Churchill Homes

Final Report

April 22, 2002

U.S. HUD PATH
Demonstration Project

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Executive Summary

Churchill Homes PATH Demonstration Project, located in Holyoke, Massachusetts, focuses on the first phase of the new HUD HOPE VI community with 50 units of affordable rental housing. Noteworthy is the attempt, through planning and design, to make the homes blend in with those of higher-income surrounding neighborhoods.

From the start, the architect demonstrated relative familiarity with resource-efficient technologies, and designed the mostly two-story attached townhomes to be energy and resource efficient. As a PATH Demonstration Project, Churchill Homes was seen as an opportunity to introduce advanced technology into affordable housing. Modular production was considered. As built, Phase 1 included four PATH-identified technologies: Optimum Value Engineering, Drywall Clips, Insulated Headers, and integrated space heating and domestic hot water, akin to Water Heaters With Space Heating Capability. Additional noteworthy elements include low-e insulated glazing, high-efficiency boilers, and programmable thermostats. An opening event was organized at resident move-in in which PATH had a limited presence.

Introduction

Churchill Homes is a complete re-planning and rebuild of an existing World War II-era public housing project called Jackson Parkway Apartments. The first phase calls for 50 rental units (Phase 1A) and 60 homeownership units (Phase 1B). Phase 2A comprises additional rental units: a rehab of two five-story walkups and 11 new townhouses in three buildings.

The PATH Demonstration Project is limited to Phase 1A, which is public housing—all residents must earn below 60% of median income (45K for family of four) for the developer to get 100% tax credits, and rents must reflect this. Although developers have historically found it difficult to plan resource efficiency and sustainability into affordable housing, the Churchill project engenders some conditions that hinder technology adoption and others that enable it.

HUD-funded communities changed over the years in two primary ways: contextuality and variety. Churchill exemplifies the new approach in its relationship to surrounding neighborhoods. Where previous efforts did not try to hide contrasting socio-economic status between new “housing projects” and existing neighborhoods, Churchill and similar developments disguise income differences and financing origins of the housing types. This is reflected in the site plan, in which the architect continued the surrounding streets into the Churchill site, a departure from the previous layout in which the surrounding streets literally dead-ended at the periphery of the site. It is also evident in the design of the houses themselves, which mirror the articulated facades of the Stick-Style Victorian and Gable-Front Vernacular styles which predominated locally during the early 1900s.

Planning for Churchill emphasizes a varied streetscape as an alternative to

previous housing projects, which emphasized first cost and uniformity. Churchill places non-residential plan elements among the housing to add variety and amenity to the community taken as a whole. From the vantage point within a new park bordered by rows of trees, two-story homeowner townhouses are to the east and rental townhouses are to the west with a three-story, two family house beyond.

Three-family house during construction

To the south is a community center, while a block away is a community garden. In addition to mixing homeownership and rentals, market rate and subsidized, homes are designed with different façade treatments, ornamentation, and color so that no two adjacent homes are alike (see computer rendering**)**.

Computer rendering of Churchill Phase 1 townhouses

These planning and design aspects are mentioned for potential cost implications and their impact on the adoption of PATH-identified technologies. Although a generous Homeownership Opportunities for People Everywhere (HOPE-VI) grant from HUD (in addition to other funding) allowed high-quality housing to emerge, it may not have been possible without it. And despite funding, a number of technologies initially considered did not make it into the houses.

PATH-Identified Technologies

As built, Churchill Homes Phase 1A includes the technologies listed below.

Optimum Value Engineered Framing:
The architect specified 2x6 wood stud wall framing at 24 in. on center to reduce the amount of lumber and increase insulation coverage within the exterior wall. Three studs, instead of four, were used at corners. 24-in. stud spacing has been reported to represent construction cost savings up to $100 per house. SWA calculated $4 per year in heating energy savings.

Wall framing studs at 24 in. on-center

Drywall Clips: These are used at wall/ceiling edges to eliminate blocking used as nailing backer to secure edge of gypsum board, representing incremental labor and cost savings.

Drywall clips/stops (at top plate) and insulated header

Insulated Headers: Used over all door and window openings to reduce the amount of lumber and increase insulation coverage within the exterior wall. This acts to reduce the amount of heat escaping over doors and windows and attendant condensation problems. The headers are manufactured in the field with 2x's flanking 1-1/2-in. expanded polystyrene rigid foam insulation at all exterior openings. The general contractor reports this as standard practice for Massachusetts, and offered that it is one of the expensive practices that inhibit the feasibility of low-income housing in the region. SWA estimates energy cost savings for the headers, as built, to be approximately $5 to $10 per year.

Integrated Space Heating and Domestic Hot Water: The system is comprised of a domestic hot water storage tank heated by a coil from a boiler in an interior closet, which provides hydronic space heating as well through baseboard radiators. Standard practice is to have a separate water heater, which, as an additional combustion element, would demand additional ventilation and electrical requirements, as well as increased cost and maintenance.

A high-efficiency, direct-vent, sealed-combustion boiler was specified. Direct concentric venting requires only a single exterior wall penetration for combustion air and exhaust air. The sealed combustion boiler enhances indoor air quality by not allowing backdrafting of exhaust gases into the home. An electronic programmable thermostat has multiple time and temperature settings to turn the system on and off at preset times according to resident occupancy and lifestyle for increased comfort and energy savings.

Path Goals

Affordability

The homes are affordable to buyers earning less than 60% of the area's median income. Cost reductions were largely due to the HOPE VI grant. Some labor savings result from the panelized wall construction as well as drywall clips and advanced framing techniques, which also resulted in material savings. Elimination of the domestic water heater helped cut costs.

Environmental Impact and Energy Use

Indoor air quality is enhanced by the use of sealed combustion boilers that do not backdraft exhaust gases into the living space. The fully modulating boiler is inherently more energy efficient than standard boilers.

The various incremental envelope measures, including high-density insulation, advanced framing techniques, and drywall clips increase energy efficiency relative to more conventional measures. The use of drywall clips and 24-in. on-center framing reduces lumber demand and deforestation.

Durability and Maintenance Costs

Due to elimination of a separate domestic water heater, only a single combustion unit, the boiler, needs to be maintained. Good construction techniques on the part of the contractor, such as truss floater clips, help maintain integrity of interior elements such as reduction in drywall cracking. The use of a vapor barrier on the interior side of the insulation helps guard against moisture problems.

Safety

Much of the construction was componentized. For example, roof framing assemblies were assembled on the ground, reducing the amount of time carpenters are vulnerable to falls. A crane was utilized to lift and install assemblies of perhaps four trusses each, complete with sheathing, purlins, and eave extensions.

Sealed combustion boilers prevent exhaust gases in the living space, as does elimination of a domestic water heater.

Case Study

Pre-Construction

Marc Sternick, AIA, Churchill Homes Project Manager for Dietz and Company, has kept up with energy efficient architecture since the mid-1970s when he obtained a degree in energy efficient architecture. In suggesting technologies during the specification phase, SWA found itself "preaching to the choir." With an advocate of energy efficiency and sustainability in a key decision-making role, PATH was able to ensure implementation of recommended strategies.

Post-Construction and Occupancy

An outreach/media event was held 23 August, 2001 on the site of the completed phase 1A rental homes. Most of the homes were occupied at the time, but five units were made available by their owners for a tour. An unoccupied unit was also available for the tour. The event included representation from the architect, developer, City, and local dignitaries. A series of tours was conducted through five houses, one in which PATH signage highlighting the included technologies was displayed. PATH presence also included a tabletop display with information packets and Will Zachmann, then Director of Communications for SWA, available for questions during the tours. The following is an account by Mr. Zachmann.

The event was held on August 23, 2001 beginning at 11:00 a.m. Approximately 180 people were in attendance, including the mayor of Holyoke, U.S. Representative John Oliver, several State representatives, and Bill Blanchett from the regional HUD office. Press attendance was very light (I noted one reporter), but Community Builders, Inc., which hosted the event, had hired a professional photographer to document the proceedings. Weather for the event was sunny and warm, and with the exception of limited landscaping, the site was clean and well prepared by the event organizers.

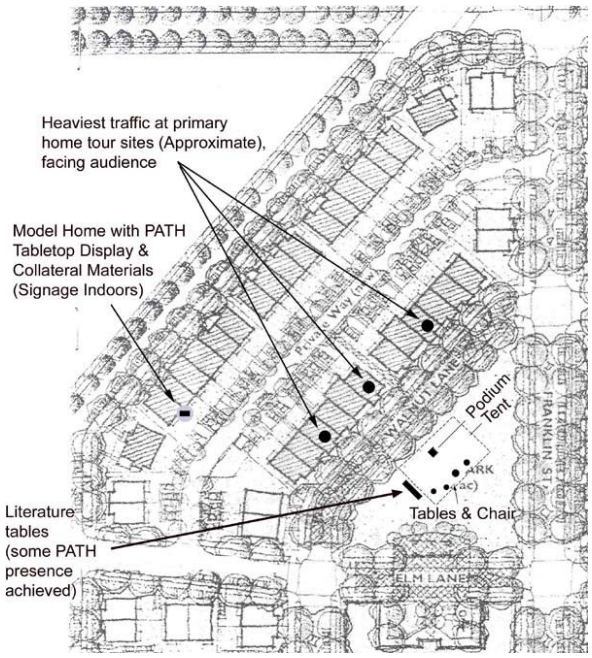
Several weeks prior to the event, I had arranged with Tom Kegelman, project manager with The Community Builders, Inc., to effect a PATH presence at the rollout, which was to consist of the PATH tabletop display and a variety of PATH literature (including the "Results in the Field ~ Holyoke, MA" document that I produced specifically for this event, color photocopies of the Urban Land article, selected articles from the PATHWAYS color publication, and other general PATH literature, along with signage illustrating and describing the various PATH-identified technologies that had been incorporated. Featured technologies included insulated headers above all windows and doors, combined heater / domestic hot water unit [direct vented], drywall clips, OVE [24" o.c.] framing, and high-density insulation [R-21] in wall cavities.).

While I had negotiated placement of the PATH display in immediate proximity to the large tent where the ceremonies were held, on the day of the event, I was informed by Community Builders event manager, Kim Leask, that Mr. Kegelman had changed his mind, and that I would not be allowed to assemble the display in the previously approved location, but would instead be setting up in front of one of the models, which also serves as the Churchill Homes office. The Community Builders were steadfast in this decision.

Unfortunately, while the model in question was ostensibly one of the 4 or 5 units included in the event's 'open house' tours, it was located in the block behind the primary row of attached townhouses that the audience faced during the ceremonies (which also contained three of the open-house units). This effectively precluded any direct sightlines between the audience and the PATH display and model, resulting in very low foot traffic, and hence, low exposure for the display and my outreach efforts in connection therewith. On the plus side, I was able to place PATH materials on the literature tables that were immediately accessible to the majority of attendees, and engaged in outreach activities insofar as was practicable, based on the less-than-favorable conditions.

Mr. Kegelman's rationale for the last-minute switch was that the architect, contractor(s), Holyoke Housing Authority, Community Builders, financing entities, and other stakeholder groups had as much or more of a role in seeing the project to fruition, and were not represented by displays, banners, etc. In that sense, I believe Mr. Kegelman was trying to be fair to the other parties involved. By the same token, it is my feeling that the alternate location was so far removed from the central action of the event as to amount to a purposeful exclusion.

It is my recommendation that, in the future, PATH project managers consider entering into some form of contractual or other written understanding with prospective demonstration project partners that clearly specifies in advance the nature and scope of our anticipated presence at any event that is to be held in conjunction with groundbreaking and/or ribboncutting ceremonies, but does not necessarily commit us to future participation. In this way, if a given project proves less than viable from a PR standpoint, we would have the opportunity to redirect our resources to projects where they would be better spent. To be fair, other participating stakeholders should receive advance notice of our intentions, so that they too would have the opportunity to establish a presence, as appropriate. In the later stages, negotiations could also take into account any monetary contributions that PATH anticipates making toward event fulfillment, so that we are able to exert additional leverage as necessary. In this way, we will be better positioned to maximize exposure for the initiative, and for the technologies and innovative design/construction strategies we endeavor to promote.



Layout of media event showing location of PATH display relative to audience and home tour sites

Conclusion

Technology Inventory Updates

A number of technologies and materials were included that are not PATH-Identified, as follows.

On-Site Panelization: Exterior walls were panelized on-site to speed construction and thereby reduce labor costs. "Shacks," or minimal shelters, were built on-site to allow the panels to be assembled in sections in any weather. The panels are made by attaching OSB to a frame comprised of wall studs set between top and bottom plates.


Wall panels assembled in temporary on-site construction "shack"

Roof Truss Installation Practice: Roof trusses with horizontal bottom chords were installed at 24" on center and aligned with exterior wall studs in almost all cases. Though this would have enabled the use of a single top plate, double top plates were used. Code mandated the use of metal "hurricane clips" to tie each truss to the top plates. Metal "truss floater clips" were used at interior partitions. These feature slotted connections to allow for differential expansion between the top chord (exposed to temperature extremes) and the bottom chord (under insulation) that otherwise might deflect the bottom chord enough to cause cracks along the wallboard of adjacent partitions. Truss floater clips apparently are standard practice for the region; the contractor reports widespread use since the early 1990s.


Large truss assemblies were lifted into position and secured with hurricane clips and truss floater clips, which allow for differential expansion

High-Density Batt Insulation: R-21 high-density fiberglass batt insulation is installed in the wall cavities. A vapor barrier, installed on the interior side of the insulation, helps reduce air infiltration and keep the insulation and wall cavity dry. The increased insulation could save $30 to $50 per year in heating costs compared to R-19 typically installed in the region.

Technologies Considered

Modular Housing: During design development, factory-built housing was considered for potential cost savings, positive impact on scheduling, and discouragement of vandalism and theft. The project is in relative proximity to the large Northeastern modular manufacturers, mitigating unit transportation costs. Massing, dimensions, and layout are fairly consistent throughout most of the units, potentially allowing many to be produced without major factory retooling. In addition, the contractor does work with modular and identifies itself as one of four in the state of Massachusetts authorized to produce modular units.

Upon inquiry, several conditions are revealed that discourage the use of modular buildings for this particular project. In terms of scheduling, manufacturers prefer a steady stream of work rather than "feast or famine." A manufacturer typically produces for several builder/dealers that together provide a fairly consistent market over time, but they can usually accommodate additional outside orders in batches of several units each.

A one-time order of 50 houses in 10 months represents a tight schedule, requiring the hiring of additional labor and prompting manufacturers to ask for a 50% downpayment on the units. It was believed that more houses would be built simultaneously than could be accommodated by most manufacturers, and that engaging multiple manufacturers would drive up costs and coordination while raising questions for quality control.

A modified construction schedule might have been possible had modular been considered earlier in the planning process. Given this, however, quotes from manufacturers indicated "negligible" savings over on-site construction, according to the developer. Some of this may be attributed to the state of the local economy at the time of bidding, as site building becomes less expensive relative to modular when there is less work available. There was the usual speculation that unions suspect modular contracts rob work from them. Despite the advent of prevailing wage laws in Massachusetts, the non-union, low-bidding general contractor came in significantly below union bids.

Another factor, according to the developer, was the inability to put together a truly generic modular specification (for uniform bidding) owing to a lack of competition; there are a limited number of manufacturers in the area capable of producing enough of the high-quality units to be considered for bidding. The developer considers the optimal arrangement to be a contractor/modular team that would bid together, but reports most area contractors have never worked with modular.

Controlled Ventilation: One of the PATH-identified technologies chosen for Churchill is comprised of continuous exhaust through bathroom exhaust fans

with fresh make-up air provided via passive air inlets at the perimeter of windows. Toward the end of construction, the architect decided not to implement the strategy, having heard reports of residents plugging up the inlets believing them to be the source of drafts and outdoor noise.

Whether or not the inlets are such a source, covering them greatly reduces the opportunity for fresh makeup air. Given a fairly tight home, continuous ventilation without a reliable source of makeup air would tend to depressurize the house, potentially creating a danger of backdrafting. Though the passive inlets work well in some areas, this particular urban context may not be the best application of this ventilation strategy due to the cool climate and ambient sound levels. A standard switch-operated light/exhaust fan was installed in each bathroom in lieu of a 24-hour exhaust fan at the same location.

Lessons Learned

Churchill Homes Phase 1A achieved its objectives of constructing high-quality, energy efficient homes available at a modest price to low-income homebuyers. A rapport between PATH and the design team was established and PATH assistance proceeded smoothly. The few issues that surfaced regarding technology, affordability and PATH involvement are as follows.

Modular Construction: Many modular housing projects have documented savings of from 5% to 30% over stick-built construction. To what can we attribute the apparent lack of savings for Churchill?

Several factors combined to make it difficult to quantify the benefits of modular construction in this project. The cost-effectiveness of modular vis a vis site-building shifts with the local market. In this case, the site builders appear to have been hungrier than at other times.

Building 50 units in a short time may encounter resistance on the part of manufacturers. The use of modular construction involves subtle but fundamental differences in scheduling in order to maximize cost impact. Establishment of a price and scheduling rapport with manufacturers as early as the finance sourcing stage may have increased the feasibility of modular construction.

There are doubtless other factors that inhibit the transition to modular construction in general, the complexities of which begin to exceed the scope of this study.

Customization: There is no denying that the homes, as built, exhibit variety and harmony with other homes in the area and generally have “curb appeal.” This will serve to build pride among the residents, encourage upkeep, and possibly discourage vandalism and theft. It is hard to put a price on that. But in order to make Phase 1A consistent with the guidelines subsequently issued by the architect for future Churchill Homes construction phases, the exteriors were designed that no two adjacent homes would sport the same façade details. The contractor indicated that this interrupts the flow of construction such that tradesmen must locate the correct color and siding details for every house. At approximately 20 feet of width per unit, this occurs often, and increases siding labor at least 20%, according to the contractor.

Extent of Consultant Involvement: PATH has had a number of successful demonstration projects in which the design team saw PATH as a useful partner that can help improve the project without excessively increasing costs.

However, architecture and development are competitive industries for which appearances play a major role. Certainly firms desire to be portrayed as innovative and as offering value, durability, and energy efficiency in their product. In this regard, PATH can be perceived as a competitor for press and attention. “I am concerned that PATH will take credit for our ideas” is a not-uncommon refrain.

Typically, in projects in which PATH works closely with the design team, the developer is willing to share the spotlight. Nonetheless, it is recommended that Level 1 Demonstration Project proposals include language that indicates there has been some discussion with the developer regarding publicity of the finished project and a tentative understanding of the prominence of PATH in this publicity. Although this is typically part of the discussion at the outset, written acknowledgement may help flag early concerns that can be effectively addressed.

Appendix

Churchill Homes Announcement

Site Plan Phase 1A Rental Units

Floor Plans and Elevations

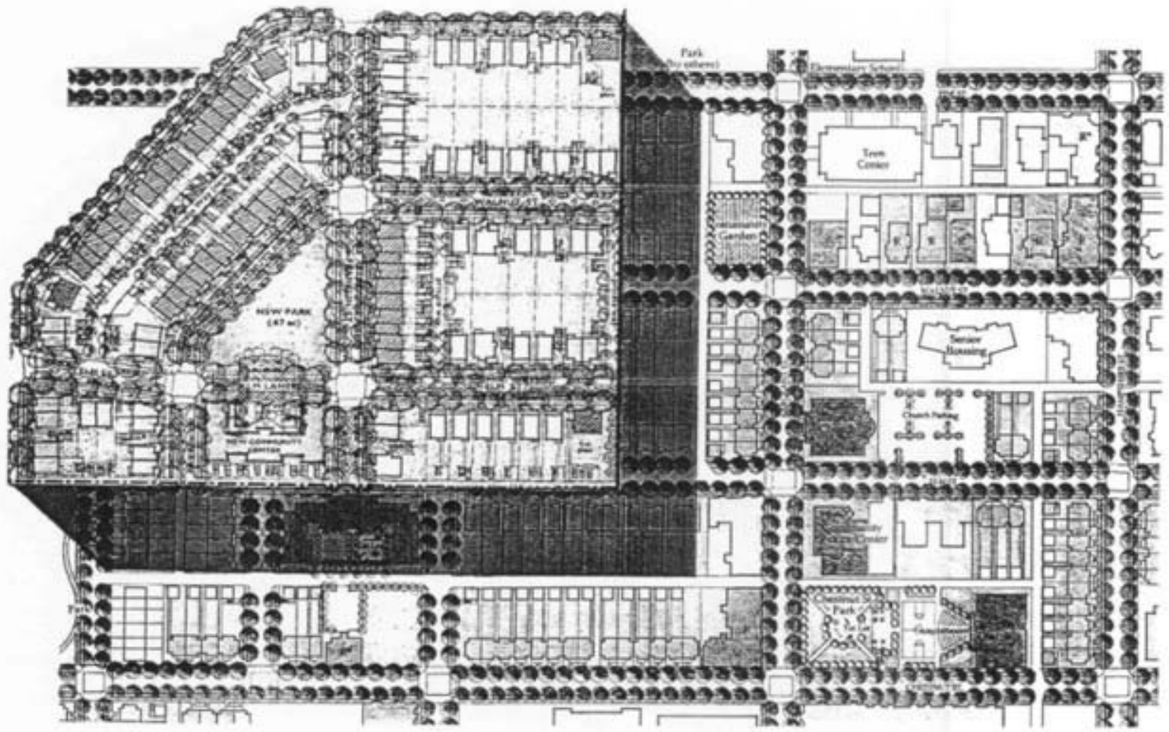
Specification Sheets

REM/Design Report

***Urban Land* article**

Project Team and Project Partners

NEIGHBORHOOD DESIGN CONCEPTS



ILLUSTRATIVE PLAN
CHURCHILL NEIGHBORHOOD PLAN
HOLYOKE, MASSACHUSETTS

Churchill Homes

Churchill Homes began as a HUD funded, Hope VI grant, which provided an alternative approach to the now flawed and obsolete designs of many of the public housing projects built in the 1950's and 60's.

The initial focus of the project is located on the grounds of the recently demolished Jackson Parkway Apartments, a typical 1950's style housing authority development. The decision to completely demolish the existing units came from the need to bring down the perceived barriers between the "low-income housing project" and the surrounding neighborhoods.

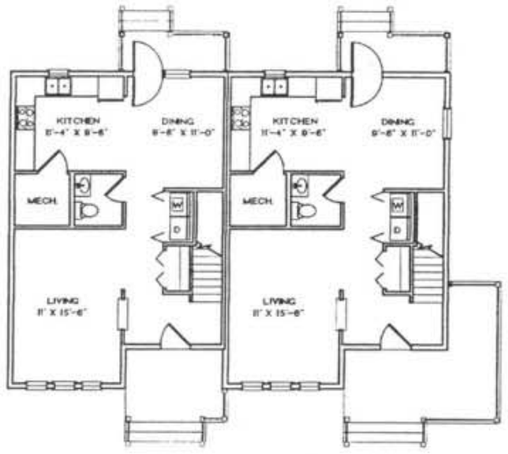
The first phase of the Comprehensive Plan calls for 110 housing units, in a variety of configurations, to be constructed on the Jackson Parkway Site. The second phase includes the renovation of existing housing and the construction of new housing in the neighborhood surrounding the Jackson Parkway site.

The primary consideration in the design of this development is to create a mix of housing types: home ownership and rental, subsidized and near-market rate, which will work together to form one cohesive neighborhood. While creating its own sense of identity, it is important for this development to blend with the vernacular architecture of the surrounding neighborhoods, helping to prevent the social stigma typically associated with a "housing project".

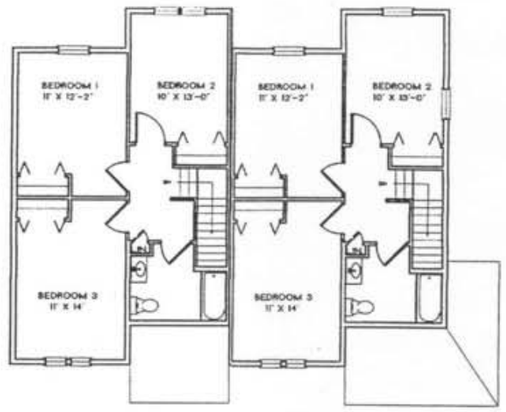
DIETZ & COMPANY
ARCHITECTS, INC.

TYPICAL UNIT PLANS AND ELEVATIONS

3 BEDROOM DUPLEX UNIT



First Floor Plan



Second Floor Plan

Schematic Plans of typical rental units are shown as examples of unit layouts that work within the dimensional constraints of the project.

* Note that covered front porches, smaller covered rear porches supported by posts or brackets and jogs in the front façade are required to keep in context with the neighborhood.

Unit width constraints are as noted but allowable length varies and is dependent only on the location of each site and the zoning ordinances that govern the percentage of impermeable coverage on each lot.

These plans and elevations are schematic designs for rental units within this development. These drawings are offerred only as examples of housing that conforms to these guidelines. These plans and elevations are not for use as construction documents, nor should they be used as a basis for new home designs.

SQUARE FOOTAGE	
FIRST FLOOR	658
SECOND FLOOR	705
TOTAL GROSS	1,363

Front Elevation

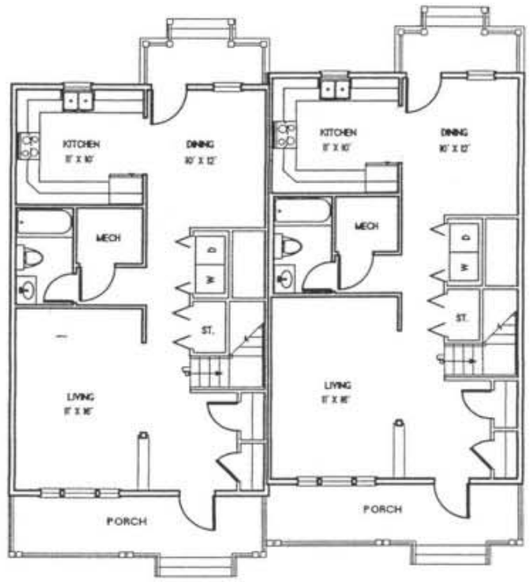
Rear Elevation

Side Elevation

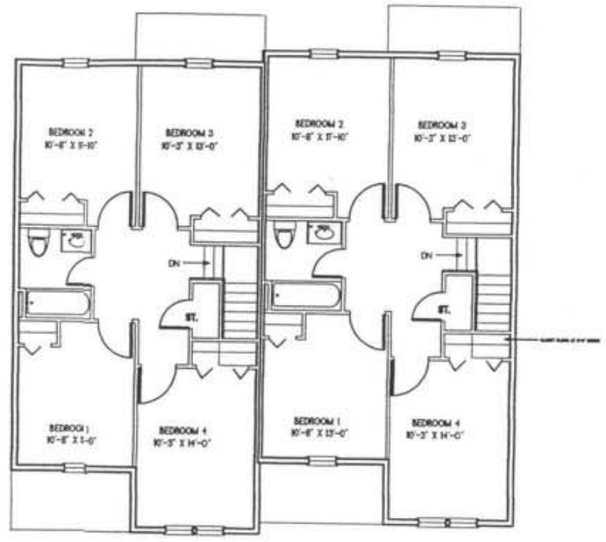
* - MANDATORY GUIDLINE FOR THIS DEVELOPMENT

TYPICAL UNIT PLANS AND ELEVATIONS

4 BEDROOM DUPLEX UNIT



First Floor Plan



Second Floor Plan

Front Elevation

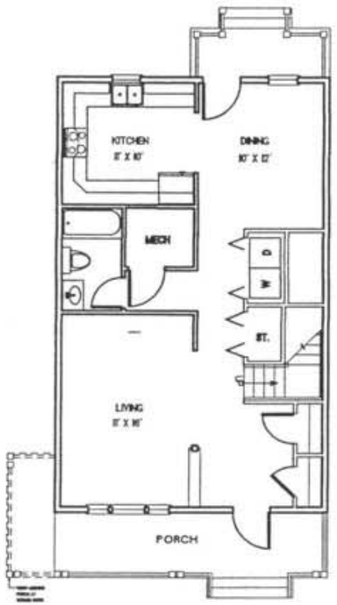
Rear Elevation

SQUARE FOOTAGE	
FIRST FLOOR	792
SECOND FLOOR	857
TOTAL GROSS	1,649

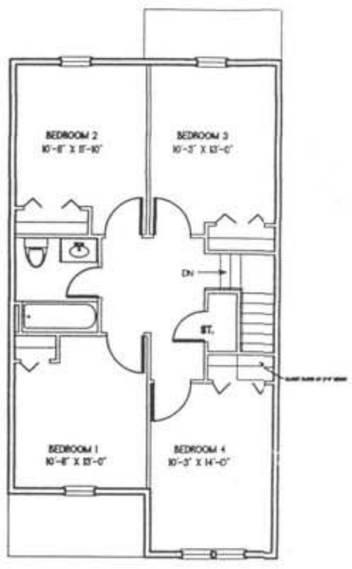
CHURCHILL HOMES
PATTERN BOOK

TYPICAL UNIT PLANS AND ELEVATIONS

4 BEDROOM SINGLE FAMILY UNIT



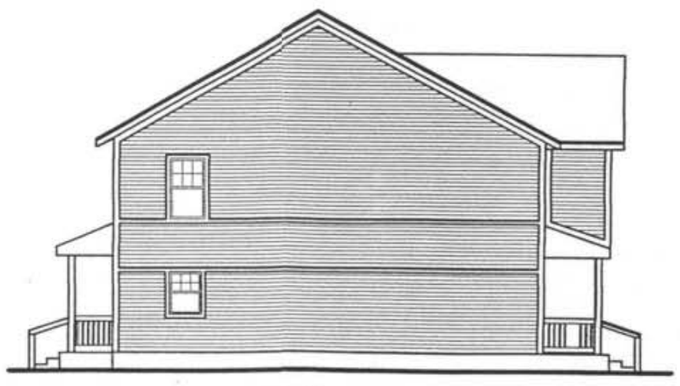
First Floor Plan



Second Floor Plan

Front Elevation

Rear Elevation



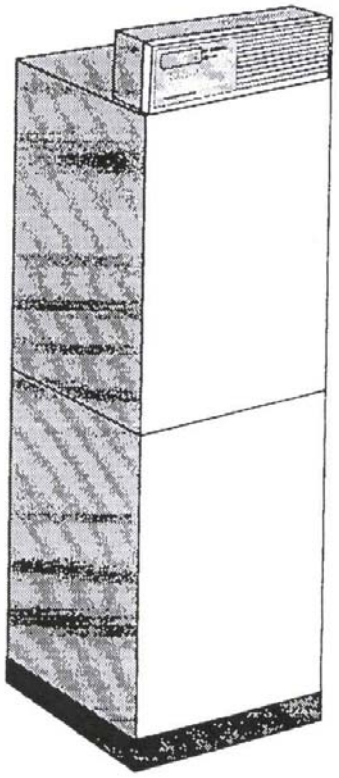
Side Elevation

SQUARE FOOTAGE	
FIRST FLOOR	658
SECOND FLOOR	705
TOTAL GROSS	1,363

CHURCHILL HOMES
PATTERN BOOK

Endurance

Fully Modulating Gas Fired Hydronic Boilers and Combination Boiler/Water Heaters



Model EDP
for space heating

Model EBP
for space/water heating

Model EDN
a non-ferrous version of EDP

- Design certified and tested by International Approval Services (American & Canadian Gas Associations)
- Material specifications per Section IV, ASME code
- Maximum working pressure - water 30 P.S.I., ASME rated
- Hydrostatic test pressure at factory - 60 P.S.I.
- Natural or propane gas
- Minimum gas supply pressure - 4" w.c.
- Maximum gas supply pressure - 13" w.c.
- 85+% AFUE
- Automatic burner modulation from 57% to full fire
- NOx levels less than 25 ppm
- Venting - Direct vent (sealed combustion with ducted combustion air in concentric vent) or Category III
- Built-in diagnostics with memory and 3-character alpha-numeric temperature readout and error codes
- Hot surface ignition
- Electrical - 115V-60HZ-1PH less than 15 amps with 24V transformer mounted and wired
- Built-in circulating pump and by-pass loop
- Equipped with anti-condensing controls
- Built-in freeze protection
- Pump exercizer to ensure pump remains free from corrosion
- Built-in overheat thermostat (safety limit)
- 20 year limited warranty

Minimum Clearances from Combustibles

	AGA		CGA	
	in.	*mm*	in.	*mm*
Left Side	1	*25*	1	*25*
Right Side	1	*25*	1	*25*
Top	1	*25*	1	*25*
Back	1	*25*	1	*25*
Front	1	*25*	1	*25*
Vent - Direct Vent	0	*0*	0	*0*
Vent - Category IV	3	*76*	3	*76*

Recommended Clearances for Accessibility and Venting

	AGA		CGA	
	in.	*mm*	in.	*mm*
Left Side	6	*152*	24	*610*
Right Side	12	*305*	24	*610*
Top	14	*356*	24	*610*
Back	9	*229*	12	*305*
Front	24	*610*	24	*610*

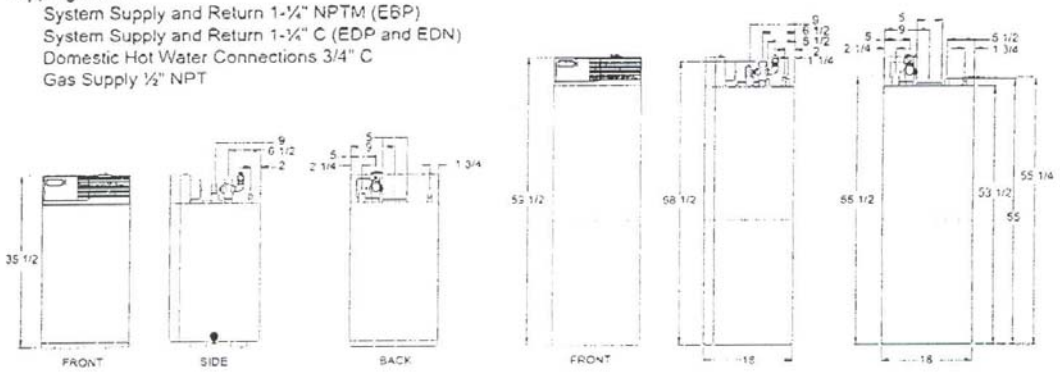
SPECIFICATIONS

Model	Input		Output		AFUE%	Contin. GPH@ 100°F Rise	Intermittent DHW Output @ 77°F Rise	NOx Levels ppm
	MBTU/h	kW	MBTU/h	kW				
EDP 110	61.8 to 108.2	18.1 to 31.7	53.7 to 94.0	15.7 to 27.5	85.5	N/A	N/A	<25
EDP 175	102.9 to 175.3	30.1 to 51.4	88.6 to 151.0	25.4 to 44.2	86.1	N/A	N/A	<25
EBP 110	61.8 to 108.2	18.1 to 31.7	53.7 to 94.0	15.7 to 27.5	85.5	114	4 gpm	<25
EBP 175	102.9 to 175.3	30.1 to 51.4	88.6 to 151.0	25.4 to 44.2	86.1	183	5 gpm	<25
EDN 110	61.8 to 108.2	18.1 to 31.7	53.7 to 94.0	15.7 to 27.5	85.5	N/A	N/A	<25
EDN 175	102.9 to 175.3	30.1 to 51.4	88.6 to 151.0	25.4 to 44.2	86.1	N/A	N/A	<25

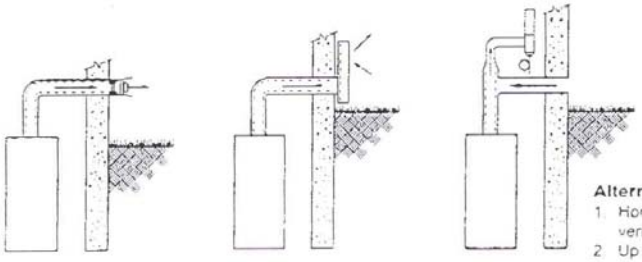
DIMENSIONS

Tapping Sizes:

System Supply and Return 1-¼" NPTM (E6P)
System Supply and Return 1-¼" C (EDP and EDN)
Domestic Hot Water Connections 3/4" C
Gas Supply ½" NPT



VENTING



Direct Vent
SEALED COMBUSTION
1. Utilizes outside air for combustion.
2. Horizontal vent lengths up to 15' with three 90° bends.

Optional Vent Terminal-Direct Vent:
1. For vent locations less than 16½" above grade.

Alternative Vent
1. Horizontal and vertical venting.
2. Up to 50 equivalent feet.
3. Can take combustion air from outside or from inside space.
4. Vent material must meet code UL1738 (US) or ULC636 (Canada).

www.teledynelaars.com

TELEDYNE LAARS
An Allegheny Teledyne Company

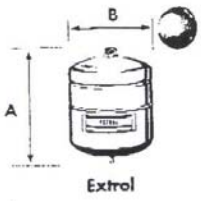
6000 Condor Drive, Moorpark, CA 93021 • 805.529.2000 FAX 805.529.5934
20 Industrial Way, Rochester, NH 03867 • 603.335.6300 FAX 603.335.3355
480 S. Service Road West, Oakville, Ontario, Canada L6K 2H4 • 905.844.8233 FAX 905.844.2635

Residential Models and Packages

- factory pre-charged to 12 psig
- pre-charge should be adjusted to equal min. operating pressure at tank location
- max. working pressure: 100 psig
- max. operating temperature: 240°F

Extrol© Specifications

Model Number	Tank Volume	Max. Accept. Volume	A Height	B Diameter	System Conn.	Shipping Weight
	Gallons	Gallons	Inches	Inches	NPTM	lbs.
15	2.0	1.0	12⅜	8	½	5
30	4.4	2.5	15½	11	½	9
60	7.6	2.5	23	11	½	14
90	14.0	11.5	21	15¾	½	23



Extrol

Radiant Extrol Tanks for radiant systems

NEW!

Model Number	Tank Volume	Max. Accept. Volume	A Height	B Diameter	System Conn.	Shipping Weight
	Gallons	Gallons	Inches	Inches	NPTM	lbs.
RX-15	2.0	1.0	12⅜	8	½	5
RX-30	4.4	2.5	15½	11	½	9

- brass fitting
- polypropylene liner
- max. operating temp. 200°F

Extrol Combination Packages

Model Number	Extrol Model	Purger Model	Vent Model	Ship. Wt. lbs.
1500/1 or 1¼	15	443 or 444	700-C	9
3000/1 or 1¼	30	443 or 444	700-C	14
3000/1½	30	445	700-C	19
6000/1¼	60	444	700-C	19
6000/1½	60	445	700-C	19
6000/ 2	60	446	700-C	20


Extrol Package

Extrol Backflow Preventer Packages

Model Number	Extrol Model	BFP Model	BFP SIZE
EXT1P	15	CP509FF	½"
EXT2P	30	CP509FF	½"
EXT5P	15	CP759FF	¾"
EXT6P	30	CP759FF	¾"

Extrol Accessories Packages

Model Number	Extrol Model	Purger Model	Vent Model	BFP Model	Fill Valve Model	Ship. Wt. lbs.
1569/1 or 1¼	15	443 or 444	700-C	C509FF	6F	15
3069/1 or 1¼	30	443 or 444	700-C	C509FF	6F	18
6069/1¼	60	444	700-C	C509FF	6F	23
6069/1½	60	445	700-C	C509FF	6F	23

Sizing the Extrol

Sizing Based on BTUs

Boiler Net Output in 1000'S of BTU/Hr.	TYPE OF RADIATION			
	Finned Tube Baseboard or Radiant Panel	Convectors or Unit Heaters	Radiators Cast Iron	Baseboard Cast Iron
25	15	15	15	15
50	15	15	30	30
75	30	30	30	60
100	30	30	60	60
125	30	60	60	90
150	30	60	90	90
175	60	60	SX-30V	SX-30V
200	60	60	SX-30V	SX-30V
250	60	90	SX-30V	SX-40V
300	90	SX-30V	SX-30V	SX-40V
350	SX-30V	SX-30V	SX-40V	SX-60V
400	SX-30V	SX-40V	SX-40V	SX-60V

Sizing based on: • Fill Pressure 12 psig • Relief Pressure 30 psig • Average System Temp. 200°F

Sizing Based on Average System Temperature

Average System Temp. °F	System Water Content in Gallons			
	Model 15	Model 30	Model 60	Model 90
100	125	275	417	876
110	93	205	311	655
120	72	158	239	502
130	58	126	194	407
140	48	105	160	336
150	40	89	134	282
160	34	76	115	241
170	30	65	99	208
180	26	57	87	182
190	23	51	77	161
200	20	45	68	143
210	18	40	61	129
220	17	37	55	116
230	15	33	50	106
240	14	30	46	96

Sizing by system temp. based on:
- Operating Temperature 40°–240°F
- Fill Pressure 12 psig
- Relief Pressure 30 psig
- Fill Temperature 40°–70°F

T8000; T8001 continued

**TRADELINE models.*

ORDER NUMBER	Application	Power Method	Stages		Switch Positions		Terminal Designations	Finish
			Heating	Cooling	System	Fan		
*T8000C1002	Heat-Cool	Power-stealing	1	1	COOL-OFF-HEAT	ON-AUTO	R, R_C, G, W, Y, O, B	Premier White
*T8000C1010								Taupe
*T8011R1006	Heat Pump	Hardwired	2		COOL-OFF-HEAT-EM. HT.		R,C,G,W_1,W_2, Y,O,B,E,L	Premier White
*T8011R1014								Taupe
*T8001C1001	Gas, Oil or Electric Systems		1		COOL-OFF-HEAT		R,C,W,Y,G,O,B	Premier White
*T8001C1019[a]								

[a] Dealer logo pocket.

T8131; T8132 Electronic Programmable Thermostat Replacement Guide/Cross Reference

Model Number	Description	Replacement	Replacement Description	Replacement Remarks
T8131C	**1 Heat/1 Cool Conventional Systems Hardwired Battery Back-up**			
T8131C1004	Honeywell Taupe	T8001C1001	1 Heat/1 Cool Hardwired Premier White	Hardwired model available in Premier White only. Batteries not required.
T8131C1012	Honeywell Premier White	T8001C1001	1 Heat/1 Cool Hardwired Premier White	Batteries not required.
T8132C	**1 Heat/ 1 Cool Conventional Systems Battery Operated**			
T8132C1003	Honeywell Taupe	T8000C1010	1 Heat/1 Cool Powerstealing Taupe	Batteries not required.
T8132C1011	Honeywell Premier White	T8000C1002	1 Heat/1 Cool Powerstealing Premier White	Batteries not required.

T8112C Electronic Programmable Thermostat

Thermostat provides electronic programmable control for 24 Vac heating and cooling systems.

CONSUMER BENEFITS:

- Easy to program for energy savings and comfort.
- Separate schedules for weekdays and weekends (5-2 Programming).
- Program up to four time and temperature settings per weekday schedule.
- LCD continuously displays time and day, current program period and room temperature.
- Temporarily override the current program with Warmer/Cooler keys.
- Hold Temp key to override the current program indefinitely.

INSTALLER BENEFITS:

- Battery powered for increased compatibility.
- Two AA alkaline batteries included.
- *bAt Lo* is displayed when battery power is low.
- Adjustable heating cycle rate (3, 6 or 9 cph).
- Selectable Fan Operation switch for electric heat systems.
- Program before or after mounting on the wall.

ELECTRICAL RATINGS:
Voltage: 15 to 30 Vac.
Current Draw:

	Running	Inrush
Heating	0.03 to 1.2A	3.5A
Cooling	0.03 to 1.2A	7.5A

CYCLES PER HOUR:
Heating: Field-selectable to 3,6,9 cph.
Cooling: Fixed at 3 cph.

TEMPERATURE RATINGS:
Setpoint Range: 45 F to 88 F (7 C to 31 C).
Operating Range: 45 F to 88 F (7 C to 31 C).

DIMENSIONS, APPROXIMATE: 7 in. (178 mm) wide, 4 in. (102 mm) high, 1-1/2 in. (38 mm) deep.

ACCESSORIES:
TG512 Versaguard Universal Thermostat Guards. See index for specific page number.

ORDER NUMBER	Application	Power Method	Stages		Switch Positions		Terminal Designations	Finish
			Heating	Cooling	System	Fan		
T8112C1007	Gas, oil, or electric 24V systems with option of independent or thermostat controlled fan in heat.	Powered by two AA alkaline batteries (included)	1	1	COOL-OFF-HEAT	AUTO-ON	G, Y, W, R_C, R	Taupe
T8112C1023								Premier White

ENERGY STAR HOME REPORT

Date: October 17, 2000

Owner's Name:
Property Address: HOLYOKE, MA
,

Builder's Name:
Weather Site: Hartford, CT
Builder's File: HOLYDG.BLG

Modified End-Use Load (MMBtu/year)

	Energy Star	*As Designed*
Heating:	141.7	74.6
Cooling:	49.7	31.6
Water heating:	49.8	60.9
Total:	241.3	167.1

This home MEETS the modified end-use load requirements for an Energy Star Home.

Pollution Prevented through Energy Star Upgrades

Type of Emissions	*Reduction (lb/year)*
Carbon Dioxide (CO2)	34329.8
Sulfur Dioxide (SO2)	47.1
Nitrogen Oxides (NOx)	45.2

The energy savings and pollution prevented are calculated by comparing the As Designed home to the Energy Efficient Reference Home as defined in the "National Home Energy Rating Technical Guidelines", September 19, 1999, prepared by the HERS Council, as amended and approved by the National Association of State Energy Officials. In accordance with these guidelines, building inputs affecting setpoints, infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads.

ENERGY COST AND FEATURE REPORT

Date: October 17, 2000

Owner's Name:
Property Address: HOLYOKE, MA ,

Builder's Name:
Weather Site: Hartford, CT
Builder's File: HOLYDG.BLG

ANNUAL ENERGY COSTS

		holydg
Heating	$	1032
Cooling	$	0
Water Heating	$	928
Lights & Appliances	$	3179
Service Charges	$	120
Total	$	5259
Average Monthly	$	438

ENERGY FEATURES

Ceiling w/Attic:	R-30, Attic U=0.032
Vaulted Ceiling:	None
Above Grade Walls:	R-19 Batt @ 24" o/c U=0.054
Foundation Walls:	None
Doors:	R-2.0
Windows:	Double - Vinyl U=0.460
Window Shading:	H: None C: Some
Frame Floors:	R-30 Batt U=0.033
Slab Floors:	R-10 Perimeter R-10.0 Per
Infiltration:	H: 0.35 C: 0.35 ACHnat
Infilt. Measure:	Blower door test
Interior Mass:	None
Heating System:	Fuel-fired hydronic distribution
Heating Efficiency:	85.8 AFUE
Cooling System:	None
Cooling Efficiency:	0.0 SEER
Water Heating System:	Integrated, Gas
Water Heating Efficiency:	0.61 EF
Ducts:	None
Active Solar:	None
Sunspace:	No

Notes: Where feature level varies in home, the dominant value is shown.

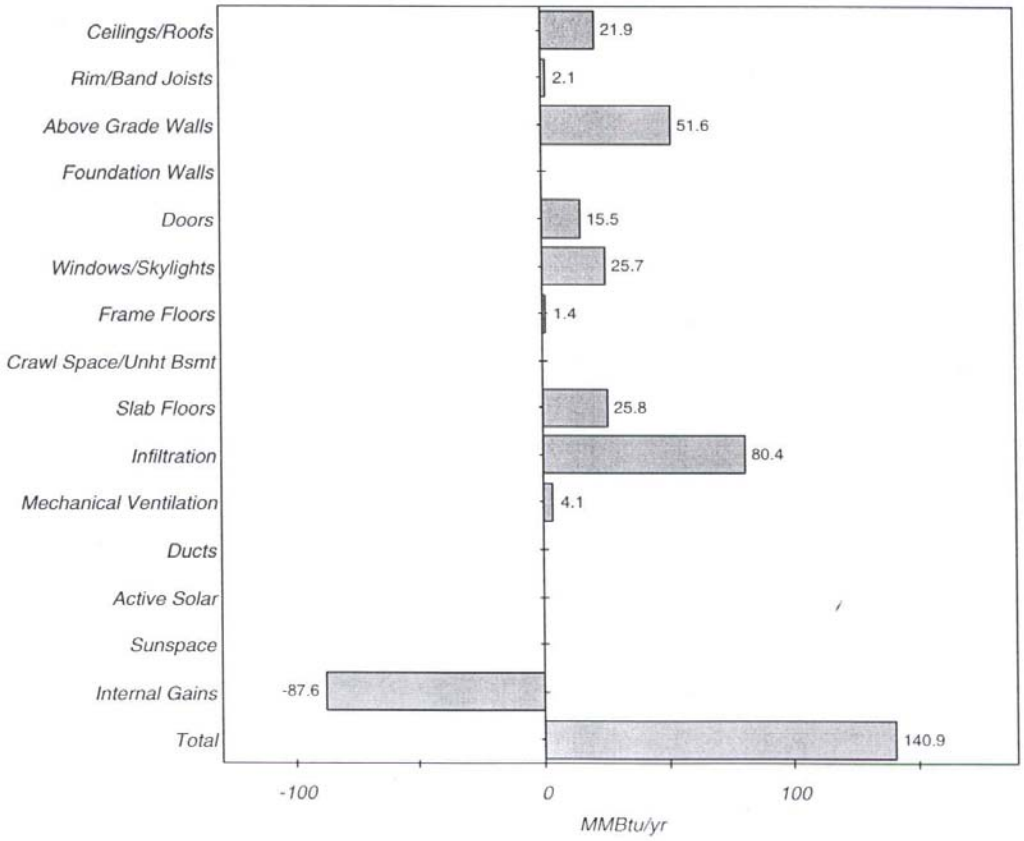
COMPONENT CONSUMPTION SUMMARY

Date: October 17, 2000

Owner's Name:
Property Address: HOLYOKE, MA
,

Builder's Name:
Weather Site: Hartford, CT
Builder's File: HOLYDG.BLG

Heating Season



Sustainability and profitability often go hand in

Breaking

Developer Samuel Levitt's dream of affordable housing within easy driving distance of New York City set the stage for countless suburban developments. Late 1950s postwar prosperity engendered a shared belief in endless possibilities, and the idea of owning a home "in the country" was at the heart of the American Dream. The suburban building boom that began in the 1950s—and continues to this day—brought a flight from the nation's cities to the quiet refuge of ranch houses and neatly trimmed lawns.

In just a few short decades, the steady wave of migration has made several-hour daily commutes commonplace. Many of those staking their quarter- and half-acre claims do so with eyes wide open, fully aware of what they are giving up in exchange for a more predictable suburban lifestyle. Escaping the hard realities of city life, improving the odds on exposure to violent crime, and finding better schools for the kids, cleaner air, and a bit more room to breathe it in—all are considered justifiable reasons for choosing "flight" over "fight."

And yet, having traded the old neighborhood for the new subdivision, some suburbanites are genuinely surprised to find themselves living in an orderly and well-appointed cultural vacuum. Amid the endlessly replicated multiplexes, chain restaurants, and strip malls, many discover that their new surroundings offer no real sense of place, no cultural identity, and precious little soul. Some of the more disenchanted and adventurous have begun to pack up, turn around, and move back into town. Reverse migration is an enabling force behind the new urbanism, and there are opportunities out there for developers and investors who are attuned to this restless and demanding demographic.

This "rebound effect"—the gradual regrouping of populations in cities—has brought a renewed commitment to the revitalization of the urban landscape. With entire neighborhoods of existing urban multifamily

WILL ZACHMANN

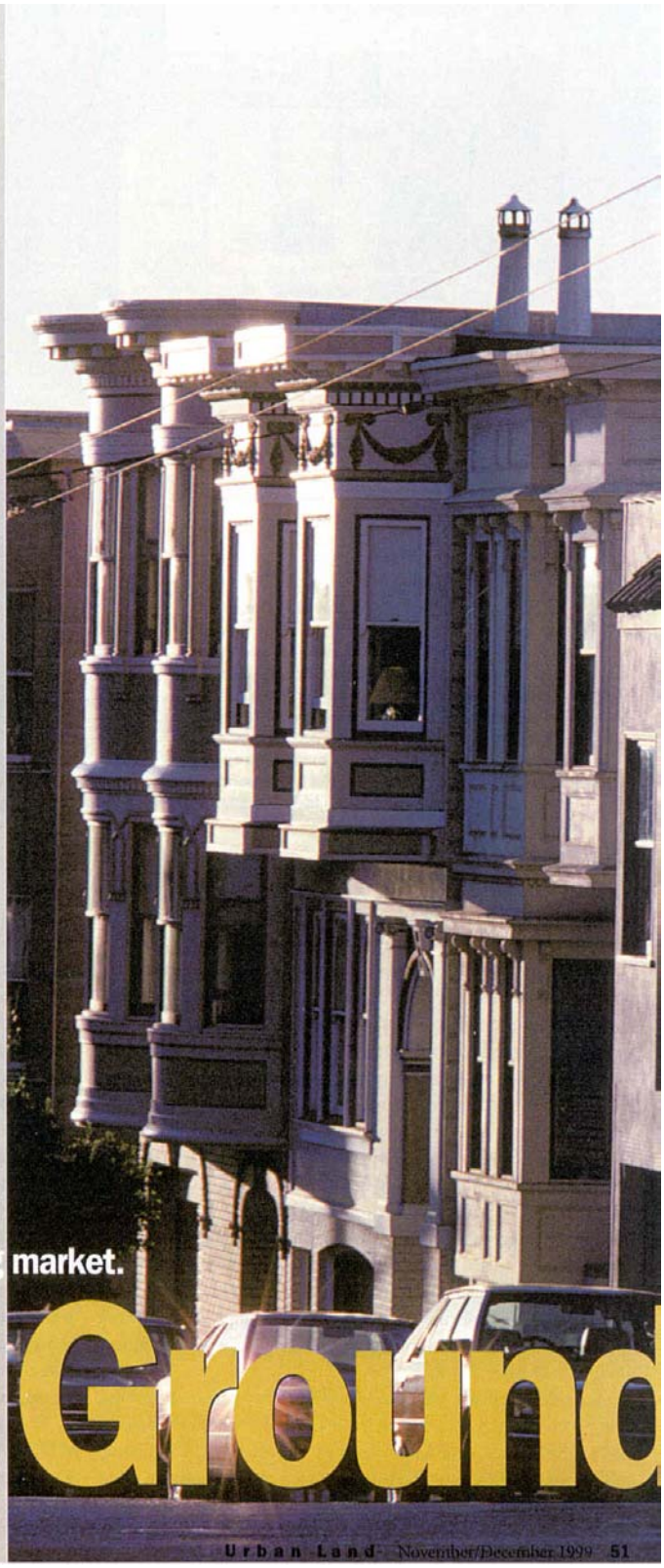
stock well past its prime and in need of extensive renovation or replacement, new multifamily housing projects are underway in places such as New York City; urban areas throughout New Jersey; Holyoke, Massachusetts; Detroit; Washington, D.C.; and other population centers throughout the United States.

A number of these projects involve high-performance buildings, where developers are incorporating elements of sustainable, energy- and resource-efficient design and construction. Community development groups, state and federal agencies, and public/private initiatives are joining in to help ease the transition to these practices. High-performance projects focus on energy efficiency, ventilation, daylighting, and technology-friendly wiring and controls to achieve buildings that are 20 to 40 percent less expensive to operate and maintain. In an effort to make the use of sustainable design and construction part of common practice, a public/private initiative called PATH—the Partnership for Advancing Technologies in Housing—has been putting together demonstration projects across the country. Many of these projects are multifamily, and a significant number fall squarely in the realm of urban infill—an emerging solution to sprawl that also helps alleviate urban blight, provides access to affordable housing, and encourages the rebirth of cities.

The PATH initiative involves technology transfer: bringing readily available but previously underused building products, systems, and design strategies into mainstream construction practice in ways that make economic sense. According to PATH communications director John Blair, "PATH spurs housing industry design and construction change by providing the latest information on innovative building materials, processes, and systems; showcasing innovative housing projects that can serve as models for builders and homeowners throughout the country; promoting focused, cooperative housing research among industry, government, and university partners; and tackling institutional barriers

hand in the multifamily housing market.

New Ground



provide technical assistance, materials specification, and energy analysis services for many of the demonstration projects. SWA assists design and development teams in computational energy use analysis; selection of PATH technologies; cost/benefit analyses; and logistical support in preparation of drawings and specifications. A number of these PATH demonstration projects are taking shape along the eastern seaboard and in the Great Lakes region. While some are designed to serve as subsidized, low-income housing, others are market rate and are targeted to the affordable and moderate-income markets. Some include a mix of ownership and rental units, one is a cohousing development, and the first example is a cooperative development that features a substantial retail component.

The Strivers Gardens, New York City

In the center of Harlem, PATH is involved in an urban renewal project known as the Strivers Gardens. This new, mixed-use development will be located on Frederick Douglass Boulevard (8th Avenue) between West 134th and 135th streets in the Strivers Historic District. When completed in summer 2001, the project will include 32,000 square feet of retail space, 169 cooperative apartments (of which 19 are two- and three-bedroom low-rise duplexes), and 106 underground/above-ground parking spaces.

The high-performance aspects of the building will center on low maintenance and durability, reduced construction costs through value engineering, increased energy efficiency (which enables downsizing of mechanical equipment), and use of sustainable technologies and materials. Together, these features are expected to result in a building that will be more cost effective over time; particularly in

See **BREAKING NEW GROUND,** *page 104*

A statewide project in New Jersey encourages the role of PATH technologies in the production of affordable, sustainable housing. Riverview Housing is a planned four-story, 16-unit apartment complex in Camden that will transform a currently unoccupied, paved-over site into an environmentally responsible building with community gardens and a view overlooking the confluence of the Delaware and Cooper rivers.

BREAKING NEW GROUND, *from page 53*

terms of the energy and maintenance costs to be borne by the building's residents. The Strivers Gardens also will serve as a model for cooperative housing, both in New York City and in urban centers throughout the country.

Designed by the New York–based architectural firm Davis Brody Bond, LLP, the project is being developed by Landmark Projects in cooperation with the New York City Housing Partnership and the New York City Department of Housing Preservation and Development under the Alliance for Neighborhood Commerce, Home Ownership & Revitalization (ANCHOR) program. The $46 million project has received funding from both public and private sources. It is unique among PATH demonstration projects primarily for its massive scope, but also for the fact that both commercial and residential spaces will be fitted with PATH technologies and modeled for optimum energy performance.

PATH technologies identified for possible use in the Strivers Gardens include optimum value engineered (OVE) framing; dimmable fluorescent lighting; drain water heat recovery; high-efficiency air conditioning without CFCs; low-flow plumbing fixtures; low-VOC paints, caulks, sealants, and finishes; high-efficiency, direct-vent boiler; prefinished drywall corners; ventilation control systems; wet spray cellulose wall insulation; ground glass for concrete mix in foundations; full-spectrum fluorescent lighting in kitchens/baths/foyers; low-E (emissivity) glazing; and recycled content carpeting. Many of these features help reduce energy consumption, while others improve indoor environmental quality. Still others help speed construction time, thereby reducing costs.

New Jersey PATH Demonstrations

While other government and private entities seem bent on fighting change in the housing industry at all costs, New Jersey's Department of Community Affairs (DCA) is actively supporting the production of affordable, sustainable housing in the state. Working with New Jersey's largest public utility, Public Service Electric and Gas (PSE&G), DCA is encouraging private and nonprofit developers to design and build better affordable housing by providing financial assistance, training, and technical support. Participating developers are being encouraged to take advantage of PATH resources through all phases of design and construction.

The statewide project, known as the "Sustainable Development/Affordable Housing Pilot Program," requires that developers address program goals in the areas of siting, resource conservation, energy and water efficiency, and occupants' health and safety. Participating developers must secure outside assistance in areas in which they lack in-house expertise.

As construction begins, DCA and PATH will select three of the developments to serve as the basis for case studies. These projects will be monitored from beginning to end to assess the role of PATH technologies in making the projects affordable, sustainable, and cost effective. The nine projects under consideration are targeted for construction in Camden, Jersey City, Newark, East Orange, and Eastampton. Together, they are expected to produce 550 housing units, including both rental (low, moderate, and market rents) and sale units. Two of the DCA/PATH projects are described below.

Riverview Housing will be a new four-story, 16-unit building that will help meet the demand for affordable housing in Camden. Initiated by local nonprofit developer Camden Lutheran Housing, Inc., and designed by William E. Kramer of Kramer/Marks Architects, Philadelphia, this apartment complex will transform a currently unoccupied, paved-over site into an environmentally responsible building complete

with community gardens and a view overlooking the confluence of the Delaware and Cooper rivers.

PATH technologies being considered for use in Riverview include value-engineered framing; high-efficiency combination space heat/domestic hot water heaters; wet spray cellulose insulation; recycled asphalt paving in parking areas; porous paving for pedestrian paths; fly ash concrete; low-flow plumbing fixtures; dimmable compact fluorescent lamps; low-VOC paints, sealants, and finishes; recycled content carpet and tile; low-E windows; flexible gas piping; and a high-efficiency "ecosystem" elevator. Ground breaking for Riverview Housing is planned for next summer.

In Holyoke, Massachusetts, 272 single-family homes, duplexes, flats, and townhouses, both owner-occupied and rental, are planned for a new neotraditional residential community, Churchill Homes, that will also incorporate PATH technologies.

Another New Jersey–based DCA/PATH project is taking shape in the central ward district of Newark. Springdale Village, an urban infill development, will bring 25 for-purchase and 16 rental units of affordable housing, along with eight new commercial storefronts, to this formerly blighted inner-city neighborhood along Springfield Avenue. The developer, JP Affordable Housing of Jersey City, has taken part before in projects under the state development and redevelopment plan. PATH's strategy for Springdale is to produce affordable, environmentally sensitive multifamily housing with reduced long-term operating costs (energy, maintenance, and replacement), and to improve resident comfort.

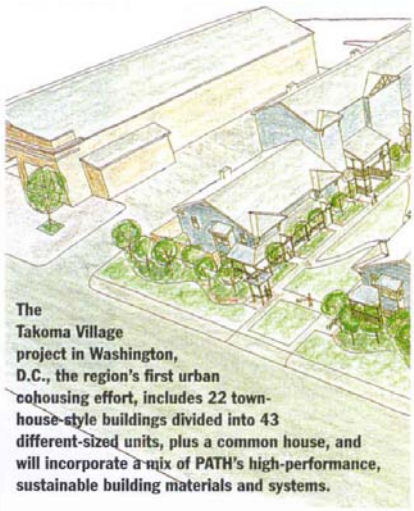
Energy-efficiency strategies identified as appropriate and cost effective include low-E glazing; well-insulated walls, roofs, and slab (including an air-tight drywall installation); ductwork located within the conditioned spaces of each unit; and fluorescent and compact fluorescent lighting fixtures. Together, these load-reducing strategies made it possible to downsize substantially the furnace and central air-conditioning units from models in the original design, resulting in reduced costs. PATH and its project representatives also examined material selections for all aspects of the buildings. Structural wood framing was reduced through OVE methods, such as 24-inch on-center framing, two-stud corners, and drywall clips that help reduce thermal bridging and speed construction time. Exterior finishes selected for their durability and appearance include brick, stucco, and fiber-cement siding; in addition, extended-warranty asphalt shingles will be used on all roofs.

For the interior finishes, good indoor air quality and a focus on environmentally preferable materials drove selection of low-VOC paints, adhesives, and sealants, as well as recycled content carpeting and recycled glass/ceramic floor tiles. Additional project features will include mechanical outside air ventilation, carbon monoxide sensors, and photovoltaically powered security lighting. Springdale Village also will be landscaped with drought-resistant native plants

and will feature a large community garden. As a PATH demonstration project, the solutions developed for Springdale Village can serve as a blueprint for similar projects in New Jersey and in other urban areas around the country.

Churchill Homes, Holyoke, Massachusetts

Situated on a 13-acre site in the Churchill section of Holyoke, Massachusetts, an abandoned 219-unit, World War II–era housing project is awaiting bulldozers. In its place, the Holyoke Housing Authority plans to introduce a new residential community called Churchill Homes, a project consisting of 272 single-family homes, duplexes, flats, and townhouses, along with a multiuse community center. One hundred of the residential properties will be rental units, with the remainder dedicated to owner-occupied and rent-to-own units. To reduce density and allow for the inclusion of common and open areas, some of the homes and apartments will be constructed off the original 27-acre site. Phase I, scheduled for ground breaking next spring, will consist of 60 owner-occupied units and 50 rental units.



The Takoma Village project in Washington, D.C., the region's first urban cohousing effort, includes 22 townhouse-style buildings divided into 43 different-sized units, plus a common house, and will incorporate a mix of PATH's high-performance, sustainable building materials and systems.

The neotraditional site plan, developed by Calthorpe Associates of Berkeley, California, features pedestrian-friendly elements such as rear-loaded parking, one-way streets, traffic calming, and a centrally located park. Remaining faithful to the Victorian-style residential architecture surrounding the site, Dietz & Company Architects of Springfield, Massachusetts, has developed a pattern book of design elements to serve as a guide for other properties in the Churchill Homes neighborhood.

Because energy efficiency, affordability, and durability are key elements of this project, PATH is again working to ensure that optimum value engineering is applied throughout the process of design development. Materials and systems selected for the project will undergo analysis from the standpoint of energy use, impact on first cost, and durability/maintenance over time.

Among the products and technologies to be included in the homes are OVE framing methods; insulated, prefabricated headers; high-performance windows; dimmable compact fluorescent lighting; humidity-sensing ventilation control devices; high-performance integrated boiler/water heaters; low-VOC paints and finishes; and an optimized insulation/envelope package.

In addition to technical assistance from PATH and funding and project management from the Holyoke Housing Authority, financial assistance for this project is being provided by the U.S. Department of Housing and Urban Development under HUD's HOPE VI program. Churchill Homes currently is progressing through the schematic design stages of development.

Takoma Village Cohousing, Washington, D.C.

The Takoma Village project, located in Washington, D.C.'s upper northwest sector, represents a renewed commitment to affordable, energy-efficient, environmentally conscious urban development . . . with a twist. When completed next spring, Takoma Village will be the national capitol region's first urban cohousing project. Cohousing is a type of collaborative housing characterized by a conscious commitment to living as a community. For new developments, shares often are sold based on the size and configuration of individual units, and a substantial common area provides a focal point for social contact, community meetings, and other shared activities.

While Takoma Village incorporates elements of the cohousing movement that began in Denmark in the late 1960s, it has been adapted to suit the American lifestyle. In keeping with this spirit of adaptability, the project's design, materials selected, dwelling unit configuration, and mix can be easily replicated in other urban areas. The facades can be easily modified in response to indigenous contextual architectural elements, so that the basic idea can be adapted to blend in with different neighborhoods and yet retain its own unique—and functional—style.

The project includes 22 townhouse-style buildings divided into 43 one-, two-, three-, and four-bedroom units, plus a common house. This configuration readily supports the cohousing model but also is appropriate for a wide range of mixed-income, urban applications. In more traditional communities, the common house can serve as a community center, outreach facility, or commercial anchor.

The developer/architect, AHD, Inc., of Bethesda, Maryland, will incorporate an optimum mix of PATH's high-performance, sustainable building materials and systems in Takoma Village. Preliminary investigations identified geothermal heating and cooling (a system that relies on the relatively constant temperature of the earth below the frost line) as the HVAC system of choice for Takoma. Low-VOC paints and finishes have been specified to help assure healthy indoor environments, and optimum value engineering will be applied throughout the design process. Other technologies being considered are solar domestic hot water systems, fiberglass-frame windows, durable fiber cement siding, permeable pavement, and renewable framing materials (engineered wood, steel, or combinations thereof). In addition, some of the units have been carefully designed as barrier-free flats that exceed accessibility requirements currently mandated by the Americans with Disabilities Act. Ground breaking for Takoma Village took place this past October.

Woodward Housing, Detroit, Michigan

The cross-town relocation of General Motors World Headquarters from the New Center area

Located in Detroit's premier commercial corridor, Woodward Housing, consisting of 168 loft-style condominiums and townhomes, is another PATH demonstration project slated to serve as an example of technologically advanced housing.

of Detroit to the Renaissance Center is presenting GM's old neighborhood with a number of challenges from the standpoint of urban planning and economic development. The main issue is to come up with a plan for the land and buildings left vacant by the automobile giant's departure.

The New Center Council, Inc., a private, nonprofit business association dedicated to the development, management, and promotion of New Center, has championed the development of the Woodward Housing project and has marshaled the cooperation and support of a public/ private development team drawn from among Detroit's corporate, nonprofit, and academic organizations. Participants include the New Center Council, Crosswinds Communities (a builder in the Great Lakes region), General Motors, the city of Detroit, and Wayne State University. This public/private venture anticipates government and private sector investment of more than $55 million.

When completed, Woodward Housing will encompass new construction of 168 loft-style condominiums and townhomes on a three-block contiguous parcel of land along Woodward Avenue, considered Detroit's premier commercial corridor. Like PATH's demonstration projects in the East and throughout the country, the partnerships that make this project possible are at the heart of PATH's efforts to prove that innovative planning and technologically advanced housing are the prime components of sustainable community development. As many of the projects' participants have discovered, sustainability and profitability often go hand in hand. ■

Will Zachmann is director of communications for Steven Winter Associates, Inc., a building systems consulting firm with offices in Norwalk, Connecticut, and Washington, D.C.

Project Team and Project Partners

Owner

Churchill Homes Limited Partnership

Land Owner/Ground Lessor, Subsidy Administrator, Special Limited Partner and Co-Manager

Holyoke Housing Authority
475 Maple St.
Holyoke, MA 01040

Developer and Co-Manager

Tom Kegelman
The Community Builders, Inc.,
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tomk@tcb.inc.org

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Westfield, MA 01085

Landscape Architect

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110 Main St.
Northampton, MA 01060

General Contractor

Chris Kline
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