J.M. ALBAINE ENGINEERING, LLC
14 Lincoln Road, Waterford, CT 06385

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Email: jma724@snet.net

February 5, 2011

Mr. Mark Shenking
Chief of Fire Station
Oswegatchie Fire Station
441 Boston Post Road
Waterford, CT 06385

RE: Update on Structural Shoring for Damaged Roof Section
Ref. Drawings:
JM Albaine Engineering, Dwgs S-1 to S-6 dated 10/25/10
Dwgs. S-6, S-7 rev. 1, (DCN #1) dated 01/26/11
Project # JMA10-327-06

Dear Mark,

I visited the site on February 4 for an inspection of the on-going work, and to meet with the foreman for Noble Construction, John, and go over some issues that have came up during the implementation of the shoring. Herein is a summary of our meeting (see new DCN #2, drawings # DC2-1, and DC2-2, dated 2/05/11):

1. All the shoring in the Apparatus Room has been constructed in accordance with our specification and drawings referenced above.

2. Columns P7, P8, & P9 in the Dispatcher Room and surround areas will be supported on existing foundations, eliminating the need to carry them down one more level.

3. The temporary beams supporting the exterior edges of the roof, at both above the Hall Room and Kitchen (second floor, see Sections A, B, & C (Dwgs S-2, S-3 and S-4) will be installed at a lower elevation, with a short double stud (one king and one jack) above it, to make room for the potential installation of the future new ceiling joist.

4. The new temporary roof supporting beams over the first floor Day Room and Kitchen will need to be increased to triple LVL's from double LVL's since we will need to cantilever those beams at each end of the room to avoid additional expensive work on the exiting features in the these rooms.

5. Most of the ceiling has been removed, and the condition of the roof framing exposed so far is considered dismal, especially in the area where the two roofs intersect, and at the flat section of the adjacent roof. We discussed the need for current work to be done very careful in this area to avoid the possibility of any potential partial

collapse that may cause injury to the workers. Once the temporary shoring is installed, this whole area will need to be surveyed completely to determine the actual framing condition for the future repair.

6. We looked at the roof area right above the Kitchen at the second floor, and some column relocation may be required, as we are trying to minimize the work around the ceiling over the Kitchen.

The new changes proposed on this report are done for the purpose to minimize the amount of disruption on existing features, and to ease the installation of the future roof reinforcement framing. As more area becomes accessible we expect additional adjustment to the design drawings.

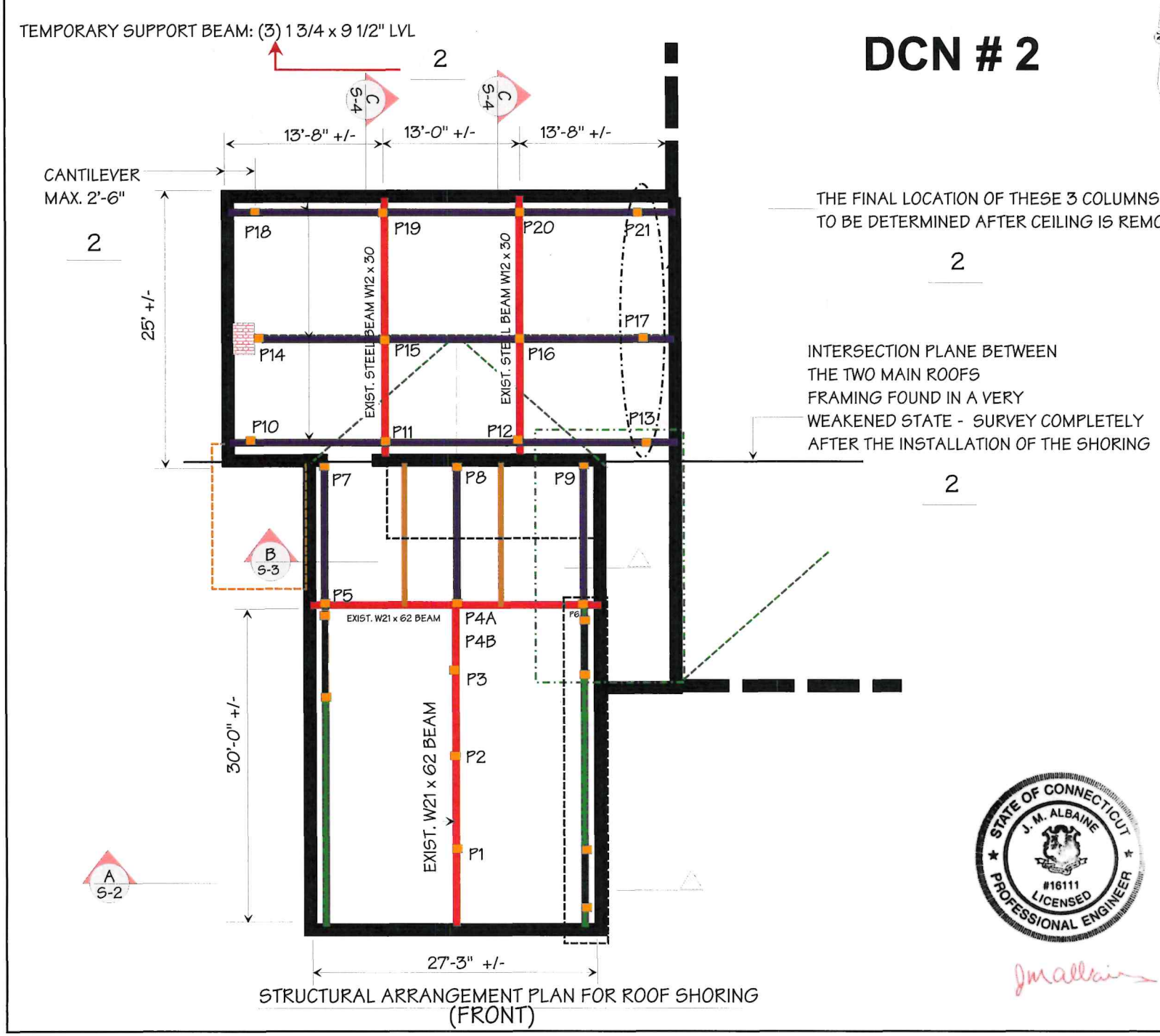
If you have any questions or desire further information regarding this update report, please contact me at your convenience.

Respectfully submitted,

Jose-Miguel Albaine, M.S., P.E.
Structural Engineer

cc. Robert Avena
Frank Hoagland
Steve Cardelle
Rocco Braciaelli
Ed Noble

DCN # 2



STRUCTURAL ARRANGEMENT PLAN FOR ROOF SHORING
(FRONT)

STATE OF CONNECTICUT
J. M. ALBAINE
#16111
LICENSED
PROFESSIONAL ENGINEER

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OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

Project No. JMA09-327-06

DRAWING No.

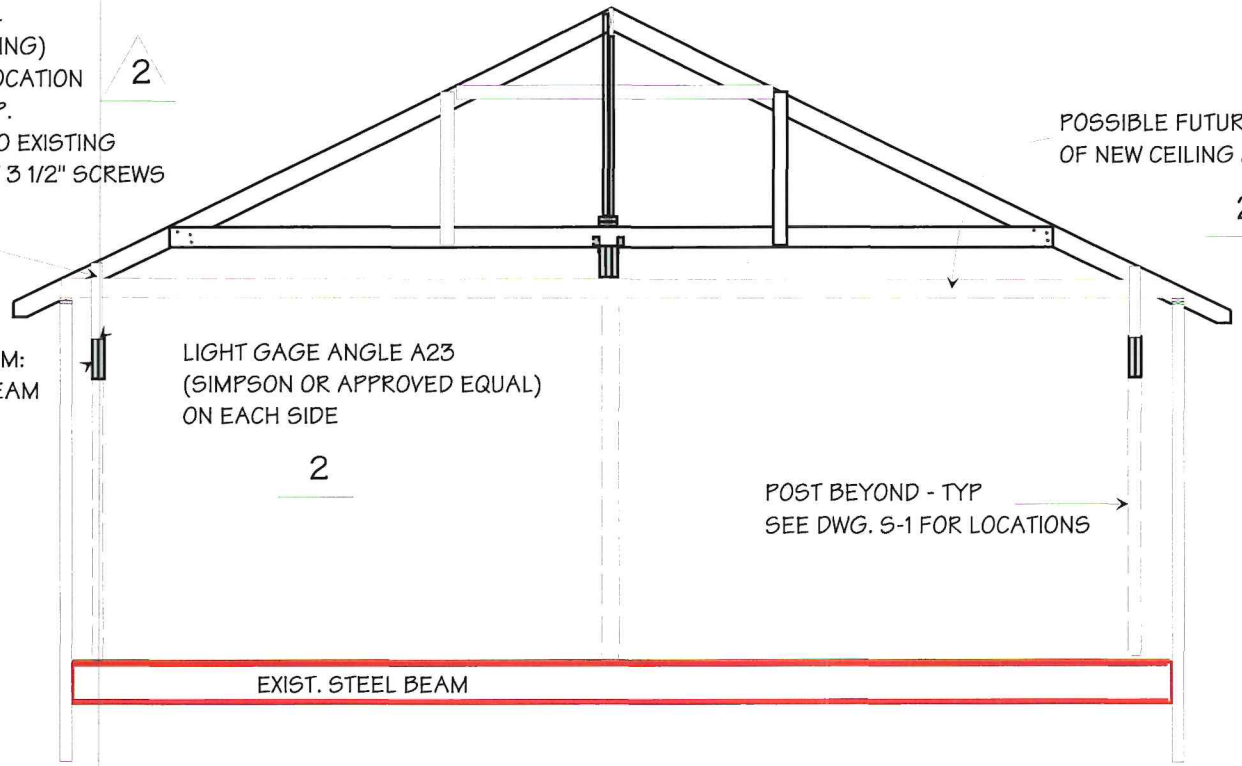
DC2- 1

REV. 2

By: J.M. Albaine, M.S., P.E.

DATE: 02 / 05 / 11

DCN # 2



THIS SECTION IS APPLICABLE FOR SECTIONS A, B, & C

NOTE:
FOR SECTIONS A & B (DWGS. S-2 & S-3), THE EXTERIOR BEAMS ARE: (2) 1 3/4 x 9 1/2 LVL

FOR SECTION C (DWG. S-4) ALL THE BEAMS ARE (3) 1 3/4 x 9 1/2" LVL

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OSWEGATCHIE FIRE DEPT.
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Project No. JMA09-327-06

DRAWING No.

DC2-2

REV. 2

By: J.M. Albaine, M.S., P.E.

DATE: 02 / 05 / 11

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March 6, 2011

Mr. Mark Shenking
Chief of Fire Station
Oswegatchie Fire Station
441 Boston Post Road
Waterford, CT 06385

RE: Structural Shoring for Damaged Roof Section
Ref. Drawings:
JM Albaine Engineering, Dwgs S-1 to S-6 dated 10/25/10
As-built Dwgs. S-1 to S-8, dated March 5, 2011 Rev. 2
Project # JMA10-327-06

Dear Mark,

On February 26 and March 5, 2011, I conducted the final inspection of the installed shoring frame work. I have attached the revised As-built drawings (S1 to S-8) showing the final shoring installation.

We also observed that the exterior North wall has a bow (outward displacement at the top of wall) of approximately 3", with the East and West exhibiting bow in the order of 2" or more. Here are a couple of options deemed to provide a practical repair in term of construction, economics, and long term performance.

OPTION "A"

Reinforce existing roof in place as shown on Dwg. S-5. This option will not remove the current deflection (sag) on the ridge, but it will provide a strong roof capable of resisting the current building code load requirement. The "roof "sag" will not be noticeable from the inside as the new inside ceiling finish will be plumb and straight.

Note that this is a conceptual design and that more analysis is required to develop the final design reinforcement to fit the existing condition.

OPTION "B"

Remove the entire roof frame from both affected buildings, and provide temporary support in the areas where adjacent roof abut the affected roof.

Under this option two paths may be followed:

1. Rebuilt a new roof framework using conventional "stick framing" and/or engineering lumber where required, and adjusting the configuration to conform to the bowed exterior supporting walls.

2. Installed a new system of prefabricated metal connected wood trusses, in which case we'll recommend that all the exterior walls be replaced with new 2 x 6 walls.

In all cases, we recommend that the upper exterior wall be either reinforced (Option A & Option B, case 1), or completely replaced (Option B, case 2), since the structural integrity of these walls have been seriously compromised by the large thrust (lateral) forces from the roof framing vertical downward displacement.

For the two lower bearing exterior walls (East & West walls) housing the Apparatus Room, we recommend that there walls be repaired and reinforced as well, since the sill plates at the floor level shows advanced degree of deterioration.

Please note that the installed temporary shoring served the function of stabilizing the roof to prevent a sudden roof collapse. The shoring are designed to provide a safe working area/platform during the projected work to repair or replace the roof; this framework has been designed for temporary application as other elements such as the exterior walls are subject to local or global failure (such as from high wind pressure or suction induced by hurricane forces).

We will work with Noble Construction to develop an estimate of the construction cost for the options described in this report. We strongly recommend that work proceeds expediently since the installed shoring are only designed for temporary application.

If you have any questions or desire further information regarding this report, please contact me at your convenience.

Respectfully submitted,

Jose-Miguel Albaine, M.S., P.E.
Structural Engineer

cc. Robert Avena
Frank Hoagland
Steve Cardelle
Rocco Braciaelli
Ed Noble

GENERAL STRUCTURAL AND CONSTRUCTION NOTES:

A. CODES AND STANDARDS

1. THE FOLLOWING CODES AND STANDARDS SHALL APPLY TO THE DESIGN, CONSTRUCTION, QUALITY CONTROL, AND SAFETY OF ALL WORK PERFORMED ON THE PROJECT. USE THE LATEST EDITION UNLESS NOTED OTHERWISE.

a. STATE OF CONNECTICUT BUILDING CODE. IBC 2003, 2005 CONNECTICUT SUPPLEMENT & 2009 AMENDMENT

b. "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION" NDS 2001 EDITION

c. "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", ANSI/ASCE 7-02, AMERICAN SOCIETY OF CIVIL ENGINEERS.

B. DESIGN DATA:

DESIGN LOADS:
1. DEAD WEIGHT OF ROOF & ATTIC FRAMING

2. LIVE LOAD:
CONSTRUTION LOAD IN ATTIC AREA = 20 psf
CONSTRUCTION LOAD ON SECOND FLOOR = 40 psf

3. GROUND SNOW LOAD = 30 psf

4. WIND SPEED, V = 120 MPH ; EXP. "C"

C. LUMBER SPECIFICATION:

1. ALL NEW LUMBER: DOUGLAS FIR (N) No. 1 / 2 S-DRY OR SOUTHERN PINE No. 2 S-Dry.

2. LAMINATED VENEER LUMBER (LVL) SPECIFICATION: $E = 1.9 \times 10^6$ PSI , $F_b = 2600$ PSI (MIN)

3. LUMBER CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

E) CONSTRUCTION:

1. IT IS THE CONTRACTORS REPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, STEEL ERECTOR'S GUY CABLES, ETC.
2. IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES, TEMPORARY SHORING, AND BRACING OF EXISTING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL COSTS OF INVESTIGATION AND/OR REDESIGN , DUE TO CONTRACTOR MISLOCATION OF STRUCTURAL ELEMENTS OR OTHER LACK OF CONFORMANCE WITH THE PROJECT DOCUMENTS, SHALL BE AT THE CONTRACTORS EXPENSE.
4. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, DETAILS, AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
5. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND COORDINATING DIMENSIONS, CLEARANCES, ELEVATIONS, CONFIGURATIONS, ETC. WITH THE WORK OF OTHER TRADES.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES (LOCATION, DEPTH, ETC.), AND IF THEY CAN NOT BE RE-POSITIONED, REPORT TO THE ENGINEER ANY INTERFERENCE WITH FOUNDATION WORK.
7. NO CHANGES TO THE THESE DRAWINGS ARE PERMITTED WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.

NOTE:
ALL DIMENSIONS SHION ARE APPROXIMATE, THE CONTRACTOR SHOULD CONDUCT A CONSTRUCTABLITY SURVEY PRIOR TO START WORK, AND NOTIFY THE ENGINEER OF ANY MAJOR DISCREPANCY - DIMENSIONAL TOLERANCES WITHIN 6 IN. ARE ACCEPTABLE AND DO NOT REQUIRE ENGINEERING NOTIFICATION.

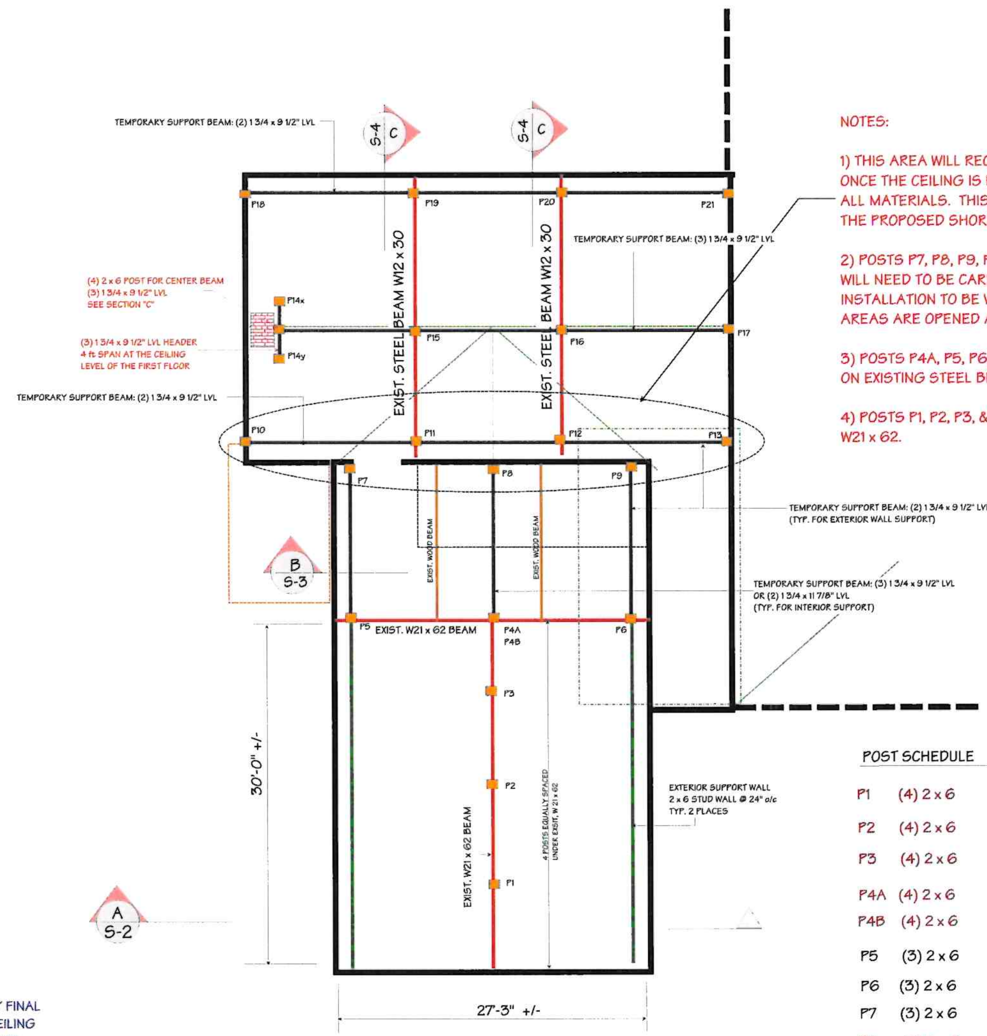
NOTE: IT'S THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE DETAILS SHOWN ON THESE DRAWINGS, DEVIATION FROM DRAWINGS SHALL BE APPROVED IN WRITING BY THE ENGINEER OF RECORD, OTHERWISE ENGINEER WILL NOT APPROVE THE WORK, OR BE HELD RESPONSIBLE FOR THE LONG-TERM PERFORMANCE OF THE STRUCTURE

IT'S STRONGLY RECOMMENDED THAT THE CONTRACTOR SCHEDULE A PRE-CONSTRUCTION MEETING WITH OWNER, AND ENGINEER PRIOR TO START OF CONSTRUCTION.

ENGINEER OF RECORD SHALL OBSERVE THE FINAL WORK FOR GENERAL COMPLIANCE WITH THESE DESIGN DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR QUALITY OF ALL CONSTRUCTION AND INSPECTIONS REQUIRED BY THE CODE OR LOCAL BUILDING OFFICIAL. THE CONTRACTOR SHALL NOTIFY, WHEN REQUIRED, TESTING LAB WHEN WORK IS READY FOR INSPECTION.

NOTE:
THE SHORING PLAN SHOWN ON THESE DRAWINGS SHALL BE IMPLEMENTED BEFORE ANY FINAL REPAIR WORK IS DONE ON THE ROOF STRUCTURE. PARTIAL REMOVAL OF THE EXISTING CEILING SHOULD BE DONE IN ORDER TO INSTALL THE SHORING STRUCTURE. ONCE THE MAJOR PART OF THE BELOW CEILING /ATTIC IS INSTALLED, THE REMAINING SHORING IN THE ATTIC SHOULD BE COMPLETED.

AFTER ALL SHORING STRUCTURE IS IN PLACE , THE COMPLETE REMOVAL OF ALL THE ATTIC/CEILING, INSULATION, AND OTHER ITEMS NOT REQUIRED FOR THE BUILDING FUTURE PERFORMANCE SHOULD BE CAREFULLY REMOVED IN ORDER TO COMPLETE A FULL ASSESSMENT OF THE FINAL REPAIR / REINFORCEMENT FOR THE EXISTING ROOF STRUCTURE.



STRUCTURAL ARRANGEMENT PLAN FOR ROOF SHORING

(FRONT)

NOTE: ALL DIMENSIONS SHOWN ARE APPROXIMATE

NOTES:

1) THIS AREA WILL REQUIRE SHORING ADJUSTMENT ONCE THE CEILING IS REMOVED & THE ATTIC CLEARED OF ALL MATERIALS. THIS MAY CAUSE SOME CHANGES TO THE PROPOSED SHORING DEPICTED ON THESE DRAWINGS

2) POSTS P7, P8, P9, P10, P13, P14, P17, P18, P19, P20 & P21 WILL NEED TO BE CARRY DOWN TO THE LOWEST LEVEL, AND THE INSTALLATION TO BE VERIFIED DURING CONSTRUCTION AFTER AREAS ARE OPENED AND EXPLORED.

3) POSTS P4A, P5, P6, P11, P12, P15, P16, P19 & P20 ARE SUPPORTED ON EXISTING STEEL BEAMS.

4) POSTS P1, P2, P3, & P4B ARE SUPPORTING EXISTING STEEL BEAM W21 x 62.

POST SCHEDULE

P1	(4) 2 x 6	P11	(3) 2 x 6
P2	(4) 2 x 6	P12	(3) 2 x 6
P3	(4) 2 x 6	P13	(3) 2 x 6
P4A	(4) 2 x 6	P14	(3) 2 x 6
P4B	(4) 2 x 6	P15	(4) 2 x 6
P5	(3) 2 x 6	P16	(4) 2 x 6
P6	(3) 2 x 6	P17	(3) 2 x 6
P7	(3) 2 x 6	P18	(3) 2 x 6
P8	(4) 2 x 6	P19	(3) 2 x 6
P9	(3) 2 x 6	P20	(3) 2 x 6
P10	(3) 2 x 6	P21	(3) 2 x 6

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Approved: JMA

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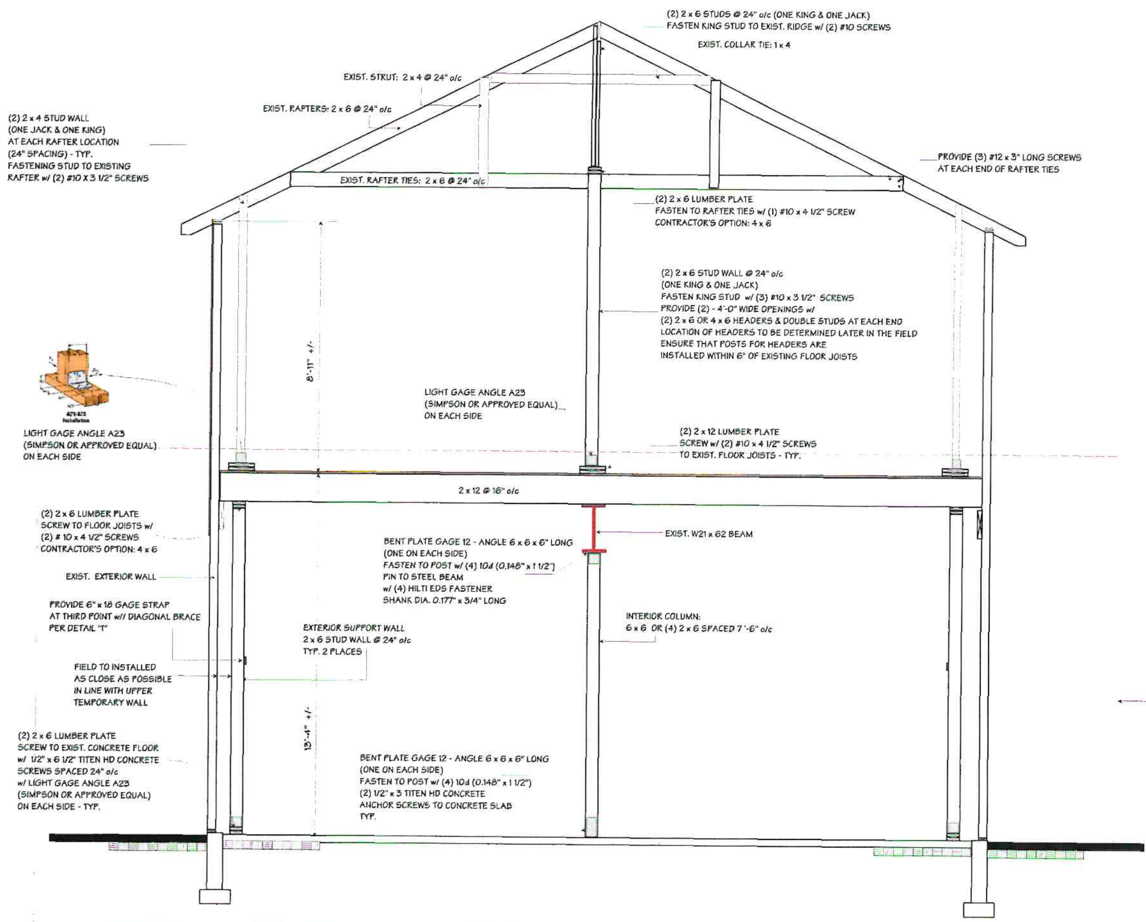
GENERAL NOTES & KEY PLAN

Project No. JMA10-327-06

Scale Unless Noted
N.T.S.

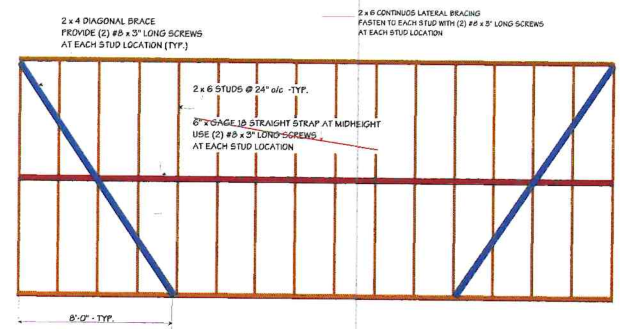
DWG. No.
S - 1

REV. 2
DATE: 03 / 05 / 2011


(2) 2 x 6 STUDS @ 24" o/c (ONE KING & ONE JACK)
FASTEN KING STUD TO EXIST. RIDGE w/ (2) #10 SCREWS
EXIST. COLLAR TIE: 1 x 4
EXIST. STRUT: 2 x 4 @ 24" o/c
EXIST. RAFTERS: 2 x 6 @ 24" o/c
(2) 2 x 4 STUD WALL
(ONE JACK & ONE KING)
AT EACH RAFTER LOCATION
(24" SPACING) - TYP.
FASTENING STUD TO EXISTING
RAFTER w/ (2) #10 X 3 1/2" SCREWS
PROVIDE (3) #12 x 3" LONG SCREWS
AT EACH END OF RAFTER TIES
EXIST. RAFTER TIES: 2 x 6 @ 24" o/c
(2) 2 x 6 LUMBER PLATE
FASTEN TO RAFTER TIES w/ (1) #10 x 4 1/2" SCREW
CONTRACTOR'S OPTION: 4 x 6
(2) 2 x 6 STUD WALL @ 24" o/c
(ONE KING & ONE JACK)
FASTEN KING STUD w/ (3) #10 x 3 1/2" SCREWS
PROVIDE (2) - 4'-0" WIDE OPENINGS w/
(2) 2 x 6 OR 4 x 6 HEADERS & DOUBLE STUDS AT EACH END
LOCATION OF HEADERS TO BE DETERMINED LATER IN THE FIELD
ENSURE THAT POSTS FOR HEADERS ARE
INSTALLED WITHIN 6" OF EXISTING FLOOR JOISTS
8'-11" +/-
LIGHT GAGE ANGLE A23
(SIMPSON OR APPROVED EQUAL)
ON EACH SIDE
LIGHT GAGE ANGLE A23
(SIMPSON OR APPROVED EQUAL)
ON EACH SIDE
(2) 2 x 12 LUMBER PLATE
SCREW w/ (2) #10 x 4 1/2" SCREWS
TO EXIST. FLOOR JOISTS - TYP.
2 x 12 @ 16" o/c
(2) 2 x 6 LUMBER PLATE
SCREW TO FLOOR JOISTS w/
(2) # 10 x 4 1/2" SCREWS
CONTRACTOR'S OPTION: 4 x 6
EXIST. W21 x 62 BEAM
BENT PLATE GAGE 12 - ANGLE 6 x 6 x 6" LONG
(ONE ON EACH SIDE)
FASTEN TO POST w/ (4) 10d (0.148" x 1 1/2")
PIN TO STEEL BEAM
w/ (4) HILTI EDS FASTENER
SHANK DIA. 0.177" x 3/4" LONG
EXIST. EXTERIOR WALL
PROVIDE 6" x 18 GAGE STRAP
AT THIRD POINT w/ DIAGONAL BRACE
PER DETAIL "1"
EXTERIOR SUPPORT WALL
2 x 6 STUD WALL @ 24" o/c
TYP. 2 PLACES
INTERIOR COLUMN:
6 x 6 OR (4) 2 x 6 SPACED 7'-6" o/c
FIELD TO INSTALLED
AS CLOSE AS POSSIBLE
IN LINE WITH UPPER
TEMPORARY WALL
13'-4" +/-
(2) 2 x 6 LUMBER PLATE
SCREW TO EXIST. CONCRETE FLOOR
w/ 1/2" x 6 1/2" TITEN HD CONCRETE
SCREWS SPACED 24" o/c
w/ LIGHT GAGE ANGLE A23
(SIMPSON OR APPROVED EQUAL)
ON EACH SIDE - TYP.
BENT PLATE GAGE 12 - ANGLE 6 x 6 x 6" LONG
(ONE ON EACH SIDE)
FASTEN TO POST w/ (4) 10d (0.148" x 1 1/2")
(2) 1/2" x 3 TITEN HD CONCRETE
ANCHOR SCREWS TO CONCRETE SLAB
TYP.

SECTION A

SCALE: 1/2" = 1'-0"


2 x 4 DIAGONAL BRACE
PROVIDE (2) #8 x 3" LONG SCREWS
AT EACH STUD LOCATION (TYP.)
2 x 6 CONTINUOUS LATERAL BRACING
FASTEN TO EACH STUD WITH (2) #8 x 3" LONG SCREWS
AT EACH STUD LOCATION
2 x 6 STUDS @ 24" o/c - TYP.
6" x GAGE 18 STRAIGHT STRAP AT MIDHEIGHT
USE (2) #8 x 3" LONG SCREWS
AT EACH STUD LOCATION
8'-0" - TYP.

DETAIL "1"

(TYP. 2 PLACES)

SEE DWG. S-8 FOR REVISION
IN THIS AREA

OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

SECTION & ELEVATION FOR STEEL FRAME IN APPARATUS ROOM

Project No. JMA10-327-06

SCALE 3/4" = 1'-0"

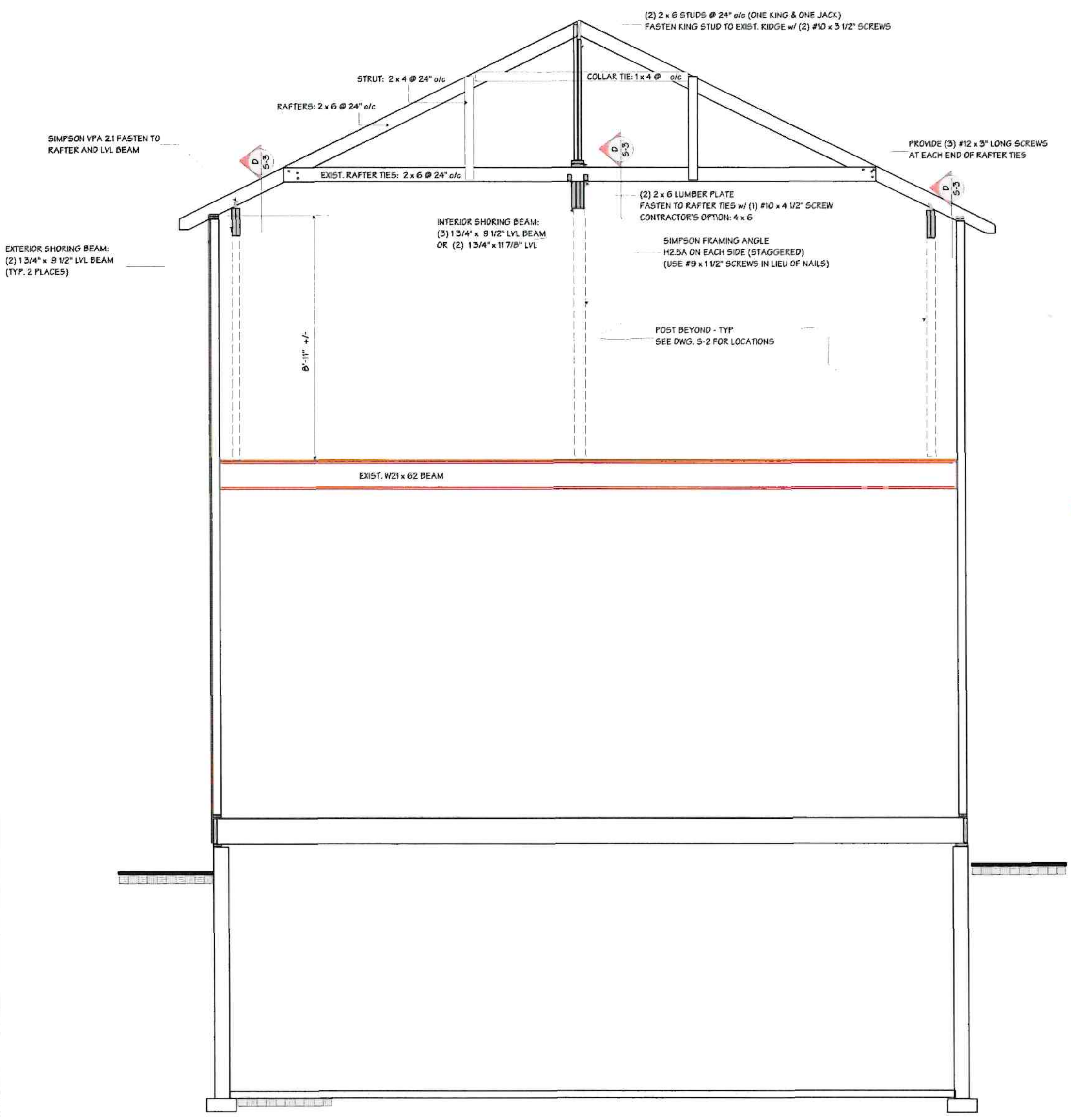
DWG. No.

S-2

REV. 2

DATE: 03 / 05 / 2011

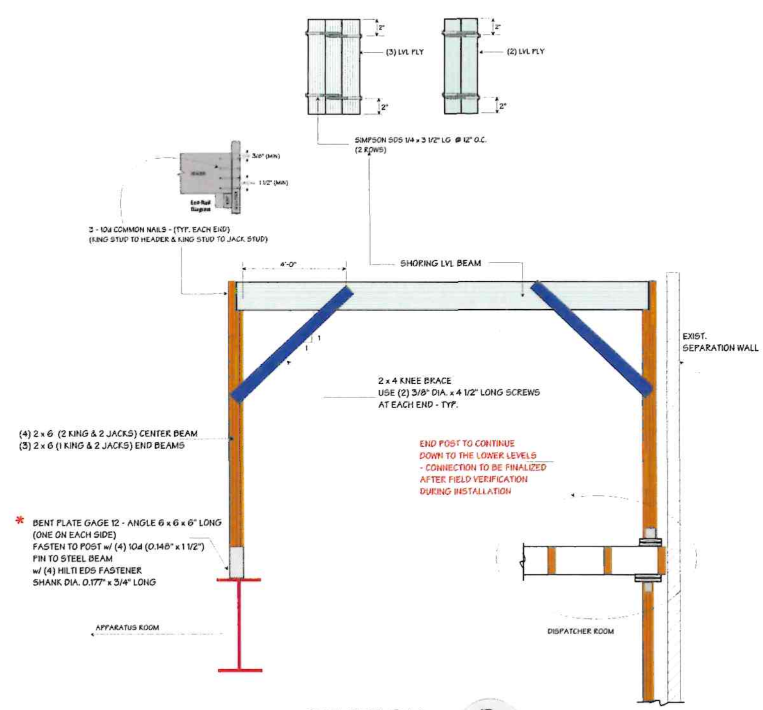
J.M. Albaine Engineering, LLC



(2) 2 x 6 STUDS @ 24" o/c (ONE KING & ONE JACK)
FASTEN KING STUD TO EXIST. RIDGE w/ (2) #10 x 3 1/2" SCREWS
STRUT: 2 x 4 @ 24" o/c
COLLAR TIE: 1 x 4 @ o/c
RAFTERS: 2 x 6 @ 24" o/c
SIMPSON VPA 2.1 FASTEN TO RAFTER AND LVL BEAM
PROVIDE (3) #12 x 3" LONG SCREWS AT EACH END OF RAFTER TIES
EXIST. RAFTER TIES: 2 x 6 @ 24" o/c
(2) 2 x 6 LUMBER PLATE
FASTEN TO RAFTER TIES w/ (1) #10 x 4 1/2" SCREW
CONTRACTOR'S OPTION: 4 x 6
INTERIOR SHORING BEAM:
(3) 1 3/4" x 9 1/2" LVL BEAM
OR (2) 1 3/4" x 11 7/8" LVL
SIMPSON FRAMING ANGLE
H2.5A ON EACH SIDE (STAGGERED)
(USE #9 x 1 1/2" SCREWS IN LIEU OF NAILS)
EXTERIOR SHORING BEAM:
(2) 1 3/4" x 9 1/2" LVL BEAM
(TYP. 2 PLACES)
D S-3
8'-11" +/-
POST BEYOND - TYP
SEE DWG. S-2 FOR LOCATIONS
EXIST. W21 x 62 BEAM

SECTION B

SCALE: 1/2" = 1'-0"



(3) LVL PLY
(2) LVL PLY
2"
SIMPSON SDS 1/4 x 3 1/2" LG @ 12" O.C.
(2 ROWS)
3/8" (MIN)
1 1/2" (MAX)
3 - 10d COMMON NAILS - (TYP. EACH END)
(KING STUD TO HEADER & KING STUD TO JACK STUD)
4'-0"
SHORING LVL BEAM
EXIST.
SEPARATION WALL
2 x 4 KNEE BRACE
USE (2) 3/8" DIA. x 4 1/2" LONG SCREWS
AT EACH END - TYP.
(4) 2 x 6 (2 KING & 2 JACKS) CENTER BEAM
(3) 2 x 6 (1 KING & 2 JACKS) END BEAMS
END POST TO CONTINUE
DOWN TO THE LOWER LEVELS
- CONNECTION TO BE FINALIZED
AFTER FIELD VERIFICATION
DURING INSTALLATION
* BENT PLATE GAGE 12 - ANGLE 6 x 6 x 6" LONG
(ONE ON EACH SIDE)
FASTEN TO POST w/ (4) 10d (0.148" x 1 1/2")
PIN TO STEEL BEAM
w/ (4) HILTI EDS FASTENER
SHANK DIA. 0.177" x 3/4" LONG
APPARATUS ROOM
DISPATCHER ROOM

SECTION D

SCALE: 1/2" = 1'-0"

ELEVATION VIEW OF SHORING AT SECOND FLOOR

TYP. 3 PLACES

* NOTE: IF POST CAN'T BE INSTALLED DIRECTLY ON THE STEEL BEAM, SOLID TIMBER BLOCKING MAY BE USED WITH THE ENGINEER'S APPROVAL

J.M. Albaine Engineering, LLC

OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

SECTION AT DISPATCHER AREA

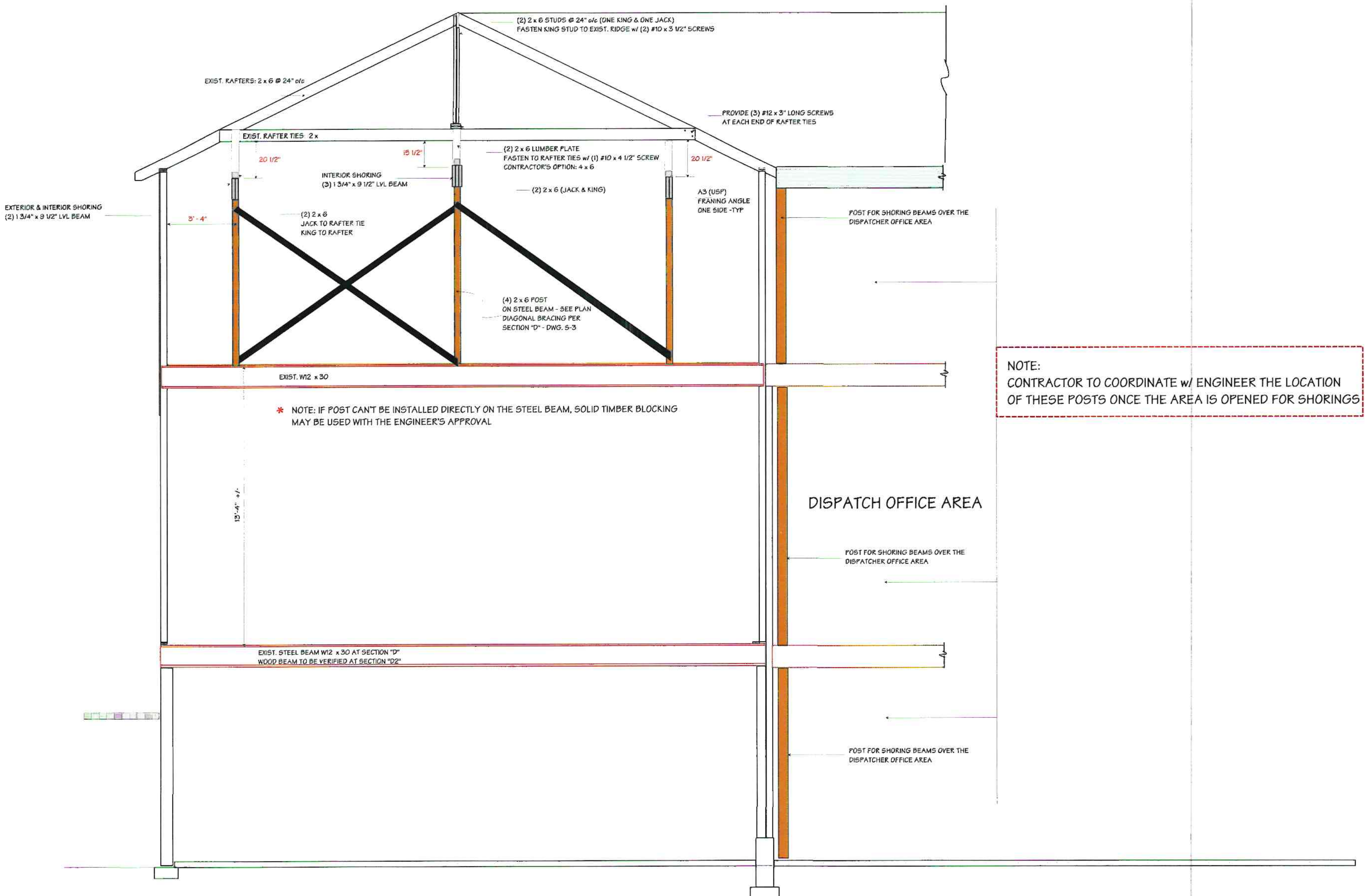
Project No. JMA10-327-06

SCALE 3/4" = 1'-0"

DWG. No. S - 3

REV. 2

DATE: 03 / 05 / 2011


(2) 2 x 6 STUDS @ 24" o/c (ONE KING & ONE JACK)
FASTEN KING STUD TO EXIST. RIDGE w/ (2) #10 x 3 1/2" SCREWS
EXIST. RAFTERS: 2 x 6 @ 24" o/c
PROVIDE (3) #12 x 3" LONG SCREWS AT EACH END OF RAFTER TIES
EXIST. RAFTER TIES 2 x
20 1/2"
15 1/2"
(2) 2 x 6 LUMBER PLATE
FASTEN TO RAFTER TIES w/ (1) #10 x 4 1/2" SCREW
CONTRACTOR'S OPTION: 4 x 6
20 1/2"
INTERIOR SHORING
(3) 1 3/4" x 9 1/2" LVL BEAM
(2) 2 x 6 (JACK & KING)
A3 (USP) FRAMING ANGLE ONE SIDE -TYP
EXTERIOR & INTERIOR SHORING
(2) 1 3/4" x 9 1/2" LVL BEAM
3' - 4"
(2) 2 x 6
JACK TO RAFTER TIE
KING TO RAFTER
POST FOR SHORING BEAMS OVER THE DISPATCHER OFFICE AREA
(4) 2 x 6 POST
ON STEEL BEAM - SEE PLAN
DIAGONAL BRACING PER
SECTION "D" - DWG. S-3
EXIST. W12 x 30
* NOTE: IF POST CAN'T BE INSTALLED DIRECTLY ON THE STEEL BEAM, SOLID TIMBER BLOCKING MAY BE USED WITH THE ENGINEER'S APPROVAL
DISPATCH OFFICE AREA
13'-4" +/-
POST FOR SHORING BEAMS OVER THE DISPATCHER OFFICE AREA
EXIST. STEEL BEAM W12 x 30 AT SECTION "D"
WOOD BEAM TO BE VERIFIED AT SECTION "D2"
POST FOR SHORING BEAMS OVER THE DISPATCHER OFFICE AREA

NOTE:
CONTRACTOR TO COORDINATE w/ ENGINEER THE LOCATION OF THESE POSTS ONCE THE AREA IS OPENED FOR SHORINGS

SECTION C

SCALE: 1/2" = 1'-0"

NOTE:
CONTRACTOR TO COORDINATE w/ ENGINEER THE FINAL SHORING OF THIS AREA PERTINENT TO SECTIONS "D" & "D2" SINCE FIELD ADJUSTMENT WILL BE REQUIRED

J.M. Albaine Engineering, LLC

OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

SECTION THROUGH DAY & KITCHEN AREA

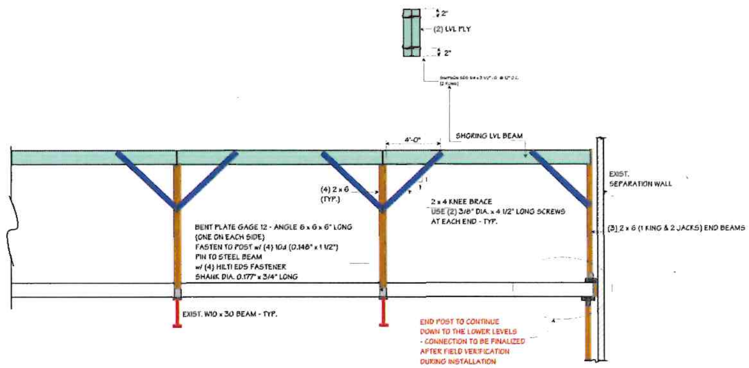
Project No. JMA10-327-06

SCALE 3/4" = 1'-0"

DWG. No. S - 4

REV. 2

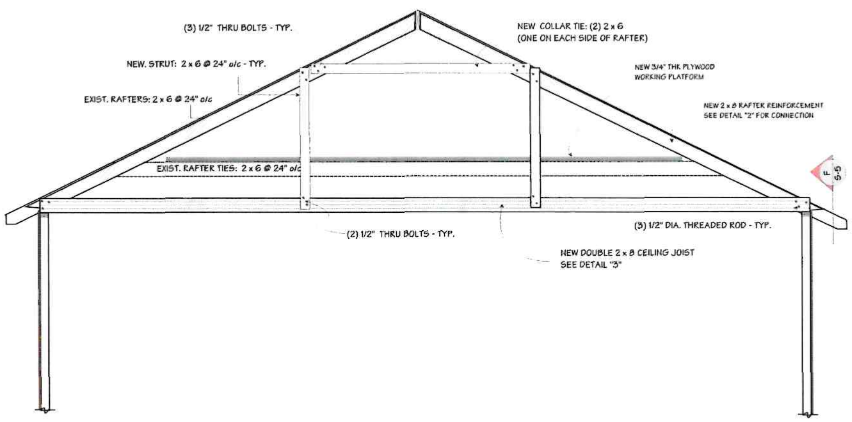
DATE: 03 / 05 / 2011


(2) LVL PLY
2"
2"
4'-0"
SHORING LVL BEAM
EXIST. SEPARATION WALL
(4) 2 x 6 (TYP.)
2 x 4 KNEE BRACE
USE (2) 3/8" DIA. x 4 1/2" LONG SCREWS AT EACH END - TYP.
(3) 2 x 6 (1 KING & 2 JACKS) END BEAMS
BENT PLATE GAGE 12 - ANGLE 6 x 6 x 6" LONG
(ONE ON EACH SIDE)
FASTEN TO POST w/ (4) 10d (0.148" x 1 1/2")
PIN TO STEEL BEAM
w/ (4) HILTI EDS FASTENER
SHANK DIA. 0.177" x 3/4" LONG
EXIST. W10 x 30 BEAM - TYP.
END POST TO CONTINUE
DOWN TO THE LOWER LEVELS
- CONNECTION TO BE FINALIZED
AFTER FIELD VERIFICATION
DURING INSTALLATION

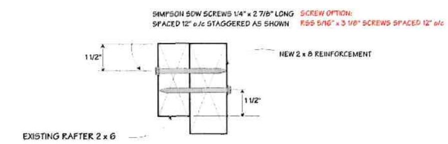
SECTION E

ELEVATION VIEW OF SHORING AT SECOND FLOOR

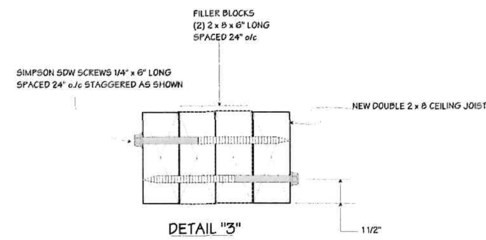
TYP. 3 PLACES


(3) 1/2" THRU BOLTS - TYP.
NEW. STRUT: 2 x 6 @ 24" o/c - TYP.
EXIST. RAFTERS: 2 x 6 @ 24" o/c
EXIST. RAFTER TIES: 2 x 6 @ 24" o/c
NEW COLLAR TIE: (2) 2 x 6
(ONE ON EACH SIDE OF RAFTER)
NEW 3/4" THK. PLYWOOD WORKING PLATFORM
NEW 2 x 8 RAFTER REINFORCEMENT
SEE DETAIL "2" FOR CONNECTION
F
S-5
(3) 1/2" DIA. THREADED ROD - TYP.
(2) 1/2" THRU BOLTS - TYP.
NEW DOUBLE 2 x 8 CEILING JOIST
SEE DETAIL "3"

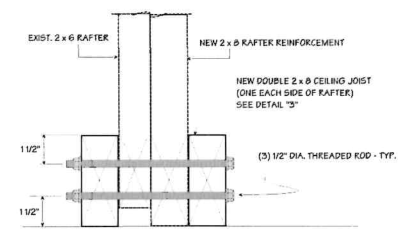
CONCEPTUAL DESIGN FOR ROOF REINFORCEMENT
(FOR PRELIMINARY CONSTRUCTION ESTIMATE COST)



DETAIL "2"



DETAIL "3"



SECTION F

J.M. Albaine Engineering, LLC

OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

SECTION CONCEPTUAL REINFORCEMENT & DETAILS

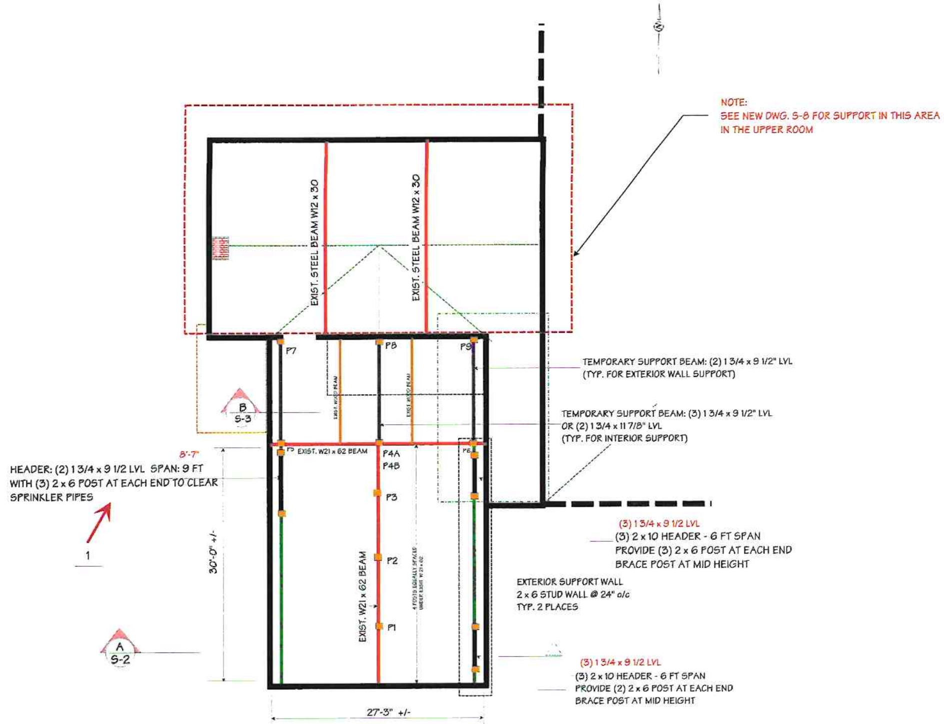
Project No. JMA10-327-06

Scale Unless Noted

DWG. No.
S - 5

REV. 2

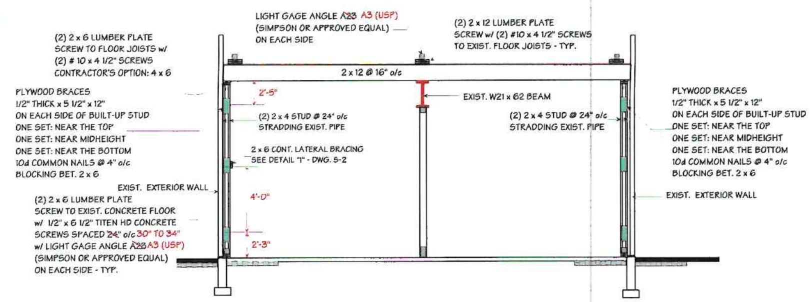
DATE: 03 / 05 / 2011


NOTE:
SEE NEW DWG. S-8 FOR SUPPORT IN THIS AREA
IN THE UPPER ROOM
EXIST. STEEL BEAM W12 x 30
EXIST. STEEL BEAM W12 x 30
P7
P8
P9
TEMPORARY SUPPORT BEAM: (2) 1 3/4 x 9 1/2" LVL
(TYP. FOR EXTERIOR WALL SUPPORT)
TEMPORARY SUPPORT BEAM: (3) 1 3/4 x 9 1/2" LVL
OR (2) 1 3/4 x 11 7/8" LVL
(TYP. FOR INTERIOR SUPPORT)
B
S-3
8'-7"
HEADER: (2) 1 3/4 x 9 1/2 LVL SPAN: 9 FT
WITH (3) 2 x 6 POST AT EACH END TO CLEAR
SPRINKLER PIPES
1
EXIST. W21 x 62 BEAM
P4A
P4B
P3
P2
P1
EXIST. W21 x 62 BEAM
30'-0" +/-
(3) 1 3/4 x 9 1/2 LVL
(3) 2 x 10 HEADER - 6 FT SPAN
PROVIDE (3) 2 x 6 POST AT EACH END
BRACE POST AT MID HEIGHT
EXTERIOR SUPPORT WALL
2 x 6 STUD WALL @ 24" o/c
TYP. 2 PLACES
A
S-2
(3) 1 3/4 x 9 1/2 LVL
(3) 2 x 10 HEADER - 6 FT SPAN
PROVIDE (2) 2 x 6 POST AT EACH END
BRACE POST AT MID HEIGHT
27'-3" +/-

AS-BUILT SHORING STRUCTURE AT THE LOWER LEVEL

APPARATUS ROOM

FROM DCN # 1 DWG. S-1

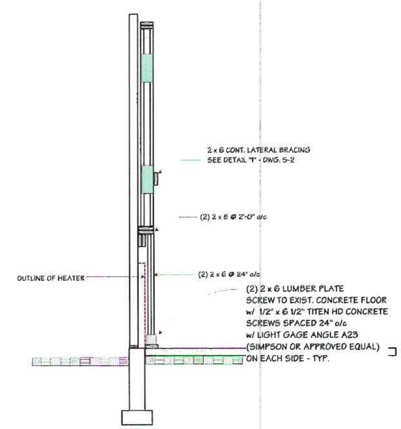

LIGHT GAGE ANGLE A23 A3 (USP)
(SIMPSON OR APPROVED EQUAL)
ON EACH SIDE
(2) 2 x 12 LUMBER PLATE
SCREW w/ (2) #10 x 4 1/2" SCREWS
TO EXIST. FLOOR JOISTS - TYP.
(2) 2 x 6 LUMBER PLATE
SCREW TO FLOOR JOISTS w/
(2) # 10 x 4 1/2" SCREWS
CONTRACTOR'S OPTION: 4 x 6
2 x 12 @ 16" o/c
PLYWOOD BRACES
1/2" THICK x 5 1/2" x 12"
ON EACH SIDE OF BUILT-UP STUD
ONE SET: NEAR THE TOP
ONE SET: NEAR MIDHEIGHT
ONE SET: NEAR THE BOTTOM
10d COMMON NAILS @ 4" o/c
BLOCKING BET. 2 x 6
2'-5"
(2) 2 x 4 STUD @ 24" o/c
STRADDING EXIST. PIPE
EXIST. W21 x 62 BEAM
(2) 2 x 4 STUD @ 24" o/c
STRADDING EXIST. PIPE
2 x 6 CONT. LATERAL BRACING
SEE DETAIL "I" - DWG. S-2
EXIST. EXTERIOR WALL
(2) 2 x 6 LUMBER PLATE
SCREW TO EXIST. CONCRETE FLOOR
w/ 1/2" x 6 1/2" TITEN HD CONCRETE
SCREWS SPACED 24" o/c 30" TO 34"
w/ LIGHT GAGE ANGLE A23 A3 (USP)
(SIMPSON OR APPROVED EQUAL)
ON EACH SIDE - TYP.
4'-0"
2'-3"
PLYWOOD BRACES
1/2" THICK x 5 1/2" x 12"
ON EACH SIDE OF BUILT-UP STUD
ONE SET: NEAR THE TOP
ONE SET: NEAR MIDHEIGHT
ONE SET: NEAR THE BOTTOM
10d COMMON NAILS @ 4" o/c
BLOCKING BET. 2 x 6
EXIST. EXTERIOR WALL

SECTION A

DETAIL "4"

ALTERNATE STUDS AT APPARATUS ROOM TO ALLOW OVERHEAD DOOR OPERATION

FROM DCN # 1 DWG. S-2



DETAIL "5": FRAMING AROUND HEATER IN APPARATUS ROOM

FROM DCN # 1 DWG. S-3

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OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

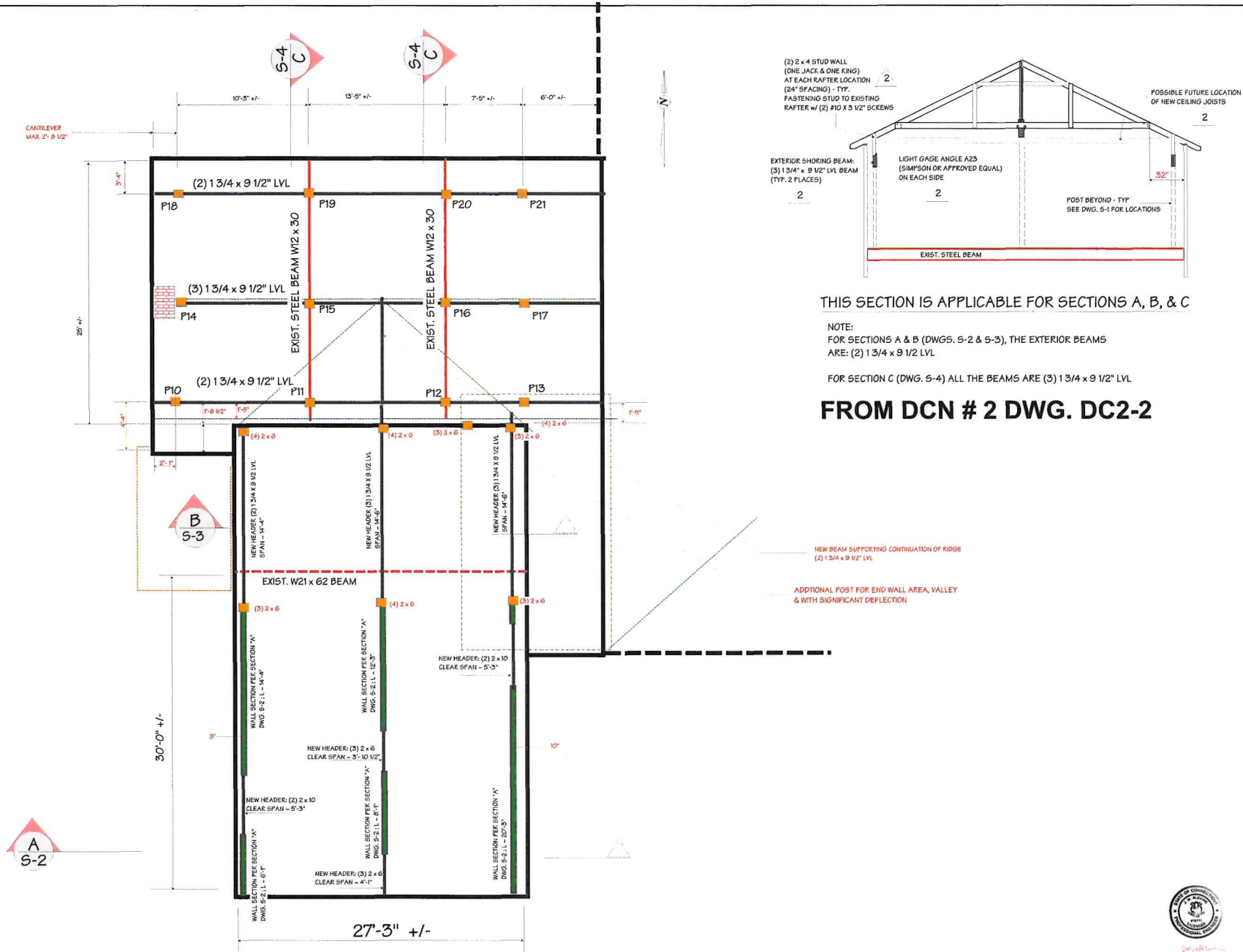
AS-BUILT FOR THE LOWER FLOOR FRAMING
(REF. DCN # 1)

Project No. JMA10-327-06

DWG. No. S - 6

REV. 2

DATE: 03 / 05 / 2011



AS-BUILT SHORING STRUCTURE AT THE UPPER LEVEL

THIS SECTION IS APPLICABLE FOR SECTIONS A, B, & C

NOTE:
FOR SECTIONS A & B (DWGS. S-2 & S-3), THE EXTERIOR BEAMS ARE: (2) 1 3/4 x 9 1/2 LVL

FOR SECTION C (DWG. S-4) ALL THE BEAMS ARE (3) 1 3/4 x 9 1/2" LVL

FROM DCN # 2 DWG. DC2-2

OSWEGATCHIE FIRE DEPT.
BOSTON POST ROAD
WATERFORD, CT 06385

AS-BUILT FOR THE UPEER FLOOR FRAMING
(REF. DCN #2)

Project No. JMA10-327-06

DWG. No.
S - 7
REV. 2
DATE: 03 / 05 / 2011

J.M. ALBAINE ENGINEERING, LLC
14 Lincoln Road, Waterford, CT 06385 Email: jma724@snet.net
www.JMAlbaineEng.com

Oswegatchie Fire Station
441 Boston Post Road, Waterford CT

Temporary Framing Inspection
REPORT #1 --- October 31, 2022

Att. Michael Howley
Director of Fire Services
Public Safety Building
204 Boston Post Road
Waterford, CT 06385

Subject: Oswegatchie Fire Station
Inspection /Assessment: Building Structural Safety
Project # JMA22-327-062

The following report objective is to provide an update of the current structural condition of the overall building shoring as designed and constructed per our recommendations. I met with Rocco Bracciale at the premises for an inspection / walk through conducted on October 1st, 2022.

Reference Documents

1) Report / Letter dated March 6th, 2011 by JM Albaine Engineering - Project # JMA10-327-06.

2) Report / Letter dated February 5, 2011 by JM Albaine Engineering - Project # JMA10-327-06

3) Design /As-Built Drawings By JM Albaine Engineering S-1 to S-7, Revision 2, dated March 05, 2011.

Executive Summary:

The installed temporary shoring on the original building under scope, built in 1928, is in good condition and no significant sign of distress or deficiency was observed nor detected that may indicate a concern regarding the safety of the building in the current condition as supported by the shoring. The shoring is holding up the damaged main roof over the Apparatus Room, Day Room, Hall Room, and Kitchen, all located in the older building, the subject of the shoring.

Moreover, the intersecting roof framing between the 1928 structure and the flat roof from the 1985 structure is a critical area where lots of damage on the roof rafters have been observed sue to the flat roof bearing on the older 1928 roof.

However, it is also our opinion that the temporary shoring is not a substitute for the overall building stability as stated in Reference 1 above and quoted below:
"Please note that the installed temporary shoring served the function of stabilizing the roof to prevent a sudden roof collapse. The shoring are designed to provide a safe working area/platform during the projected work to repair or replace the roof; this framework has been designed for temporary application as other elements such as the exterior walls are subject to local or global failure (such as from high wind pressure or suction induced by hurricane forces)."

It is factual that since the installation of the shoring, the building has been subject to two major hurricane forces, Irene in August 2011 and Sandy in October 2012. These hurricanes had wind velocity of 66 mph & 80 mph respectively, and the building withstood these forces with no major consequences.

The deficient roof framing is being supported by the shoring, however it is subject to deterioration if water intrusion is present which will further weaken such framing. It is imperative to keep the existing roof framing in a dry condition.

Furthermore, the current Connecticut Building Code (2022) requires building to be designed for a wind velocity of 108 mph in Waterford, which translates to building forces increment of 82% above those from Hurricane Sandy, therefore presenting a high risk of building damage and stability in the case that such storm may come through our area.

Conclusion:

The shoring installed in 2011 are providing the required support as originally intended, mainly reinforced the weaken roof framing over the Apparatus Room, Dispatcher Room, Day Room, Hall Roo, and the kitchen. These shoring were installed principally because of the dismal condition of the roof framing (see Ref. #2).

The shoring was found in good conditions with negligent movement changes since they were installed, thus ensuring the safe function of those areas under potential heavy snowstorms.

However, the existing roof framing was stabilized by providing vertical supports at the peak (ridge) down to solid structure and reinforcing the existing rafter tie connections to the existing rafters (refer to Reference 3, Section "A", Dwg S-2 and Section "B" Dwg. S-3). The existing rafters (2 x 6 @ 24" on-center) were not reinforced at the time due to the nature of the work (temporary), and they remain the weakest link in the chain as water intrusion from the roof will further deterioration on such elements of the roof framing.

Regarding the building lateral stability caused by hurricane induced lateral forces and to a lesser degree seismic forces, the area of the building under consideration is vulnerable as reported previously due to the weakened state of the exterior walls specially in the Apparatus Room as previously reported.

Although the building has withstood two significant hurricane events in the last 12 years, there still exist a significant risk of building overall stability if a significant hurricane passes through the areas because of the condition of the exterior bearing wall (shear walls) and the existing roof rafters that were not reinforced at the time of the installation of the shoring.

I trust this information is adequate for your needs. If you have any questions or desire further information regarding this report, please contact me at your convenience.

Respectfully submitted,

Jose-Miguel Albaine, M.S., P.E.
Consulting Design-Structural Engineer


OSWEGATCHIE FIRE CO. NO. 4
1928
1985
1976