1 3	1 5	2 6
ALL OTHERS	≤DIA _b >DIA _b <2DIA _b ≥2DIA _b	1 1 1	1 3 3	1 5 5	2 4 6

TYPICAL ABBREVIATIONS

- DIA_b = NOMINAL BAR DIAMETER
- > = GREATER THAN
- ≥ = EQUAL TO OR GREATER THAN
- < = LESS THAN
- ≤ = EQUAL TO OR LESS THAN

- AVOID SPLICES IN REGIONS OF MAXIMUM MOMENT. IF THIS IS NOT POSSIBLE STAGGER SPLICES SO THAT NOT MORE THAN 50% OF THE BARS ARE SPLICED WITHIN A REQUIRED SPLICE LENGTH OTHERWISE INCREASE SPLICE LENGTH BY 30%.
- TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST IN THE MEMBER BELOW THE REINFORCEMENT. WALL REINF IS CLASSIFIED AS OTHER BARS.
- FOR LIGHTWEIGHT AGGREGATE CONCRETE MULTIPLY THE VALUES ABOVE BY 1.3.

MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE (UNLESS SHOWN OTHERWISE ON DRAWINGS)												
CLASS B TENSION SPLICE Fy=60000 PSI												
f'c = 4000 PSI, NORMAL WEIGHT												
BAR SIZE	TOP BARS CATEGORY						OTHER BARS CATEGORY					
	1	2	3	4	5	6	1	2	3	4	5	6
#3	18"	18"	18"	18"	18"	18"	16"	16"	16"	16"	16"	16"
#4	26"	24"	24"	24"	24"	24"	20"	19"	19"	19"	19"	19"
#5	40"	32"	30"	30"	30"	30"	31"	25"	23"	23"	23"	23"
#6	57"	45"	40"	36"	36"	36"	44"	35"	31"	28"	28"	28"
#7	77"	62"	54"	43"	42"	42"	59"	48"	42"	33"	33"	33"
#8	102"	81"	71"	57"	51"	48"	78"	63"	55"	44"	39"	37"
#9	129"	103"	90"	72"	64"	55"	99"	79"	69"	56"	50"	42"
#10	163"	131"	114"	92"	82"	65"	126"	101"	88"	70"	63"	50"
#11	200"	160"	140"	112"	100"	80"	154"	123"	108"	86"	77"	62"

R&G
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STRUCTURAL ENGINEERS
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seal:

revisions:

project:
**165 LOWELL STREET
LYNNFIELD, MA**

drawing title:
**GENERAL NOTES
& TYPICAL DETAILS**
date: 07/24/2019
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drawn: BSM

dwg no:
S0.1