## Important Note About House Plans

House Plans are fully integrated sets of construction drawings created by BSC for specific locations and climates. The sets include floor plans, detailed framing plans and wall framing elevations, exterior elevations and sections, advanced framing and enclosure details, as well as mechanical and electrical plans.

Through our multi-disciplinary team approach, interior, framing and mechanical layouts are designed and coordinated well before the start of construction. Duct layouts are not only shown on the mechanical plan but on the framing plan as well. This level of coordination limits changes made in the field and helps to ensure assemblies and systems are installed as designed.

**Please Note**

Please note that House Plans are posted as examples of high performance housing designs and are not to be used for construction. If you wish to use these plans as a basis for a house design, you should keep the following in mind:

- Most state and local governments require that a set of drawings be stamped by an architect licensed to practice locally
- Foundation plans need to be developed for the specific site and climate
- While these drawings were developed to be compliant with the then-current IRC code, you will need to meet your local building code requirements
- Finally, since materials and products specified in the drawings may not be available in all locations, you will need to carefully research any substitutions to verify compatibility and performance.

# HABITAT FOR HUMANITY of GREATER LOWELL

# Westford, MA

## PLAN 1
## THREE BEDROOM - BASEMENT

## PROJECT DESCRIPTION

These plans describe an affordable, energy-efficient, and durable 1400 sq ft single-family home. The drawing set and specifications were developed by Building Science Corporation through the Department of Energy's Building America Program for Habitat for Humanity of Greater Lowell. The house plan will be built in Westford, Massachusetts. During project planning and construction, all efforts should be made to meet the goals of this project.

## SQUARE FOOTAGES

| | |
|---|---|
| BASEMENT | 816 SQ FT |
| FIRST FLOOR | 865 SQ FT |
| SECOND FLOOR | 543 SQ FT |

Notes: 1. Area calculations according to ANSI Z765-2003.
2. Finished square footage calculations for this house were made based on plan dimensions only and may vary from the finished square footage of the house as built.

## DRAWING LIST



## CONSTRUCTION DOCUMENTS
## 8 JANUARY 2009


BUILDING SCIENCE CORPORATION
70 MAIN STREET WESTFORD, MASSACHUSETTS 01886
P: 978-589-5100 F: 978-589-5103


Building AMERICA

## GENERAL REQUIREMENTS

1. ALL WORK SHALL COMPLY WITH FEDERAL, STATE AND LOCAL BUILDING CODES AND REGULATIONS.

2. MECHANICAL, ELECTRICAL AND PLUMBING WORK REQUIRED OF THIS PERMIT APPLICATION TO BE PERFORMED BY SUBCONTRACTOR LICENSED IN THE STATE IN WHICH WORK IS BEING PERFORMED.

3. SUBCONTRACTOR SHALL PROVIDE CERTIFICATION OF GENERAL LIABILITY INSURANCE AND WORKMAN'S COMPENSATION COVERAGE, AS REQUIRED BY THE GENERAL CONTRACTOR.

4. CONTRACTOR SHALL COORDINATE AND/OR OBTAIN ALL BUILDING PERMITS REQUIRED FOR CONSTRUCTION AND CERTIFICATES OF OCCUPANCY.

5. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, AND PROCEDURES.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY DURING BUILDING CONSTRUCTION AND SHALL PROVIDE ADEQUATE SHORING AND BRACING TO ENSURE SUCH SAFETY.

7. ALL DIMENSIONS AND SITE CONDITIONS TO BE FIELD VERIFIED AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NOTIFY BUILDING SCIENCE CORPORATION OF AN DISCREPANCY PRIOR TO COMMENCEMENT OF WORK.

8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER INDICATED ON PLANS OR NOT, AND TO PROTECT THEM FROM DAMAGE.

9. ALL DETAILS, SECTIONS, NOTES, OR REFERENCE TO OTHER DRAWINGS ARE INTENDED TO BE TYPICAL.

10. DURING CONSTRUCTION, AND PRIOR TO THE INCORPORATION OF ANY CHANGES, REVISIONS, MODIFICATIONS AND/OR DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS, CONTRACTOR SHALL BRING TO THE ATTENTION OF BUILDING SCIENCE CORPORATION AND OBTAIN APPROVAL FROM THE GOVERNING BUILDING OFFICIAL BEFORE PROCEEDING WITH THE WORK.

11. THE MANUFACTURERS, PRODUCTS AND EQUIPMENT LISTED ESTABLISH PERFORMANCE REQUIREMENTS. SUBSTITUTIONS OF EQUAL PERFORMANCE MAY BE SUBMITTED FOR BUILDING SCIENCE CORPORATION'S APPROVAL.

12. ALL MATERIALS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS/SPECIFICATIONS UNLESS OTHERWISE SPECIFIED BY BUILDING SCIENCE CORPORATION.

13. SPECIFIC NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT.

## BUILDING AMERICA PERFORMANCE CRITERIA

REQUIREMENTS: DESIGN

RESIDENCES MUST REDUCE WHOLE HOUSE ENERGY USE (HVAC, HOT WATER, LIGHTING, AND ALL APPLIANCES/PLUG LOADS) AS STIPULATED IN THE TABLE BELOW:

| PROJECT TYPE | PERCENT REDUCTION | ENERGY STAR INDEX |
|---|---|---|
| SINGLE HOMES | 40% | 60-65 |
| COMMUNITIES | 30% | 70-75 |

WHOLE-HOUSE DILUTION VENTILATION: A MECHANICAL VENTILATION SYSTEM MUST BE INSTALLED TO BE CAPABLE OF MEETING ASHRAE STANDARD 62.2 WHICH STIPULATES A VENTILATION RATE OF 7.5 CFM PER PERSON (COUNTED AS THE NUMBER OF BEDROOMS PLUS ONE) PLUS 0.01 CFM PER SQUARE FOOT OF FLOOR AREA. WHILE 62.2 STIPULATES THAT OPERATION OF THE VENTILATION SYSTEM IS AT THE OCCUPANT'S DISCRETION AND THE STANDARD IS SILENT REGARDING WHOLE HOUSE DISTRIBUTION OF VENTILATION AIR, THIS PERFORMANCE CRITERIA STIPULATES THAT THE 62.2 VENTILATION FLOW RATE BE DELIVERED AT LEAST ONE-THIRD OF THE TIME AND THAT WHOLE HOUSE DISTRIBUTION IS REQUIRED.

LOCAL EXHAUST VENTILATION: INTERMITTENT SPOT EXHAUST OF 100 CFM MUST BE PROVIDED FOR EACH KITCHEN (RECIRCULATING COOKTOP HOODS ARE NOT PERMITTED). INTERMITTENT SPOT EXHAUST OF 50 CFM OR CONTINUOUS EXHAUST OF 20 CFM WHEN THE BUILDING IS OCCUPIED MUST BE PROVIDED FOR EACH ROOM HAVING A TOILET, BATH, OR SHOWER.

VENTILATION INTAKE LOCATIONS: WHEN A SUPPLY-ONLY OR BALANCED VENTILATION SYSTEM IS USED, THE INTAKE MUST GO THROUGH AN OUTSIDE WALL AND NOT THE ROOF (DUE TO PROXIMITY TO EXHAUST/VENT POLLUTANTS, AND HEATED AIR/VOC'S/ODORS FROM THE ROOF). WALL INTAKES SHOULD BE LOCATED AT LEAST 10 FEET FROM, AND NOT DIRECTLY ABOVE, ANY WALL EXHAUST OR VENT.

ALL COMBUSTION APPLIANCES (EXCEPT A GAS STOVE, COOKTOP OR OVEN) IN THE CONDITIONED SPACE MUST BE SEALED COMBUSTION. SPECIFICALLY, ANY FURNACE INSIDE CONDITIONED SPACE MUST BE A SEALED-COMBUSTION 90%+ AFUE UNIT. ANY WATER HEATER INSIDE CONDITIONED SPACE MUST BE DIRECT-POWER-VENTED. ANY BOILER INSIDE A CONDITIONED SPACE MUST BE SEALED COMBUSTION.

WINDOWS WITH THE FOLLOWING CLIMATE-SPECIFIC PERFORMANCE VALUES MUST BE USED:

| CLIMATE ZONE | MAXIMUM U-VALUE | MAXIMUM SHGC |
|---|---|---|
| ZONES 1-3 | 0.40 | 0.35 |
| ZONES 4-8 | 0.35 | 0.40 |

ALL DUCTS AND AIR HANDLING EQUIPMENT MUST BE IN THE CONDITIONED SPACE.

MAJOR APPLIANCES (REFRIGERATOR, CLOTHES WASHER, AND DISHWASHER) MUST ACHIEVE ENERGY STAR PERFORMANCE IN THE TOP ONE-THIRD OF THE DOE ENERGY GUIDE RATING SCALE.

ALL LIGHTING MUST BE ENERGY STAR QUALIFIED WITH THE FOLLOWING EXCEPTIONS: MOTION-SENSITIVE OUTDOOR SPOTLIGHTS AND SOLAR-POWERED ACCENT AND PATHWAY LIGHTING. LED TECHNOLOGY IS CURRENTLY NOT CERTIFIED BY ENERGY STAR. HOWEVER, LEDS ARE ACCEPTABLE.

CARBON MONOXIDE DETECTORS (HARD WIRED UNITS) MUST BE INSTALLED (AT ONE PER EVERY APPROXIMATE 1000 SQUARE FEET) IN ANY HOUSE CONTAINING COMBUSTION APPLIANCES OR AN ATTACHED GARAGE.

REQUIREMENTS: TESTING

BUILDING AMERICA TESTING OF THE HOUSE MUST BE COMPLETED AS PART OF THE COMMISSIONING PROCESS.

IN A PRODUCTION SETTING, EACH MODEL TYPE (i.e., FLOOR PLAN) MUST BE TESTED UNTIL TWO CONSECUTIVE HOUSES OF THIS MODEL TYPE MEET TESTING REQUIREMENTS. ADDITIONALLY, TESTING OF THIS MODEL TYPE CAN BE REDUCED TO A SAMPLING RATE OF 1 IN 7 (i.e., 1 TEST, WITH 6 "REFERENCED" HOUSES). SMALL ADDITIONS TO A FLOOR PLAN (e.g., BAY WINDOW, CONVERSION OF DEN TO BEDROOM) ARE CONSIDERED TO BE THE SAME MODEL TYPE; MAJOR CHANGES (e.g., BONUS ROOM OVER THE GARAGE, CONVERSION OF GARAGE INTO A HOBBY ROOM, ETC.) MUST BE CONSIDERED A SEPARATE MODEL TYPE. UNIQUE OR CUSTOM HOUSE PLANS MUST BE INDIVIDUALLY TESTED.

AIR LEAKAGE (DETERMINED BY PRESSURIZATION TESTING) MUST BE LESS THAN 2.5 SQUARE INCHES/100 SQUARE FEET SURFACE AREA LEAKAGE RATIO (CGSB, CALCULATED AT A 10 PA PRESSURE DIFFERENTIAL); OR 1.25 SQUARE INCHES/100 SQUARE FEET LEAKAGE RATIO (ASTM, CALCULATED AT A 4 PA PRESSURE DIFFERENTIAL); OR 0.25 CFM/SQUARE FOOT OF BUILDING ENCLOSURE SURFACE AREA AT A 50 PASCAL AIR PRESSURE DIFFERENTIAL. THE CALCULATION OF THE BUILDING ENCLOSURE AREA INCLUDES THE FOUNDATION OR BELOW GRADE SURFACE AREAS. IF THE HOUSE IS DIVIDED INTO MULTIPLE CONDITIONED ZONES, SUCH AS CONDITIONED ATTICS OR CONDITIONED CRAWL SPACE, THE BLOWER DOOR REQUIREMENT MUST BE MET WITH THE ACCESS TO THE SPACE OPEN, CONNECTING THE ZONES.

TOTAL SPACE CONDITIONING SYSTEM DUCT LEAKAGE MUST BE LESS THAN FIVE PERCENT OF THE TOTAL AIR HANDLING SYSTEM RATED AIR FLOW AT HIGH SPEED (NOMINAL 400 CFM PER TON) DETERMINED BY PRESSURIZATION TESTING AT 25 PA. TWO COMPLIANCE MECHANISMS ARE ACCEPTABLE: (1) TEST TOTAL DUCT LEAKAGE AT FINISH STAGE, OR (2) TEST TOTAL DUCT LEAKAGE AT DUCT ROUGH-IN STAGE. WHEN MORE THAN ONE AIR HANDLER EXISTS, EACH AIR HANDLING SYSTEM MUST INDIVIDUALLY MEET THE REQUIREMENT. IF ZONING IS USED, ALL ZONE DAMPERS MUST BE OPEN. MANUAL OR MOTORIZED OUTSIDE AIR VENTILATION DAMPERS MUST BE CLOSED.

LOCAL AND WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOWS MUST BE TESTED DURING COMMISSIONING OF THE BUILDING.

FORCED AIR SYSTEMS THAT DISTRIBUTE AIR FOR HEATING MUST BE DESIGNED TO PROVIDE BALANCED AIRFLOW TO ALL CONDITIONED SPACES AND ZONES (BEDROOMS, HALLWAYS, BASEMENTS). BALANCED AIRFLOW IS DEFINED AS A SYSTEM THAT CONTROLS INTER-ZONAL AIR PRESSURE DIFFERENCES WHEN DOORS ARE CLOSED TO LESS THAN 3 PA USING PASSIVE TRANSFER GRILLES, JUMP DUCTS, DOOR UNDERCUTS OR ACTIVE RETURN DUCTS OR ANY COMBINATION THEREOF.

SYSTEM EXTERNAL STATIC PRESSURE MUST BE WITHIN MANUFACTURERS SPECIFICATIONS (0.5 WIC/125 PA MAXIMUM TYPICAL).

## GENERAL CONSTRUCTION NOTES

### CIVIL NOTES:

DEBRIS - REMOVE DEBRIS WITHIN 2'-0" OF BUILDING.

EXTERIOR GRADE - SLOPE GRADE 5% TO DRAIN AWAY FROM BUILDING.

SOIL GAS CONTROL - ALL WALLS, ROOF AND FLOORS IN CONTACT WITH THE GROUND SHALL BE CONSTRUCTED TO RESIST THE LEAKAGE OF SOIL GAS FROM THE GROUND TO THE BUILDING. A PASSIVE SUB-SLAB DEPRESSURIZATION SYSTEM IN ACCORDANCE WITH THE SUPPLEMENTARY GUIDELINES SHALL BE PROVIDED, 1 VENT PIPE, MIN. 3" DIAMETER, PER 1500 SF OF SLAB AREA. VENT STRAIGHT UP THRU ROOF.

### STRUCTURAL NOTES:

CONCRETE - ALL CONCRETE TO HAVE A WATER/CEMENT RATIO OF LESS THAN 0.5 AND 10% FLY ASH PORTLAND CEMENT REPLACEMENT.

FOOTINGS - ALL FOOTINGS SHALL REST ON NATIVE, UNDISTURBED SOIL AND WILL BE A MIN. OF 48" BELOW FINISHED GRADE OR IN ACCORDANCE WITH LOCAL BUILDING CODE. APPLY LIQUID APPLIED CAPILLARY BREAK (MUST DRY TACK FREE) ON TOP OF FOOTING PRIOR TO PLACING/CASTING CONCRETE FOUNDATION WALL.

STEP FOOTINGS - HORIZONTAL STEP = 24" MAX.
- VERTICAL STEP = 24" MAX.

FOUNDATION WALLS - 8" WIDE CONCRETE WALL WITH 2 1/2" DEEP VERTICAL SAW-CUT CONTROL JOINTS ON INTERIOR FACE OF WALL. LOCATE JOINTS 18" FROM EVERY CORNER AND 20' MAX. ALONG LENGTH OF WALL SEGMENT.

DRAIN TILE - 4" DIA. PIPE, 3/4" CRUSHED STONE (NO FINES), 6" MIN. PIPE COVER. LOCATE 4" DIA. DRAIN TILE CONNECTION PIPE THROUGH BASE OF FOOTING WITHIN 5' OF EVERY CORNER AND EVERY 15' MAX. ALONG LENGTH OF WALL SEGMENT WITH MIN. 1 PER WALL SEGMENT.

SILL PLATE - 2x6 TREATED SILL PLATE WITH 1/2" DIA. ANCHOR BOLTS 12" LONG, SET MIN. 4" INTO CONCRETE AND SPACED AT 6' O.C MAX. PROVIDE CAPILLARY BREAK BETWEEN SILL PLATE AND CONCRETE, 6 mil POLY OR EQUAL.

ANCHOR BOLTS - PROVIDE 1/2" DIA. ANCHOR BOLTS 12" LONG, SET MIN. 4" INTO CONCRETE SPACED AT 6' O.C. MAX. TWO BOLTS MIN. PER PLATE SECTION WITH ONE BOLT LOCATED NOT MORE THAN 12" OR LESS THAN SEVEN BOLT DIAMETERS FROM EACH END OF THE PLATE SECTION.

BEARING STUD PARTITION - 2x6 STUDS AT 24" O.C.

STEEL COLUMN - 3" DIA. HSS ON 3'-0" x 3'-0" x 12" CONCRETE PAD W/ (4) #5 REBAR EACH WAY.

CONCRETE SLAB - 4" CONCRETE SLAB WITH SAW-CUT CONTROL JOINTS SPACED AT 20' MAX. AND SAW-CUT COLUMN ISOLATION JOINTS.

BEAMS AND LINTELS - SUPPORT FULL WIDTH TO FOUNDATION.

### ARCHITECTURAL NOTES:

DRIP EDGE - PROVIDE 1" DRIP EDGE ON FLASHING OVER OPENINGS IN EXTERIOR WALLS.

WOOD PROTECTION - WOOD FRAMING MEMBERS THAT ARE NOT PRESSURE TREATED WITH A WOOD PRESERVATIVE AND WHICH ARE SUPPORTED ON CONCRETE IN CONTACT WITH THE GROUND SHALL BE SEPARATED FROM THE CONCRETE BY AT LEAST 6 mil POLY FILM OR EQUAL.

STAIR DIMENSIONS (ALL INTERIOR AND EXTERIOR STAIRS - REFER TO DRAWINGS FOR ACTUAL STAIR DIMENSIONS)
- MIN. RISE = 5"
- MAX. RISE = 8 1/4"
- MIN. RUN = 8 1/4"
- MAX. RUN = 1'-1 7/8"
- MIN. TREAD = 10"
- MAX. TREAD = 1'-1 7/8"
- MAX. NOSING = 1"
- MIN. HEADROOM = 6'-6"
- MIN. WIDTH = 2'-10"

HANDRAILS AND GUARDS
- MIN. HEIGHT = 2'-10" (HANDRAILS), 3'-0" (GUARDS)
- MAX. HEIGHT = 3'-2" (HANDRAILS)
- A CLEARANCE OF NOT LESS THAN 1 1/2" SHALL BE PROVIDED BETWEEN HANDRAIL AND ANY SURFACE BEHIND IT.

BEDROOM EGRESS - MIN. ONE WINDOW PER BEDROOM SHALL HAVE A MIN. NET CLEAR OPENING OF 5.7 SF, A MIN. NET CLEAR OPENING HEIGHT OF 24", A MIN. NET CLEAR OPENING WIDTH OF 20", AND A SILL HEIGHT OF NOT MORE THAN 44" FROM THE FLOOR UNLESS OTHERWISE SPECIFIED IN WINDOW SPECIFICATION (NOT APPLICABLE IF THERE IS A DOOR W/ DIRECT ACCESS TO THE EXTERIOR ON THAT LEVEL).

INTERIOR DOORS - UNDERCUT ALL DOORS 3/4" MIN.

COAT CLOSETS - (1) ROD AND (1) SHELF MIN.

LINEN CLOSETS - (4) SHELVES MIN. AND 1'-2" DEEP MIN.

MINIMUM HEADROOM - 6'-5" BELOW ALL BEAMS AND DUCTS.

ACCESS HATCH - PLYWOOD WITH AIR SEAL GASKET AND LATCH.

### MECHANICAL, ELECTRICAL, AND PLUMBING NOTES:

EXHAUST FANS - VENT TO EXTERIOR.

RANGE HOODS - VENT TO EXTERIOR W/ NON-COMBUSTIBLE DUCT.

DRYER VENT - CAPPED AND SCREENED DRYER VENT, DUCTING INSTALLED TO SLOPE TO EXTERIOR.

SMOKE DETECTORS - LOCATE ON EACH FLOOR LEVEL AND INTERCONNECT.

CARBON MONOXIDE DETECTORS - LOCATE IN EACH BEDROOM.

## CONSTRUCTION ASSEMBLIES

CONSTRUCTION SHALL CONFORM TO BUILDING AMERICA SPECIFICATIONS (UNITED STATES DEPARTMENT OF ENERGY) AND ASSEMBLIES AS LISTED BELOW:

FOUNDATION WALLS - FOUNDATION WILL BE A CONDITIONED BASEMENT. BASEMENT WALLS WILL BE CAST-IN-PLACE CONCRETE W/ TWO (2) LAYERS 2" RIGID FOIL-FACED POLYISOCYANURATE INSULATION (R-26) ON THE INSIDE FACE OF THE WALL RATED TO BE EXPOSED FOR FLAME SPREAD AND SMOKE DEVELOPED.

BASEMENT FLOOR - 4" CONCRETE SLAB OVER 6 MIL POLYETHYLENE VAPOR BARRIER OVER 2" XPS RIGID INSULATION OVER 4" CLEAN CRUSHED STONE PAD ON UNDISTURBED / NATIVE SOIL.

FRAME WALL CONSTRUCTION - EXTERIOR WALLS SHALL BE FRAMED WITH 2X6 STUDS AT 24" O.C. CAVITY SHALL BE INSULATED WITH CELLULOSE TO R-19 (R-19 FIBERGLASS BATT IS A SUITABLE SUBSTITUTION). EXTERIOR WALLS SHALL BE SHEATHED WITH TWO (2) 2" LAYERS RIGID FOIL-FACED POLYISOCYANURATE SHEATHING (R-26). 1/2" OSB OR PLYWOOD (SEE DETAILS 2&3/A-11 FOR NAILING PATTERN) AND (1) LAYER 1 1/2" AND (1) LAYER 2" RIGID FOIL-FACED POLYISOCYANURATE SHEATHING SHALL BE INSTALLED AT THE CORNERS. USE FOIL ADHESIVE TAPE AT HORIZONTAL AND VERTICAL JOINTS AND CORNERS (UL 181 OR EQUAL) AT EXTERIOR FACE OF SHEATHING. 1x3 WOOD FURRING SHALL BE APPLIED ON TOP OF INSULATING SHEATHING AND BELOW CLADDING. SEE DETAIL 1a/A-12 FOR WOOD FURRING AND SIDING INSTALLATION.

ROOF CONSTRUCTION - ROOF SHALL BE FRAMED WITH 2X12 ROOF RAFTERS AT 24" O.C. RAFTERS SHALL BE INSULATED WITH CELLULOSE TO R-40 (R-40 FIBERGLASS BATT IS A SUITABLE SUBSTITUTION). ROOF TO BE SHEATHED WITH TWO (2) LAYERS 2" FOIL-FACED POLYISOCYANURATE (R-26). 1/2" OSB OR PLYWOOD SHEATHING TO BE INSTALLED BOTH ABOVE AND BELOW RIGID FOAM INSULATION. SELF-ADHERED ROOF MEMBRANE TO BE INSTALLED CONTINUOUSLY ON LOWER LAYER OF SHEATHING. GWB TO BE INSTALLED CONTINUOUSLY BELOW RAFTERS. SELF-ADHERED ROOF MEMBRANE SHALL BE INSTALLED AT THE ROOF PERIMETER ON UPPER LAYER OF SHEATHING. MEMBRANE SHALL EXTEND FROM THE EDGE OF THE ROOF TO 2' IN HORIZONTALLY FROM THE EXTERIOR WALL FACE.

INTERIOR NON-LOAD BEARING PARTITION CONSTRUCTION - 2X4 STUDS AT 24" O.C. WITH ONE (1) LAYER 1/2" GWB EACH SIDE.

TYP. FLOOR CONSTRUCTION - ¾" T&G SUBFLOOR ON TOP OF ENGINEERED FLOOR JOIST AT 24" O.C. WITH ONE (1) LAYER 1/2" GWB BELOW JOIST.

### DOOR SPECIFICATION

A. EXTERIOR ENTRY DOORS:
1. INSULATED STEEL AND WEATHERSTRIPPED
2. OPEN FROM INSIDE WITHOUT KEY
3. PROVIDE VIEWER UNLESS TRANSPARENT GLASS IS PROVIDED IN DOOR OR SIDELITE

B. INTERIOR DOORS:
1. HOLLOW CORE

### WINDOW SPECIFICATION

ALL WINDOWS SHALL BE SPECTRALLY SELECTIVE LOW-E DOUBLE GLAZED VINYL FRAMED WITH THE FOLLOWING PERFORMANCE VALUES FROM THE NATIONAL FENESTRATION RATING COUNCIL (NFRC):

CLIMATE ZONE 5:
U-VALUE = 0.33 OR LESS
SOLAR HEAT GAIN COEFFICIENT (SHGC) = 0.30 OR LESS

1. CONFIRM R.O. SIZES WITH WINDOW MANUFACTURER AND ADJUST WALL FRAMING ACCORDINGLY.

2. SEE 4/A-13 FOR WINDOW INSTALLATION DETAILS.

3. 21052 DOUBLE HUNG WINDOW MUST MEET MA BUILDING CODE (780 CMR) SECTION 5310 REQUIREMENTS FOR EMERGENCY ESCAPE AND RESCUE OPENINGS.

### PRODUCT SPECIFICATION

| | Product Type | Specified Product |
|---|---|---|
| A | Adhesive | |
| | Construction Adhesive | Polyseamseal All Purpose Adhesive Caulk, PL 200® Construction Adhesive or Equal |
| | Foam-Compatible Construction Adhesive | Liquid Nails Foamboard & Projects Adhesive (LN-604), PL 300® Foam Board Adhesive or Equal |
| B | Backer Board | |
| | Cement Backer Board | USG Durock, WonderBoard Cement Backerboard or Equal |
| | Fiber Cement Backer Board | James Hardie HardieBacker Cement Board or Equal |
| C | Capillary Break (Footing-Liquid Applied) | W.R. Meadows SEALMASTIC Emulsion-Type or Solvent-Type Dampproofing or Equal |
| | Capillary Break (Sill) | |
| | Polyethylene | 6 mil Polyethylene or Equal |
| | Foam | Dow Styrofoam Sill Seal, Owens Corning FoamSealR or Equal |
| | Cellulose Insulation (Borate-Treated Product Only) | |
| | Damp Sprayed | US GreenFiber INS735 Cocoon2 Stabilized Borate Formula-30 lbs. or Equal |
| | Loose Blown | US GreenFiber INS735 Cocoon2 Stabilized Borate Formula-30 lbs. or Equal |
| | Cladding Vent | Cor-A-Vent Siding Vent SV-3/5 or Equal |
| D | Dampproofing (Liquid Applied Bituminous) | W.R. Meadows SEALMASTIC Emulsion-Type or Solvent-Type Dampproofing or Equal |
| E | Expanding Polyurethane Foam Sealant | |
| | High Expansion | Dow Great Stuff Big Gap Filler or Equal |
| | Low Expansion | Dow Great Stuff Window & Door or Equal |
| | Extruded Polystyrene Foam (XPS) | Dow Styrofoam or Owens Corning Foamular |
| F | Filter Fabric | DuPont Landscape PRO Professional Grade Landscape Fabric or Equal |
| | Flashing | |
| | Metal Flashing | York Manufacturing Soleil® Copper-Aluminum Flashing or Equal |
| | Pre-Manufactured Sill Pan Flashing | Dow Weathermate Sill Pan or Equal |
| | Self Adhered Flashing | |
| | Formable Flashing | DuPont FlexWrap, Dow Weathermate Flexible Flashing or Equal |
| | Straight Flashing | W.R. Grace Vycor Plus, DuPont StraightFlash, Dow Weathermate Straight Flashing or Equal |
| | Fiberglass Insulation | |
| | Batts | Owens Corning PINK FIBERGLAS® Unfaced, Johns Manville Formaldehyde-free™batts Unfaced, Certainteed High-Performance Batts Unfaced |
| | Loose Fill | Owens Corning PINK FIBERGLAS®, Johns Manville Formaldehyde-free™ Climate Pro®/Attic Protector®, Certainteed InsulSafe® or Equal |
| | Foundation Drainage Mat | Cosella-Dorken Delta-MS, System Platon or Equal |
| | Fully-Adhered Waterproofing Membrane | W.R. Grace Ice and Water Shield or Equal |
| G | Gypsum Wall Board (GWB) | |
| | Paper Faced Gypsum Wall Board (GWB) | Sheetrock Brand Gypsum Panels or Equal |
| | Paperless Gypsum Wall Board (PGWB) | Georgia Pacific DensArmor Plus |
| H | Housewrap (Non-Micro Perforated Plastic) | |
| | Draining Housewrap | DuPont Tyvek Drainwrap |
| | Housewrap | DuPont Tyvek Homewrap, Fiberweb Typar HouseWrap, Dow Weathermate Plus, Johns Manville Gorilla Wrap, Fortifiber WeatherSmart |
| K | Kick-Out Diverter | Berger Kick-Out Diverter or Equal |
| R | Ridge Vent | Cor-A-Vent X-5 Extreme Ridge Vent, Trim Line Ridge Vents or Equal |
| | Rigid Polyisocyanurate | |
| | Foil Faced | Dow Tuff-R or Thermax |
| | Glass Fiber Faced | Dow Quik-R or Equal |
| S | Sealant | |
| | Air-Barrier Sealant | Tremco Acoustical Sealant or Equal |
| | Paintable Sealant | Polyseamseal All Purpose Adhesive Caulk, Sashco Sealants Big Stretch, Geocel ProCOLOR™ Tripolymer Sealant or Equal |
| | Urethane Sealant | Bostik Chem-Calk 955-SL Polyurethane Sealant or Equal |
| | Spray Polyurethane Foam | |
| | Closed Cell Spray Foam | Demilec Heatlok 2lbs/cubic foot or Equal |
| | Open Cell Spray Foam | Icynene 0.5 lbs/cubic foot or Equal |
| T | Tape | |
| | Builder's Sheathing Tape | Tyvek Tape, Dow Weathermate Construction Tape, 3M Contractor's Tape or Equal |
| | Foil Tape | 3M Aluminum Foil Tape 1449 or Equal |
| | Thin Profile Sheathing | Thermoply or Equal |

### DOOR SCHEDULE

| SIZE | TYPE | QUANTITY |
|---|---|---|
| 3068 | EXTERIOR | 1 |
| 2868 | EXTERIOR | 1 |
| 2668 | INTERIOR | 8 |
| 2068 | INTERIOR | 9 |

### WINDOW SCHEDULE

| SIZE | TYPE | QUANTITY |
|---|---|---|
| 210210 | DOUBLE HUNG | 4 |
| 21052 | DOUBLE HUNG | 11 |
| 4040 | SLIDING | 2 |

Building America

CONSTRUCTION DOCUMENTS 01/08/09

PROJECT:
BUILDING SCIENCE CORPORATION
70 MAIN STREET WESTFORD, MASSACHUSETTS 01886 PH: 978-589-5100

HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

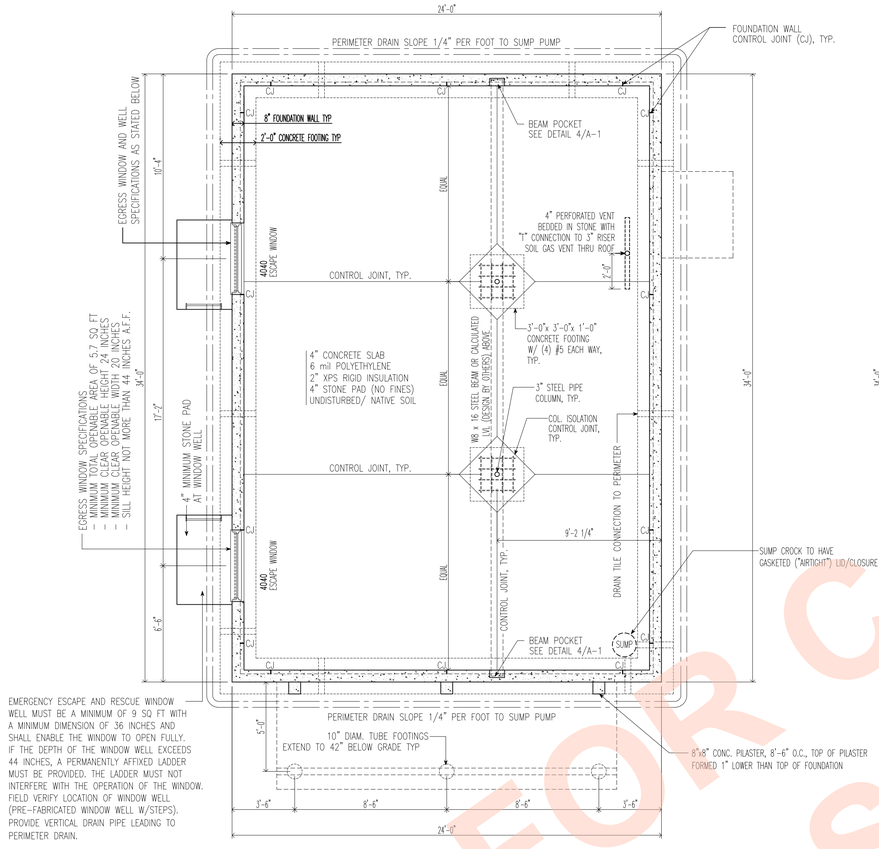
Notes, Assemblies & Specifications

SCALE AS NOTED



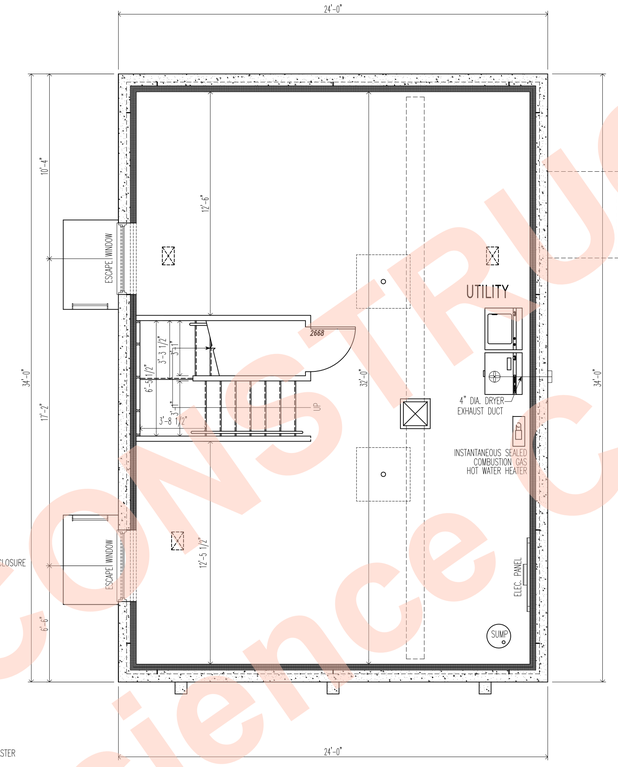
N-1

FILE: MA Westford Plan 1.dwg

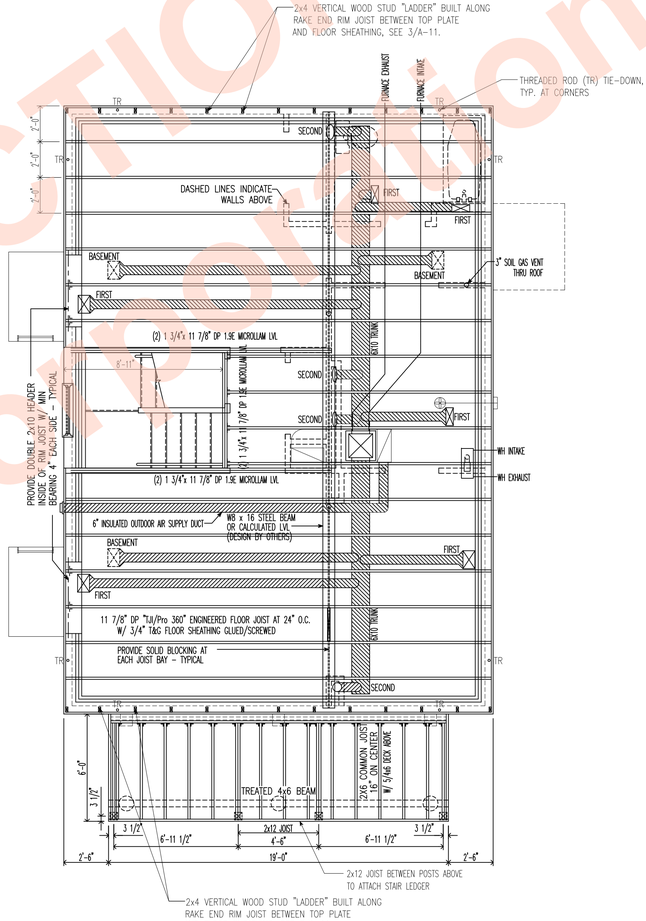



EMERGENCY ESCAPE AND RESCUE WINDOW WELL MUST BE A MINIMUM OF 9 SQ FT WITH A MINIMUM DIMENSION OF 36 INCHES AND SHALL ENABLE THE WINDOW TO OPEN FULLY. IF THE DEPTH OF THE WINDOW WELL EXCEEDS 44 INCHES, A PERMANENTLY AFFIXED LADDER MUST BE PROVIDED. THE LADDER MUST NOT INTERFERE WITH THE OPERATION OF THE WINDOW. FIELD VERIFY LOCATION OF WINDOW WELL (PRE-FABRICATED WINDOW WELL W/STEPS). PROVIDE VERTICAL DRAIN PIPE LEADING TO PERIMETER DRAIN.

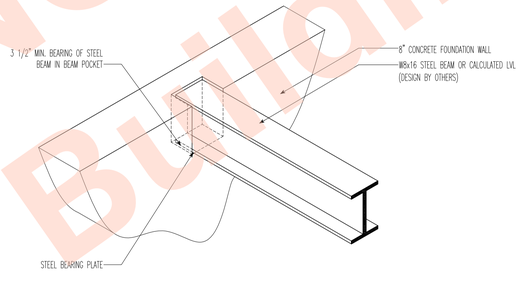
## 1 | FOUNDATION PLAN
SCALE 1/4" = 1'-0"




## 2 | BASEMENT PLAN
SCALE 1/4" = 1'-0"




## 3 | FIRST FLOOR FRAMING PLAN & DUCT LAYOUT
SCALE 1/4" = 1'-0"




## 4 | BEAM POCKET DETAIL
SCALE 1" = 1'-0"



CONSTRUCTION DOCUMENTS 01/08/09

ARCHITECT:
BUILDING SCIENCE CORPORATION
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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

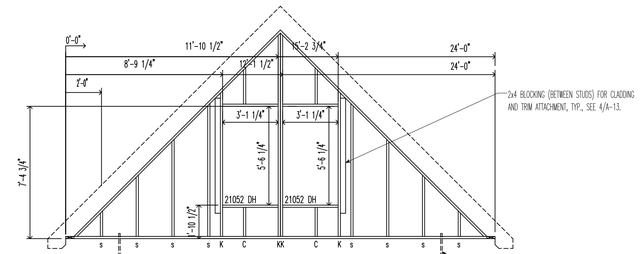
Foundation Plan, Basement Plan, First Floor Framing Plan & Duct Layout & Details

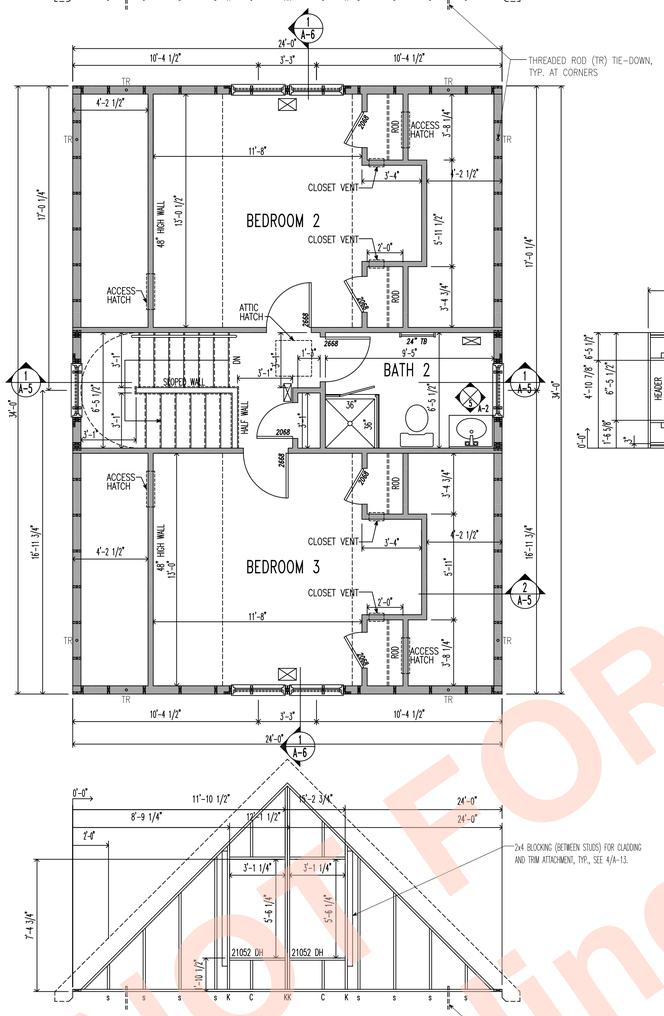
SCALE AS NOTED

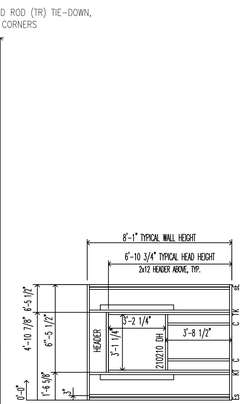


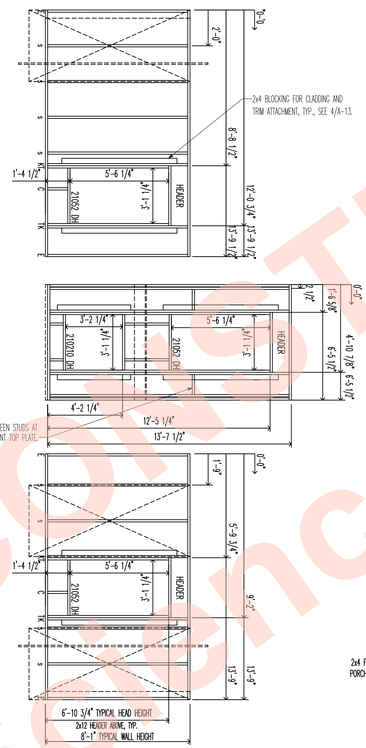
A-1

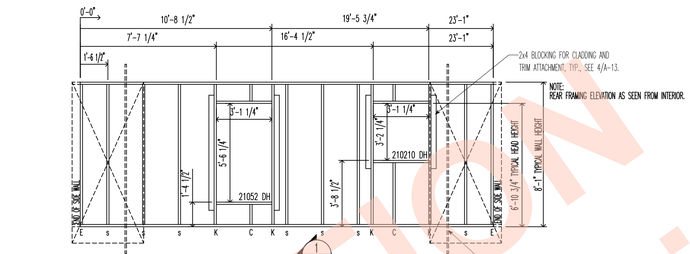
FILE: MA Westford Plan 1.dwg

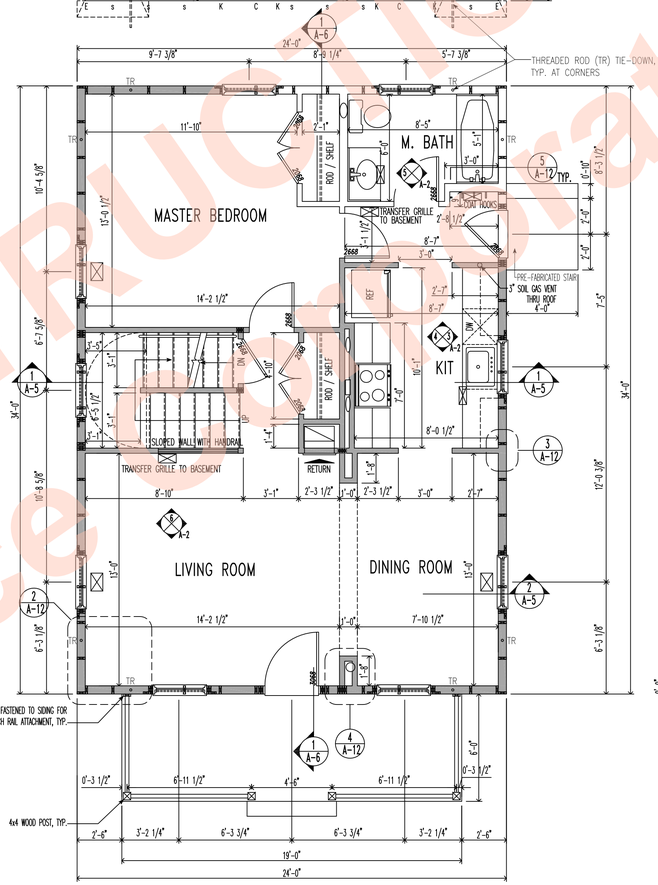


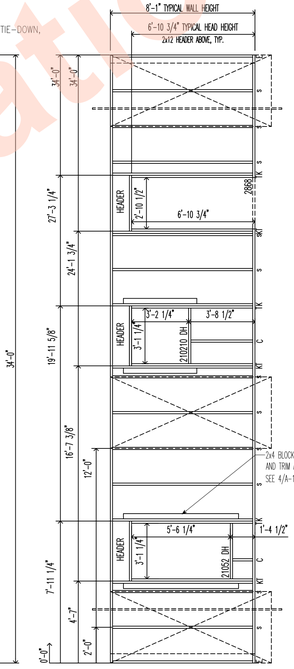



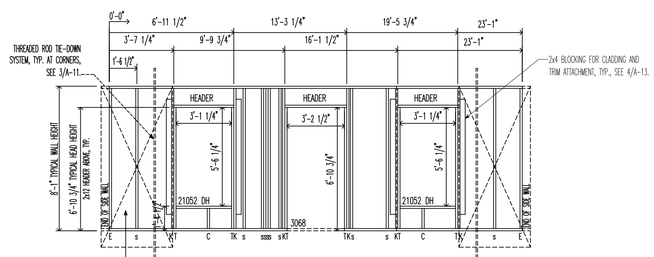




1 | FIRST FLOOR PLAN & WALL FRAMING ELEVATIONS
SCALE 1/4" = 1'-0"

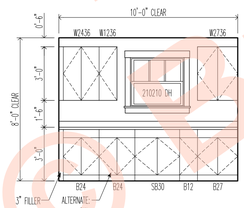



2 | SECOND FLOOR PLAN & WALL FRAMING ELEVATIONS
SCALE 1/4" = 1'-0"

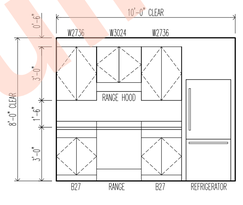
NOTE:

1. WINDOW OPENINGS IN WALL FRAMING ELEVATIONS ARE BASED ON SILVERLINE WINDOWS SERIES 1401 VINYL DOUBLE HUNG WINDOWS ALONG WITH SPECIFIC WINDOW INSTALLATION DETAILS – SEE SHEET A-13.

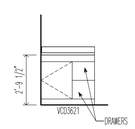
2. IF WINDOWS OTHER THAN THOSE STATED ABOVE ARE TO BE USED, WALL FRAMING MUST BE ADJUSTED ACCORDINGLY. ADD 1" TO MANUFACTURER'S SPECIFIED ROUGH OPENING WIDTH AND HEIGHT TO ACCOUNT FOR ½" PLYWOOD BOX DETAIL – SEE SHEET A-13.



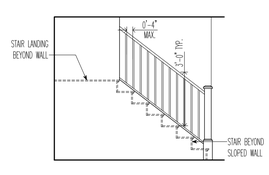

3 | KITCHEN ELEVATION
SCALE 1/4" = 1'-0"




4 | KITCHEN ELEVATION
SCALE 1/4" = 1'-0"




5 | VANITY ELEVATION
SCALE 1/4" = 1'-0"




6 | SLOPED WALL ELEVATION
SCALE 1/4" = 1'-0"



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HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

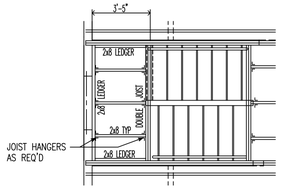
First & Second Floor Plans, Wall Framing Elevations & Interior Elevations

SCALE: AS NOTED

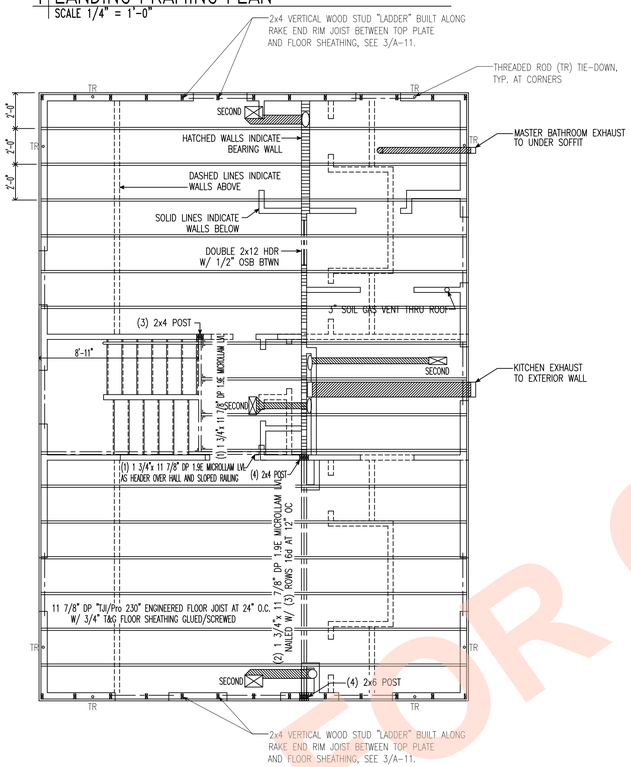


A-2

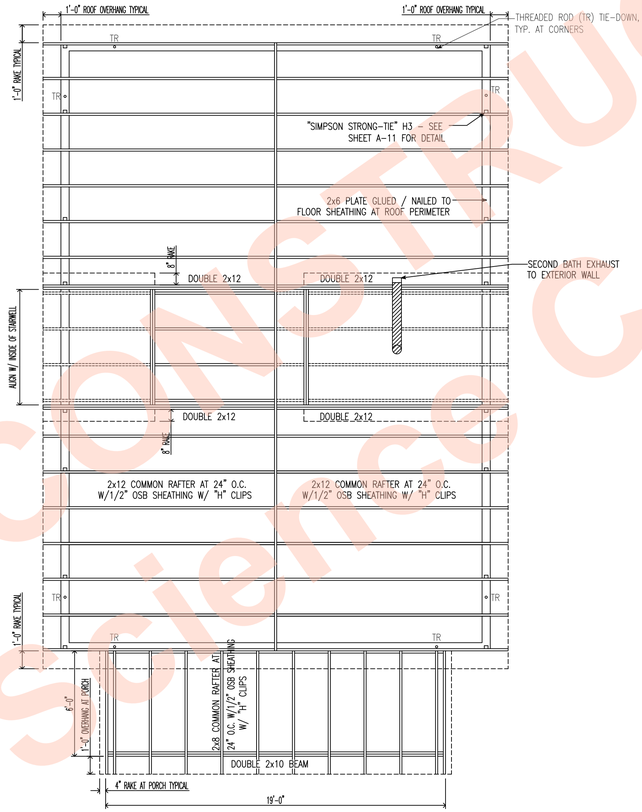
FILE: MA Westford Plan 1.dwg



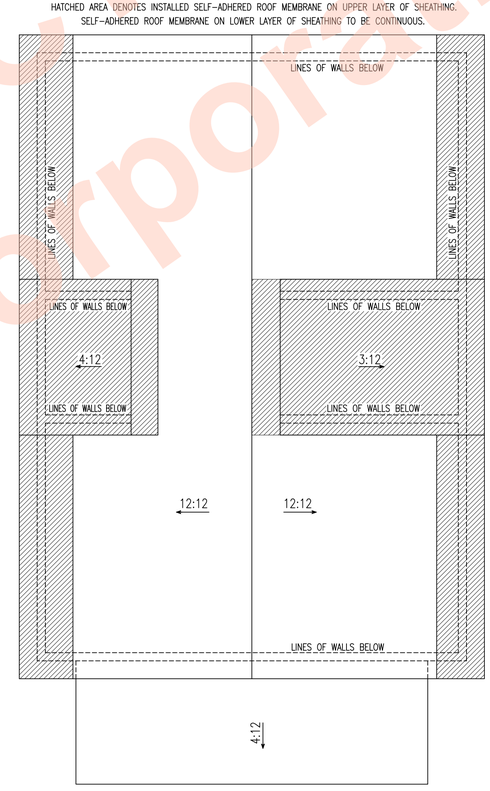

## 4 | LANDING FRAMING PLAN
SCALE 1/4" = 1'-0"




## 1 | SECOND FLOOR FRAMING PLAN & DUCT LAYOUT
SCALE 1/4" = 1'-0"




## 2 | ROOF FRAMING PLAN
SCALE 1/4" = 1'-0"




## 3 | ROOF PLAN
SCALE 1/4" = 1'-0"



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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

Second Floor Framing Plan & Duct Layout, Roof Framing Plan, Roof Plan & Landing Framing Plan
SCALE AS NOTED



A-3

FILE: MA Westford Plan 1.dwg

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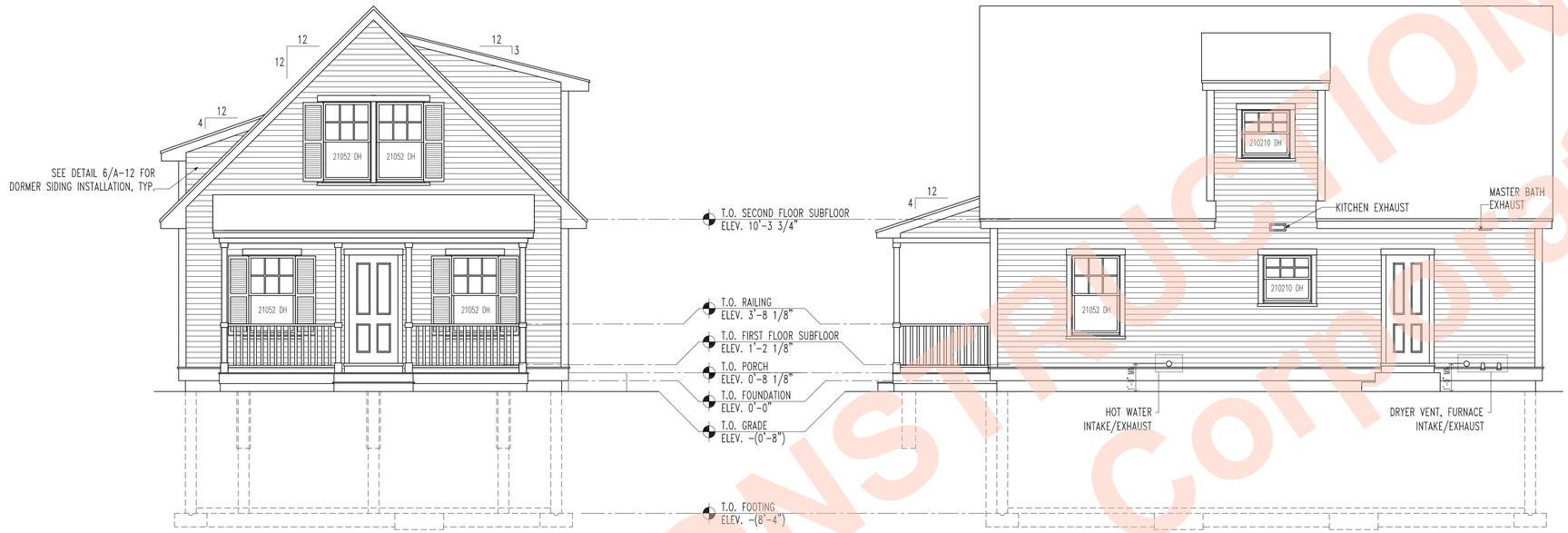
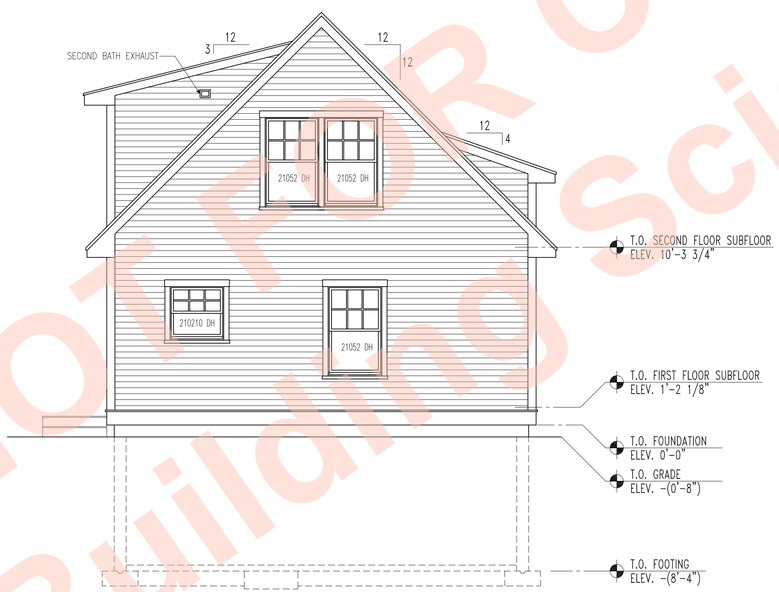



1 | FRONT ELEVATION
SCALE 1/4" = 1'-0"

2 | RIGHT SIDE ELEVATION
SCALE 1/4" = 1'-0"




3 | REAR ELEVATION
SCALE 1/4" = 1'-0"


4 | LEFT SIDE ELEVATION
SCALE 1/4" = 1'-0"



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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

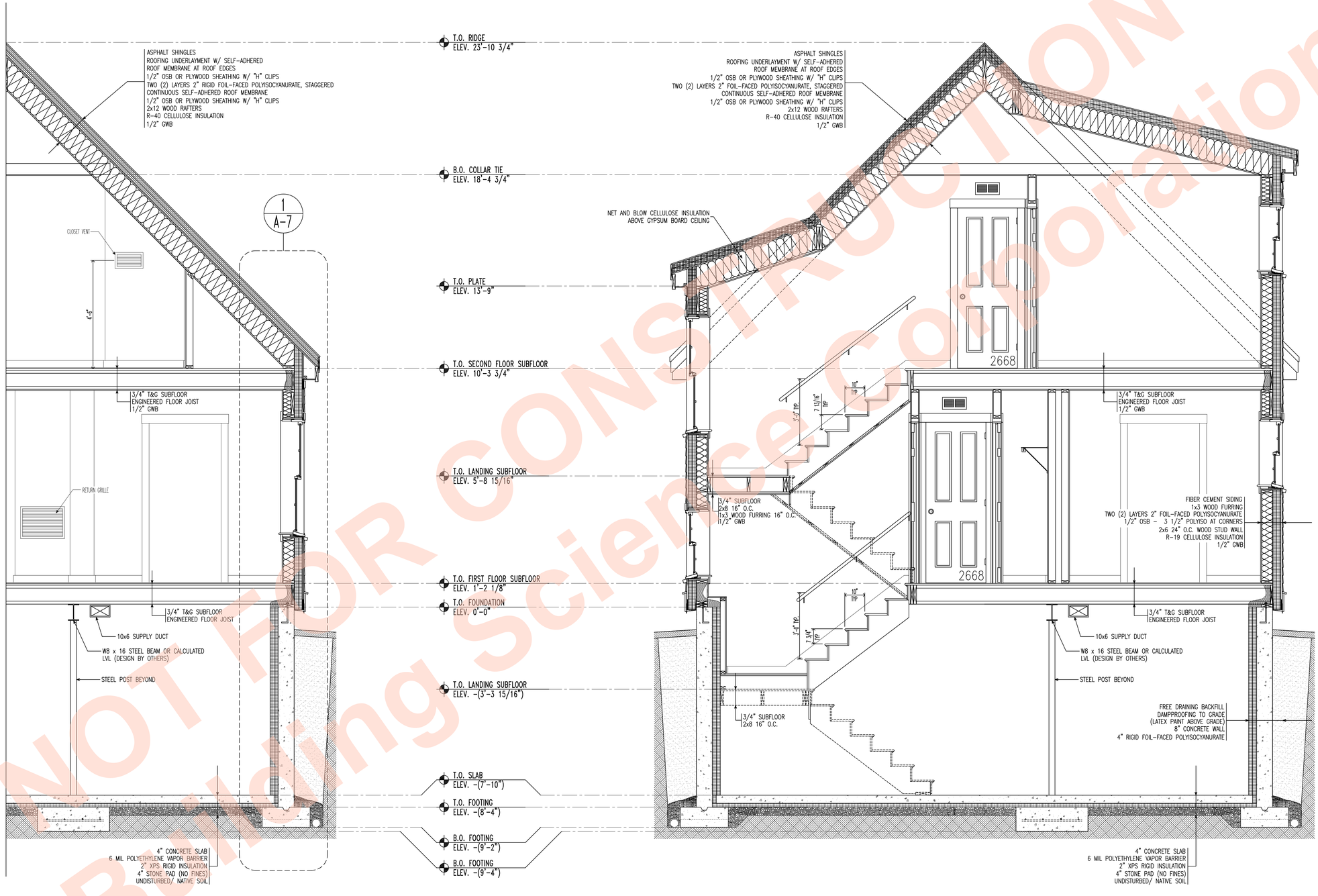
Building Elevations

SCALE AS NOTED



A-4

FILE: MA Westford Plan 1.dwg




2 | BUILDING SECTION
SCALE 1/2" = 1'-0"

1 | BUILDING SECTION
SCALE 1/2" = 1'-0"



CONSTRUCTION DOCUMENTS 01/08/09

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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

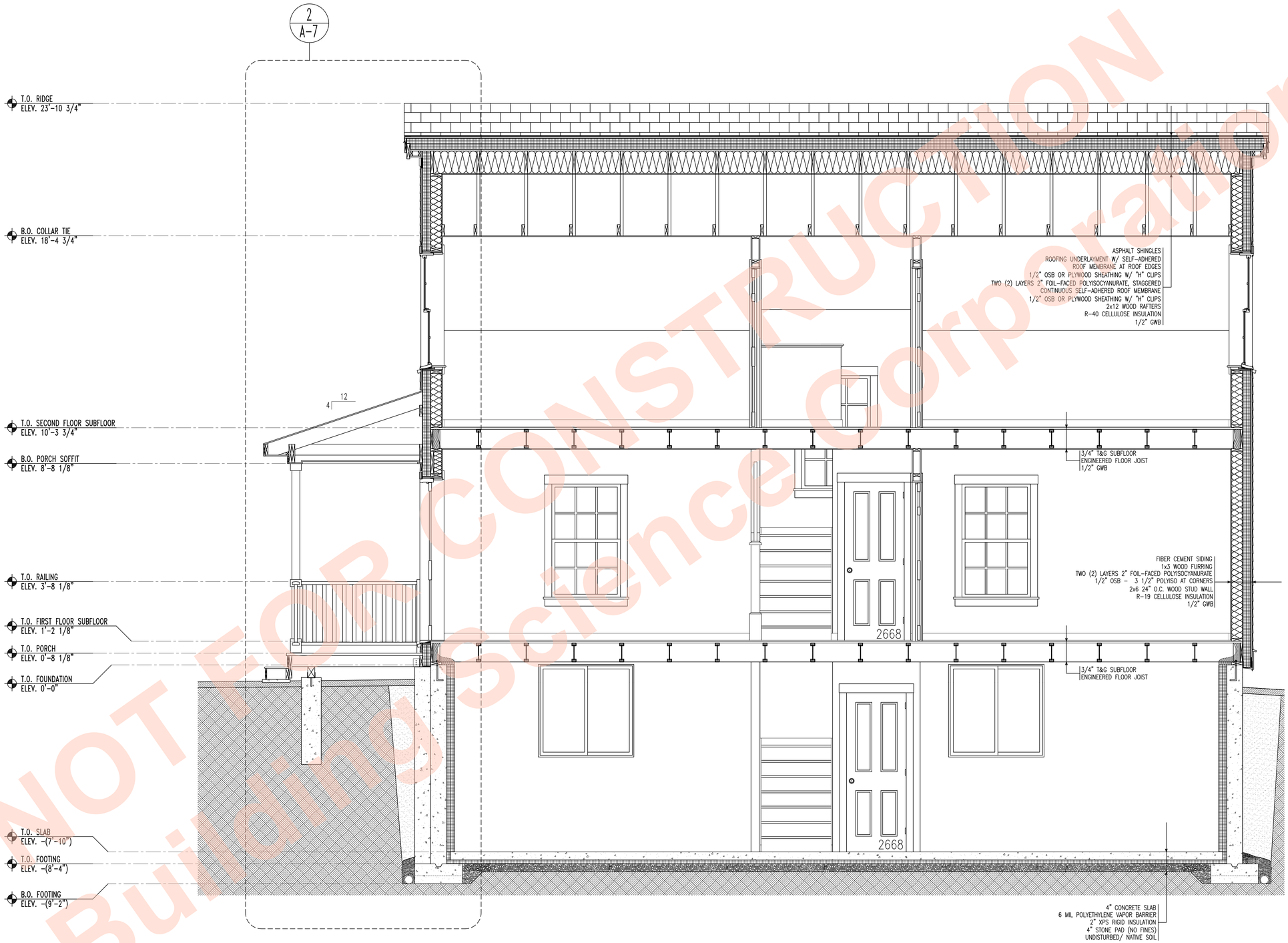
Building Sections

SCALE AS NOTED



A-5

FILE: MA Westford Plan 1.dwg




1 | BUILDING SECTION
SCALE 1/2" = 1'-0"



CONSTRUCTION DOCUMENTS 01/08/09

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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

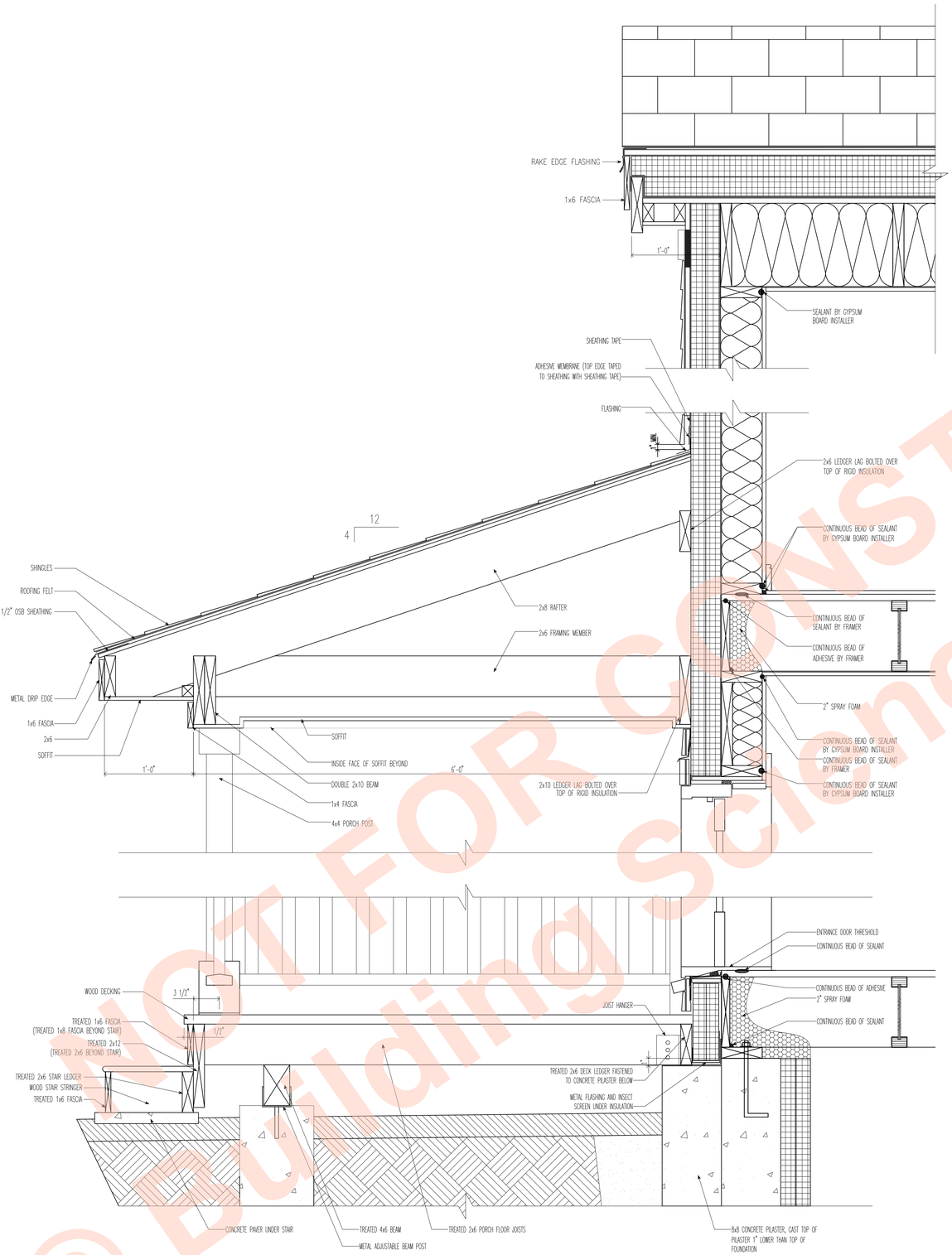
Building Section

SCALE AS NOTED

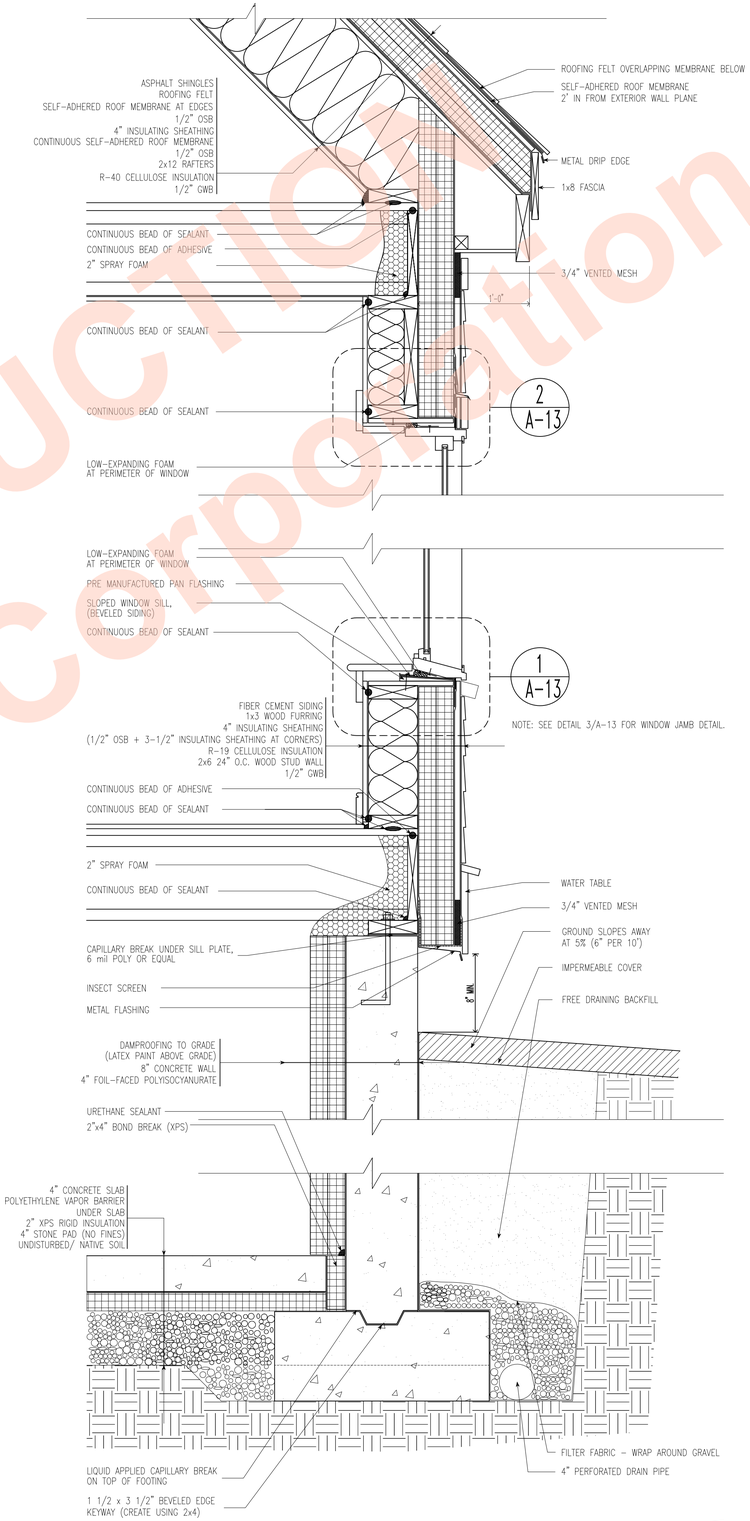


A-6

FILE: MA Westford Plan 1.dwg




## 2 | WALL SECTION
SCALE 1 1/2" = 1'-0"




## 1 | WALL SECTION
SCALE 1 1/2" = 1'-0"



CONSTRUCTION DOCUMENTS 01/08/09

BUILDING SCIENCE CORPORATION
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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

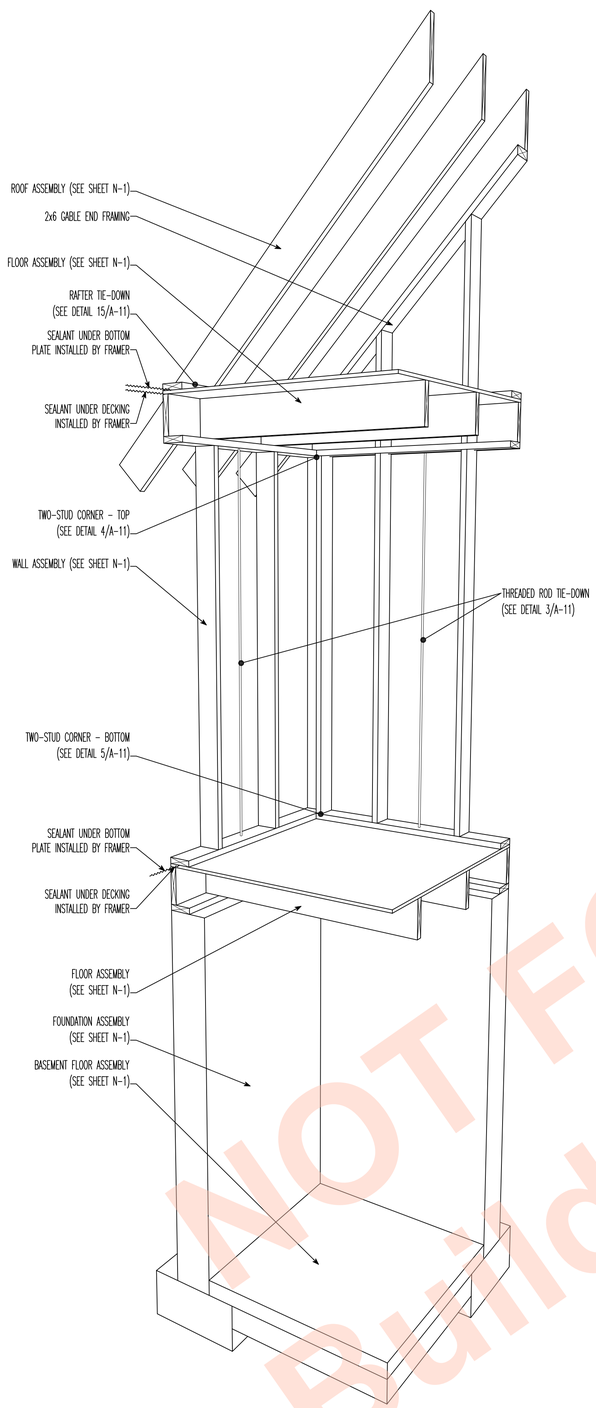
Wall Sections

SCALE AS NOTED

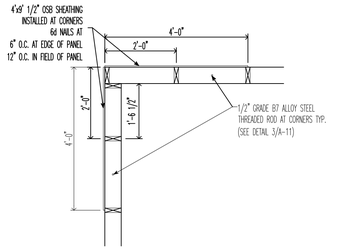


A-7

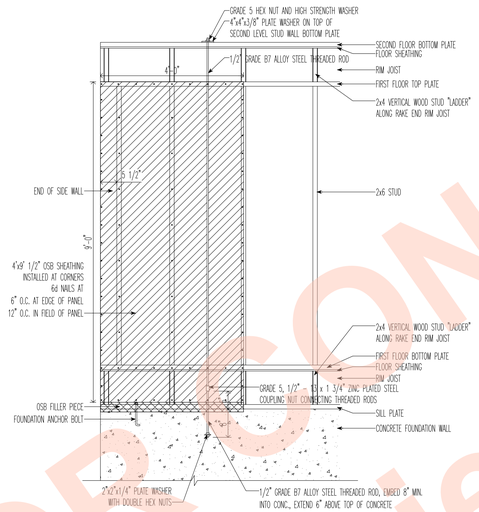
FILE: MA Westford Plan 1.dwg




1 | FRAMING OVERVIEW
N.T.S.




2 | TYPICAL CORNER FRAMING PLAN
N.T.S.



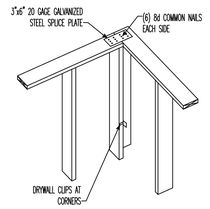

3 | TYPICAL CORNER FRAMING ELEVATION
N.T.S.

## ADVANCED FRAMING IRC 2003 REFERENCES

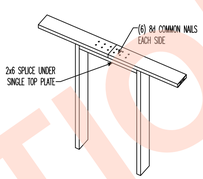
SINGLE TOP PLATE
– IRC 2000 and 2003, in Section R602.3.2 Top Plate: Exception: A single top plate may be installed in stud walls, provided that the plate is adequately tied at joints, corners, and intersecting walls by a minimum 3-inch-by-6-inch by 0.036 inch-thick (76 mm by 152 mm by 0.914 mm) galvanized steel plate that is nailed to each wall or segment of wall by six 8d nails on each side, provided that the rafters or joists are centered over the studs with a tolerance of no more than 1 inch (25.4 mm). The top plate may be omitted over lintels that are adequately tied to adjacent wall sections with steel plates or equivalent as previously described.
– IRC 2000 and 2003, in Figure 602.3(2): The figure label states "single or double top plate."
– IRC 2000 and 2003, in Section R602.5: Interior, nonbearing walls shall be permitted to be constructed with 2-inch-by-3-inch (51 mm by 76 mm) studs spaced 24 inches (610 mm) on center or, when not part of a braced wall line, 2-inch-by-4-inch (51 mm by 102 mm) flat studs spaced at 16 inches (406 mm) on center. Interior, nonbearing walls shall be capped with at least a single top plate. Interior, nonbearing walls shall be fireblocked in accordance with Section R602.8.
– IRC Table R602.3(1): For top or sole plate to stud (end nail), two 16d fasteners are required.

NO HEADERS IN NON-LOAD-BEARING WALLS
– IRC 2000 and 2003, Section R602.7.2: Nonbearing walls. Load-bearing headers are not required in interior or exterior nonbearing walls. A single, flat 2-inch-by-4-inch (51 mm by 102 mm) member may be used as a header in interior or exterior nonbearing walls for openings up to 8 feet (2438 mm) in width if the vertical distance to the parallel nailing surface above is not more than 24 inches (610 mm). For such nonbearing headers, no cripples or blocking is required above the header.
– IRC 2000 and 2003 Table R702.3.5 Minimum Thickness and Application of Gypsum Board: Allows the use of 24-inch-on-center framing for fastening gypsum board with either fasteners or adhesive 1/2 inch thickness or greater.
– IRC 2000 and 2003 Section R703 Exterior Covering: Structural sheathing and siding requirements are based on Table R703.4. Note that footnote "a" specifies that the table is based on 16 inches on center and that studs-spaced-24-inches-on-center siding shall be applied to sheathing approved for that spacing.
– IRC 2003 Section R602.10.2 Seismic Design Category D2: In Seismic Design Category D2, cripple walls shall be braced in accordance with Table R602.10.1.

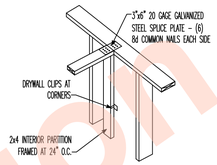
DRYWALL CLIPS
– IRC 2000 and 2003, Section R602.3 Design and Construction: Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF and PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). [Excerpt]
– IRC 2000 and 2003, Figure R602.3(2): Note: A third stud and/or partition intersection backing studs shall be permitted to be omitted through the use of wood back-up cleats, metal drywall clips, or other approved devices that will serve as adequate backing for the facing materials.



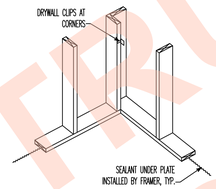

4 | TWO-STUD CORNER - TOP
N.T.S.



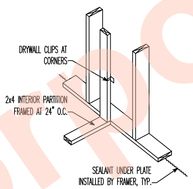

8 | SINGLE TOP PLATE SPLICE
N.T.S.



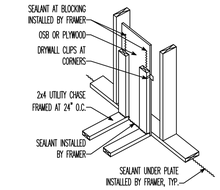

12 | SINGLE TOP PLATE AT PARTITION
N.T.S.



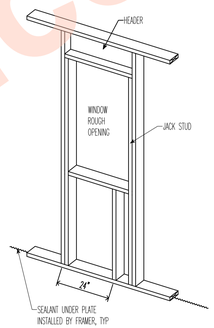

5 | TWO-STUD CORNER - BOTTOM
N.T.S.



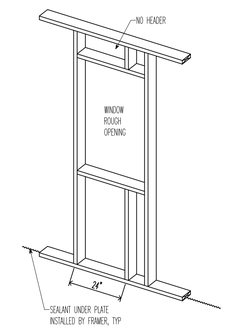

9 | BOTTOM PLATE AT PARTITION
N.T.S.



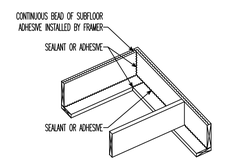

13 | AIR SEALING AT MECH CHASE
N.T.S.



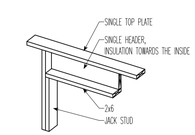

6 | LOAD-BEARING WALL OPENING
N.T.S.



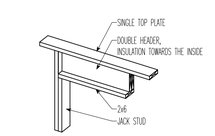

10 | NON-LOAD-BEARING WALL OPENING
N.T.S.



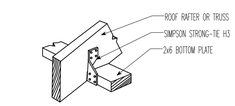

14 | RIM JOIST AIR SEALING
N.T.S.




7 | SINGLE HEADER
N.T.S.




11 | DOUBLE HEADER
N.T.S.




15 | ROOF-WALL FRAMING CONNECTION
N.T.S.

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CONSTRUCTION DOCUMENTS 01/08/09

ARCHITECT:
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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

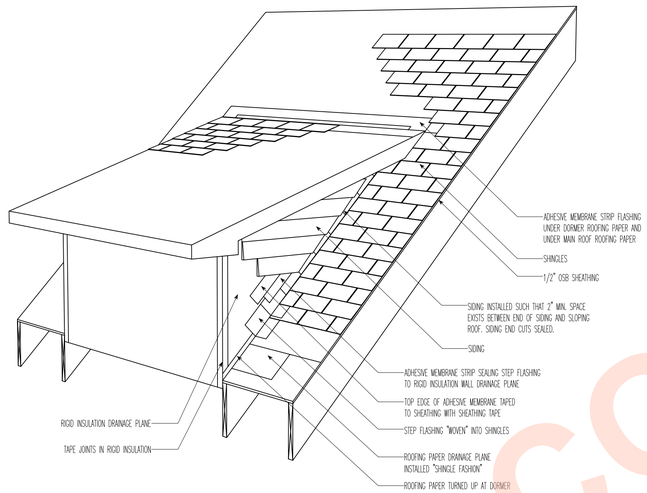
Advanced Framing Details

SCALE AS NOTED

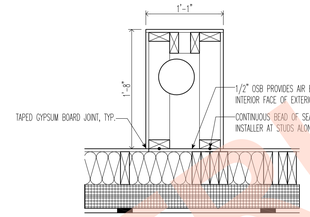


A-11

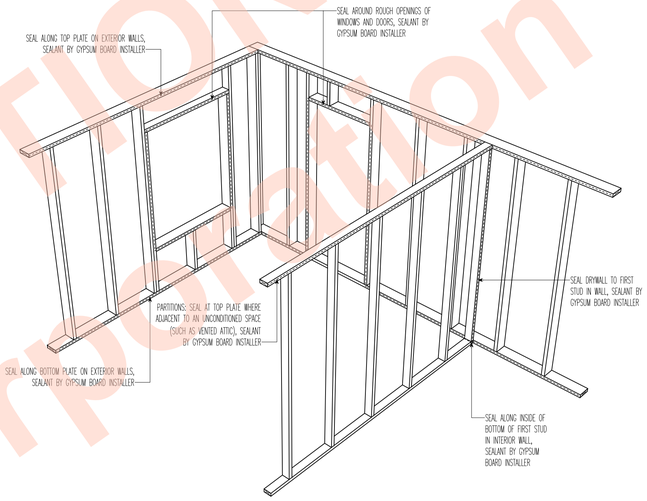
FILE: MA Westford Plan 1.dwg



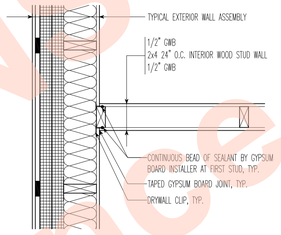

6 | DORMER SIDING INSTALLATION
SCALE N.T.S.



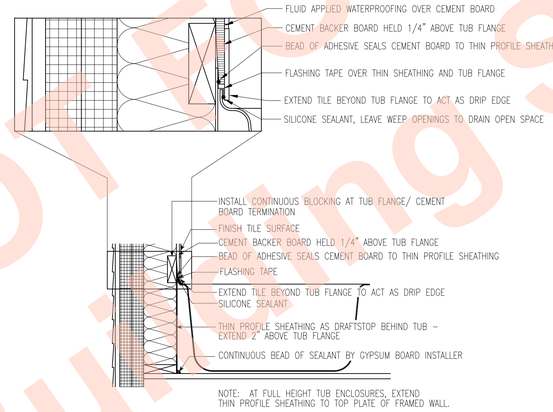

4 | MECHANICAL CHASE AT EXTERIOR WALL
SCALE 1" = 1'-0"



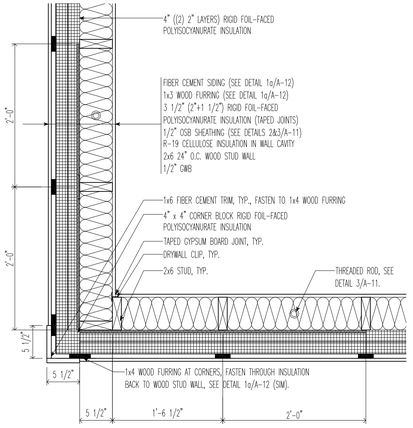

1b | AIR BARRIER AT WALLS AND CEILINGS PERSPECTIVE
SCALE N.T.S.



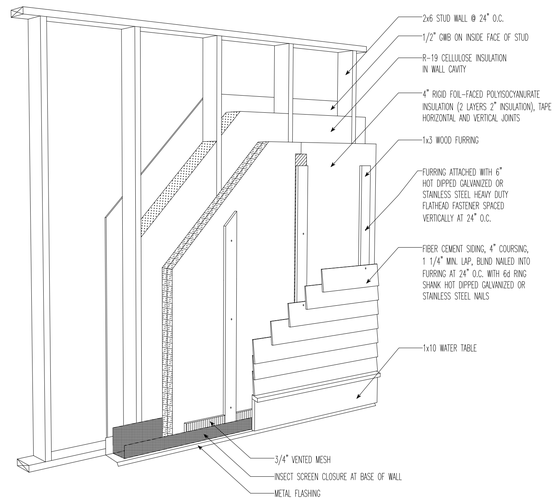

3 | INTERIOR WALL AT EXTERIOR WALL
SCALE 1" = 1'-0"




5 | EXTERIOR WALL AT BATHTUB / SHOWER
SCALE 1" = 1'-0"




2 | 2 STUD CORNER AT EXTERIOR WALL
SCALE 1" = 1'-0"




1a | ENCLOSURE ASSEMBLY
SCALE N.T.S.

Building America



CONSTRUCTION DOCUMENTS 01/08/09

ARCHITECT:
BUILDING SCIENCE CORPORATION
70 MAIN STREET WESTFORD, MASSACHUSETTS 01886 PH: 978-589-5100

PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

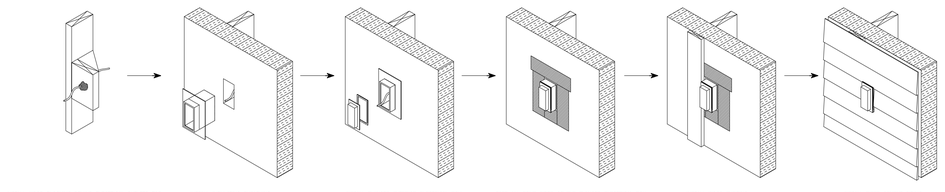
Enclosure Details

SCALE AS NOTED

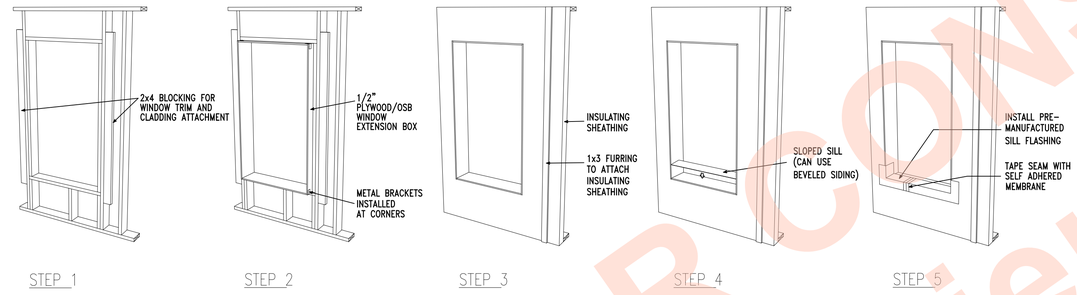


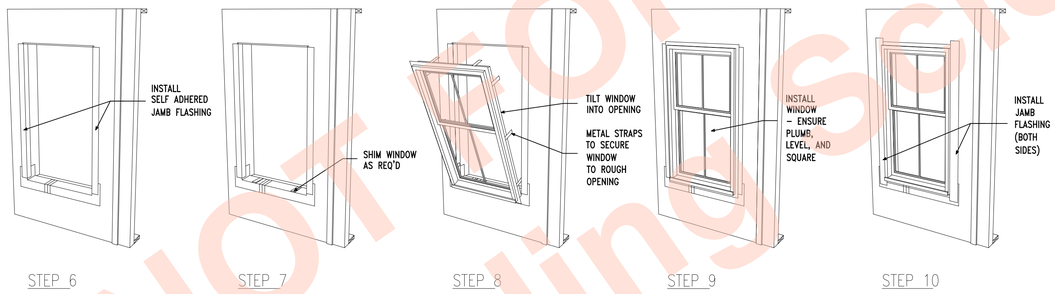
A-12

FILE: MA Westford Plan 1.dwg

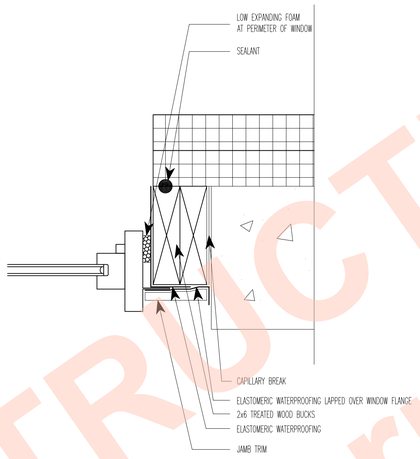



## 5 | MECHANICAL PENETRATION DETAILS
SCALE N.T.S.

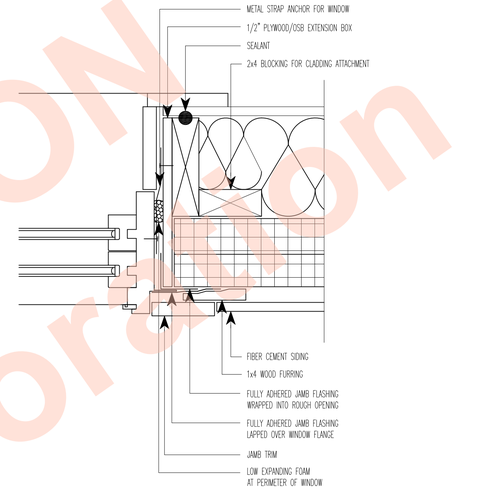


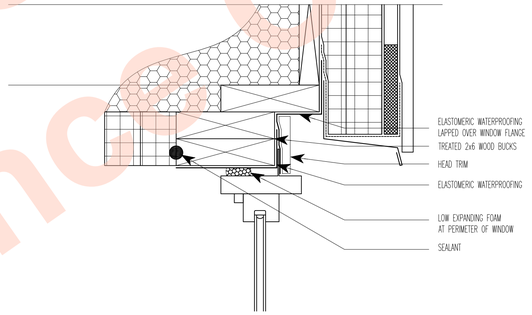

## 4 | WINDOW INSTALLATION DETAILS
SCALE N.T.S.



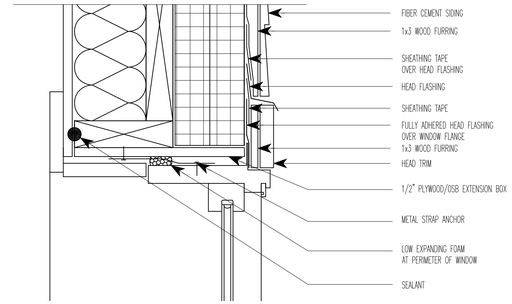

## 8 | BASEMENT WINDOW JAMB DETAIL
SCALE 3" = 1'-0"



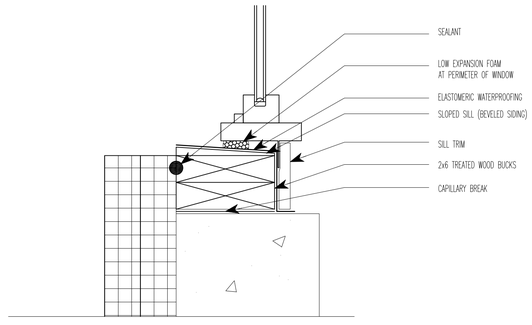

## 3 | WINDOW JAMB DETAIL
SCALE 3" = 1'-0"



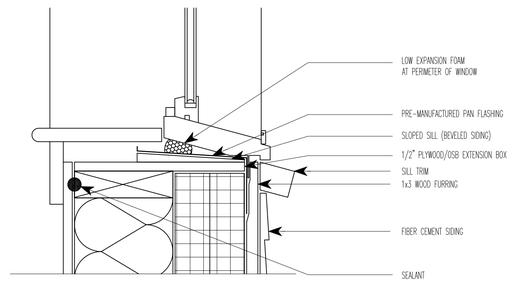

## 7 | BASEMENT WINDOW HEAD DETAIL
SCALE 3" = 1'-0"




## 2 | WINDOW HEAD DETAIL
SCALE 3" = 1'-0"




## 6 | BASEMENT WINDOW SILL DETAIL
SCALE 3" = 1'-0"




## 1 | WINDOW SILL DETAIL
SCALE 3" = 1'-0"

Building America



CONSTRUCTION DOCUMENTS 01/08/09

ARCHITECT:
BUILDING SCIENCE CORPORATION
70 MAIN STREET WESTFORD, MASSACHUSETTS 01886 PH: 978-589-5100

PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

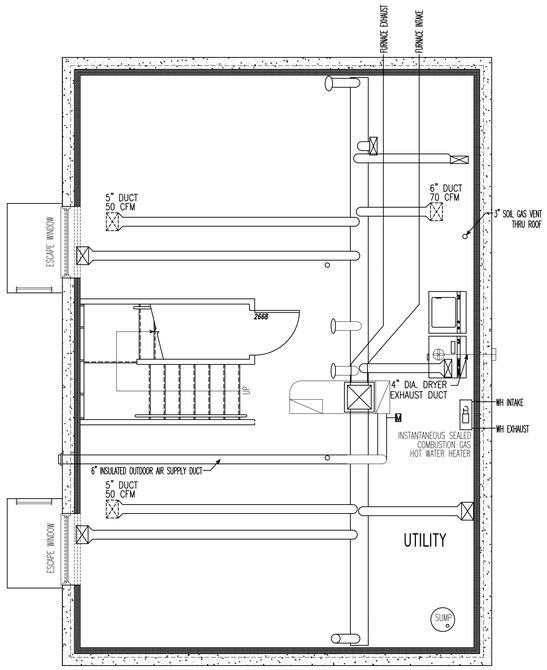
Window, Door & Mechanical Penetration Details

SCALE AS NOTED

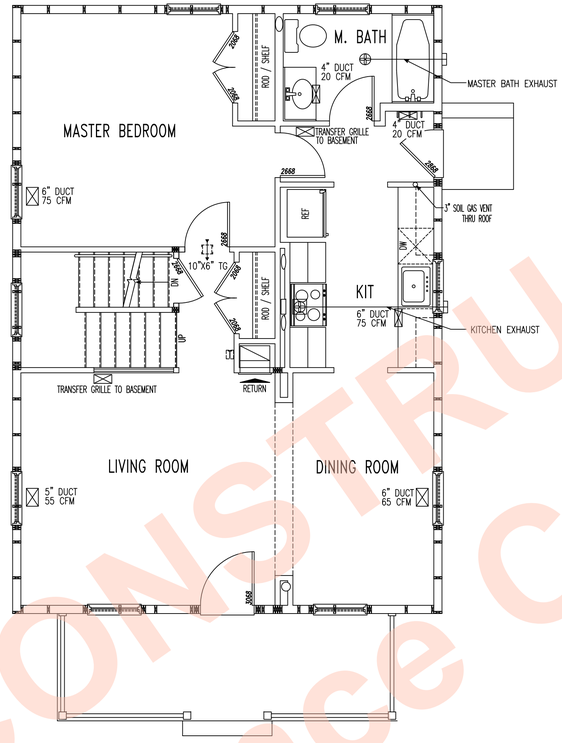


A-13

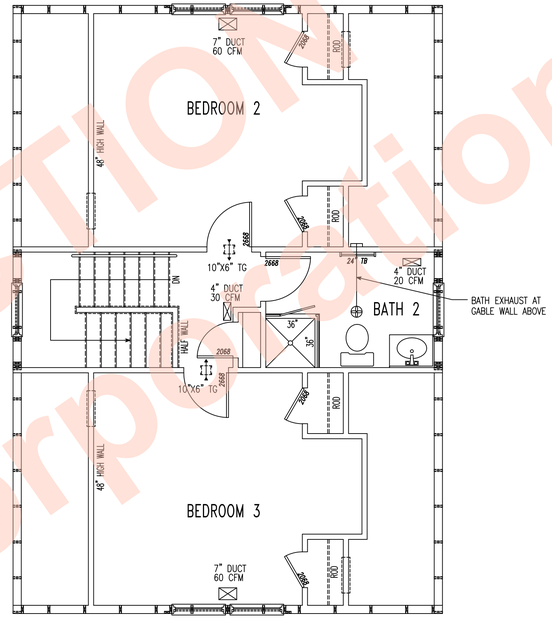
FILE: MA Westford Plan 1.dwg




## 1 | BASEMENT REGISTER FLOWS
SCALE 1/4" = 1'-0"




## 2 | FIRST FLOOR REGISTER FLOWS
SCALE 1/4" = 1'-0"



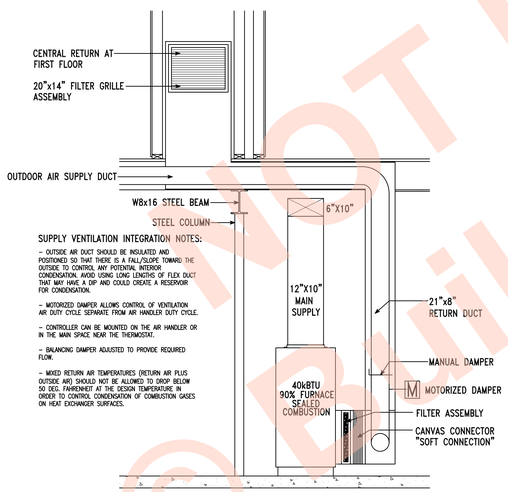

## 3 | SECOND FLOOR REGISTER FLOWS
SCALE 1/4" = 1'-0"

NOTES:

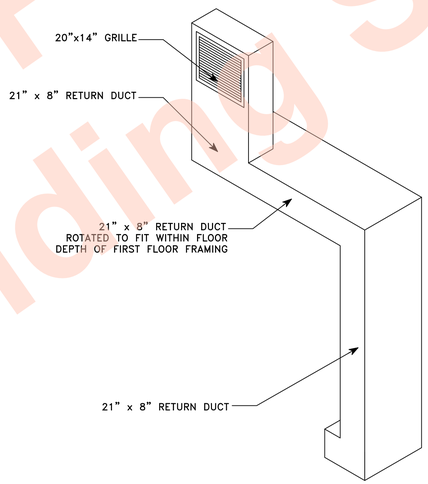
1. DUCTS ARE SIZED FOR COOLING TO ALLOW INSTALLATION OF A CONDENSER IF SPECIFIED. SEE EQUIPMENT INFORMATION FOR COOLING LOAD.
2. ALL DUCTS TO BE SEALED WITH MASTIC AND LOCATED IN CONDITIONED SPACE.
3. ALL REGISTERS TO BE ADJUSTABLE DIRECTIONAL MOUNTED WITH DAMPER. A MANUAL DAMPER TO BE LOCATED AT MAIN TRUNK JUNCTION TO CONTROL FLOW.
4. TRANSFER GRILLES TO BE PROVIDED FOR PRESSURE RELIEF / PRESSURE EQUALIZATION BETWEEN CLOSED ROOMS AND COMMON AREAS (SEE SHEET M-1).
5. DOORS TO BE UNDERCUT 3/4" BETWEEN TOP OF FINISH FLOOR AND UNDERSIDE OF DOOR.
6. AIR HANDLER TO BE LOCATED AND ACCESSED WITHIN INTERIOR CONDITIONED SPACE.
7. RETURN DUCT TO BE BUILT WITH A "SOFT" CONNECTION AND TWO OFFSET BENDS TO REDUCE SOUND AND VIBRATION.
8. A FILTER WITH A MERV 12 RATING TO BE INSTALLED AT THE AIR HANDLER.
9. OUTSIDE AIR TO BE PROVIDED TO RETURN SIDE OF SYSTEM WITH DAMPER CONTROL.
10. 6" DIAMETER INSULATED OUTSIDE AIR DUCT FROM EXTERIOR TO BE INSTALLED WITH A MANUAL DAMPER TO SET FLOW. APRILAIRE 6" MOTORIZED DAMPER TO BE INSTALLED DOWNSTREAM OF MANUAL DAMPER. APRILAIR VCS 8126 FAN CYCLER TO BE INSTALLED TO CONTROL MOTORIZED DAMPER. MOTORIZED DAMPER IS PROVIDED TO PREVENT EXCESS VENTILATION DURING PEAK LOAD USAGE. DAMPER SHUTS OFF DURING PEAK USE TO STOP OUTSIDE AIR FLOW TO RETURN FOR A PRESCRIBED AMOUNT OF TIME, THEREFORE PREVENTING OVERVENTILATION.

| LEGEND | |
|---|---|
| | SUPPLY REGISTER |
| | OVER DOOR TRANSFER GRILLES |
| | TOILET EXHAUST FAN, PANASONIC FV-05VFL1 |
| | KITCHEN EXHAUST FAN W/ LIGHT |
| T | THERMOSTAT SCI ERV-24 SUPER |
| M | MOTORIZED DAMPER FOR O.A. CONTROL |
| | MANUAL DAMPER |
| | RETURN AIR FLOW |

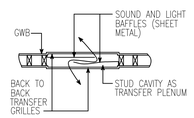
| EQUIPMENT INFORMATION | |
|---|---|
| FURNACE | 40.0 kBtu/hr |
| DESIGN HEATING LOAD | 19.3 kBtu/hr |
| DESIGN COOLING LOAD | 13.5 kBtu/hr |
| SYSTEM CFM | 655 CFM |
| MAIN SUPPLY TRUNK | 12"x10" |
| FRONT SUPPLY TRUNK | 6"x10" |
| REAR SUPPLY TRUNK | 6"x10" |
| RETURN TRUNK | 21"x8" |
| RETURN GRILLE | 20"x14" |
| SUPPLY TRUNK DESIGN VELOCITY | 750 FPM |
| RETURN TRUNK DESIGN VELOCITY | 550 FPM |
| RETURN GRILLE DESIGN VELOCITY | 350 FPM |

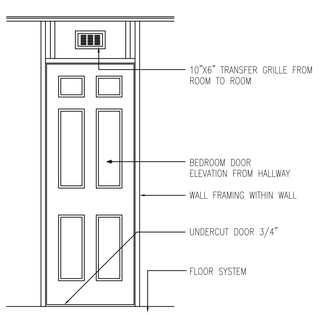



## 4 | AIR HANDLER DETAIL
SCALE 1/2" = 1'-0"

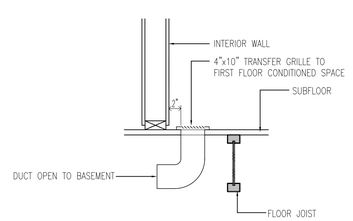



## 5 | RETURN DUCT ISOMETRIC
SCALE 1/2" = 1'-0"




## 6 | TRANSFER GRILLE OVER DOOR DETAIL
SCALE 1/2" = 1'-0"




## 7 | TRANSFER GRILLE TO BASEMENT DETAIL
SCALE 1" = 1'-0"

Building America



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PROJECT:
HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

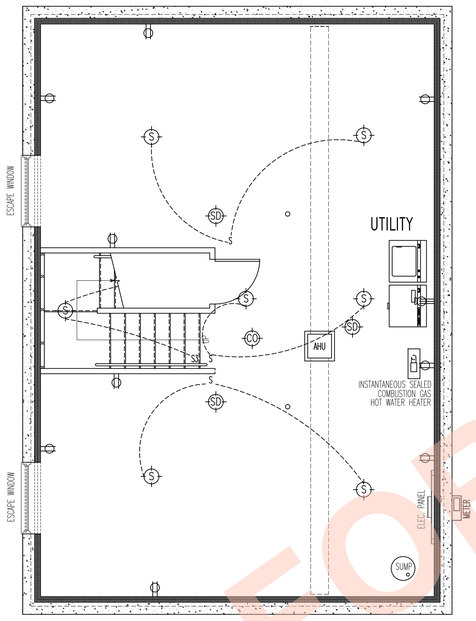
Register Flows, Notes & Details

SCALE AS NOTED

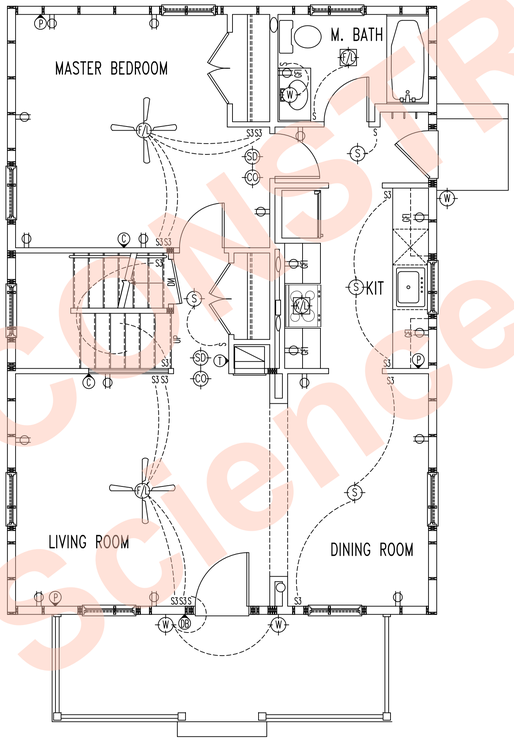


M-1

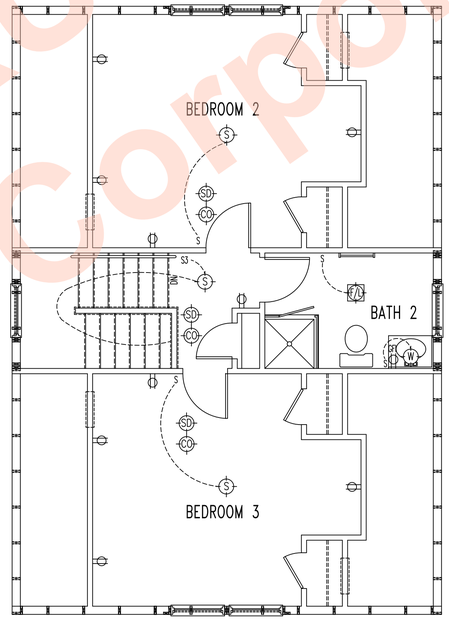
FILE: MA Westford Plan 1.dwg




1 | BASEMENT ELECTRICAL PLAN
SCALE 1/4" = 1'-0"




2 | FIRST FLOOR ELECTRICAL PLAN
SCALE 1/4" = 1'-0"




3 | SECOND FLOOR ELECTRICAL PLAN
SCALE 1/4" = 1'-0"

NOTES:

1. 20A 120V CIRCUIT TO AHU.
2. ALL WORK MUST COMPLY WITH MOST RECENT VERSION OF THE NATIONAL ELECTRIC CODE.

## ELECTRICAL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| S | SURFACE MOUNTED LIGHT FIXTURE |
| W | WALL MOUNTED LIGHT FIXTURE |
| D | DROPPED LIGHT FIXTURE |
| R | RECESSED LIGHT FIXTURE |
| RG | RECESSED LIGHT FIXTURE (AIRTIGHT) |
| RW | RECESSED LIGHT FIXTURE (WATERPROOF) |
| P | POLE LAMP (EXTERIOR-SITE) |
| F | FLOOD W/MOTION SENSOR |
| SD | SMOKE DETECTOR (INTERCONNECTED W/ BATTERY BACKUP) |
| CO | CARBON MONOXIDE DETECTOR (INTERCONNECTED W/ BATTERY BACKUP IF NEC.) |
| F | EXHAUST FAN |
| F/L | EXHAUST FAN / LIGHT COMBINATION |
| K/L | KITCHEN EXHAUST FAN / LIGHT COMBINATION |
| (24) | FLUORESCENT STRIP LIGHT (SINGLE) (LENGTH IN INCHES) |
| (24) | FLUORESCENT STRIP LIGHT (DOUBLE) (LENGTH IN INCHES) |
| (24) | TRACK LIGHT (LENGTH IN INCHES) |
| C | CABLE TV / PHONE OUTLET |
| DB | DOOR BELL |
| T | THERMOSTAT |
| | 110 VAC DUPLEX OUTLET |
| | 110 VAC DUPLEX OUTLET (TOP SWITCHED) |
| GFI | 110 VAC DUPLEX OUTLET (GROUND FAULT INTERUPTOR) |
| WP | 110 VAC DUPLEX OUTLET (WATERPROOF) |
| D | DRYER OUTLET |
| R | RANGE OUTLET |
| S | SINGLE POLE SWITCH |
| S3 | THREE-WAY SWITCH |
| S4 | FOUR-WAY SWITCH |
| SD | SWITCH WITH DIMMER |
| SD3 | THREE-WAY SWITCH WITH DIMMER |
| SD4 | FOUR-WAY SWITCH WITH DIMMER |
| ST | SWITCH WITH TIMER |
| F | CEILING FAN |
| F/L | CEILING FAN/LIGHT COMBINATION |
| AHU | AIR HANDLING UNIT |

NOTE: ALL SYMBOLS MAY NOT BE USED IN PLAN



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HABITAT FOR HUMANITY
PLAN 1 - THREE BEDROOM HOUSE
WESTFORD, MA

Electrical Plans

SCALE AS NOTED



E1

FILE: MA Westford Plan 1.dwg