MITCHELL ENGINEERING INC.

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Scope of Work:

Lateral + Gravity for Remodel / Addition shown on Sheets A1, A2 & A3 contained within. As-built construction shown within has been provided to our office.

Roof Framing (Sheet A3)

Do to short spans Headers sized by inspection.

2nd Floor / Low Roof Framing (Sheet A2)

Beam #1 (LL=10'-0")

Wt. L. $10' \times 40^{PSF}_{Roof} + 60 \times 50 = 700^{PLF}$

$M = 700 \times 10^2/8 = 8750 \times 12/2400 = 43 in^3$; $3\frac{1}{2} \times 10\frac{1}{2}$

$\Delta_{allow} = L/360 = 0.33$

$5 \times 700 \times 10^4 \times 1728 / 384 \times 1.6 \times 10^6 \times 193 = .245 \leq .33$

GL. #B $3\frac{1}{2} \times 10\frac{1}{2}$

PREPARED BY M.M PROJECT Lance Richert SHEET NO. #1 OF 34

DATE 7/1/21 SUBJECT LHO JOB NO. 021.243

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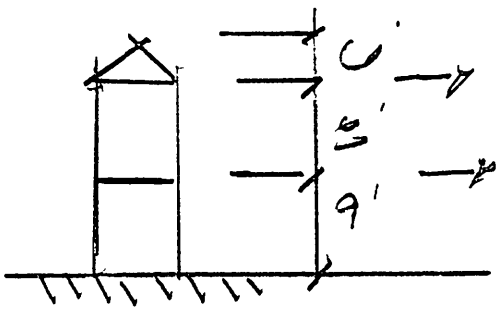
LATERAL $K_{T2} = 1.3^{\circ}$



$10' \times 15.9 \times 1.3^{\circ} = 219^{\#}$

$8.5' \times 12.9 \times 1.3^{\circ} = 151^{\#}$

SEISMIC D.L.

@ UPPER FLOOR

a) ROOF - $2100^{\#} \times 15 = 33^{K}$

b) WALLS $10' \times 4' \times 0 = 0 - 40^{K}$

$92^{K} \times .15 = 16.5$

@ MAIN FLR

a) UPPER FLR $1950 \times 20 - 39^{K}$

b) WALLS - $= 12^{K} - 52^{K}$

$40^{K} \times 11' = 440 \quad 9.5^{K}$

$52^{K} \times 9' = 468 \quad 0.7$

1148

@ TOP PLATE

$9800 / 26' = 374^{\#}-ft$ ← SEISMIC CONTROL SIDE

$9800 \quad 52' = 188^{\#}-ft$ ← WIND CONTROL FRONT/BACK

PREPARED BY M.M PROJECT KHO SHEET NO. #2 OF ___

DATE 7/1/21 SUBJECT "LATERAL" JOB NO. 021-243

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SHEAR FRONT / BACK

@ UPPER FLOOR
@ GRIDS #1 - 219 x 30 - 6570 / 26' - 252 (V.P.)
& 5/6 - 219 x 30' - 6570 / 2? - 244 - P-4

@ MAIN FLR

@ GRIDS #2 - NO CHANGE
5/6 - 6570 + 151 x 25' - 10300 / 34' - 304 -
P-4 / VERIFY PLYWOOD

SIDE / SIDE

@ UPPER FLR
@ GRID B 4900 / 24' - 204 - P-4 / V.P.
D / E - 4900' / 30 - 163 - P-6

@ MAIN FLR
@ GRIDS A - NO CHANGE
6700 / 28' - 239
C - 239 x 10' - 2390 / 9 - 265 - V.P.
E - 4900 + 239 x 7' - 6573 / 29 - 226
V.P. / P-4

PREPARED BY M.M PROJECT 1646 SHEET NO. 43 OF

DATE 7/1/21 SUBJECT JOB NO. 021-243

SHEAR WALL SCHEDULE

Shear Wall Designation	Nail Size	Nail Spacing				ALLOWABLE SHEAR Hem-Fir #2 #/Ft
		Edges	Studs	Top/Btm. Plate	Blocking Req'd.	
P1-6	8d	6"	12"	6"	Yes	210
P1-4	8d	4"	12"	4"	Yes	310
P1-3	8d	3"	12"	3"	Yes	400
P1-2	8d	2"	12"	2"	Yes	525
P2-3	8d	3"	12"	3"	Yes	800
P2-2	8d	2"	12"	2"	Yes	1050

Shear Wall Notes:

1. P1 - 7/16 A.P.A. rated Plywood or Orientated Strand Board (O.S.B.) on one side of wall.
   P2 - 7/16 A.P.A. rated Plywood or Orientated Strand Board (O.S.B.) on each side of wall.
2. For P1-3, P1-2, P2-3, & P2-2 shear walls use 3x studs at adjoining panel edges. Nailing shall be staggered.
3. Nails shall be 8d common. (d = .131 inch)
4. Where plywood is installed on both sides of wall plywood joints shall fall on separate studs each side.
5. All panel edges backed with 2-inch nominal framing for P1-6 & P1-4 shear wall. All panels edges backed with 3x framing at P1-3, P1-2, P2-3, & P2-2 shear walls. Install panels either horizontally or vertically. Space nails @ 12 inches on center @ intermediate supports.
6. All anchor bolts shall be installed with hot dipped galvanized plate washers.
7. Refer to foundation plan for anchor bolt size, spacing and mudsill/rim connections.

44

STRUCTURAL NOTES

CODE:
DESIGN IS IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE (I.B.C.) AS AMENDED BY THE LOCAL BUILDING DEPARTMENT.

LIVE LOADS:
ROOF----------25PSF
FLOOR----------40PSF
DECK----------60PSF
LATERAL
WIND----------EXPOSURE C, 85MPH/110MPH(ULT)/ WIND PER ASCE 7-18, SECTION 28.5.3
SEISMIC----------SITE CLASS D. SEISMIC PER ASCE 7-18, SIMPLIFIED LATERAL FORCE SYSTEM, SECTION 12.14.8.1

FOUNDATIONS:
EXTEND FOOTINGS TO FIRM UNDISTURBED SOIL, BEARING CAPACITY OF 2000PSF. ALL EXTERIOR FOOTINGS SHALL EXTEND A MINIMUM OF 1'-6" BELOW ADJACENT EXTERIOR GRADE. FOUNDATION DESIGN IS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY MARK DODDS DATED FEBRUARY 25, 2021

CAST-IN-PLACE CONCRETE:
F'c=3000 PSI @ 28 DAYS. MINIMUM 5-1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE AND MAXIMUM OF 6-3/4 GALLONS OF WATER PER 94# SACK OF CEMENT. NO SPECIAL INSPECTION REQUIRED. CONCRETE SHALL COMPLY WITH ACI 318-14 SECTION 26.4.2.1. MAXIMUM SLUMP IS 4 INCHES. ALL PHASES OF WORK PERTAINING TO THE CONCRETE CONSTRUCTION SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE. ALL REINFORCING STEEL, DOWELS, ANCHOR BOLTS, AND OTHER INSERTS SHALL BE SECURED IN POSITION PRIOR TO POURING CONCRETE. ANCHOR BOLTS FOR PRESSURE TREATED SILL PLATES TO FOUNDATION WALLS TO BE 5/8 INCH DIAMETER WITH 7 INCH MINIMUM EMBEDMENT INTO CONCRETE AND MAXIMUM SPACING OF 2 FEET ON CENTER. MINIMUM 2 BOLTS PER SILL PLATE PIECE. ONE BOLT TO BE PLACED WITHIN 6 INCHES OF EACH END OF THE SILL PLATE. DIPPED GALVANIZED CONNECTORS SHALL CONFORM TO ASTM STANDARD 153 AND HOT DIPPED GALVANIZED CONNECTORS SHALL CONFORM TO ASTM A653M CLASS G-185. STAINLESS STEEL FASTENERS AND CONNECTORS SHALL BE TYPE 304 OR 316. SIMPSON PRODUCT FINISHES CORRESPONDING TO THESE REQUIREMENTS ARE ZMAX (HOT DIPPED GALVANIZED) AND SST 300 (STAINLESS STEEL). FASTNERS FOR PRESSURE TREATED AND FIRE-RETARDANT TREATED WOOD SHALL BE ZMAX HOT DIPPED GALVANIZED (G185).

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE PLACED IN CONFORMANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE AND THE MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION BY CRSI. DEFORMED REINFORCING STEEL BARS SHALL CONFORM TO ASTM A-615 GRADE 40 FOR #5 AND SMALLER REINFORCEMENT AND GRADE 60 FOR #6 AND LARGER. ALL REINFORCING BAR BENDS SHALL BE MADE COLD WITH A MINIMUM RADIUS OF 6 BAR DIAMETERS (1'-7" MINIMUM). CORNER BARS (2'-0" BEND) SHALL BE PROVIDED FOR ALL HORIZONTAL REINFORCEMENT. LAP ALL BARS A MINIMUM OF 48 BAR DIAMETERS UNLESS NOTED OTHERWISE. UNLESS NOTE OTHERWISE ON THE DRAWINGS REINFORCING STEEL SHALL HAVE THE FOLLOWING MINIMUM COVER:

CONCRETE CAST AGAINST EARTH	3 INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THROUGH #18 BARS	2 INCHES
#5 BAR AND SMALLER	1-1/2 INCHES

STRUCTURAL TIMBER:

ALL LUMBER SHALL CONFORM TO WWPA GRADING RULES FOR WESTERN LUMBER, LATEST EDITION. PROVIDE CUT WASHERS UNDER ALL NUTS AND BOLTS BEARING AGAINST WOOD. ALL WOOD IN CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED IN ACCORDANCE WITH AWPA U1 AND M4 STANDARDS. ALL STRUCTURAL LUMBER SHALL BE AS NOTED BELOW:

2X FLOOR/DECK JOIST	HEM-FIR#2----------Fb=850 PSI
4X BEAMS	DOUG-FIR/LARCH #2----Fb=850PSI
6X BEAMS	DOUG-FIR/LARCH #2----Fb=850PSI
LUMBER NOT NOTED	HEM-FIR #2----------Fb=850 PSI

MISCELLANEOUS HANGERS TO BE SIMPSON OR APPROVED EQUAL. ALL HANGERS SHALL BE FASTENED TO WOOD WITH PROPER NAILS. ALL HOLES SHALL BE NAILED. MACHINE BOLTS TO BE A-307. ANCHOR BOLTS INTO CONCRETE SHALL BE 5/8 INCH DIAMETER WITH 7 INCHES OF EMBEDMENT INTO CONCRETE UNLESS NOTED OTHERWISE ON THE PLANS. ALL NAILS SHALL BE COMMON WIRE NAILS. NAILING SHALL BE IN ACCORDANCE WITH THE CURRENT I.B.C. SCHEDULE.

FLOOR SHEATHING:

SHEATHING SHALL BE ¾ INCH TONGUE AND GROOVE A.P.A. RATED SHEATHING. SPAN RATING 48/24 WITH LONG DIMENSION PERPENDICULAR TO SUPPORTS. UNLESS NOTED OTHERWISE NAIL WITH 8d COMMON NAILS AT 6 INCHES ON CENTER AT SUPPORTED PANEL EDGES AND 10 INCHES ON CENTER AT INTERMEDIATE SUPPORTS. THE FLOOR SHEATHING SHALL BE GLUED TO THE JOIST AND THE TONGUE AND GROOVE JOINTS WITH AN APPROVED ADHESIVE.

WALL SHEATHING:
SHEATHING SHALL BE 7/16 INCH A.P.A. RATED SHEATHING, SPAN RATING 24/0. PANEL END JOINTS SHALL OCCUR AT SUPPORTS. NAIL PANEL EDGES WITH 10d NAILS AT 6 INCHES ON CENTER AND 10 INCHES ON CENTER AT INTERMEDIATE SUPPORTS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

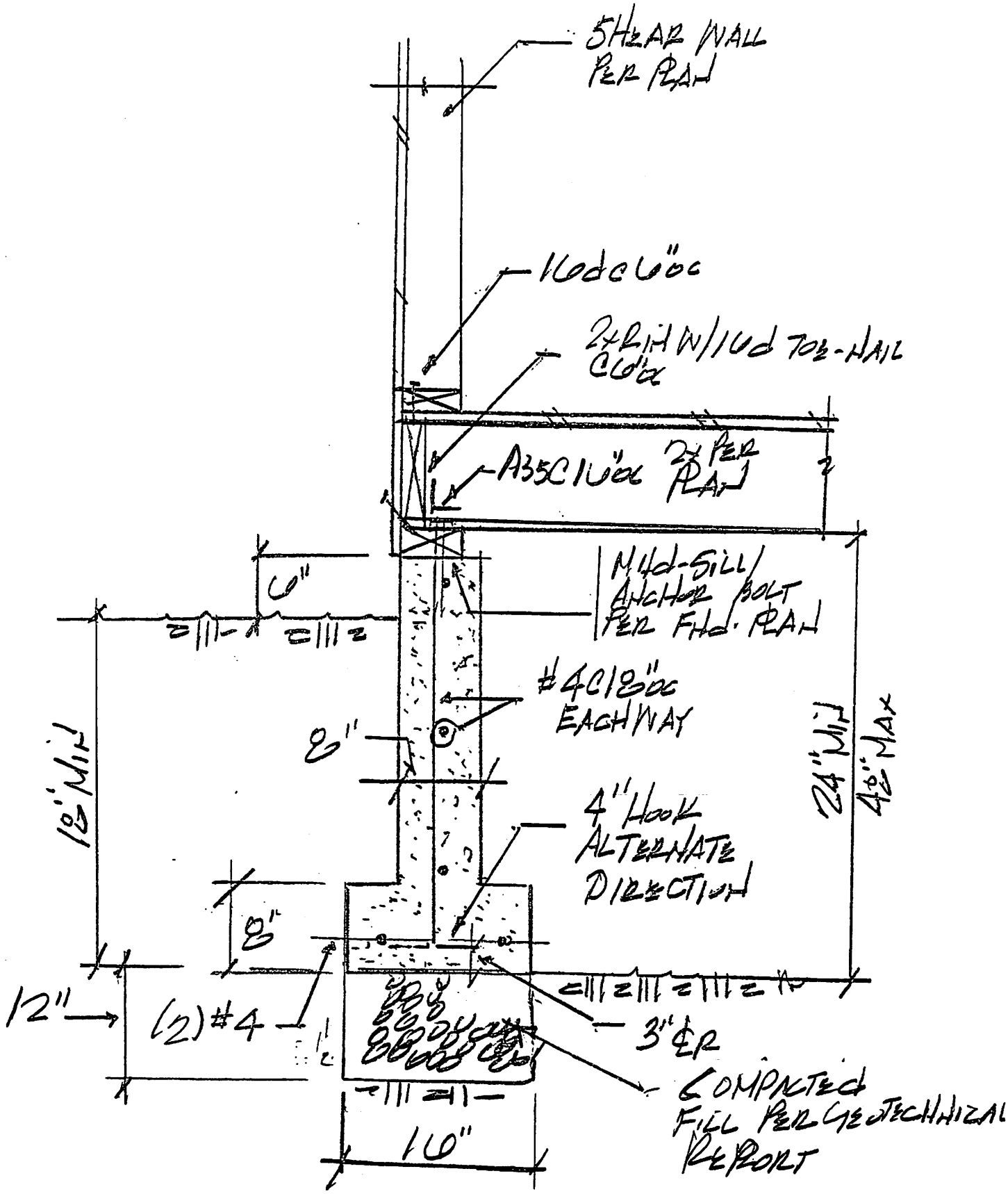
GLU-LAMINATED TIMBER:
LAMINATED TIMBER SHALL BE DOUGLAS-FIR/LARCH KILM DRYED. STRESS GRADE COMBINATION OF 24F-V4 FOR SIMPLE SPANS AND 24F-V8 FOR CANTILEVER AND CONTINUOUS BEAMS.

ROOF SHEATHING:
SHEATHING SHALL BE 7/16 INCH A.P.A. RATED SHEATHING. SPAN RATING 32/16, INSTALLED WITH LONG DIMENSION ACROSS SUPPORT. PANEL END JOINTS SHALL OCCUR AT SUPPORTS. NAIL PANEL EDGES WITH 8d NAILS SPACED AT 4 INCHES ON CENTER AND 10 INCHES ON CENTER AT INTERMEDIATE SUPPORTS.

FLOOR FRAMING:
PROVIDE FULL DEPTH BLOCKING FOR JOIST AT THE SUPPORTS. FLUSH BEAMS (FB) AND HEADERS NOT CALLED OUT ON THE PLANS SHALL BE (2)2X8. ALL VERTICALLY LAMINATED COLUMNS AND HEADERS SHALL BE SPIKED TOGETHER WITH 12d NAILS SPACED AT 12 INCHES ON CENTER.

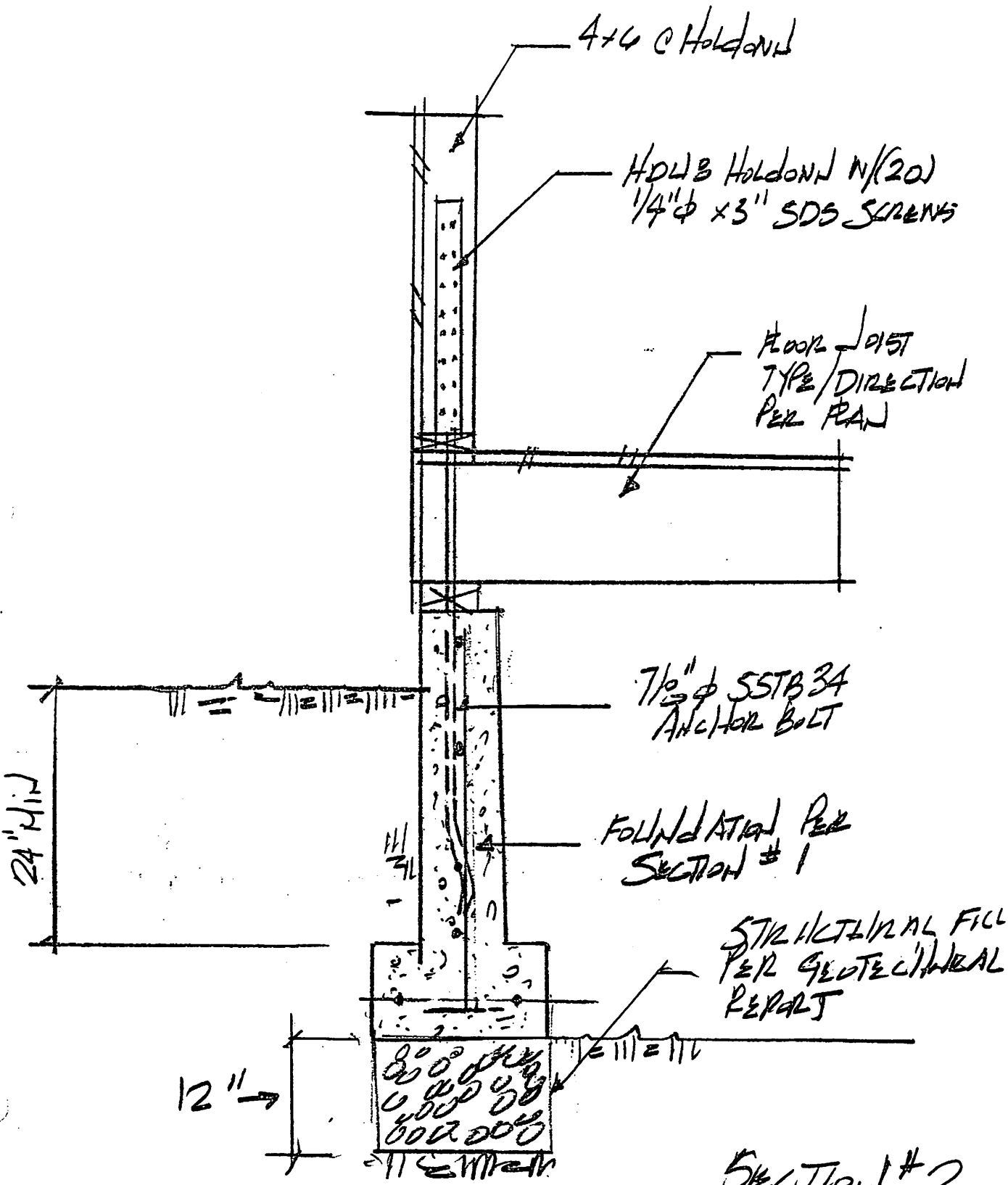
BEARING WALL FRAMING:
ALL DOOR AND WINDOW HEADERS NOT CALLED OUT ON THE PLANS SHALL BE (2) 2X8 HEM-FIR#2 WITH ONE CRIPPLE AND ONE STUD AT EACH END FOR OPENINGS 4 FEET WIDE OR LESS. ALL COLUMNS NOT CALLED OUT ON THE PLANS SHALL BE (2) STUDS SPIKED TOGETHER WITH 12d NAILS AT 12 INCHES ON CENTER. PROVIDE 2 LAYERS OF BUILDING PAPER BETWEEN WOOD AND CONCRETE. WALLS SHALL HAVE A SINGLE BOTTOM PLATE AND DOUBLE TOP PLATE. END NAIL TOP PLATES AND BOTTOM PLATES TO EACH STUD WITH 2-16d NAILS. FACE NAIL DOUBLE TOP PLATE WITH 10d NAILS AT 10 INCHES ON CENTER. LAP AND FACE NAIL PLATES WITH 2-10d NAILS AT EACH SPLICE, CORNER INTERSECTION. STAGGER SPLICES A MINIMUM OF 48 INCHES.

ROOF TRUSSES:
TRUSSES SHALL BE PLANT FABRICATED DOUGLAS-FIR/LARCH OR HEM-FIR. TRUSS MANUFACTURER SHALL SUBMIT SHOP DRAWING AND CALCULATIONS STAMPED, SIGNED AND DATED BY A WASHINGTON STATE LICENSED STRUCTURAL ENGINEER. SUBMIT TRUSS DRAWING TO THE ENGINEER OF RECORD AND BUILDING DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. ROOF TRUSSES SHALL BE DESIGNED AS ATTIC TRUSSES WITHOUT STORAGE. MANUFACTURERS INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION, FOR THE INSPECTORS USE AND REFERENCE.

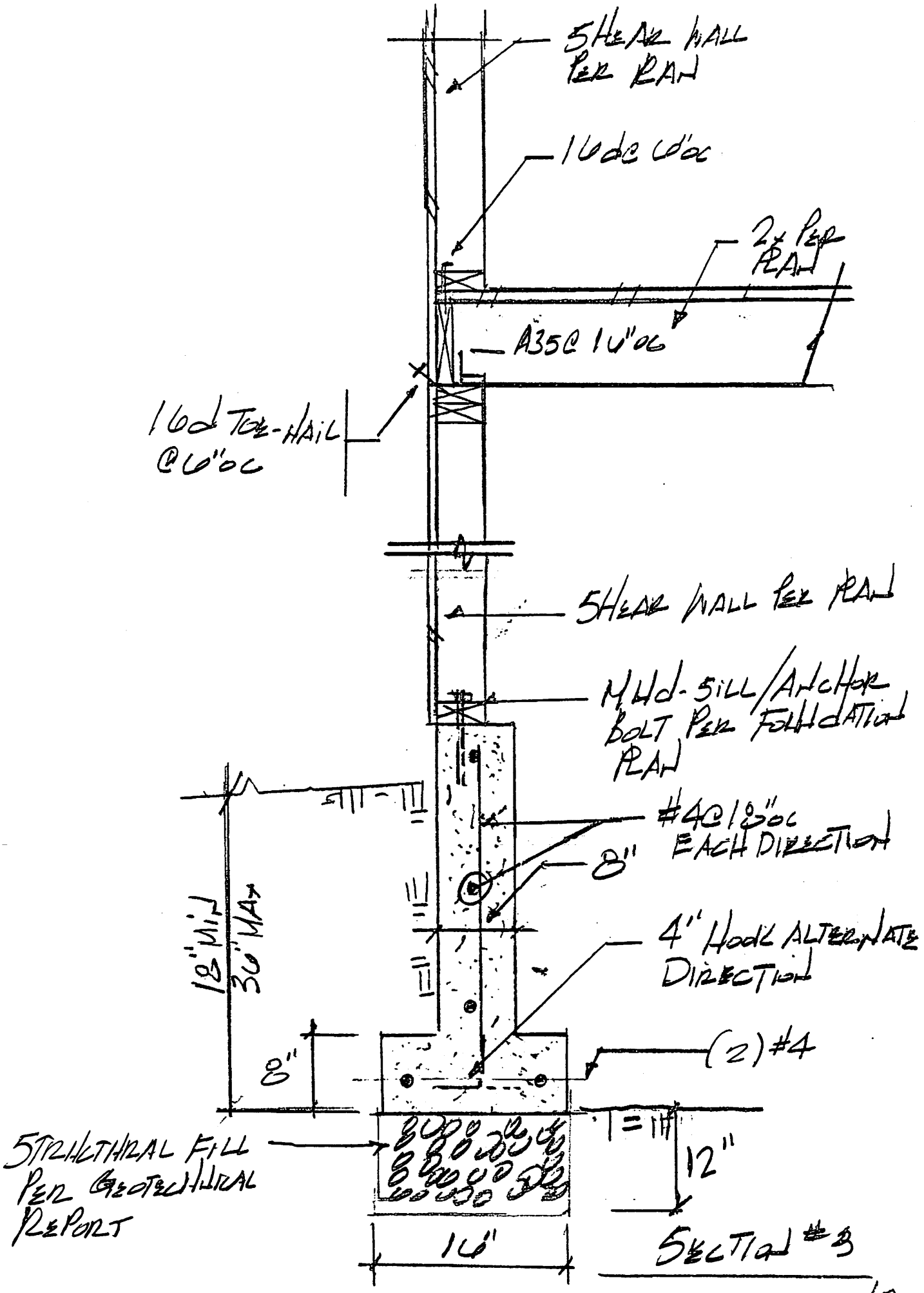

SHEAR WALL PER PLAN
16d @ 6"oc
2x RIM W/16d TOE-NAIL @ 6"oc
A35 @ 16"oc 2x PER PLAN
6"
MUD-SILL/ ANCHOR BOLT PER FND. PLAN
#4 @ 18"oc EACH WAY
8"
12" MIN
24" MIN 48" MAX
4" HOOK ALTERNATE DIRECTION
8"
12"
(2) #4
3" CLR
COMPACTED FILL PER GEOTECHNICAL REPORT
10"

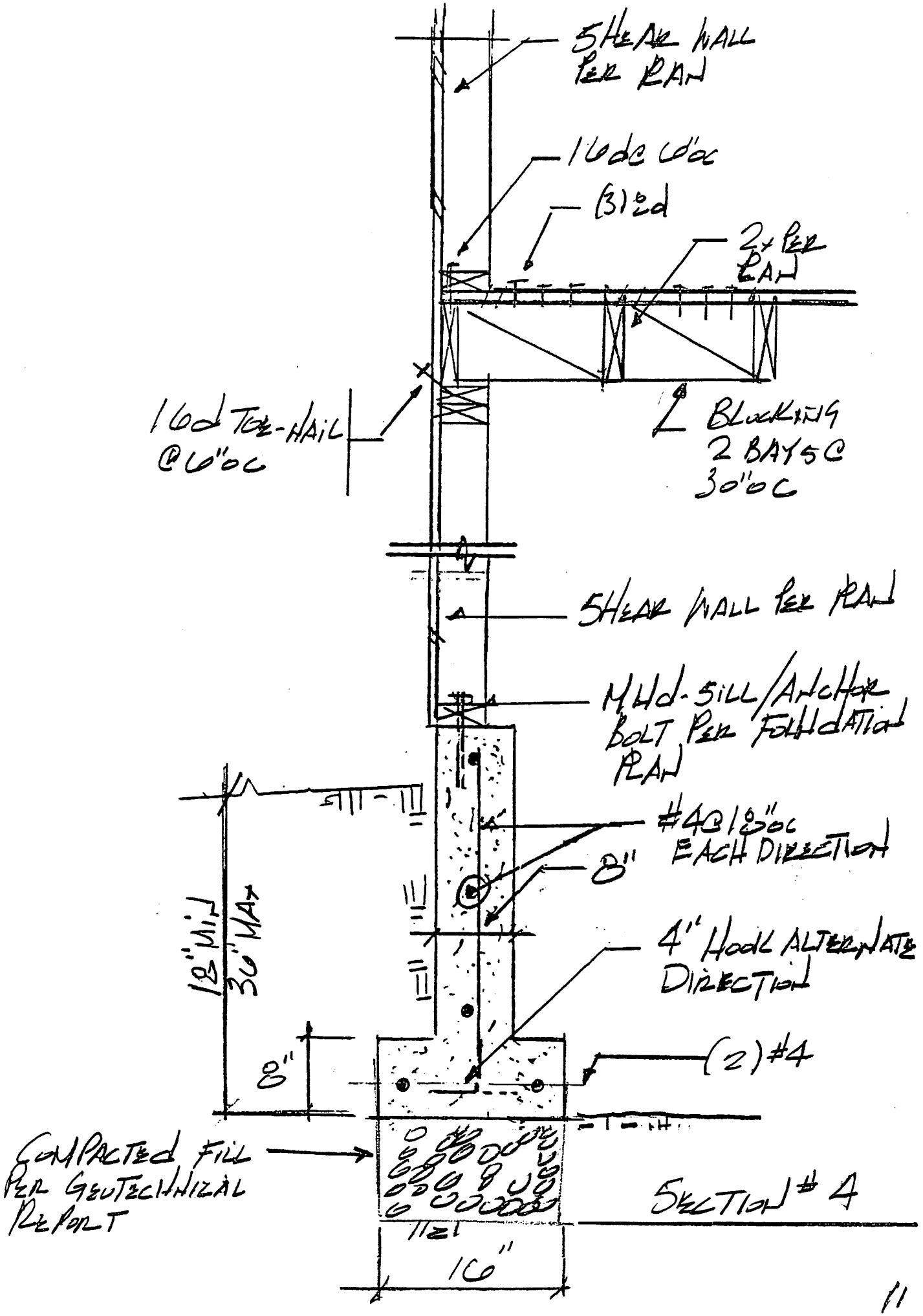
SECTION #1

#8

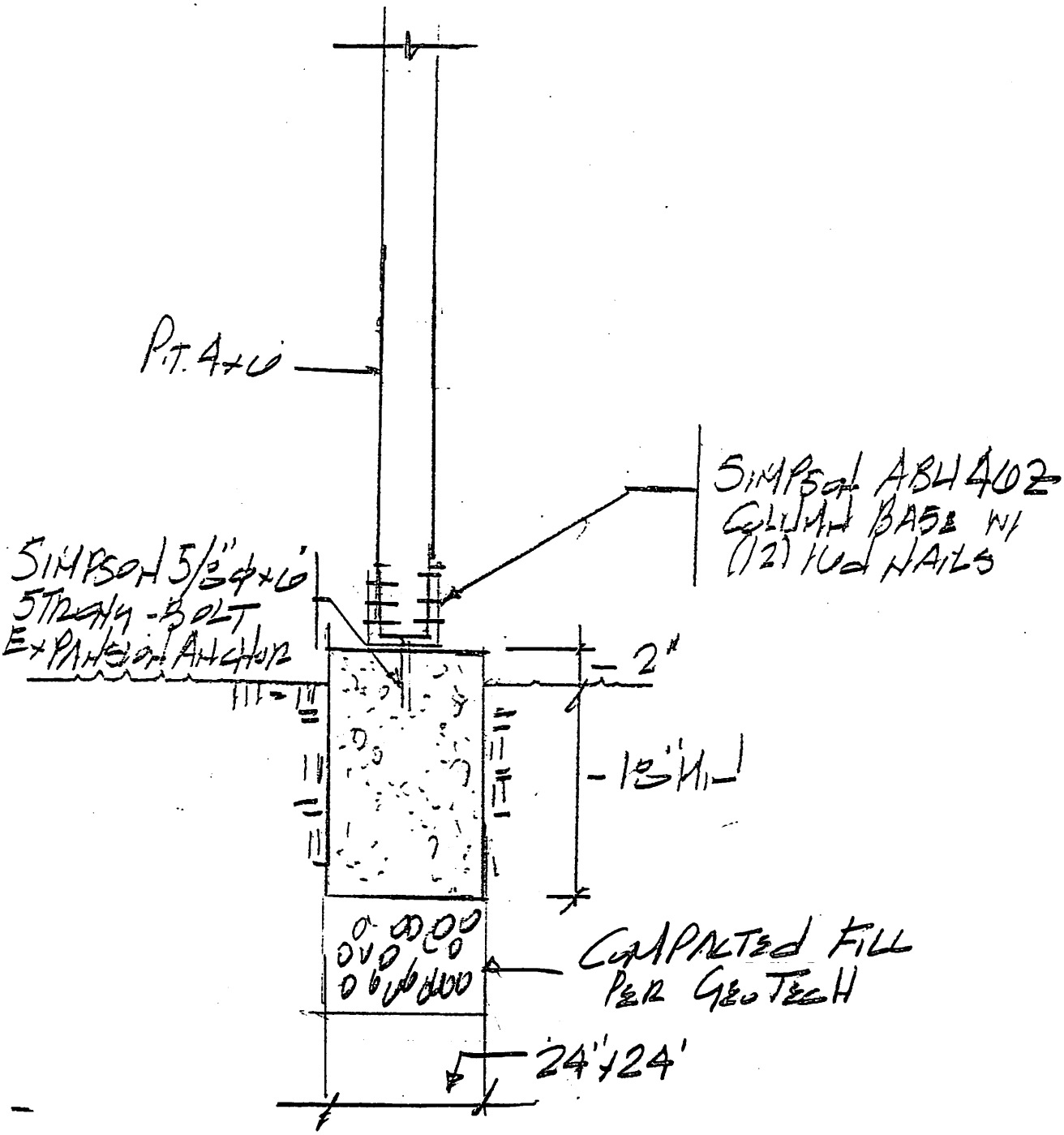

4x6 C HOLDOWN
HDU8 HOLDOWN W/(20) 1/4"ϕ x3" SDS SCREWS
FLOOR JOIST TYPE/DIRECTION PER PLAN
7/8" ϕ SSTB34 ANCHOR BOLT
FOUNDATION PER SECTION # 1
STRUCTURAL FILL PER GEOTECHNICAL REPORT
24" MIN
12"

SECTION # 2

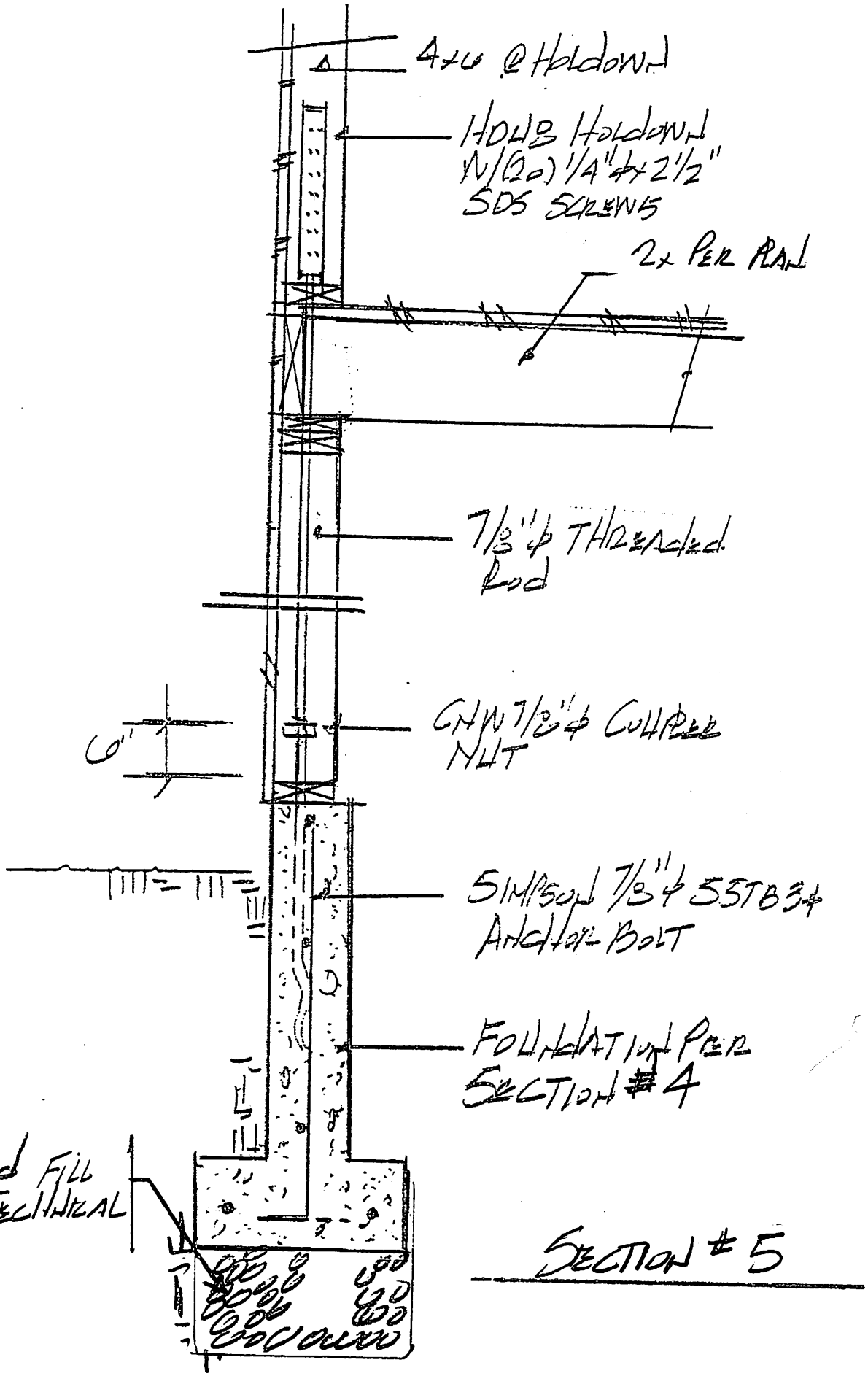

SHEAR WALL PER PLAN
16dc @6"oc
2x PER PLAN
A35@ 16"oc
16d TOE-NAIL @6"oc
SHEAR WALL PER PLAN
MUd-SILL/ANCHOR BOLT PER FOUNDATION PLAN
#4@18"oc EACH DIRECTION
8"
4" HOOK ALTERNATE DIRECTION
18" MIN 36" MAX
8"
(2)#4
STRUCTURAL FILL PER GEOTECHNICAL REPORT
12"
16"
SECTION #3


5 HEAR WALL PER PLAN
16d @ 6"oc
(3) 2x
2x PER PLAN
16d TOE-NAIL @ 6"oc
BLOCKING 2 BAYS @ 30"oc
5 HEAR WALL PER PLAN
MBd - SILL/ANCHOR BOLT PER FOUNDATION PLAN
#4 @ 18"oc EACH DIRECTION
8"
4" HOOK ALTERNATE DIRECTION
18" MIN 30" MAX
8"
(2) #4
COMPACTED FILL PER GEOTECHNICAL REPORT
16"
SECTION # 4

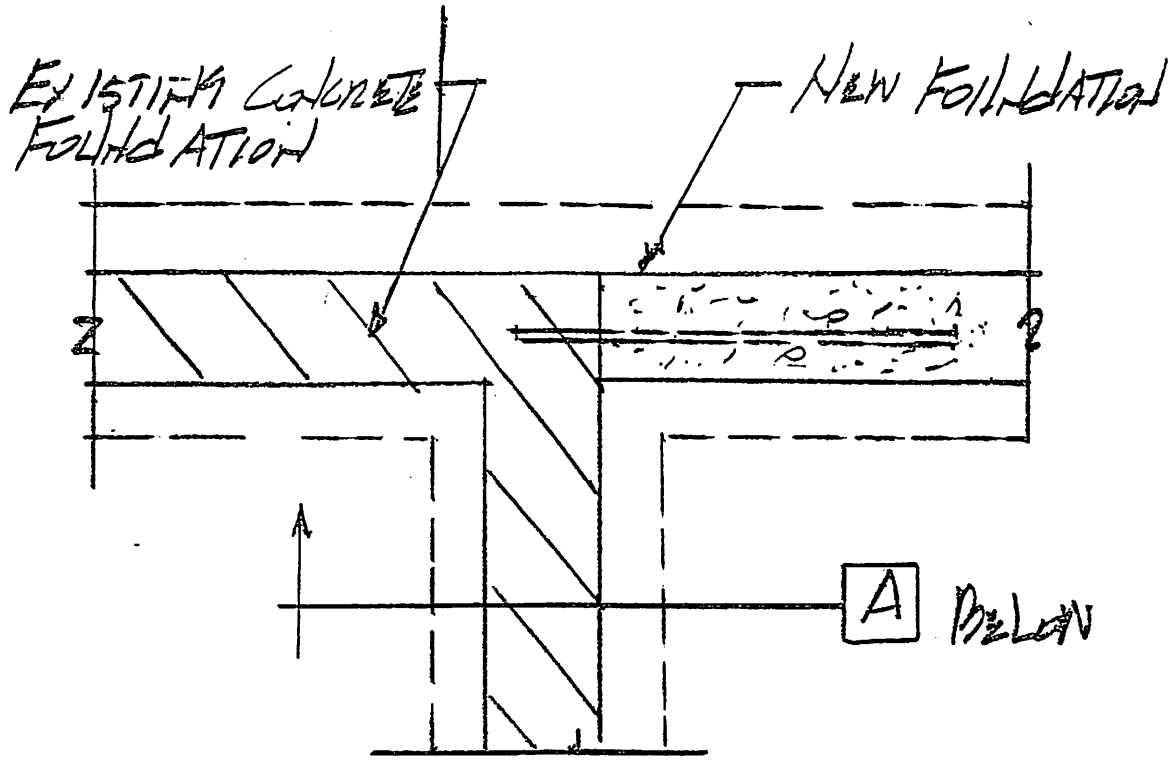
11


PT. 4x6
SIMPSON ABU402
GALVA BASE W/
(12) 10d NAILS
SIMPSON 5/8"ϕx6"
STRONG-BOLT
EXPANSION ANCHOR
2"
12"MIN
COMPACTED FILL
PER GEOTECH
24"x24"

SECTION 4A

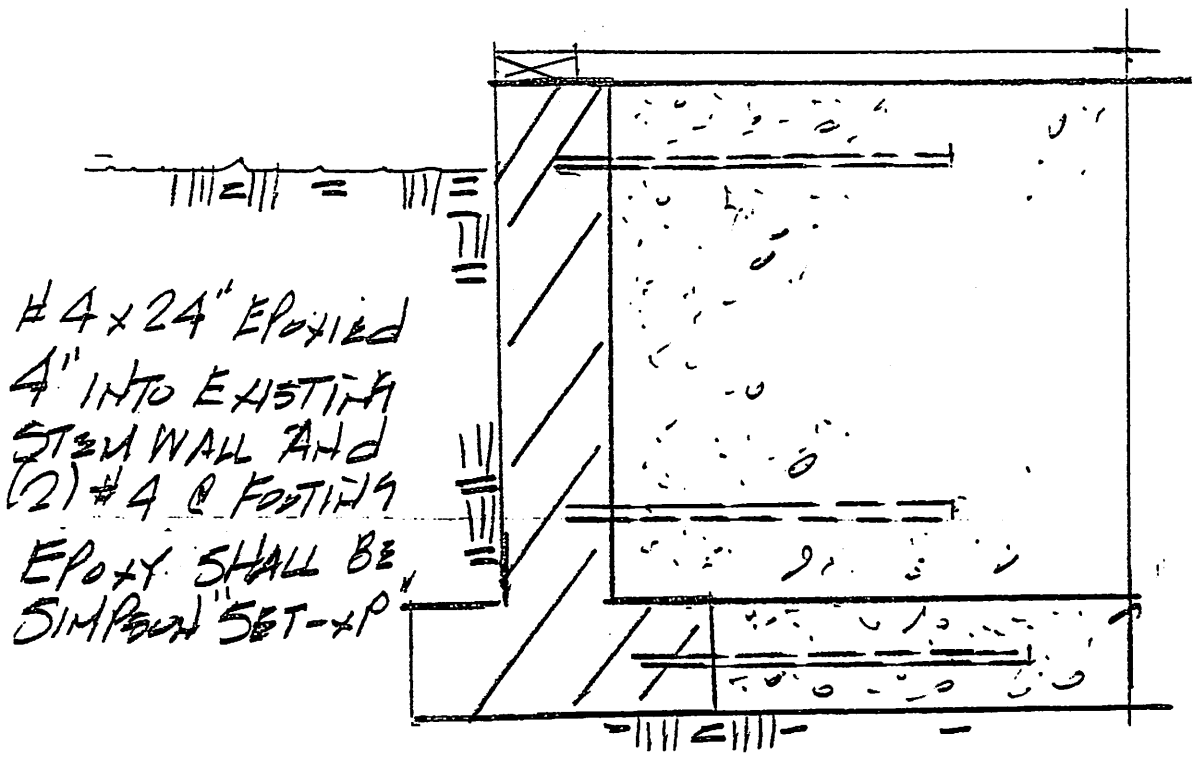

4x6 @ Holdown
HDU8 Holdown
W/(20) 1/4" dia x 2 1/2"
SDS SCREWS
2x PER REAL
7/8" ϕ THREADED
ROD
6"
CNW 7/8" ϕ COUPLER
NUT
SIMPSON 7/8" ϕ SSTB34
ANCHOR BOLT
FOUNDATION PER
SECTION #4
COMPACTED FILL
PER GEOTECHNICAL
REPORT

SECTION # 5



PLAN

DETAIL #6



SECTION A

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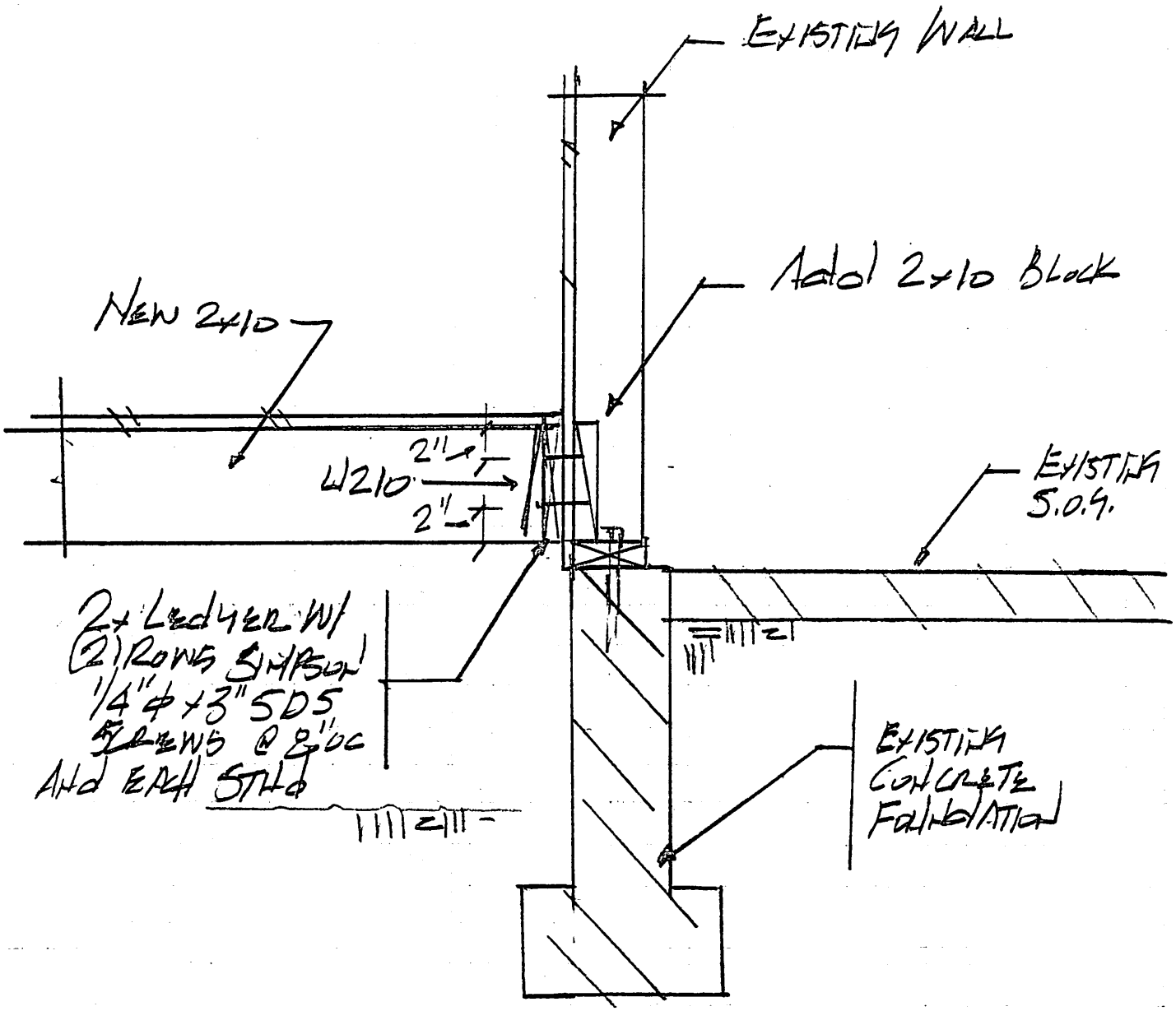

SECTION #7

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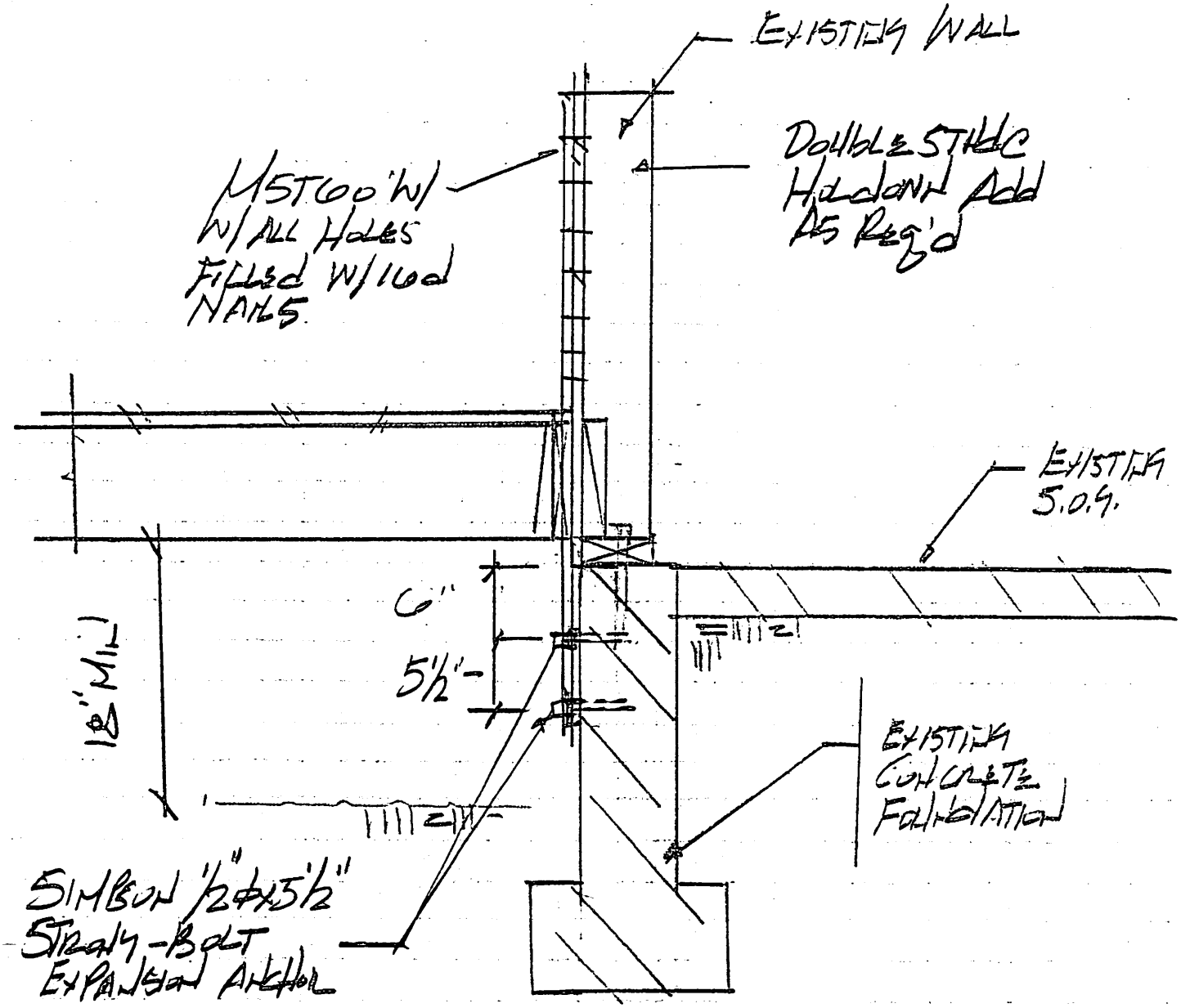

SECTION # 7A

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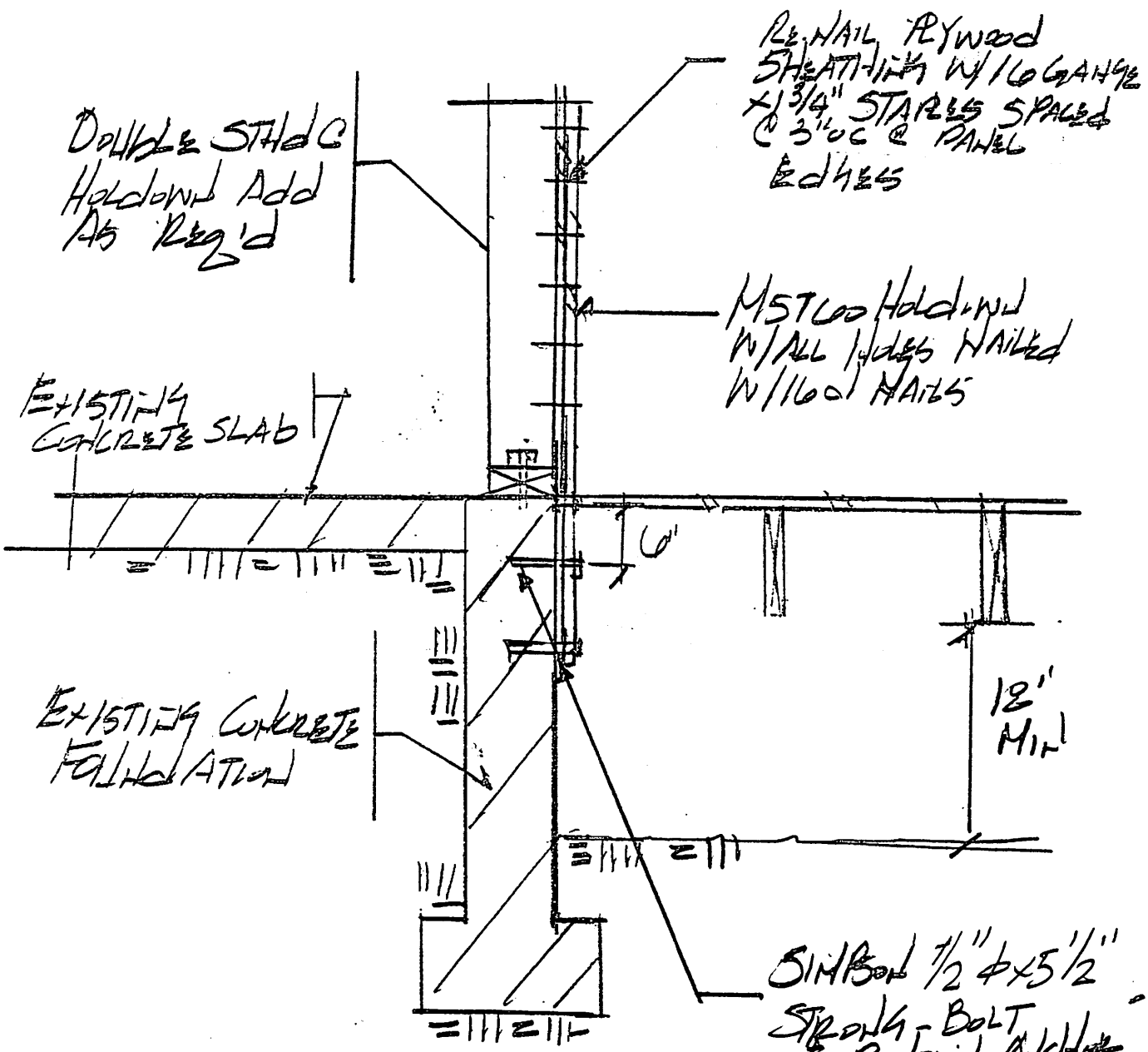

Section #8

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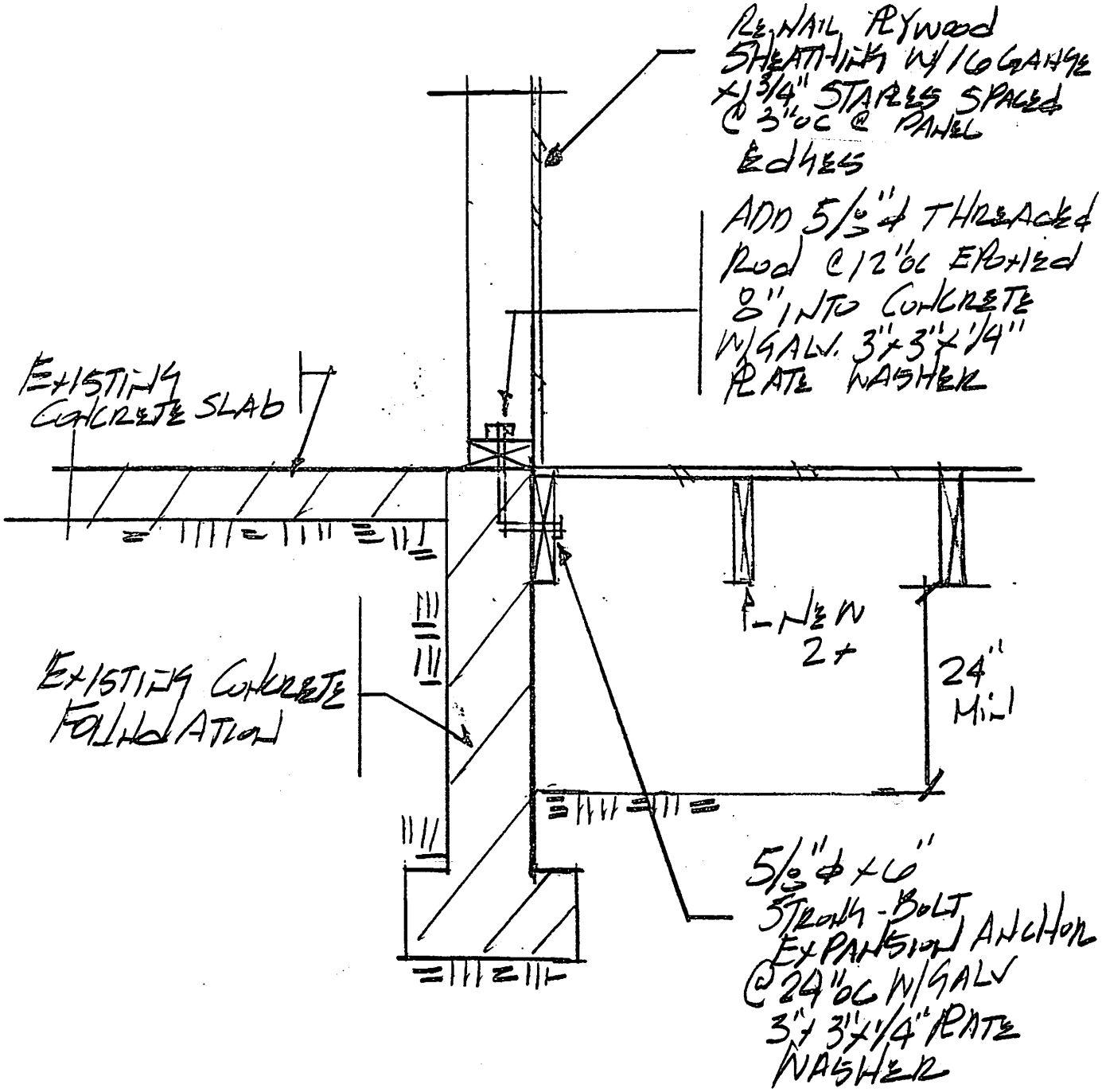
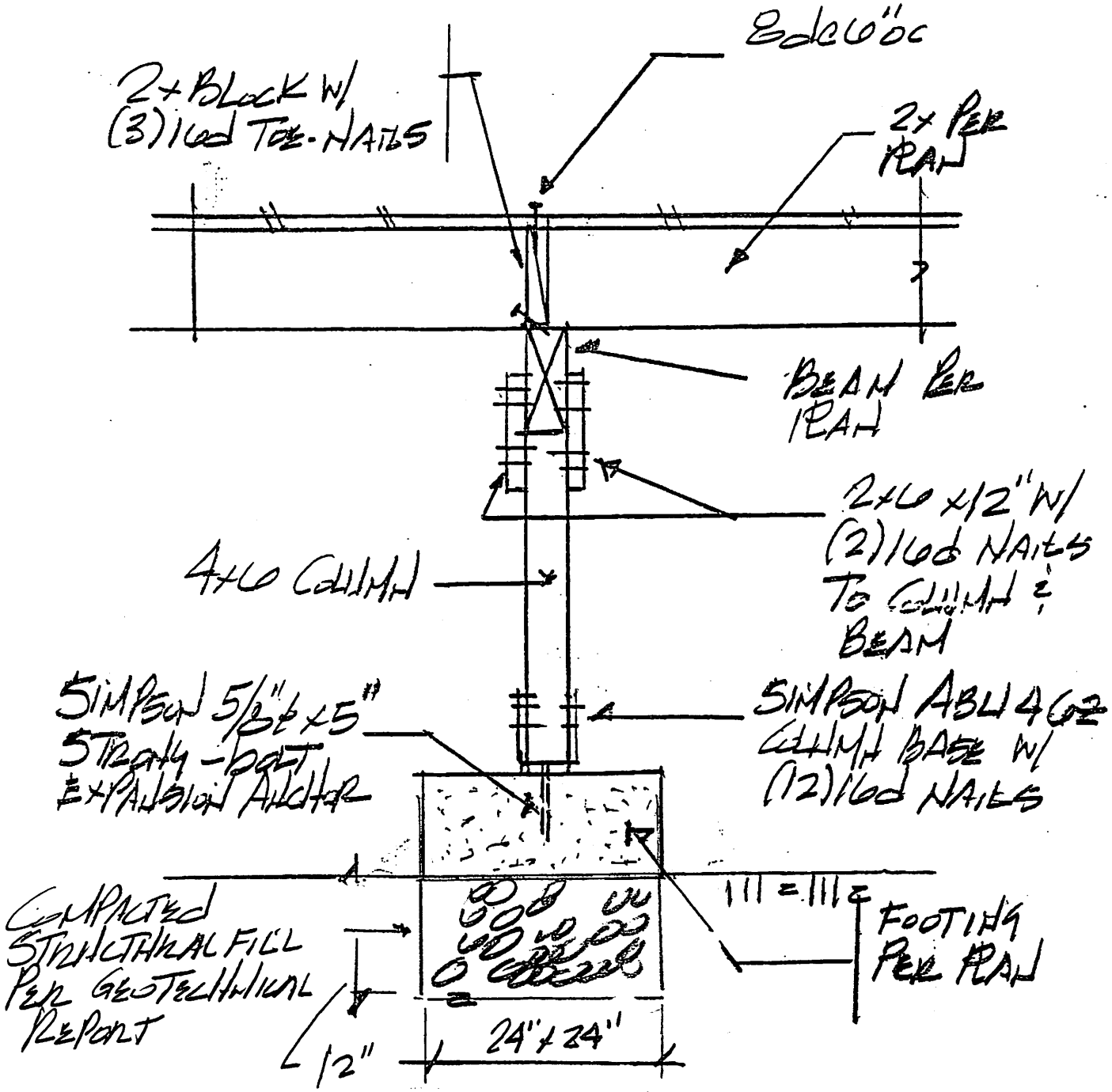


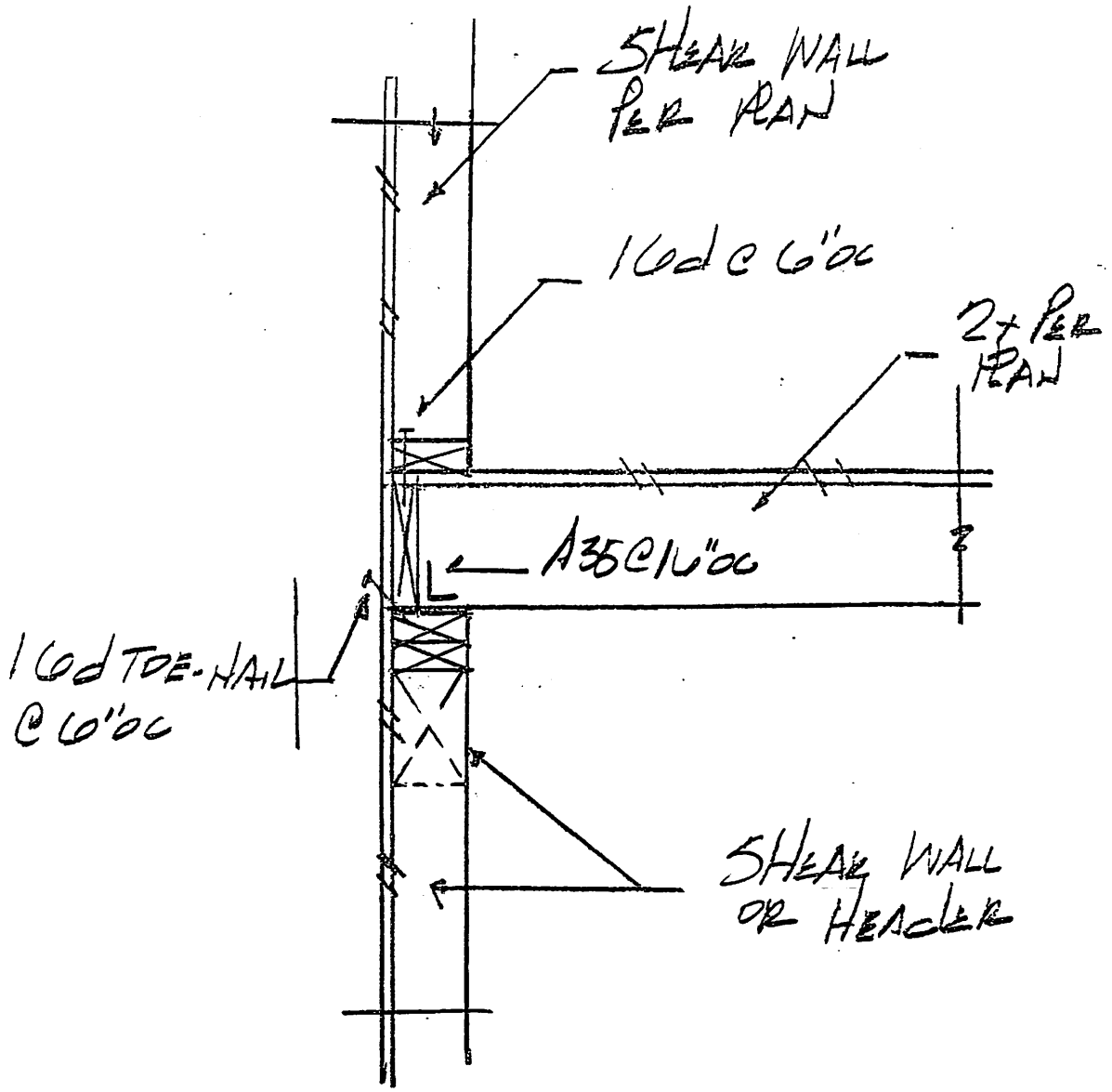
SECTION #9

EPOXY SHALL BE SIMPSON "SET-XP" EPOXY.
SPECIAL INSPECTION REQ'D FOR EPOXY PLACEMENT

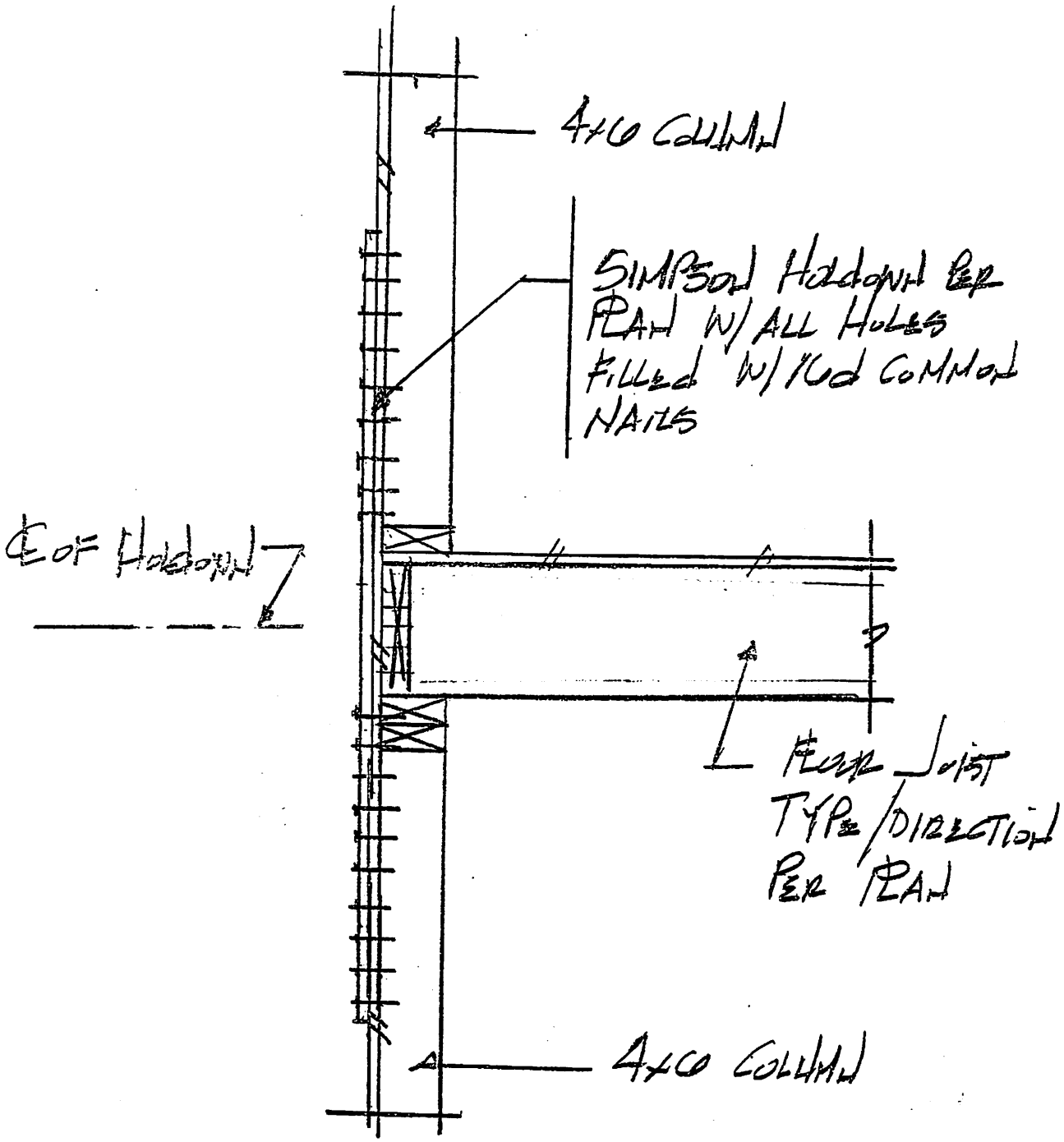


SECTION # 10

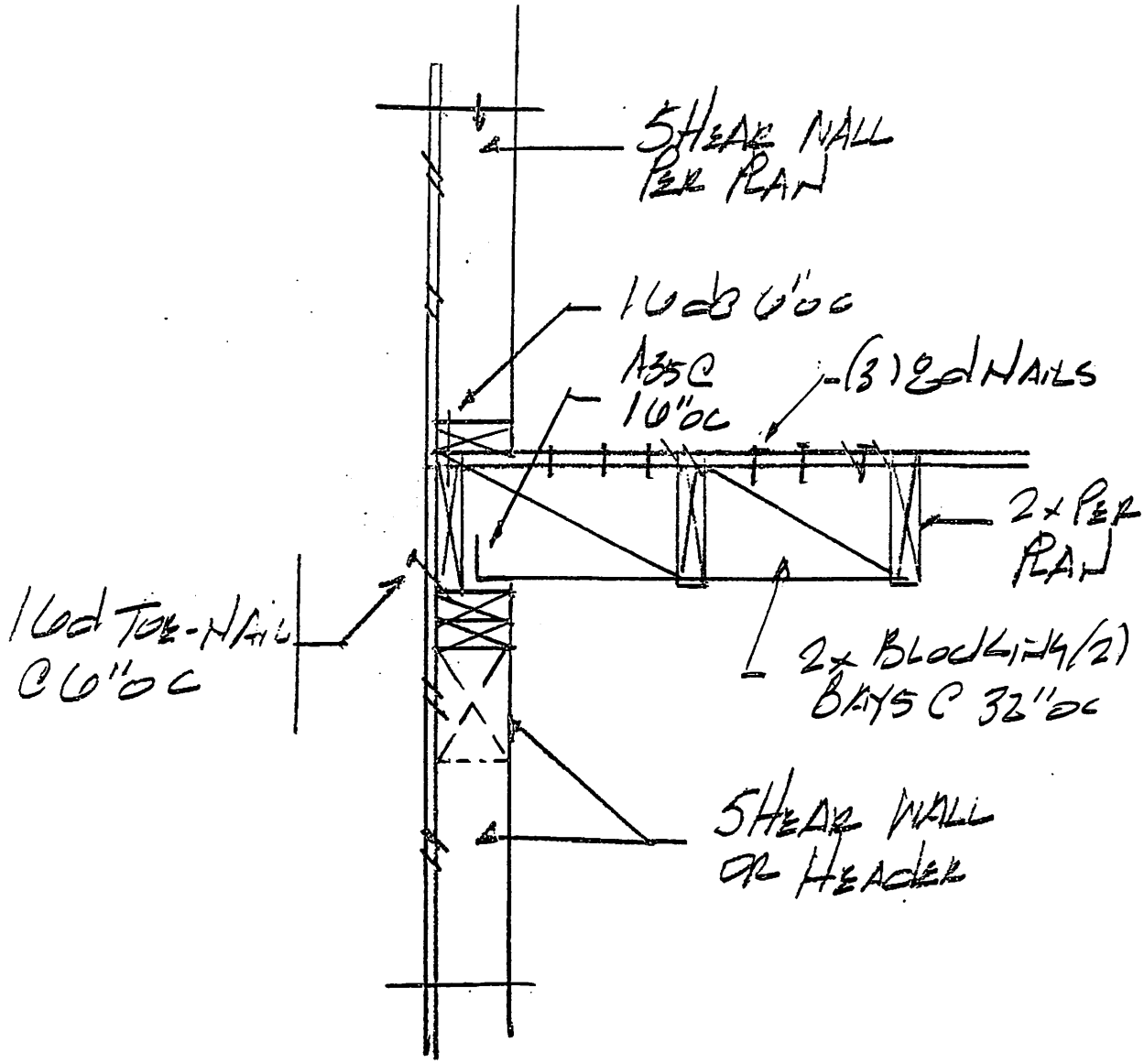
ALTERNATE COLUMN BASE CAN BE USED WITH APPROVAL OF BUILDING OFFICIAL


SHEAR WALL PER PLAN
16d @ 6"oc
2x PER PLAN
A35 @ 16"oc
16d TOE-NAIL @ 6"oc
SHEAR WALL OR HEADER

SECTION #11


4x6 COLUMN
SIMPSON Holdown PER PLAN W/ ALL HOLES FILLED W/ 16d COMMON NAILS
℄ OF Holdown
FLOOR JOIST TYPE/DIRECTION PER PLAN
4x6 COLUMN

SECTION 12


SHEAR WALL PER PLAN
16d @ 6"oc
A35 @ 16"oc
(3) 8d NAILS
2x PER PLAN
16d TOE-NAIL @ 6"oc
2x BLOCKING (2) BAYS @ 32"oc
SHEAR WALL OR HEADER

SECTION #13

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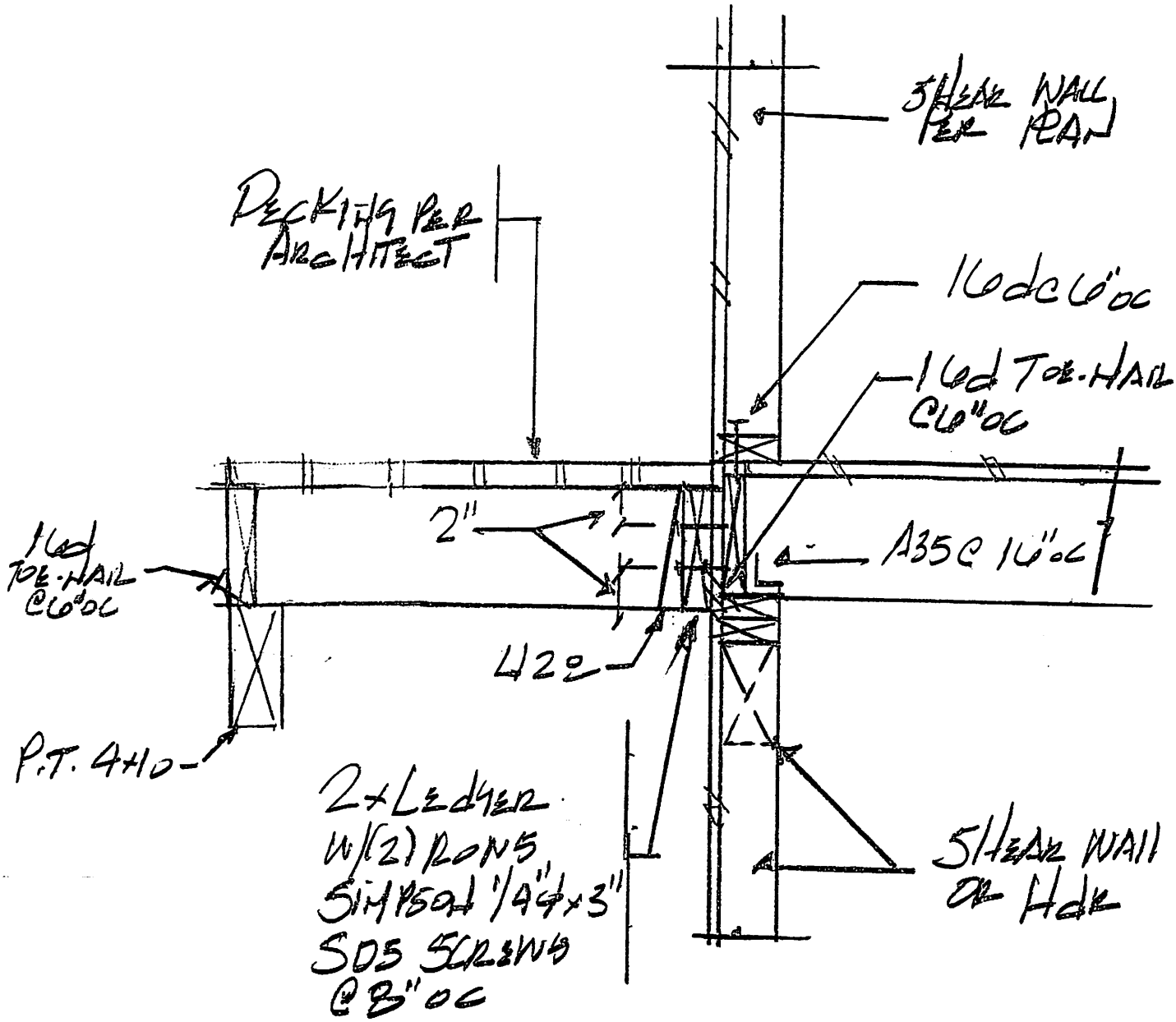

Section #14

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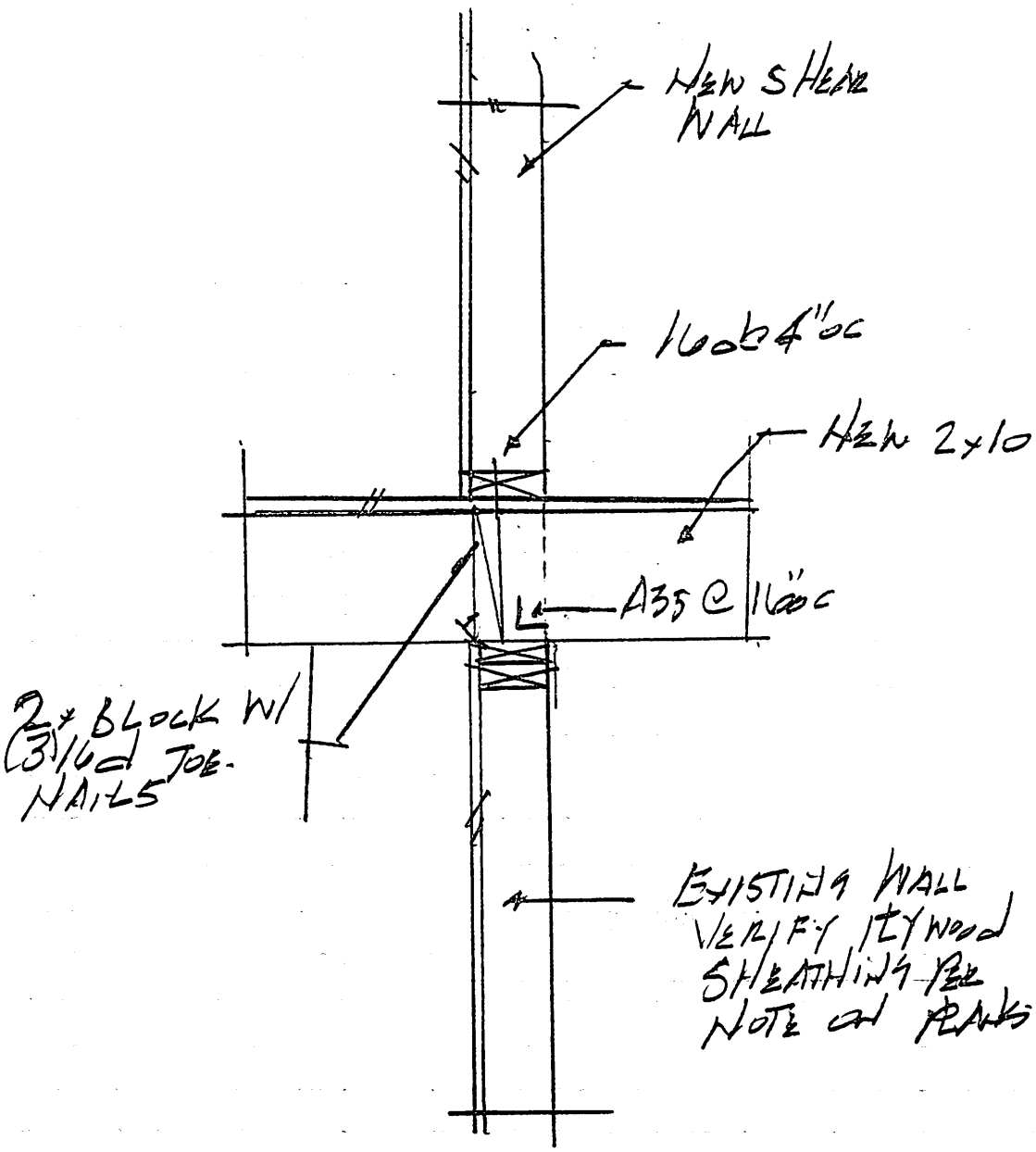

SECTION #15

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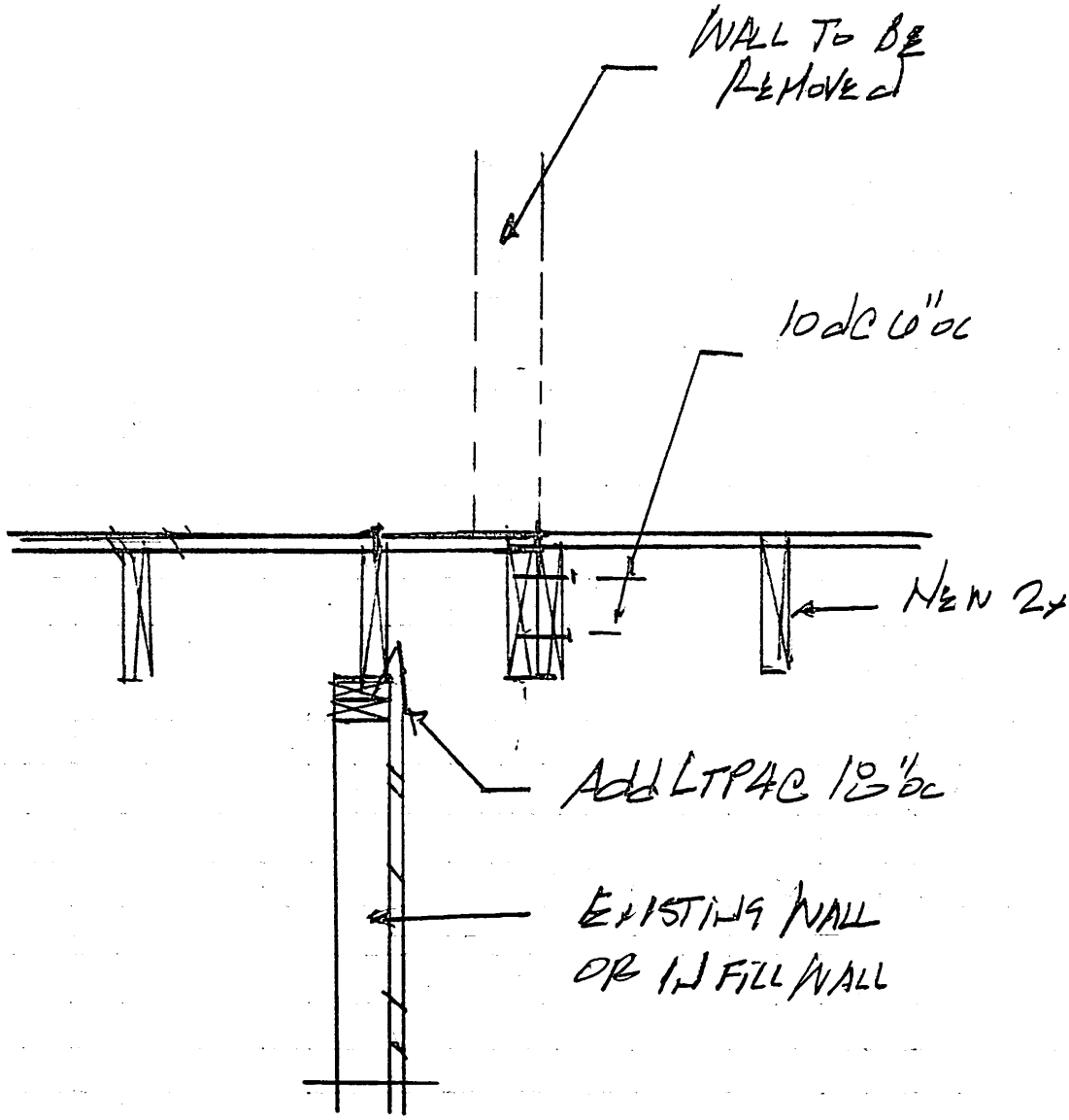

SECTION #10

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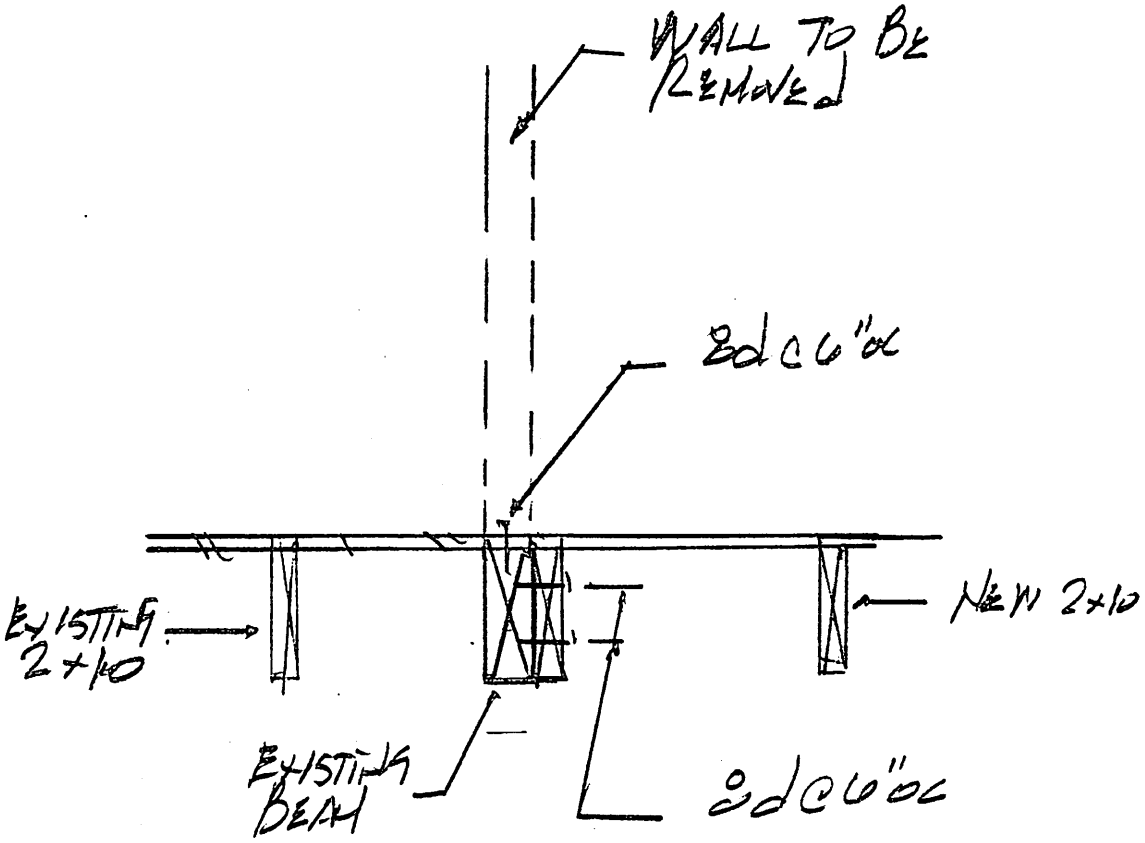

Section #17

MITCHELL ENGINEERING INC.

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Redmond, WA 98052
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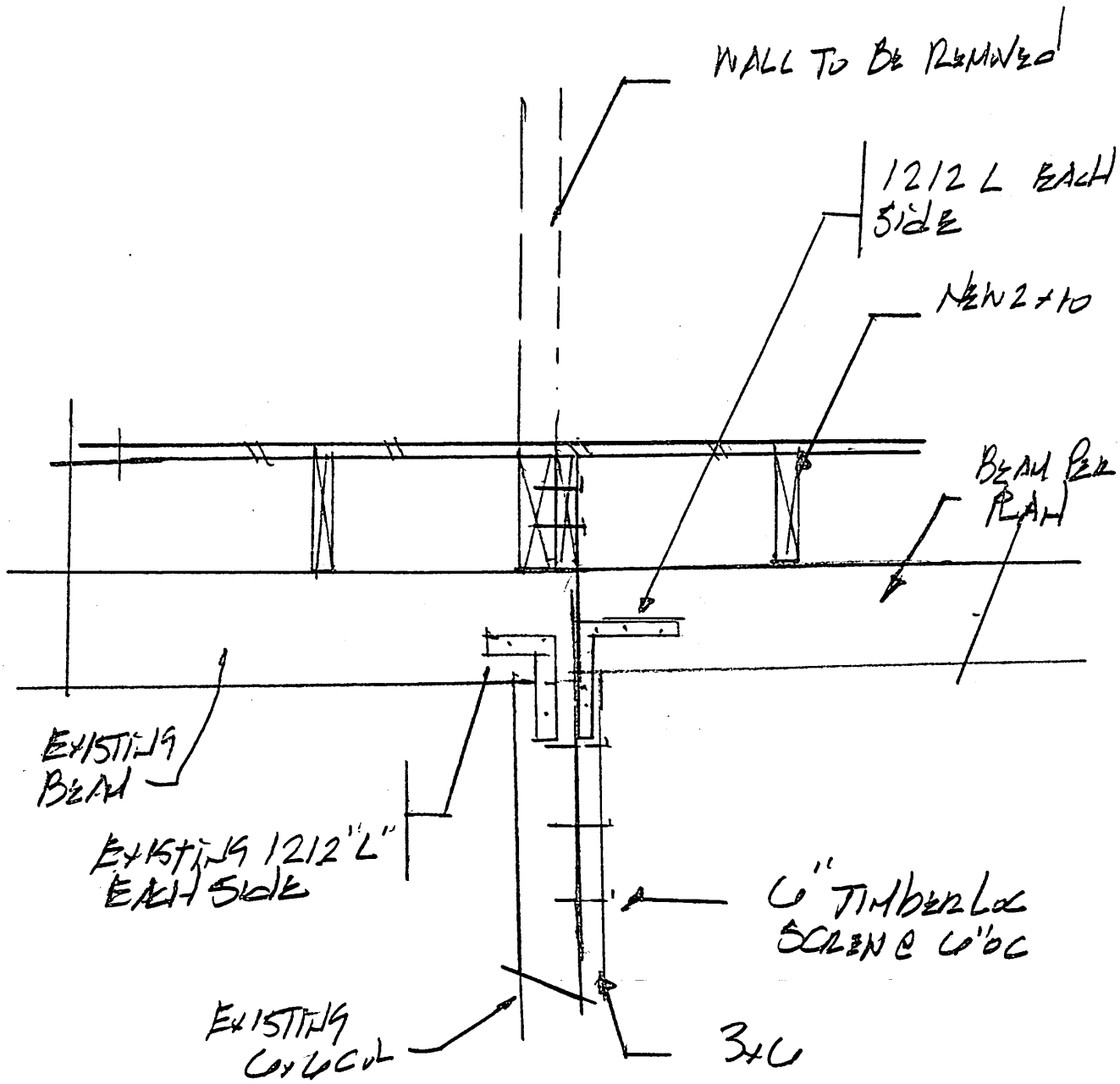

SECTION #18

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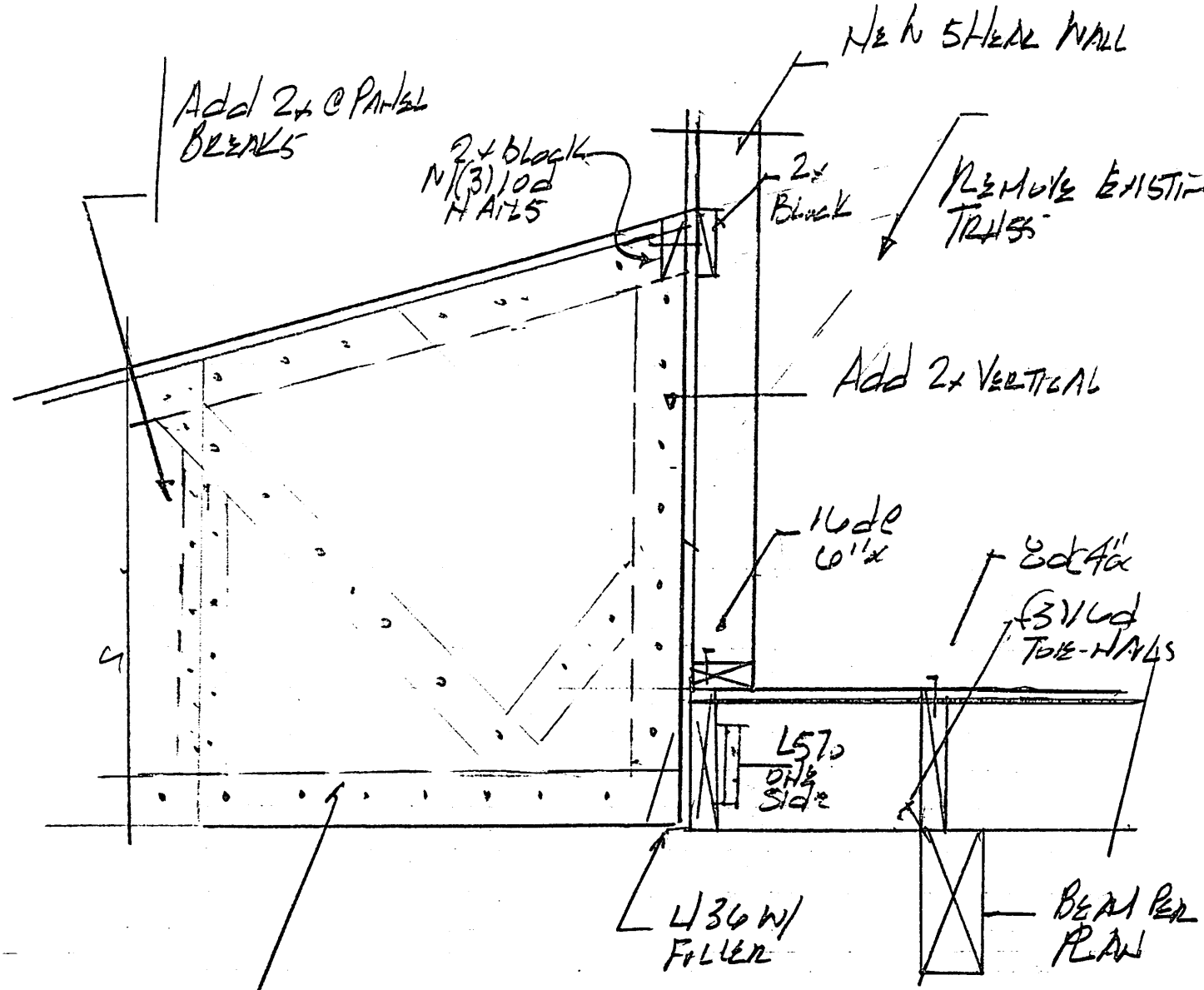

Section #19

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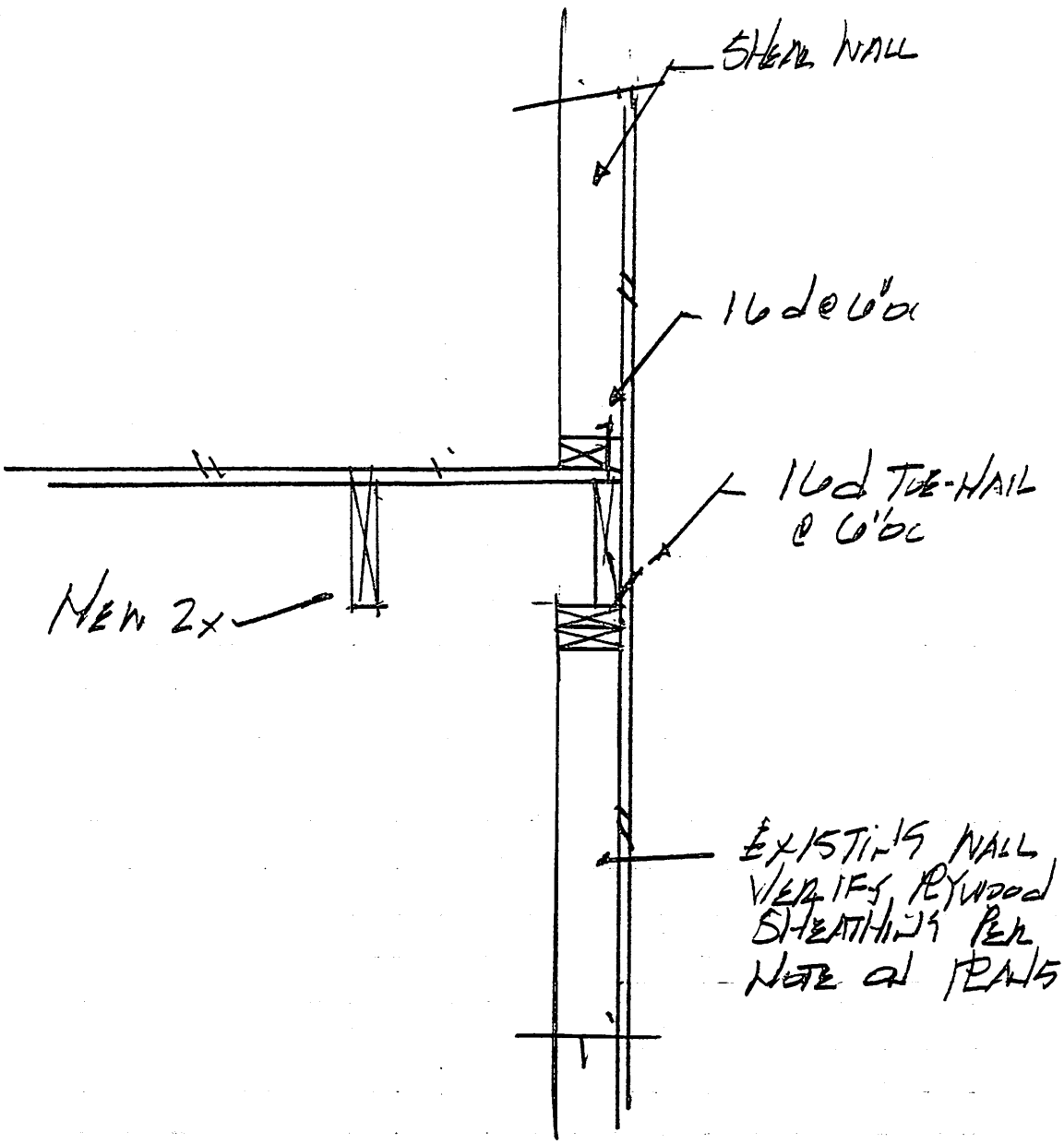

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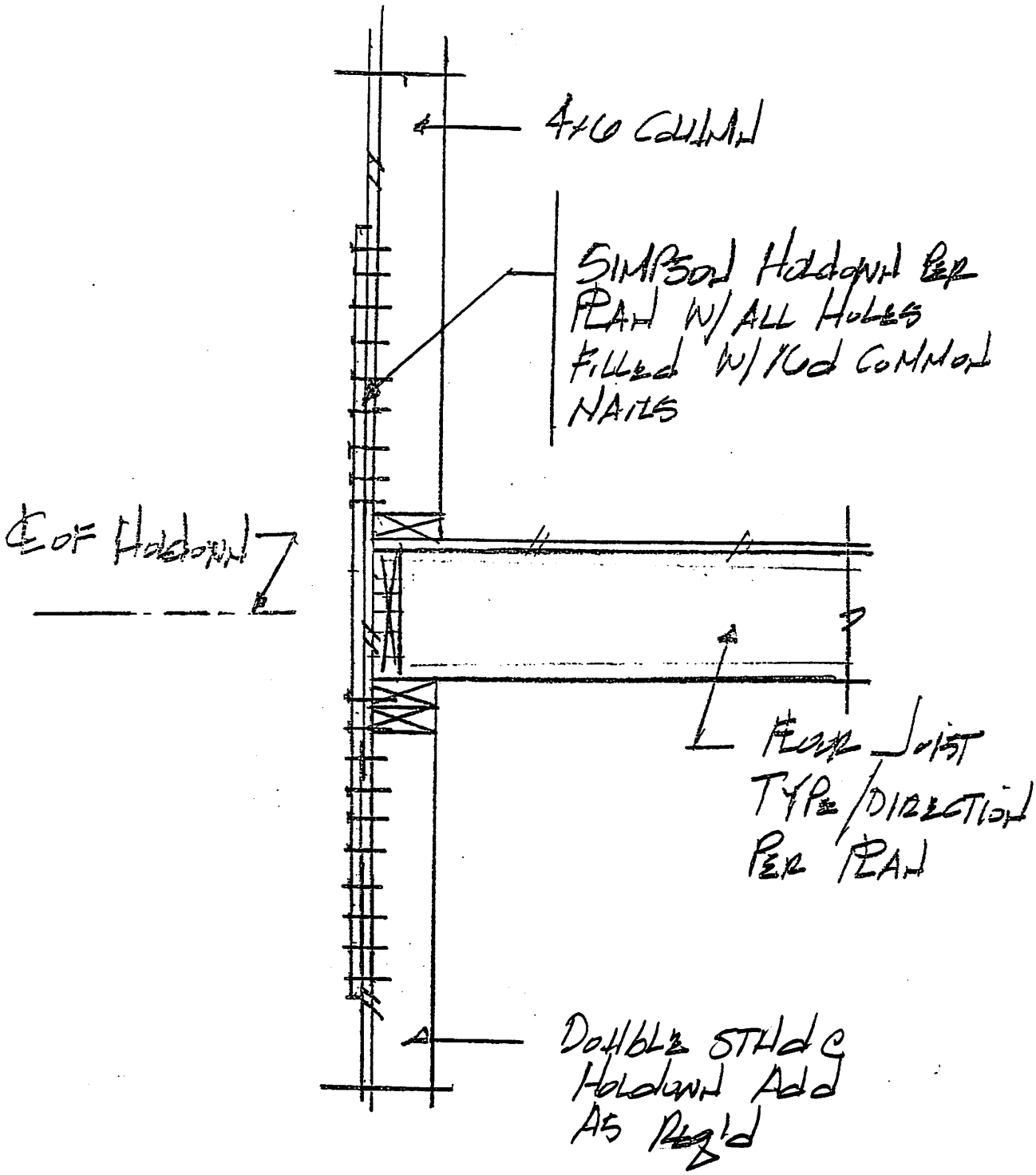
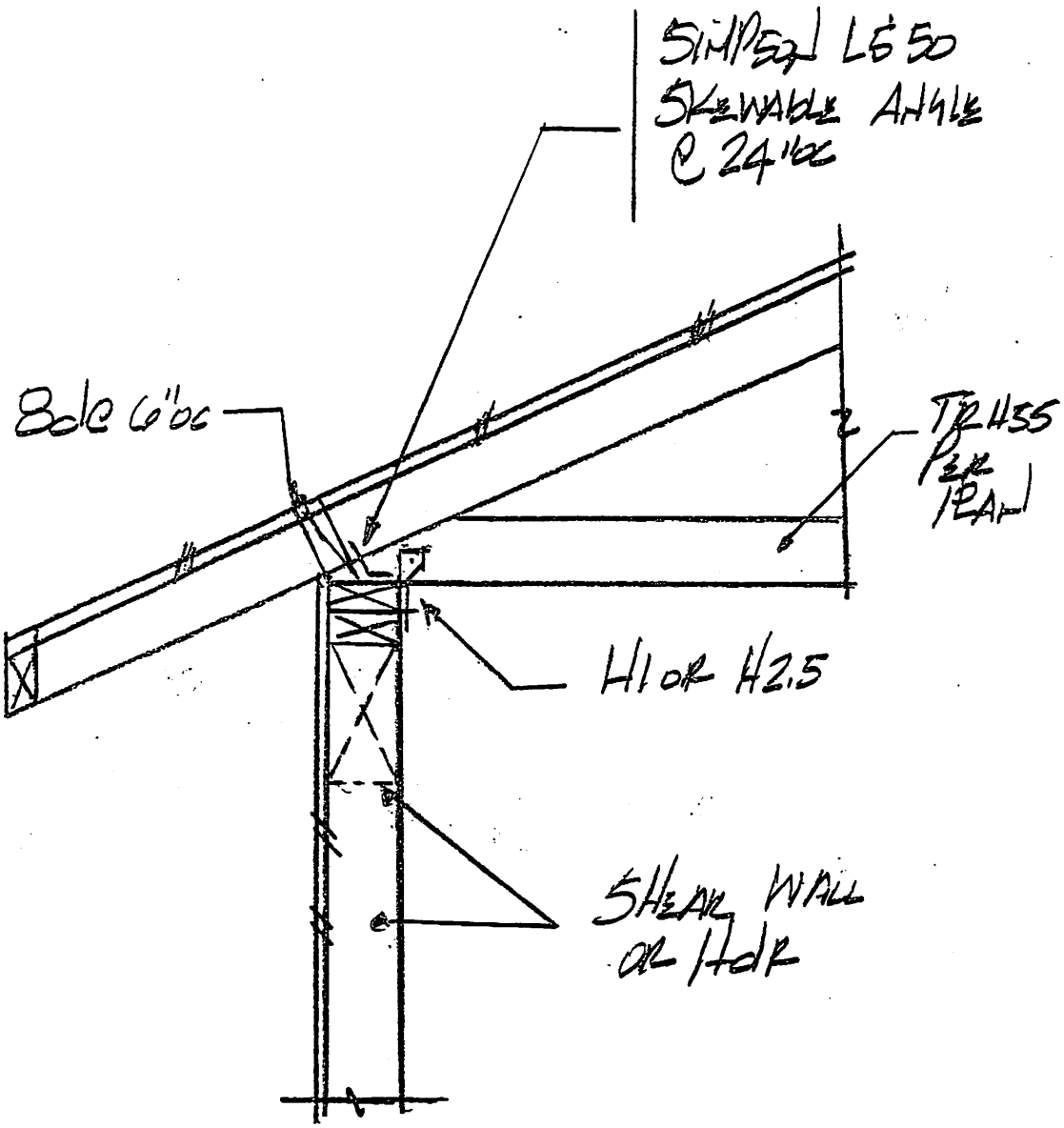
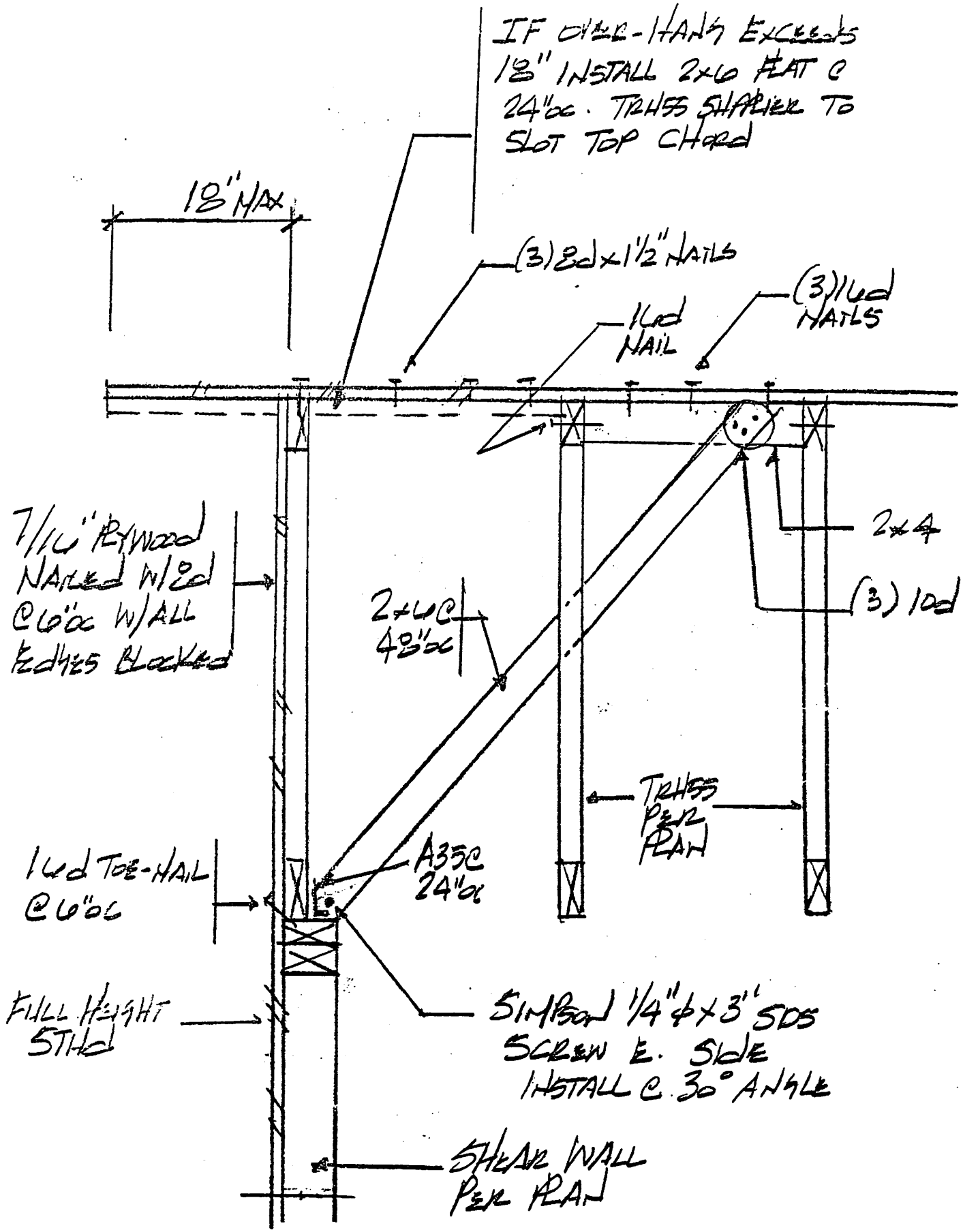

4x6 COLUMN
SIMPSON Holdown Per PLAN W/ ALL HOLES FILLED W/ 16d COMMON NAILS
℄ OF Holdown
FLOOR JOIST TYPE/DIRECTION PER PLAN
DOUBLE STUD Holdown Add As Req'd

SECTION #21


SIMPSON L50
SKEWABLE ANGLE
@ 24" oc
8d @ 6" oc
TRUSS
PER
PLAN
H1 OR H2.5
SHEAR WALL
OR HDR

SECTION #22


IF OVER-HANG EXCEEDS 12" INSTALL 2x6 FLAT @ 24"oc. TRUSS SHIMMER TO SLOT TOP CHORD
12" MAX
(3) 8d x 1½" NAILS
10d NAIL
(3) 10d NAILS
7/16" PLYWOOD NAILED W/ 8d @ 6"oc W/ ALL EDGES BLOCKED
2x4 @ 48"oc
2x4
(3) 10d
TRUSS PER PLAN
10d TOE-NAIL @ 6"oc
A35 @ 24"oc
FULL HEIGHT STUD
SIMPSON 1/4" ϕ x 3" SDS SCREW E. SIDE INSTALL @ 30° ANGLE
SHEAR WALL PER PLAN

SECTION #23

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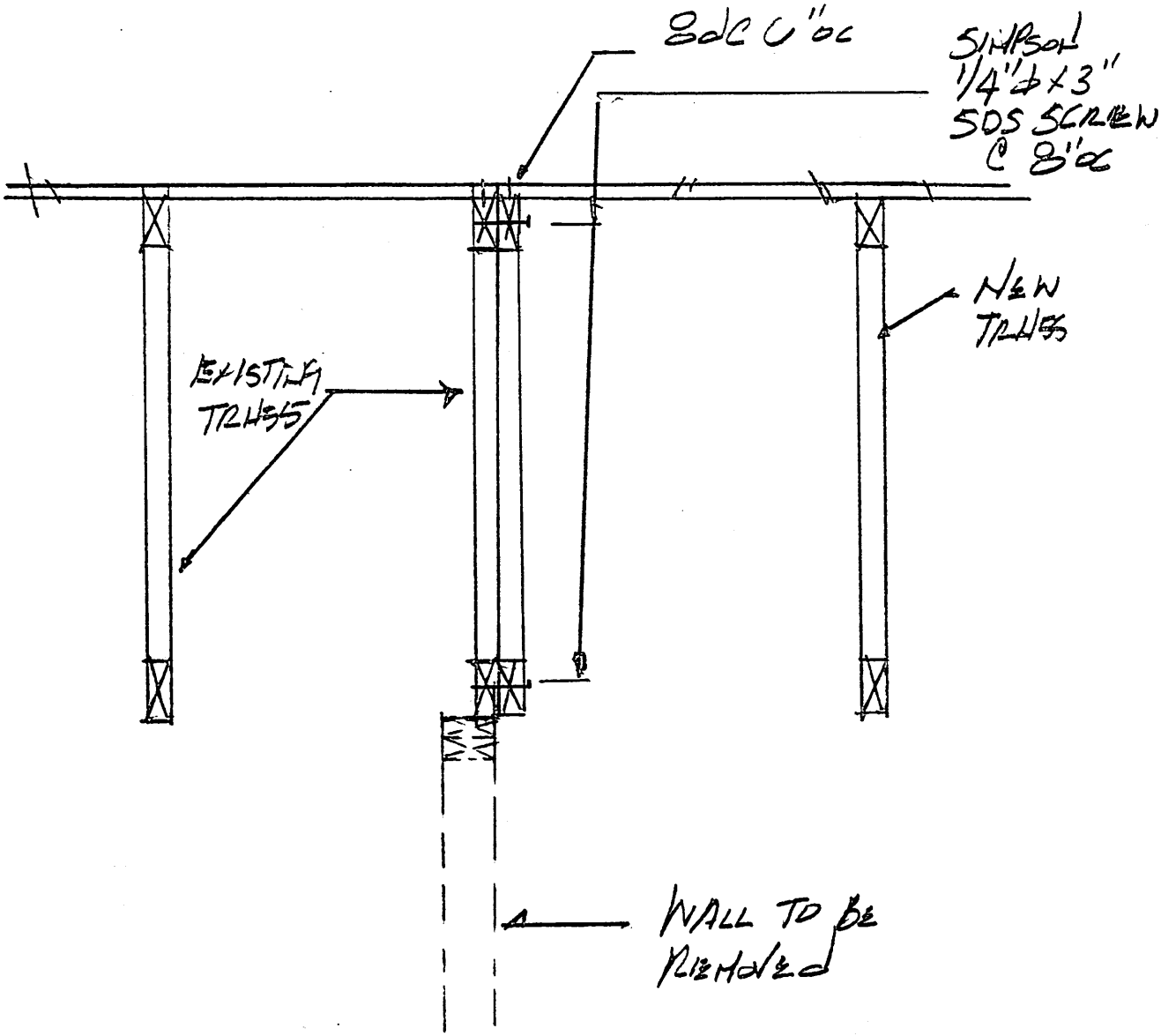
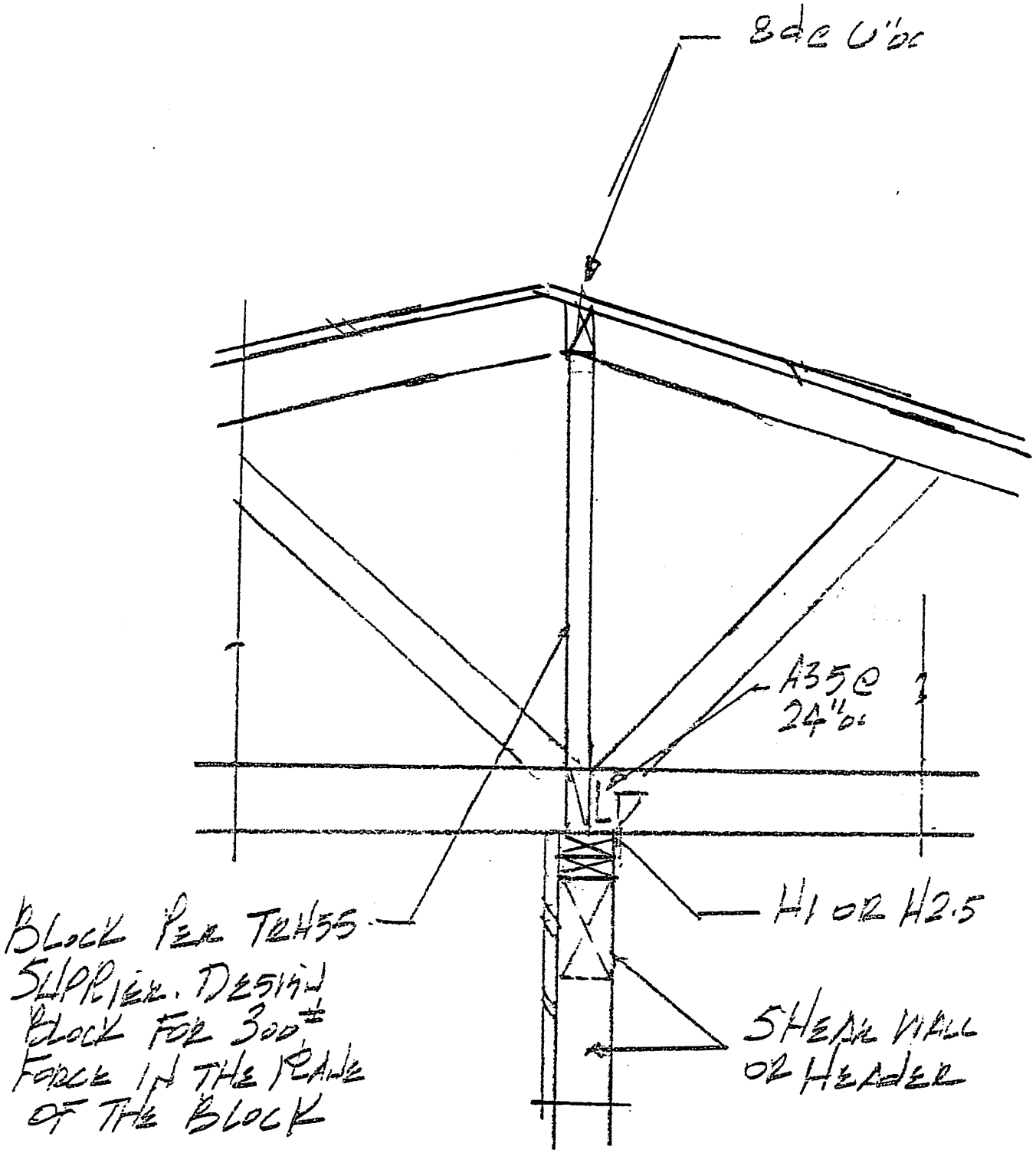


SECTION #24


8dc 6"oc
A35 @ 24"oc
H1 OR H2.5
BLOCK PER TEH55 SUPPLIER. DESIGN BLOCK FOR 300# FORCE IN THE PLANE OF THE BLOCK
SHEAR WALL OR HEADER

SECTION #25

IF AS-BUILT CONSTRUCTION IS DIFFERENT THAN NOTED OR SHOWN CONTACT OUR OFFICE

NEW MUD-SILL PT 3x6 W/ 5/4"ϕx12" ANCHOR BOLTS @ 24"oc W/GALV. 3"x3"x1/4" PLATE WASHER @ GIRD ANCHOR BOLTS @ 12"oc (C)

VERIFY 24"x24"x12"DP FOOTING.

(EXISTING CONCRETE FOUNDATION VERIFY MUD-SILL IS BOLTED TO CONCRETE W/ ANCHOR BOLTS SPACED NO MORE THAN 48"oc

DOWEL NEW/EXISTING FOOTING DETAIL # 6 (SIM)

(6) SIMPSON HDU8 HOLDOWN PER SECTION # 5 (3 PLACES) (#1, #2 & #3)

VERIFY 8"x16" FOOTING

EXISTING SLAB-ON-GRADE

HDU8 HOLDOWN #5 PER SECTION # 2 #4 & #5

R-4

P1-4

12"

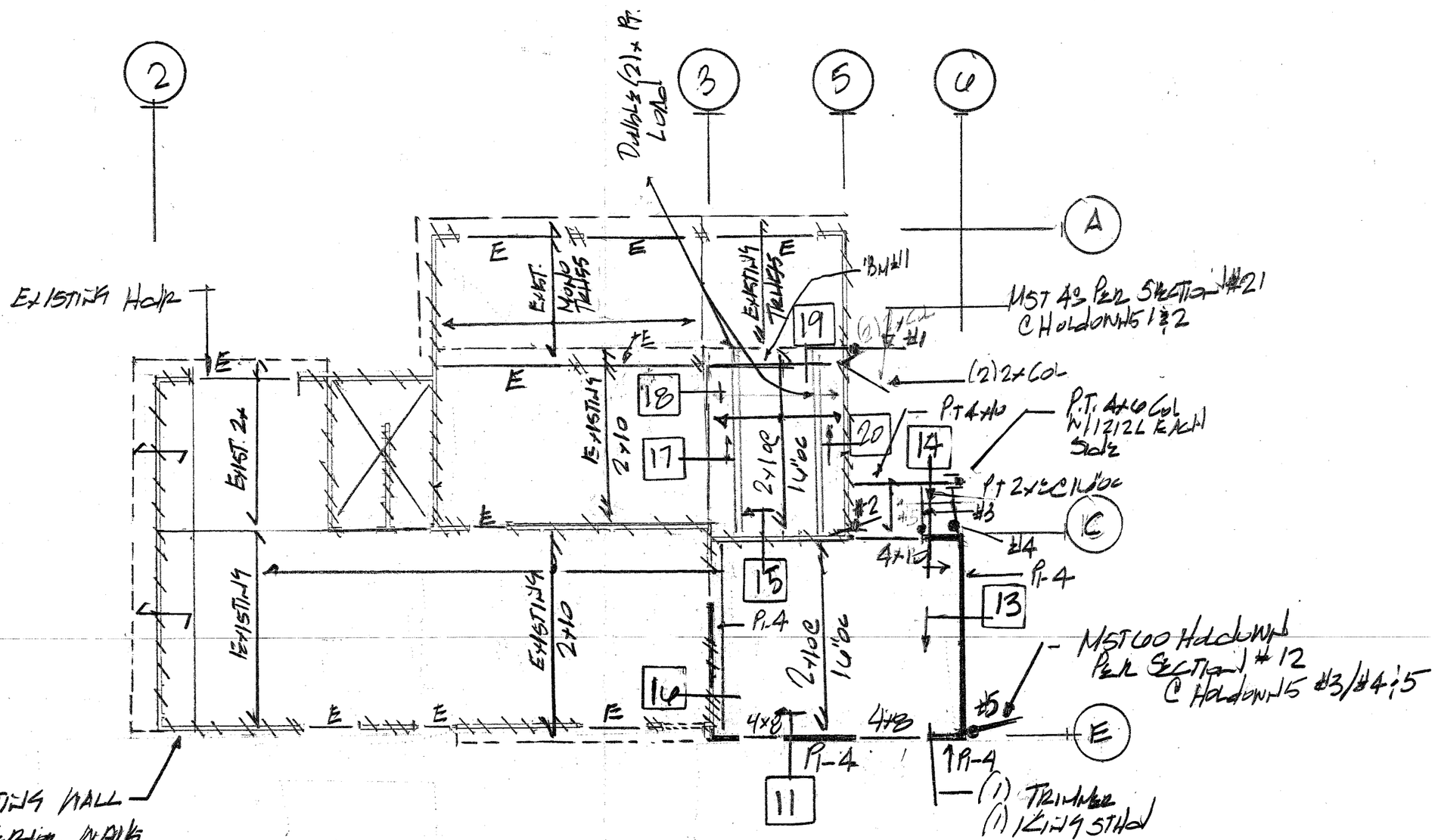
FOUNDATION/MAIN FLOOR FRAMING PLAN

SCALE 1/8": 1'-0" KLO - PLAN. 021-243

REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS FOUNDATION VENTS.

A1

BEAM #1 - 4.L 3½×16½

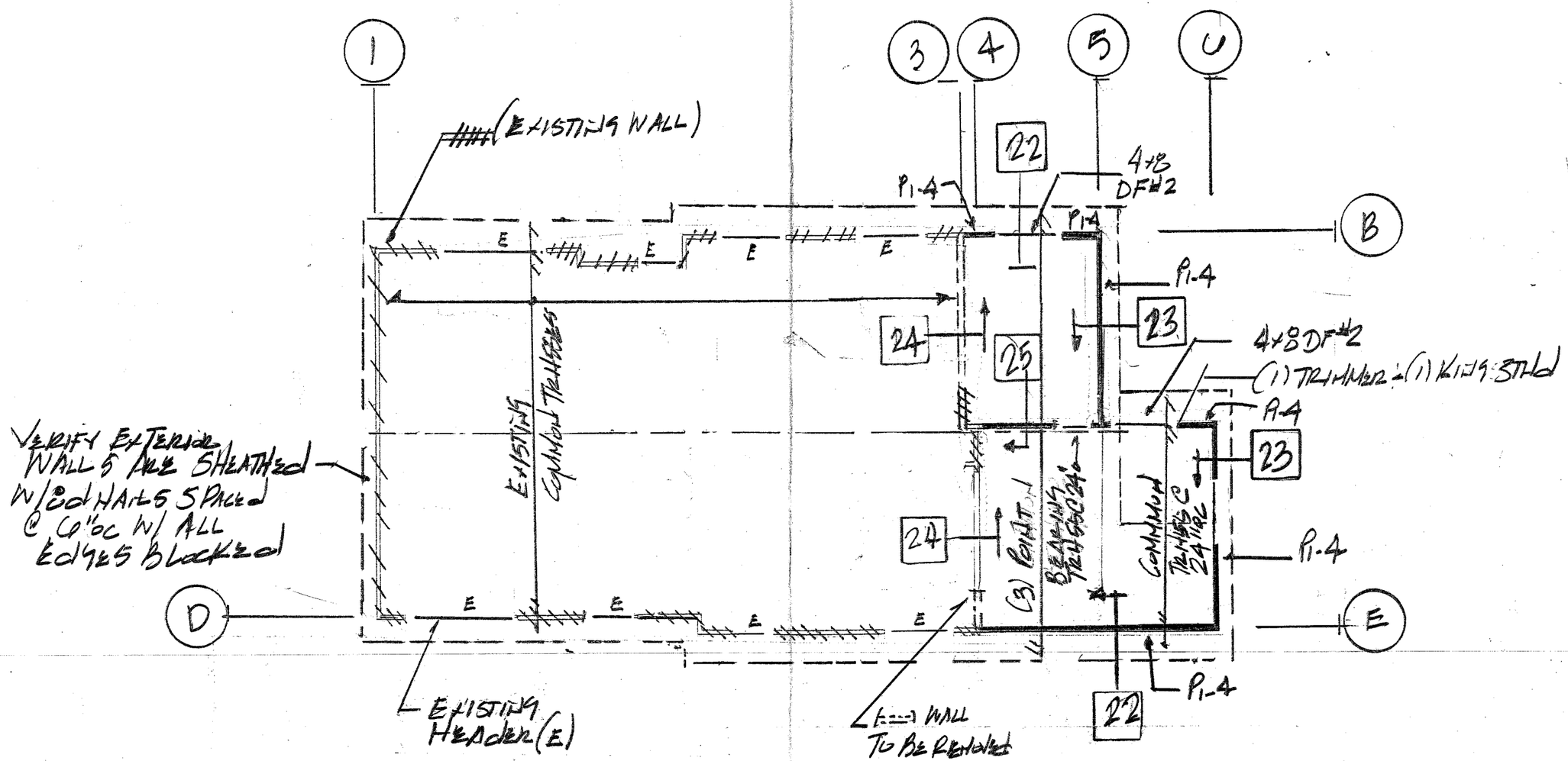


~~#####~~ EXISTING WALL
VERIFY EXTERIOR WALLS ARE SHEATHED W/ 7/16" PLYWOOD NAILED W/ 8d NAILS SPACED @ 6"OC

2nd Floor / Low Roof Framing Plan

SHEAR WALLS EXIST. 1ST / 2ND FLOORS
1ST Floor Architectural Plan
1410 - Proj. 021-243-

A2



ROOF FRAMING PLAN

SHEAR WALLS BTW. 2ND FLOOR / ROOF
2ND FLOOR ARCHITECTURAL PLAN
KLO - PROJ. 021-243