In the Village of Essex, Vermont sits a beautiful historic brick church, Holy Family. On July 6, 2011, lightning struck the Parish Hall and fire broke out destroying the entire Parish Hall. Fortunately the Essex Fire Department was able to save the historic brick church. But the parish lost their Hall that served as a location for countless meals and community events. The parish quickly came together to design a new Parish Community Center.

Lead by parish volunteer David Robideau, who served as the main point of contact for the design and construction team, Architect Ann Vivian of GVV Architects in Burlington, Vermont, John Forder of Forcier Engineering and Construction Manager David Bogue of Professional Construction, Inc, South Burlington, Vermont, they designed a 7,900-square-foot two-story timber frame structure, with classrooms on the first floor and a beautiful Hall, commercial kitchen and small meeting room on the second floor. The new building was sited on the property away from the historic church to reduce the risk of loss from future fires. The new location along with exposed timber
SIPS Stand for Structural Insulated Panels and So Much More

Structural insulated panels (SIPS) are a high performance building system consisting of an insulating foam core sandwiched between two structural facings, typically oriented strand board (OSB). SIPS are manufactured under factory controlled conditions and can be fabricated to fit nearly any building design. The result is a building system that is extremely strong, energy efficient and cost effective. Building with SIPS will save time, money and labor.

Green Buildings & SIPS. It's All About the Energy
Buildings account for 39% of total U.S. energy consumption, 38% of carbon dioxide emissions and up to 40% of a home's heat loss is due to air leakage.

SIPS create a superior building envelope with high thermal resistance and minimal air infiltration which prevent heated and cooled inside air from infiltrating outside in an uncontrolled manner. In fact, Oak Ridge National Laboratory (ORNL) Whole-Wall R-value studies show that a 4-inch SIP wall (nominal) rated at R-14 outperforms a 2x6 stick framed wall with R-19 fiberglass insulation.

SIPS Saves Resources
SIPS are also fabricated in a controlled environment, allowing for greater efficiency. The National Association of Home Builders estimates that the construction of a 2000 sq. ft. home produces 7,000 lbs. of waste. SIPS have the ability to drastically reduce the waste generated during construction by using advanced optimization software and automated fabrication technology to ensure the most efficient use of material.

Not only that but, the wood used to sandwich the insulation in a tradition SIP is made from oriented strand board, or OSB, which is manufactured from fast-growing, underutilized, and often less expensive wood species grown in carefully managed forests. The OSB manufacturing process is also very efficient and results in very little scrap. In fact, about 85-90 percent of a log can be used to make high quality structural panels, and the remainder – bark, saw trim, and sawdust – can be converted into energy, pulp chips or bark dust.

And the traditional insulating core material expanded polystyrene, or EPS, it is a lightweight and composed mostly of air. Only 2% of EPS is plastic. Over the lifetime of a house, the EPS insulation used in SIPS will save many times the energy embodied in the petroleum used to make EPS. Scrap EPS generated during the manufacturing process can be recycled into new EPS products.

Are Structural Insulated Panels More Expensive?
Building with SIPs generally costs about the same as building with wood frame construction when you factor in the labor savings resulting from shorter construction time and less jobsite waste. Other savings are realized because smaller heating and cooling systems are required with SIP construction.
Holy Family St. Lawrence Parish Center

General Contractor & Cost Estimator
Professional Construction, Inc.
45 Swift Street, #6, South Burlington, VT 05403
www.pro-construction.com

Project Team

Architect:
Guillot Vivian Viehmann Architects, Inc.
284 S. Union Street, Burlington, VT 05401

Structural Engineer:
Hawksworth, Bibb, Inc.
237 Commerce Street, #250, Williston, VT 05495

Civil Engineer:
Forcier Consulting Engineers
174 Browns River Rd., Essex Junction, VT 05452

Design/Build Electrical Contractor:
Ryan Brothers Electrical Contractors
1 Industrial Parkway, Burlington, VT 05401

Design/Build HVAC Contractor:
Avonda Air
1879 Williston Road, South Burlington, VT 05403

Plumbing Contractor:
J.R.’s Plumbing & Heating
2 East Street, Essex Junction, VT 05452

Project General Description

Location: Essex Junction, Vermont
Date Bid: Aug 2012  Construction Period: Apr 2013 to Dec 2013
Total Square Feet: 7,900  Site: 1 acre.
Number of Buildings: One.

DIVISION COST % OF COST SQ.FT. COST SPECIFICATIONS
CONCRETE 55,750 4.70 7.06 Masonry, stone for fireplace.
MASONRY 50,873 4.29 6.44 Structural steel framing.
METALS 35,910 3.02 4.55 Drywall.
WOOD, PLASTICS & COMPOSITES 276,664 23.25 34.94 Carpentry, labor, timber, SIPS panels and materials.
THERMAL & MOISTURE PROTECTION 91,313 7.69 11.56 Damp-proofing and waterproofing, thermal protection, weather barriers, roofing and siding panels, joint protection.
OPENINGS 68,872 5.80 8.72 Doors & frames, windows.
FINISHES 190,269 16.03 24.08 Plaster & gypsum board, flooring, painting & coating.
SPECIALTIES 27,520 2.32 3.48 Gas fireplace, glass railing.
EQUIPMENT 40,000 3.37 5.06 Food service.
FURNISHINGS 16,677 1.40 2.11 Window treatments.
CONVEYING SYSTEMS 64,800 5.46 8.20 Elevator (1 passenger).
FIRE SUPPRESSION 13,423 1.13 1.70 Water-based fire-suppression systems.
HVAC 76,360 6.43 9.67 Air distribution.
ELECTRICAL 91,369 7.70 11.57 Electrical.
TOTAL BUILDING COSTS 1,187,229 100% $50.28 Specialties (excluding architectural and engineering fees)
EXISTING CONDITIONS 3,290
EARTHWORK 63,145
EXTERIOR IMPROVEMENTS 96,050
UTILITIES 28,505
TOTAL PROJECT COST 1,376,219

UPDATED ESTIMATE TO OCTOBER 2015: $164.23 PER SQUARE FOOT

Regional Cost Trends
This project updated to October 2015 in the selected cities of the United States.

<table>
<thead>
<tr>
<th>EASTERN U.S.</th>
<th>Sq. Ft. Cost</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>Atlanta GA</td>
<td>$164.23</td>
<td>$1,297,384</td>
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<tr>
<td>Pittsburgh PA</td>
<td>$207.07</td>
<td>$1,635,832</td>
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<td>New York NY</td>
<td>$264.19</td>
<td>$2,875,996</td>
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<th>CENTRAL U.S.</th>
<th>Sq. Ft. Cost</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>Dallas TX</td>
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<td>$2,353,078</td>
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<tr>
<td>Kansas City KS</td>
<td>$214.21</td>
<td>$1,692,240</td>
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<tr>
<td>Chicago IL</td>
<td>$223.13</td>
<td>$1,762,710</td>
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<table>
<thead>
<tr>
<th>WESTERN U.S.</th>
<th>Sq. Ft. Cost</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>Los Angeles CA</td>
<td>$212.42</td>
<td>$1,678,138</td>
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<tr>
<td>Las Vegas NV</td>
<td>$194.57</td>
<td>$1,537,118</td>
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<tr>
<td>Seattle WA</td>
<td>$202.42</td>
<td>$1,678,138</td>
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</tbody>
</table>

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