



ENERGY
STEP CODE
BUILDING BEYOND THE STANDARD

A study by Industry for Consumers



CANADIAN
HOME BUILDERS' ASSOCIATION
CENTRAL OKANAGAN

December 2018

A Report Prepared for Consumers

By CHBA CO

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1. INTRODUCTION

- 1.1. Since 1943, the Canadian Home Builders' Association (CHBA) Central Okanagan has been "the voice of Canada's residential construction industry." Representing one of the largest industry sectors in Canada, CHBA membership is made up of over 8,500 companies – including home builders, renovators, land developers, trade contractors, product and material manufacturers, building product suppliers, lending institutions, insurance providers, and service professionals.

The Canadian Home Builders' Association Central Okanagan is built on a vision and commitment - a vision of a strong and positive role for the housing industry, and a commitment to support our members and their ability to provide affordability, quality and choice for consumers.

1.2. Study Purpose and Scope

- 1.2.1. The study was commissioned by CHBA British Columbia, in partnership with CHBA Central Okanagan. The purpose of this study was to explore and anticipate the financial impact of the BC Energy Step Code on consumers, identify any modifications to the Step Code necessary to ensure that it effectively and efficiently achieves the desired outcomes, and mitigate negative impacts.
- 1.2.2. The core of the investigation was to determine the costs associated with achieving the proposed metrics and performance requirements for Part 9 buildings, and baselining these against the state of building construction in the Central Okanagan. A comprehensive data set of both energy modelling and associated costing data was developed to answer these questions.

This Report presents the findings of a comprehensive exploration of the economic impacts of the British Columbia (BC) Energy Step Code ("Step Code") in the Central Okanagan. The research represents one of the most extensive analyses of associated costs of the BC Energy Step Code in the region.

1.3. Oversight Committee and Consultant Team Members

- 1.3.1. An interdisciplinary committee led by David Pfuetzner and Les Bellamy conducted all local analysis. The Step Code Committee consisted of a diverse group of 8 industry professionals experienced in the construction of Part 9 buildings and 50 independent industry consultants.

Refer to APPENDIX "A"

Energy Modeling and consultation provided by Einar Halbig B.A.Sc., CEA, Principle at E3 Eco Group.

1.4. Methodology

- 1.4.1. Previous, large scale financial impact studies commissioned by BC housing used per square foot cost analysis sourced from 2017 Altus Construction Guide, with input from the Province. CHBA CO industry professionals recognize the challenges of large-scale studies and the inaccuracy of Class 'D' Estimates.

Cost variances of 20% to 30% are typical with Class 'D' (Sq. Ft Pricing) estimates and do not provide consumers and builders with the accuracy required to make informed decisions. The CHBA CO Step Code analysis applied typical construction process' that are consistent with Fiduciary and contractual obligations of building contractors.

1.5. Typical Regional Architypes and Baseline Specifications

1.5.1. CHBA BC recognizes building Architypes throughout the province vary from one region to another. To address this issue, a Residential Home Designer created full working construction drawings of 3 typical Architypes constructed in the Central Okanagan;

- Small Home: Grade Level Entry (Walk-up) 2307 Sq Ft. Finished
- Medium Home: Rancher with walk-out Basement, 2806 Sq. Ft. Finished
- Small Multi Family (Duplex) 2216 Sq. Ft. per Unit

Refer to Appendix 'D'

1.5.2. Following the design process, detailed finishing specifications were created for each dwelling type. The details included everything from flooring, cabinetry, and plumbing fixtures to the door knobs and towel bars. The finishing specified for the small home are entry level, low cost finishes. The Medium home and Duplex received minor upgrades to the finishing specifications and are consistent with typical construction finishes in the Central Okanagan.

1.6. Building Energy Modelling

1.6.1. Using the most current Version of Natural Resources Canada (NRCan)'s HOT2000 program, Einar Halbig B.A.Sc., CEA modeled each Architype for climate zone 5. Although roughly 27 million modelling options can be produced, The CHBA CO requested 3 to 4 scenarios for each home to reach each step of the Step Code. This resulted in 48 different scenarios that use the most typical processes and the lowest build cost options.

Refer to Appendix 'B'

It should be noted that common perceptions are Step One does not require any changes to building construction. Modeling results produced by Einar Halbig B.A.Sc., CEA for the Small Home and Medium Home conclude improvements must be made to match 'Reference' house based on the provided orientation of the dwellings. The CHBA CO concludes it is improbable and cost prohibitive for land developers to produce building areas that incorporate all homes facing in optimal orientation. In most occurrences, dwellings will be limited by orientation and window placement due to roadways and adjacent buildings. It is reasonable to use a common orientation challenge as a baseline model.

1.7. Construction Costs

1.7.1. To establish Baseline construction costs, a diverse group of licensed builders submitted full drawings and specifications to their typical sub trade and supplier team. Both elemental cost analysis format as well as trade divisional formats were compared between the builder committee members and blended to produce a single cost figure for each home. The builder team included builders certified as R2000, Energy star, CRB / Reno Mark

Renovator, Registered Housing Professional, Red Seal Carpenter and over 25 years experience each in the Residential Construction industry.

It should be noted that individual costing figures produced by each member of the builder team varied less than 5% of overall construction cost.

1.7.2. To establish costs associated with increased energy efficiency, the builder group applied the same tendering process used for baseline costs for each proposed solution modeled by Einar Halbig B.A.Sc., CEA.

1.7.3. One of the research questions and a major overarching goal of this report is to explore the costing impacts of applying various steps of the Step Code to different archetypes in the Central Okanagan. The goal of these investigations is to understand if the costs of implementing the Step Code vary across archetypes and if these costs are significant enough to impact housing affordability.

Past studies commissioned by BC Housing projected only modest increases in construction costs resulting from the adoption of higher requirements for building energy performance. The CHBA CO study has concluded the higher requirements have proven to have demonstrable impact on cost.

1.8. Limitations

1.8.1. A few limitations of the building analysis should be noted. First, the analysis presented here is limited to the archetypes that were studied. As such, it may be easier or harder for other archetypes to reach different levels of the Step Code. For example, a house that has an area spread out over two storeys and a basement will have less difficulty achieving higher levels of performance compared to a single storey, slab-on grade house with a larger area of exposed envelope per unit area of living space.

1.8.2. Second, the modelling approach involves the application of different combinations of ECM (Energy Conservation Measures) to a single base building design for each archetype. More specifically, results are derived by taking a code compliant home and increasing its performance by adding different combinations of ECMs. While this is a traditional, rational and effective method to equitably compare between interventions, it is also limited in its ability to achieve higher performance levels. This is because the approach normalizes any efficiency gains derived from the use of passive design measures.

Designers targeting higher levels of performance will likely pursue a more site-specific design strategy that maximizes passive design methodologies, but many dwellings will be limited by orientation and window placement due to roadways and adjacent buildings.

It should also be noted that cookie cutter style housing is unlikely to become acceptable on a mass scale and that reasonable assumption must be considered when estimating the financial impact of the higher levels of the Step Code.

2. RESULTS

This section presents the results of the costing analysis, as well as additional analysis required to answer some of the key research questions posed by the study.

2.1. Incremental Capital Expense

2.1.1. Incremental Capital Cost refers to the cost premium associated with going to a higher step within the Step Code framework and includes both materials and labour. It does not include any savings that might be realized from lower operating costs. Reductions in the capital costs of mechanical equipment due to the use of better building envelopes has been included, but it does not include potential for increases in design costs– Design fees will most likely remain higher as each home will be designed specifically to its orientation.

2.1.2. Tables 1 to 3 show the results of all architypes studied. Results show both Single Family dwellings resulted in Capital Cost increases of no less than 2% up to 9% for the lower steps and up to 11% for higher steps. The Duplex could achieve the lower steps with a fraction of a percent up to 3% and up to 7% for higher steps.

Table 1. Regional additional costs associated with Step Code, Small Home – Climate Zone 5

		Current Building Code Minimum - Build Cost	\$464,125.00	
STEP	OPTIONS	UPGRADES	COST	Percentage Increase
STEP 1	IT5	TOTAL	\$11,392.36	2%
STEP 2	IT6	TOTAL	\$12,075.56	3%
	IT6a	TOTAL	\$11,958.74	3%
	IT6b	TOTAL	\$11,944.73	3%
	IT7	TOTAL	\$12,075.56	3%
STEP 3	IT8	TOTAL	\$24,048.03	5%
	IT8a	TOTAL	\$17,813.19	4%
	IT8b	TOTAL	\$16,165.31	3%
	IT8c	TOTAL	\$21,671.47	5%
Estimated 2 - 4-week construction delays				
STEP 4	IT9	TOTAL	\$28,255.03	6%
	IT9a	TOTAL	\$33,889.75	7%
	IT10	TOTAL	\$31,327.21	7%
	IT11	TOTAL	\$41,812.02	9%
	IT12	TOTAL	\$32,045.70	7%
	IT13	TOTAL	\$28,503.49	6%
Estimated 4 - 6-week construction delays				
STEP 5	IT14	TOTAL	\$34,795.38	7%
	IT15	TOTAL	\$41,059.38	9%
	IT16	TOTAL	\$34,795.38	7%

Refer to APENDIX 'C' for full details

Table 2. Regional additional costs associated with Step Code, Medium Home – Climate Zone 5

MEDIUM HOME				
		Current Building Code Minimum Build Cost	\$518,000.00	
STEP	OPTIONS	UPGRADES	COST	Percentage Increase
STEP 1	IT5	TOTAL	\$19,398.88	4%
	IT6	TOTAL	\$20,294.88	4%
	IT14	TOTAL	\$21,638.88	4%
STEP 2	IT7	TOTAL	\$27,453.08	5%
	IT8	TOTAL	\$21,611.50	4%
	IT15	TOTAL	\$18,923.50	4%
	IT16	TOTAL	\$18,811.50	4%
STEP 3	IT9	TOTAL	\$29,739.72	6%
	IT10	TOTAL	\$33,328.11	6%
	IT17	TOTAL	\$48,784.11	9%
	IT18	TOTAL	\$34,288.50	7%
	IT19	TOTAL	\$20,228.80	4%
Estimated 2 - 4-week construction delays				
STEP 4	IT11	TOTAL	\$44,977.90	9%
	IT13	TOTAL	\$31,878.37	6%
	IT20	TOTAL	\$41,425.26	8%
Estimated 4 - 6-week construction delays				
STEP 5	IT12	TOTAL	\$57,247.31	11%
	IT21	TOTAL	\$45,682.85	9%
	IT22	TOTAL	\$54,897.15	11%

Refer to APENDIX 'C' for full details

2.1.3. The CHBA CO study shows Capital Cost Expenses are substantially higher for Single Family dwellings than the results produce in the 2017 Metric Research report. However, Capital Cost Expense results for Duplex are similar.

Table 3. Regional additional costs associated with Step Code, Duplex – Climate Zone 5

DUPLEX				
		Current Building Code Minimum - Build Cost	\$887,000.00	
STEP	OPTIONS	UPGRADES	COST	Percentage Increase
STEP 1	BASE	TOTAL	\$2,520.00	0.3%
STEP 2	IT1	TOTAL	\$13,431.51	2%
	IT2	TOTAL	\$12,087.51	1%
	IT2a	TOTAL	\$12,020.31	1%
STEP 3	IT3	TOTAL	\$27,856.62	3%
	IT3a	TOTAL	\$19,001.27	2%
Estimated 2 - 4-week construction delays				
STEP 4	IT4	TOTAL	\$48,842.84	6%
	IT6a	TOTAL	\$53,952.28	6%
	IT6b	TOTAL	\$53,840.28	6%
	IT6c	TOTAL	\$62,730.84	7%
Estimated 4 - 6-week construction delays				
STEP 5	IT5a	TOTAL	\$65,889.24	7%
	IT5b	TOTAL	\$57,210.70	6%

Refer to APENDIX 'C' for full details

3. EFFECTIVENESS OF STEP CODE ON GHG REDUCTION

The goal of this section is to provide information for all stake holders and encourage solutions.

Energy efficiency, GHG Emissions, and Housing Affordability are top of mind for most Canadians. Members of the CHBA Central Okanagan are on the front line of these issues and have a responsibility to provide consumers and authorities with information to assist them with decision making.

When it comes to climate change and greenhouse gas emissions, the housing sector is a Canadian success story. The residential sector is the only sector to meet original Kyoto Protocol reduction targets. As an association, CHBA has been a leader and champion of energy efficiency, leading development and adoption of Canada's world leading R-2000 program, participating extensively in ENERGY STAR initiatives, supporting the first-ever energy requirements in the national building code, and advocating for more incentives like the very successful national energy retrofit program that addressed the real challenge in the housing sector—the older existing housing stock.

Today, CHBA is leading on voluntary advanced energy efficiency through its Net Zero Energy Housing Council and its Net Zero Home labelling program.

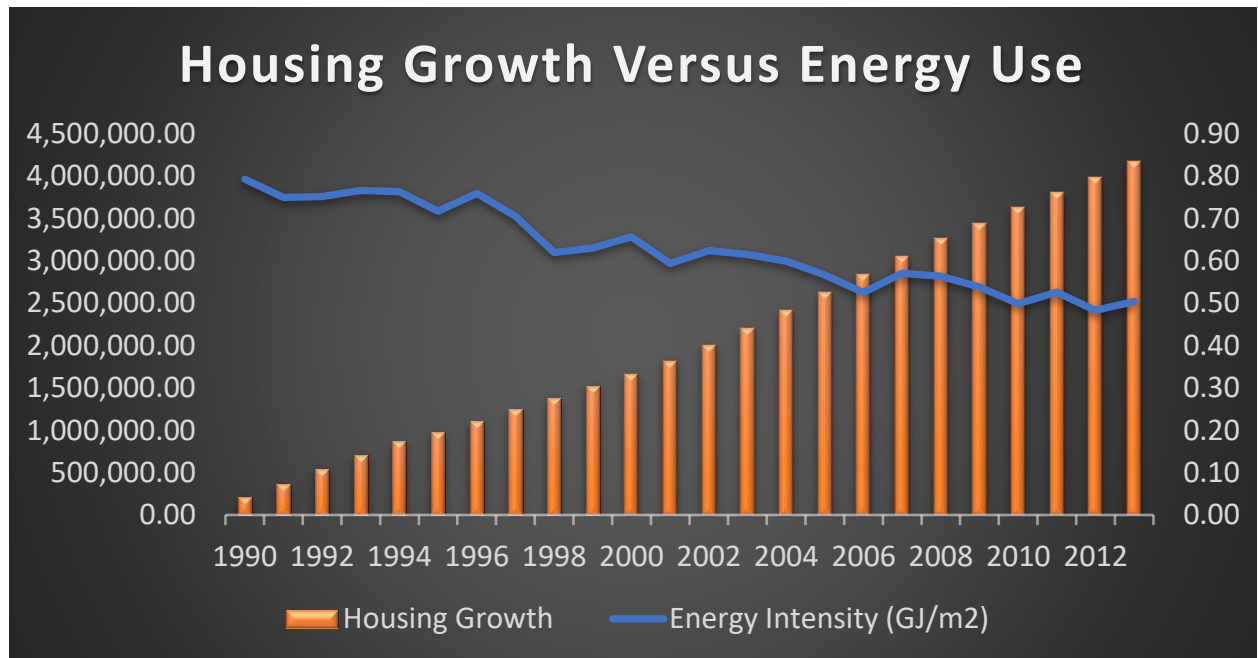


Figure 1. Housing Growth versus Energy Use

From 1990 to 2014, GHG emissions in the housing sector were down 11%, despite the number of houses having grown by 38% nationally. With new housing energy efficiency 37% better than it was in 1990, and new construction accounting for less than 1% of the total housing stock each year, it is critical to recognize that the real opportunity for reduced GHG Emissions in housing is through energy-efficient retrofits.

It is important to note that this success in the housing sector did not come about through mandating energy efficiency in codes, but from ongoing innovation—thanks in large part to joint government and industry research and development.

It also came from very successful retrofit programming for the existing housing stock, and voluntary improvement in new construction through programs like Energy Star.

While CHBA supports efforts to go further to improve energy efficiency and address climate change, care must be taken to ensure that this doesn't come at the cost of reduced housing affordability.

BC is facing serious housing affordability challenges and it is important that regulation not result in the next generation of home buyers being locked out of the market.

It is time for Provincial and Municipal priorities for housing and the environment to pursue a single, simple but extremely important goal:

Let's build better houses for the same price or less.

If there is a need to address a given issue with the code, then it needs to be done in a way that doesn't increase costs. If there isn't such a means, then R&D and innovation is needed to find a solution before regulating it. This is the time for real innovation—and BC has the capacity to lead the way.

Given today's affordability challenge, this is a position that should be taken by the Provincial and Municipal Governments at large and with respect to the BC Building Code, Bylaws and regulations. It should be supported by Provincial & Federal R&D dollars, leveraged with those of the private sector.

The Provincial government has stated that it would like to see Net Zero Ready energy performance in all new homes by 2032. While this level of performance is attainable today, it has a steep price tag based on recent research done by the CHBA CO. This is fine for those who can afford that investment, but for many, that simply isn't the case.

We need to drive this cost down to the point where it does not impact affordability and lock even more people out of home ownership. We have about 13 years to figure out how—or less if the province and municipalities implement these levels even faster, which is likely and a concern.

Adopting such levels faster without cost effective solutions will be very problematic for those aspiring to join the ranks of the middle-class through homeownership. Our only chance for success is if government at all levels focuses R&D investment to yield the necessary cost savings, and code changes are implemented to respect cost considerations.

Most innovation in construction is non-proprietary, so public sector investment in R&D is a very appropriate Provincial role.

Another key tool is voluntary programming.

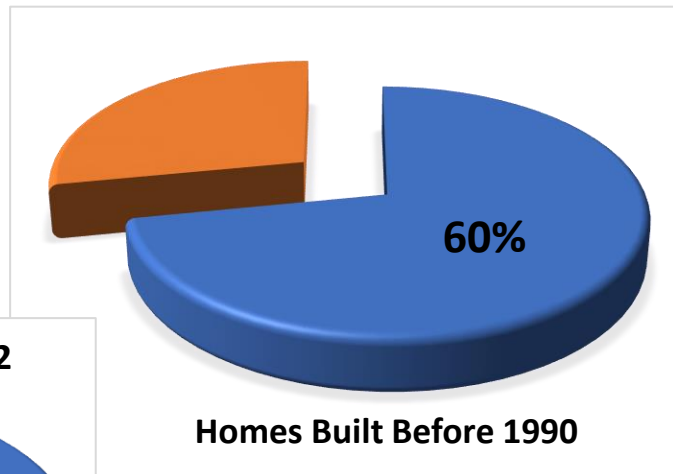
Initiatives like ENERGY STAR, R-2000 and CHBA's Net Zero Home Labelling Program enable homeowners to choose higher levels of performance on a voluntary basis, moving the market forward without damaging affordability in entry-level homes.

This approach supports innovation and provides market streamlining, ensuring that incremental costs are optimized and linked to homeowner benefits. Providing leading-edge, voluntary programming is key to advancing energy efficiency and supporting innovation in housing while protecting choice and affordability. Regulation if necessary, can follow, after costs have been reduced.

Figure 2. Homes Built Before 1990

Existing Housing Stock – why is that important?

Statistics Canada reports 60% of existing housing stock in BC was built before 1990. National studies report on average, homes built before 1990 consume 100% more energy than a home built today.



Stats Canada also reports another 39% of existing stock was built between 1990 and 2012.

The same National study reports homes built in that time frame on average consume 60% more energy than a home built today.

Figure 4. New Homes 1% of Housing Stock

Homes Built Between 1990 & 2012

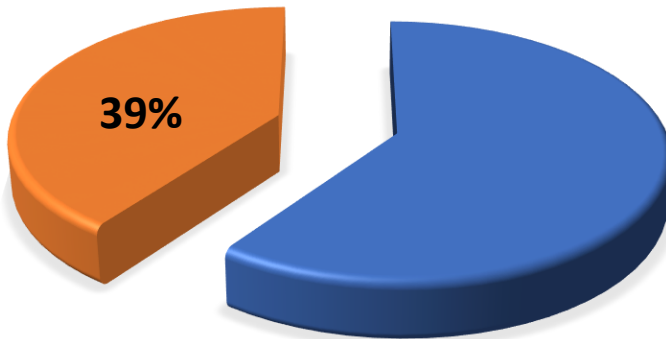


Figure 3. Homes Built Between 1990 & 2012

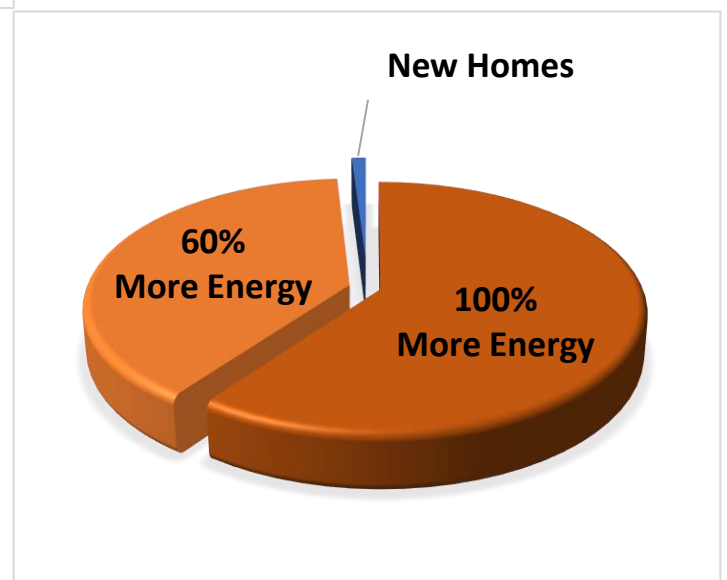
For clarity – 99% of all existing housing in BC on average consume between 60% and 100% more energy than homes built today.

Emphasis should be placed on energy efficient retrofits through policy measures like energy-efficiency tax credits.

A permanent, refundable home renovation tax credit, using the EnerGuide Rating System, will most effectively address the government's climate change goals related to housing.

By requiring homeowners to get receipts to qualify, our research suggests reduced underground economy activity can make such a program cost neutral to government.

Every dollar invested in an existing home will yield four to seven times more GHG reductions than the same dollar investment in a new home.



BC's housing sector has an important role to play in helping to meet Canada's climate change goals. Much has already been accomplished, and much more can be done, but it must be done in a way that addresses the real issues and doesn't erode housing affordability. We have a uniquely Canadian history of industry/government collaboration in this area, and we need to build on this for the future.

4. SUMMARY AND RECOMMENDATIONS

- 4.1. In conclusion, the CHBA CO can not endorse mandatory implementation of the BC Energy Step Code at this time. The 'Step Code' does not provide a cost neutral solution and fails to address the largest energy use – existing stock.

The CHBA CO endorses any voluntary steps taken to reduce GHG emissions and encourages government at all levels to incentivize consumers and builders to do so.

APPENDIX 'A'

Step Code Committee

Align West Homes Ltd.
AuthenTech Homes Ltd.
Bellamy Homes Inc.
Centra Windows
Ian Paine Construction Ltd
Peoples Insulation
Quality Air Care Heating & Air Conditioning Total
Home Solutions Inc.

Energy Advisor

Einar Halbig B.A.Sc., CEA, Principle at E3 Eco Group.

Consultants

OK Vac & Alarm,
Coast Wholesale,
Beyond Audio,
Norelco Cabinets,
Small's Flooring,
Tailored Living,
Colonial Countertops,
Quality Sun Decks,
JK Glass,
Rona,
People's Drywall,
Duotek Electric,
Robinson Lighting,
Mountain Extreme
Excavating,
The Fireplace Den,
Bucknell Construction,
Creative Door,
Nicholson Enterprises,
Quality Air Care & Plumbing,
Top Rung,
Trueline Moulding,

VC Décor,
Valley Masonry,
About Face Painting,
Kitchen & Bath Classics,
Sun Valley Roofing,
Nicholson
Exteriors,
Everlasting Stucco,
C&M Stucco,
Westeck Windows & Doors,
Acutruss,
Concept Electric,
First Class Plumbing,
Kelowna Vacuums,
Plygem Windows,
Madge Roofing,
Sundeck Center,
Inside Out Masonry,
Conroy Exteriors,
Okanagan Insulation,
Galley Contracting,
Amber Millwork,

Westwood Fine Cabinetry,
Lights on Banks,
Competition Glass,
Dannburg Flooring,
Quiktherm Insulation,
The Carpenter' Son,
ASA Heating,
Brock White

APPENDIX 'B'

New House Upgrade Matrix- Step Code

Einar Halbig B.A.Sc., CEA, Principle at E3 Eco Group.



E3 Eco Group Inc. New House Upgrade Matrix- SFD- Step Code for HDD<3000

Project:	Duplex
Client:	CHBA CO
Address:	
Date:	5-Oct-2018
House Modeled:	Modelled As single Family House in Hot2000 V.11.5

Base Case House Construction Specifications	
Floor Slab	R12 at perimeter of the SOG and non at bsmt slab
Below Grade Wall Construction	2x6 @ 24"OC with R22 batt insulation
Above Grade Wall Construction	2x6 @ 24"OC with R22 batt insulation
Floors Over Unheated Space	11 7/8" TJI @16"OC with R28? batt insulation
Roof Construction	Engineered truss @ 24"o.c with R50 insulation
Window Specification	Maximum USI 1.80, SHGC 0.25
Door Specification	Maximum USI 1.80 (steel or fiberglass skin with polyurethane insulation core)
Ventilation Specification	HRV 71% SRE @0C 64% SRE @-25
Air Tightness	3.5 ACH@50Pa; an estimate based on typical local construction
Space Heating System	Condensing natural gas Furnace, AFUE 92%
Supplemental Space Heating	Natural gas direct vent sealed fire place with spark ignition
Domestic Water Heating System	80 US gallon electric water heater
Space Cooling	AC SEER 14.5

Base Case Energy Credits:	
Low energy lighting	None
Energy Star appliances	None
Drain Water Heat Recovery	None
Total Heated Floor area (sq. m)	447.1
Frost line based on HOT2000 11.3 climate data	2 ft
Location	Kelowna
HDD	3400
Step Code	3000<HDD<3999

Conversion factor GJ to kWh= 277.7777778
Conversion factor MJ to kWh= 0.277777778

		N/A (The model was completed in General Mode)																		
Iteration	Upgrade Description:	Energuide Rating (GJ)	Reference House (GJ)	EnerGuide Assumed Electric Base Loads (GJ)	Energuide Rating (GJ) NOT including EnerGuide assumed electric base loads	Reference House (GJ) NOT including EnerGuide assumed electric base loads	% Better than the Reference House, NOT including EnerGuide assume electric base loads	ACH @50 Pa	Space Heating (kWh)	Space Cooling (kWh)	DHW energy (kWh)	Ventilation energy (kWh)	Auxiliary Energy Required (from Full House Report) (MJ/year)	Design Heat loss (Watts)	MEUI (kWh/m2/yr)	TEDI (kWh/sq m/year)	Step Code Level:	Step Code Level: Airtightness	Step Code Level: MEUI	Step Code Level: TEDI
Base Case	None	N/A	N/A	N/A	N/A	N/A	N/A	3.5	24310	1816	8334	1004	82622	15654	79.3	51.3	1	1	1	1
Step 1 Criteria							N/A	N/A							N/A	N/A				
Base Case	None	N/A	N/A	N/A	N/A	N/A	N/A	3.5	24310	1816	8334	1004	82622	15654	79.3	51.3	1	1	1	1
Step 2 Criteria							N/A	3.0							75.0	45.0				
IT 1	Increase air tightness to 3.0 ACH@50Pa, add R12 insulation under full slab, increase below grade wall insulation and above grade wall insulation to R24, increase exposed floor insulation to R40, upgrade windows to USI 1.60 and solar heat gain coefficient 0.35	N/A	N/A	N/A	N/A	N/A	N/A	3.0	19561	2464	8336	1004	66483	14291	70.2	41.3	2	2	2	2

IT 2	Increase air tightness to 2.5 ACH@50Pa, add R12 insulation under full slab, upgrade windows to USI 1.60 and solar heat gain coefficient 0.35	N/A	N/A	N/A	N/A	N/A	N/A	2.5	19043	2468	8336	1004	64722	13844	69.0	40.2	2	3	3	2
IT 2a	Increase air tightness to 2.5 ACH@50Pa, add R12 insulation under full slab, upgrade windows to USI 1.60 and solar heat gain coefficient 0.35, downgrade foundation wall insulation to 2x4 @24"OC with R14 batts	N/A	N/A	N/A	N/A	N/A	N/A	2.5	19544	2469	8336	1004	66425	14008	70.1	41.3	2	3	2	2
Step 3 Criteria							N/A	2.5							70.0	40.0				
IT 3	Increase air tightness to 2.5 ACH @50pa, Add R16 insulation under full slab, increase below grade wall insulation and above grade wall insulation to R24, increase exposed floor insulation to R40, replace the windows to USI 1.6 and solar heat gain coefficient 0.35, increase HRV efficiency to 80% sensible recovery efficiency, add R5 insulation to Foundation walls	N/A	N/A	N/A	N/A	N/A	N/A	2.5	18906	1905	8333	1004	64257	13384	67.4	39.9	3	3	3	3
IT 3a	Increase air tightness to 2.5 ACH@50Pa, add R12 insulation under full slab, increase below grade wall insulation and above grade wall insulation to R40, increase exposed floor insulation to R40, upgrade windows to USI 1.60 and solar heat gain coefficient 0.40	N/A	N/A	N/A	N/A	N/A	N/A	2.5	18614	2475	8333	1004	63263	13665	68.1	39.3	3	3	3	3
IT 3b	Increase air tightness to 2.5 ACH@50Pa, add R12 insulation under full slab, increase exposed floor insulation to R40, upgrade windows to USI 1.40 and solar heat gain coefficient 0.40	N/A	N/A	N/A	N/A	N/A	N/A	2.5	18453	2489	8336	1004	62717	13595	67.7	39.0	3	3	3	3
Step 4 Criteria							N/A	1.5							55.0	30.0				
IT 4	Increase air tightness to 1.5 ACH@50Pa, Add R16 insulation under full slab, upgrade below grade wall insulation to R24 plus R10 continuous insulation, upgrade above grade wall insulation to R24 plus R4 exterior insulation, increase exposed floor insulation to R40, replace the windows to USI 1.4 and solar heat gain coefficient 0.35, increase HRV efficiency to 80% sensible recovery efficiency, increase furnace efficiency to 96%, add DWHRS (ex. Power pipe C3-72 inches)	N/A	N/A	N/A	N/A	N/A	N/A	1.5	13356	1969	7688	1004	46720	10768	53.7	29.0	4	4	4	4
IT 6a	Increase air tightness to 1.5ACH@50Pa, add R16 insulation under full slab, increase below grade wall insulation to R24, increase above grade wall insulation to R24 and add R10 exterior insulation, increase exposed floor insulation to R40, upgrade the windows to USI 1.40 and solar heat gain coefficient 0.40, add R10 insulation to foundation walls, increase furnace efficiency to 96%, add DWHRS (ex. Power pipe C3-72 inches)	N/A	N/A	N/A	N/A	N/A	N/A	1.5	12675	2624	7692	1004	44340	10787	53.7	27.5	4	4	4	4
IT 6b	Increase air tightness to 1.5ACH@50Pa, add R16 insulation under full slab, increase below grade wall insulation to R24, increase above grade wall insulation to R24 plus R10 exterior insulation, increase exposed floor insulation to R40, upgrade the windows to USI 1.40 and solar heat gain coefficient 0.40, add air source heat pump (HSPF 7.1, SEER 14.5) to furnace	N/A	N/A	N/A	N/A	N/A	N/A	1.5	5713	2333	8335	1004	44349	10787	38.9	27.6	4	4	4	4
IT 5c	Increase air tightness to 1.0ACH@50Pa, add R16 insulation under full slab, increase below grade wall insulation to R24 plus R10 continuous insulation, increase above grade wall insulation to R24 plus R15 exterior insulation, increase exposed floor insulation to R40, upgrade the windows to USI 1.00 and solar heat gain coefficient 0.40, upgrade furnace to 96% AFUE, add Drain Water Heat Recovery System (72" long model in each unit)	N/A	N/A	N/A	N/A	N/A	N/A	1.0	7457	2905	7690	1004	26086	8186	42.6	16.2	4	5	4	5
Step 5 Criteria							N/A	1.0							35.0	20.0		5		

IT 5a	Increase air tightness to 1.0ACH@50Pa, add R16 insulation under full slab, increase below grade wall insulation to R24 plus R10 continuous insulation, increase above grade wall insulation to R24 plus R15 exterior insulation, increase exposed floor insulation to R40, upgrade the windows to USI 1.20 and solar heat gain coefficient 0.40, upgrade furnace to 96% AFUE, add air source heat pump (HSPF 9.0, SEER 14.5) to furnace	N/A	N/A	N/A	N/A	N/A	N/A	1.0	3406	2518	8333	1004	30413	8778	34.1	18.9	5	5	5	5
IT 5b	Increase air tightness to 1.0ACH@50Pa, add R16 insulation under full slab, increase below grade wall insulation to R24 plus R5 continuous insulation, increase above grade wall insulation to R24 plus R10 exterior insulation, increase exposed floor insulation to R40, upgrade the windows to USI 1.00 and solar heat gain coefficient 0.40, upgrade furnace to 96% AFUE, add air source heat pump (HSPF 9.0, SEER 14.5) to furnace	N/A	N/A	N/A	N/A	N/A	N/A	1.0	3710	2573	8333	1004	28752	8568	34.9	17.9	5	5	5	5
IT 5c	Increase air tightness to 1.0ACH@50Pa, add R12 insulation under full slab, increase below grade wall insulation to R24 plus R5 continuous insulation, increase above grade wall insulation to R24, increase exposed floor insulation to R40, upgrade the windows to USI 0.80 and solar heat gain coefficient 0.40, upgrade furnace to 96% AFUE, add air source heat pump (HSPF 9.0, SEER 14.5) to furnace	N/A	N/A	N/A	N/A	N/A	N/A	1.0	3256	2614	7694	1004	29071	8556	32.6	18.1	5	5	5	5



E3 Eco Group Inc. New House Upgrade Matrix- SFD- Step Code for HDD<3000

Project:	Single Family House- Medium House
Client	CHBA CO
Address:	
Date:	3-Oct-2018
House Modeled:	Single Family Houses, modelled in Hot2000 11.5

Base Case House Construction Specifications	
Floor Slab	None for below frost line slab, R12 for slab above frost line
Below Grade Wall Construction	2x6 @ 24"OC with R22 batt insulation
Above Grade Wall Construction	2x6 @ 24"OC with R22 batt insulation
Floors Over Unheated Space	3/4" plywood, 11 7/8" floor joists @19.25" OC, R28
Roof Construction	Engineered truss @ 24"o.c with R50 insulation
Window Specification	Maximum USI 1.80, SHGC 0.25
Door Specification	Maximum USI 1.80 (steel or fiberglass skin with polyurethane insulation core)
Ventilation Specification	HRV 71% @0 and 64% @-25
Air Tightness	3.5 ACH@50Pa; an estimate based on typical local construction
Space Heating System	Condensing natural gas furnace, AFUE 92%
Supplemental Space Heating	Natural gas direct vent sealed fire place with spark ignition
Domestic Water Heating System	80 US gallon electric water heater
Space Cooling	AC with SEER 14.5

Base Case Energy Credits:	
Low energy lighting	None
Energy Star appliances	None
Drain Water Heat Recovery	None
Total Heated Floor area (sq. m)	266.6
Frost line based on HOT2000 11.3 climate data	2 ft
Location	Kelowna
HDD	3400
Step Code	3000<HDD<3999

Conversion factor GJ to kWh= 277.7777778
Conversion factor MJ to kWh= 0.277777778

Iteration	Upgrade Description (over and above Base Case Construction Specifications):	Energid Rating (GJ)	Reference House (GJ)	EnerGuide Assumed Electric Base Loads (GJ)	Energid Rating (GJ) NOT including EnerGuide assumed electric base loads	Reference House (GJ) NOT including EnerGuide assumed electric base loads	% Better than the Reference House, NOT including EnerGuide assume electric base loads	ACH @50 Pa	Space Heating (GJ)	Space Cooling (GJ)	DHW energy (GJ)	Ventilation energy (GJ)	Auxiliary Energy Required (from Full House Report) (MJ/year)	Design Heat Loss (Watts)	MEUI (kWh/m ² /year)	TEDI (kWh/sq. m/year)	Step Code Level:	Step Code Level: Airtightness	Step Code Level: % Lower than Reference or MEUI	Step Code Level: TEDI
Base Case	None	114	99	25.62	88.4	73.4	-20.4%	3.5	67.40	3.94	15.73	0.88	63634	11243	91.6	66.3	0	1	0	1
Step 0 Criteria							0.0%	N/A							N/A	N/A	1	1	1	1

IT 1	increase airtightness to 3.5ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts,	102	96	25.62	76.4	70.4	-8.5%	3.5	56	4.67	15.72	0.88	52471	10264	80.1	54.7	0	1	0	1
IT 2	increase airtightness to 3.0ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts	100	96	25.6	74.4	70.4	-5.7%	3.0	53.44	4.69	15.74	0.88	50448	9877	77.9	52.6	0	2	0	1
IT 3	increase airtightness to 3.0ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts, increase exposed floors insulation to R40	100	96	25.6	74.4	70.4	-5.7%	3.0	53.42	4.69	15.74	0.88	50429	9875	77.9	52.5	0	2	0	1
IT 4	increase airtightness to 3.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 exposed floors insulation to R40	100	96	25.6	74.4	70.4	-5.7%	3.0	53.12	4.69	15.74	0.88	50154	9850	77.6	52.3	0	2	0	1
Step 1 Criteria							0.0%	N/A							N/A	N/A				
IT 5	increase airtightness to 3.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.25, increase above grade wall insulation to R24, increase exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, upgrade furnace to 96% AFUE	96	96	25.6	70.4	70.4	0.0%	3.0	49.07	4.24	15.74	0.88	47686	9317	72.9	49.7	1	2	2	1
IT 6	increase airtightness to 3.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.35, increase above grade wall insulation to R24 batts, increase exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, upgrade furnace to 96% AFUE, added 5% natural ventilation for summertime cooling	96	96	25.6	70.4	70.4	0.0%	3.0	49.82	3.47	15.74	0.88	48415	9762	72.8	50.4	1	2	2	1
IT 14	increase airtightness to 3.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.25, increase above grade wall insulation to R24, increase exposed floors insulation to R40, upgrade furnace to 96% AFUE, upgrade air conditioner to 18 SEER	96	96	25.6	70.4	70.4	0.0%	3.0	49.54	3.88	15.74	0.88	48140	9397	73.0	50.2				
Step 2 Criteria							10.0%	3.0							75.0	45.0				
IT 7	increase airtightness to 3.0ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, increase below grade wall insulation to R24 exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, upgrade furnace to 96% AFUE, added 5% natural ventilation, add R4 insulation to the foundation walls, add R4 insulation to ext. walls	88	96	25.6	62.4	70.4	11.4%	3.0	40.43	5.44	15.73	0.88	39285	8652	65.1	40.9	2	2	3	2

IT 8	increase airtightness to 3.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, increase below grade wall insulation to R24 batts, increase exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, add R5 insulation to the foundation walls, add R4 to pony walls	93	96	25.6	67.4	70.4	4.3%	3.0	45.55	5.31	15.72	0.88	43005	9135	70.3	44.8	2	2	2	2
IT 15	increase airtightness to 2.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, increase below grade wall insulation to R24 batts, increase exposed floors insulation to R40, change HRV to 70% Sensible recovery efficiency, add R5 insulation to the foundation walls, add R4 to pony walls	90	96	25.6	64.4	70.4	8.5%	2.0	41.92	5.37	15.37	0.88	39577	8446	66.2	41.2	2	3	3	2
IT 16	increase airtightness to 3.0ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.2 SHGC 0.25, increase above grade wall insulation to R24 batts, increase below grade wall insulation to R24 batts, increase exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, add R5 insulation to the foundation walls	91	96	25.6	65.4	70.4	7.1%	3.0	44.78	4.43	15.72	0.88	42280	8732	68.6	44.1	2	2	3	2
Step 3 Criteria							20.0%	2.5							70.0	40.0				
IT 9	increase airtightness to 2.5ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 below grade insulation to R24 batt, increase exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, add 1" R5 insulation to the foundation walls, add 1" R4 to pony walls, add 1" R4 to exterior walls	87	96	25.6	61.4	70.4	12.8%	2.5	39.51	5.48	15.73	0.88	37299	8260	64.2	38.9	3	3	3	3
IT 10	increase airtightness to 2.0ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 below grade insulation to R24 exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency, Upgrade furnace to 96% AFUE add R10 insulation to the foundation walls, add R10 to R4 to exterior walls	83	96	25.6	57.4	70.4	18.5%	2.0	35.47	5.52	15.72	0.88	34462	7776	60.0	35.9	3	3	3	3
IT 17	increase airtightness to 2.0ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 below grade insulation to R24 exposed floors insulation to R40, change HRV to 70% Sensible recovery efficiency, Upgrade furnace to 96% AFUE add R10 insulation to the foundation walls, add R10 to R4 to exterior walls	84	96	25.6	58.4	70.4	17.1%	2.0	35.91	5.52	15.72	0.88	34891	7856	60.5	36.4	3	3	3	3

IT 18	increase airtightness to 2.5ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 below grade insulation to R24 exposed floors insulation to R40, upgrade HRV to 70% Sensible recovery efficiency, add 1" R5 insulation to the foundation walls, add 1" R4 to 1" R4 to exterior walls	88	96	25.6	62.4	70.4	11.4%	2.5	39.96	5.48	15.73	0.88	37730	8340	64.7	39.3	3	3	3	3
IT 19	increase airtightness to 1.0 ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 1.2 SHGC 0.25, increase above grade wall insulation to R24 below grade wall insulation to R24 batt ,increase exposed floors insulation to R40, Upgrade furnace to 96% AFUE	84	96	25.6	58.4	70.4	17.1%	1.0	37.43	4.51	15.73	0.88	36370	7429	61.0	37.9	3	5	3	3
Step 4 Criteria							40.0%	1.5							55.0	30.0				
IT 11	increase airtightness to 1.5 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batt plus add R12 exterior insulation, increase below grade insulation to R24 batt plus add R15 continuous insulation, increase exposed floors insulation to R40, upgrade HRV to 80% Sensible recovery efficiency	78	96	25.6	52.4	70.4	25.6%	1.5	29.83	5.73	15.70	0.88	28165	6825	54.3	29.3	4	4	4	4
IT 13	increase airtightness to 1.5 ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24, increase below grade wall insulation to R24 batt, increase exposed floors insulation to R40, upgrade furnace to 96% AFUE	78	96	25.6	52.4	70.4	25.6%	1.5	29.43	6.04	15.75	0.88	28595	6896	54.3	29.8	4	4	4	4
IT 20	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batt and add R8 exterior insulation, increase below grade insulation to R24 batt and add R15 insulation to the foundation walls, increase exposed floors insulation to R40	78	96	25.6	52.4	70.4	25.6%	1.0	30.44	5.70	15.71	0.88	28741	6789	54.9	29.9	4	5	4	4
Step 5 Criteria							N/A	1.0							35.0	20.0				
IT 12	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24 plus add R8 exterior insulation, increase below grade wall insulation to R24 batt plus add R10 continuous insulation, increase exposed floors insulation to R40, add air source heat pump (HSPF 7.1 SEER 14.5)	57	96	25.6	31.4	70.4	55.4%	1.0	8.16	6.38	15.71	0.88	18868	5491	32.4	19.7	5	5	5	5

IT 21	increase airtightness to 0.6 ACH@50Pa, add R16 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24 plus add R5 exterior insulation, increase below grade wall insulation to R24 batt plus add R10 continuous insulation, increase exposed floors insulation to R40, add air source heat pump (HSPF 7.1 SEER 14.5), upgrade to HRV to 80% Sensible Recovery Efficiency	57	96	26.6	30.4	69.4	56.2%	0.6	8.16	6.29	15.71	0.88	19064	5367	32.3	19.9	5	5	5	5
IT 22	increase airtightness to 0.6 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24 plus add R5 exterior insulation, increase below grade wall insulation to R24 batt plus add R10 continuous insulation, increase exposed floors insulation to R40, add air source heat pump (HSPF 7.1 SEER 14.5), upgrade HRV to 75% Sensible Recovery Efficiency	57	966	25.6	31.4	940.4	96.7%	0.6	8.20	6.29	15.71	0.88	19178	5398	32.4	20.0	5	5	5	5



E3 Eco Group Inc. New House Upgrade Matrix- SFD- Step Code for HDD<3000

Project:	Single Family House- small size
Client	CHBA CO
Address:	
Date:	11-Sep-2018
House Modeled:	Single Family Houses, modelled in Hot2000 11.5

Base Case House Construction Specifications	
Floor Slab	None for below frost line slab, R12 for slab above frost line
Below Grade Wall Construction	2x6 @ 24"OC with R20 batt insulation
Above Grade Wall Construction	2x6 @ 24"OC with R22 batt insulation
Floors Over Unheated Space	3/4" plywood, 11 7/8" floor joists @19.25" OC, R28
Roof Construction	Engineered truss @ 24"o.c with R50 insulation
Window Specification	Maximum USI 1.80, SHGC 0.25
Door Specification	Maximum USI 1.80 (steel or fiberglass skin with polyurethane insulation core)
Ventilation Specification	HRV 71% @0 and 64% @-25
Air Tightness	3.5 ACH@50Pa; an estimate based on typical local construction
Space Heating System	Condensing natural gas furnace, AFUE 92%
Supplemental Space Heating	Natural gas direct vent sealed fire place with spark ignition
Domestic Water Heating System	80 US gallon electric water heater
Space Cooling	AC SEER 14.5

Base Case Energy Credits:	
Low energy lighting	None
Energy Star appliances	None
Drain Water Heat Recovery	None
Total Heated Floor area (sq. m)	252.1
Frost line based on HOT2000 11.3 climate data	2 ft
Location	Kelowna
HDD	3400
Step Code	3000<HDD<3999

Conversion factor GJ to kWh= 277.7777778

Conversion factor MJ to kWh= 0.277777778

Iteration	Upgrade Description (over and above Base Case Construction Specifications):	Energuide Rating (GJ)	Reference House (GJ)	EnerGuide Assumed Electric Base Loads (GJ)	Energuide Rating (GJ) NOT including EnerGuide assumed electric base loads	Reference House (GJ) NOT including EnerGuide assumed electric base loads	% Better than the Reference House, NOT including EnerGuide assume electric base loads	ACH @50 Pa	Space Heating (GJ)	Space Cooling (GJ)	DHW energy (GJ)	Ventilation energy (GJ)	Auxiliary Energy Required (from Full House Report) (MJ/year)	Design Heat Loss (Watts)	MEUI (kWh/m2/yr)	TEDI (kWh/sq m/year)	Step Code Level:	Step Code Level: Airtigh tness	Step Code Level: % Lower than Reference or MEUI	Step Code Level: TEDI
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Base case		99	91	25.6	73.4	65.4	-12.2%	3.5	54.33	2.78	15.72	0.58	51288	9364	80.9	56.5	0	1	0	1
Step 0 Criteria							0.0%	N/A							N/A	N/A				
IT 1																				
IT 2	add R12 insulation to the slab	99	91	25.6	73.4	65.4	-12.2%	3.5	53.92	2.78	15.72	0.58	50905	9328	80.4	56.1	0	1	0	1
IT 3	upgrade windows to USI 1.6 SHGC 0.30	96	92	25.6	70.4	66.4	-6.0%	3.5	50.80	2.98	15.72	0.58	47961	9106	77.2	52.8	0	1	0	1
Step 1 Criteria							0.0%	N/A							N/A	N/A				
IT 4	increase airtightness to 3.0 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30	93	92	25.6	67.4	66.4	-1.5%	3.0	48.12	2.99	15.72	0.58	45433	8664	74.3	50.1	0	2	0	1
IT 4a	increase airtightness to 2.0 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30	89	92	25.6	63.4	66.4	4.5%	2.0	43.64	3.00	15.72	0.58	41204	8664	69.4	45.4	1	3	1	1
IT 5	increase airtightness to 3.0 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40	89	92	25.6	63.4	66.4	4.5%	3.0	44.45	3.00	15.71	0.58	41961	8297	70.2	46.2	1	2	1	1
IT 5a	increase airtightness to 3.0 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40	89	92	25.6	63.4	66.4	4.5%	3.0	44.45	3.00	15.71	0.58	41961	8297	70.2	46.2	1	2	1	1
Step 2 Criteria							10.0%	3.0							75.0	45.0		2		
IT 6	increase airtightness to 2.5 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts, add 1" EPS insulation to	87	92	25.6	61.4	66.4	7.5%	2.5	42.22	3.01	15.71	0.58	39861	7892	67.8	43.9	2	3	3	2
IT 6a	increase airtightness to 2.0 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts, increase exposed floors insulation to R40	85	92	25.6	59.4	66.4	10.5%	2.0	40.03	3.02	15.71	0.58	37788	7489	65.4	41.6	2	3	3	2
IT 6b	increase airtightness to 2.0 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts	85	92	25.6	59.4	66.4	10.5%	2.0	40.5	3.01	15.71	0.58	38239	7551	65.9	42.1	2	3	3	2
IT 6c	increase airtightness to 2.5 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.6 SHGC 0.30, increase above grade wall insulation to R24 batts, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40	89	92	25.6	63.4	66.4	4.5%	3.0	44.45	3	15.71	0.58	41961	8297	70.2	46.2	1	2	2	1
IT 7	increase airtightness to 2.5 ACH@50Pa, add R12 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, add 1" EPS insulation to	84	92	25.6	58.4	66.4	12.0%	2.5	39.3	3.21	15.71	0.58	37100	7656	64.8	40.9	2	3	3	2
Step 3 Criteria							20.0%	2.5							70.0	40.0		3		

IT 8	increase airtightness to 1.5 ACH@50Pa, add R15 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, and add 1 inch of R4 insulation to the exterior above grade walls, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, add Drain water Heat recovery (min 72 inches long ex. Power pipe C3-72). Upgrade the furnace efficiency to 96% AFUE	72	91	25.6	46.4	65.4	29.1%	1.5	29.47	3.34	13.23	0.77	28632	6280	51.6	31.5	3	4	4	3
IT 8a	increase airtightness to 1.5 ACH@50Pa, add R15 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, add Drain water Heat Recovery System (min 72 inches long ex. Power pipe C3-72). upgrade the furnace efficiency to 96% AFUE	76	91	25.6	50.4	65.4	22.9%	1.5	32.93	3.28	13.23	0.77	31994	6704	55.3	35.3	3	4	3	3
IT 8b	increase airtightness to 1.5 ACH@50Pa, add R15 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, add Drain water Heat Recovery System (min 72 inches long ex. Power pipe C3-72), upgrade the furnace efficiency to 96% AFUE	77	91	25.6	51.4	65.4	21.4%	1.5	34.39	3.27	13.25	0.77	33414	6861	56.9	36.8	3	4	3	3
IT 8c	increase airtightness to 2.5 ACH@50Pa, add R15 insulation to the slab, upgrade windows to USI 1.4 SHGC 0.35, increase above grade wall insulation to R24 batts, and add 1 inch of R4 insulation to the exterior above grade walls, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, add Drain water Heat recovery (min 72 inches long ex. Power pipe C3-72). Upgrade the furnace	77	91	25.6	51.4	65.4	21.4%	2.5	34.01	3.31	13.23	0.77	33047	7163	56.5	36.4	3	3	3	3
Step 4 Criteria							40.0%	1.5							55.0	30.0		4		
IT 9	increase airtightness to 1.5 ACH@50Pa, add R15 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24 batts, and add 1 inch of R4 insulation to the exterior above grade walls, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, add Drain water Heat recovery (min 72 inches long ex. Power pipe C3-72). Upgrade the furnace	67	91	25.6	41.4	65.4	36.7%	1.5	23.54	3.56	13.25	0.77	22871	5570	45.3	25.2	4	4	4	4
IT 9a	increase airtightness to 1.5 ACH@50Pa, add R15 insulation to the slab, upgrade windows to USI 1.2 SHGC 0.25, increase above grade wall insulation to R24 batts and add R8 exterior insulation to the exterior above grade walls, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, add Drain water Heat recovery (min 72 inches long ex. Power pipe C3-72). upgrade the furnace	68	91	25.6	42.4	65.4	35.2%	1.5	24.65	3.54	13.24	0.77	23957	5720	46.5	26.4	4	4	4	4
IT 10	increase airtightness to 1.5 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24 batts, and add 1 inch of R4 insulation to the exterior above grade walls, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, add Drain water Heat recovery (min 72 inches long ex. Power pipe C3-72). Upgrade the furnace efficiency to 96% AFUE, Upgrade the HRV to 90% Sensible Recovery Efficiency and Less Air	52	91	25.6	26.4	65.4	59.7%	1.0	8.68	3.48	13.24	0.77	20609	5145	28.8	22.7	4	5	5	4
IT 10a	increase airtightness to 1.5 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.20 SHGC 0.25, increase above grade wall insulation to R24 batt, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min HSPF 7.1 and SEER 14.5)	59	91	25.6	33.4	65.4	48.9%	1.5	13.55	3.29	15.71	0.77	29433	6475	36.7	32.4	3	4	4	3

IT 11	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 0.8 SHGC 0.35, increase above grade wall insulation to R24 batts, and add 1 inch of R4 insulation to the exterior above grade walls, add 2" EPS insulation to foundation wall insulation and also first storey above grade walls, increase exposed floors insulation to R40, add Drain water Heat recovery (min 72 inches long ex. Power pipe C3-72), Upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	51	91	25.6	25.4	65.4	61.2%	1.0	8.13	3.5	13.23	0.77	19394	5005	28.2	21.4	4	5	5	4
IT 11a	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.20 SHGC 0.25, increase above grade wall insulation to R24 batt and add R8 exterior insulation, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	57	91	25.6	31.4	65.4	52.0%	1.0	11.03	3.43	15.71	0.77	23927	5766	34.1	26.4	4	5	5	4
IT 12	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.00 SHGC 0.25, increase above grade wall insulation to R24 batt and add R8 exterior insulation, add 1" EPS insulation to foundation wall insulation, increase exposed floors insulation to R40, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	56	91	25.6	30.4	65.4	53.5%	1.0	10.06	3.54	15.71	0.77	21762	5498	33.1	24.0	4	5	5	4
IT 13	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.00 SHGC 0.25, increase above grade wall insulation to R24 batt and add R8 exterior insulation, add R8 continuous insulation to foundation wall insulation, increase exposed floors insulation to R40, upgrade the furnace efficiency to 96% AFUE	68	91	25.6	42.4	65.4	35.2%	1.0	21.79	3.73	15.71	0.77	21175	5441	46.3	23.3	4	5	4	4
Step 5 Criteria							N/A	1.0							35.0	20.0		5		
IT 14	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.00 SHGC 0.40, increase above grade wall insulation to R24 batt and add R10 exterior insulation, add R8 continuous insulation to foundation wall insulation, increase exposed floors insulation to R40, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	54	91	25.6	28.4	65.4	56.6%	1.0	7.43	4.71	15.71	0.77	15984	4933	31.5	17.6	5	5	5	5
IT 15	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.20 SHGC 0.40, increase above grade wall insulation to R24 batt and add R15 exterior insulation, add R10 continuous insulation to foundation wall insulation, increase exposed floors insulation to R40, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	54	91	25.6	28.4	65.4	56.6%	1.0	7.51	4.64	15.69	0.77	16151	4952	31.5	17.8	5	5	5	5
IT 16	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 1.20 SHGC 0.40, increase above grade wall insulation to R24 batt and add R10 exterior insulation, add R8 continuous insulation to foundation wall insulation, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	56	91	25.6	30.4	65.4	53.5%	1.0	9.15	4.37	15.70	0.77	17645	5149	33.0	19.4	5	5	5	5
IT 17	increase airtightness to 1.0 ACH@50Pa, add R20 insulation to the slab, upgrade windows to USI 0.80 SHGC 0.40, increase above grade wall insulation to R24 batt and add R5 exterior insulation, add R8 continuous insulation to foundation wall insulation, upgrade the furnace efficiency to 96% AFUE and add an Air Source Heat Pump (min. HSPF 7.1 and SEER 14.5)	55	91	25.6	29.4	65.4	55.1%	1.0	7.93	4.63	15.70	0.77	17389	5140	32.0	19.2	5	5	5	5

APPENDIX 'C'

Energy Conservation Measures

ECM provided by Einar Halbig B.A.Sc., CEA, Principle at E3 Eco Group.

- Small Home
- Medium Home
- Duplex

SMALL HOME				
		Current Building Code Minimum - Build Cost	\$464,125.00	
STEP	OPTIONS	UPGRADES	COST	Percentage Increase
STEP 1	IT5	3.0 ACH	\$100.00	
		R12 INSULATION TO SLAB	\$2,167.64	
		USI 1.6 SHGC 0.30 WINDOW UPGRADE	\$2,041.00	
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$1,220.61	
		TOTAL	\$11,392.36	2%
STEP 2	IT6	2.5 ACH	\$150.00	
		R12 INSULATION TO SLAB	\$2,167.64	
		USI 1.6 SHGC 0.30 WINDOW UPGRADE	\$2,041.00	
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$1,293.81	
		TOTAL	\$12,075.56	3%
	IT6a	2.0 ACH	\$250.00	
		R12 INSULATION TO SLAB	\$2,167.64	
		USI 1.6 SHGC 0.30 WINDOW UPGRADE	\$2,041.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$2,575.10	
		TOTAL	\$11,958.74	3%
	IT6b	2.0 ACH	\$250.00	
		R12 INSULATION TO SLAB	\$2,167.64	
		USI 1.6 SHGC 0.30 WINDOW UPGRADE	\$2,041.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		Energy Advisor	\$1,850.00	

		Administration	\$500.00		
		Site Supervisor (includes 2 day delay)	\$400.00		
		Air Tightness Materials	\$60.00		
		Management Fee (12%)	\$2,561.09		
		TOTAL	\$11,944.73	3%	
	IT7	2.5 ACH	\$150.00		
		R12 INSULATION TO SLAB	\$2,167.64		
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$2,041.00		
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11		
		R24 INSULATION	\$820.00		
		R40 EXPOSED FLOOR	\$1,295.00		
		Energy Advisor	\$1,850.00		
		Administration	\$500.00		
		Site Supervisor (includes 2 day delay)	\$400.00		
		Air Tightness Materials	\$60.00		
		Management Fee (12%)	\$1,293.81		
		TOTAL	\$12,075.56	3%	
	STEP 3	IT8	1.5 ACH	\$250.00	
			R15 INSULATION TO SLAB	\$2,546.31	
			USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$4,362.00	
			1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
			R24 INSULATION	\$820.00	
			R40 EXPOSED FLOOR	\$1,295.00	
			R5 EXTERIOR INSULATION	\$3,807.00	
			FURNACE 96%	\$300.00	
HRV 80% (W/ POSCH BATH FANS)			\$2,500.00		
Drain water Heat Recovery System (Power pipe C3-72)			\$2,050.00		
Energy Advisor			\$1,850.00		
Administration			\$500.00		
Site Supervisor (includes 2 day delay)			\$400.00		
Air Tightness Materials			\$60.00		
Management Fee (12%)			\$1,809.61		
TOTAL			\$24,048.03	5%	
IT8a		1.5 ACH	\$250.00		
		R15 INSULATION TO SLAB	\$2,546.31		
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$4,362.00		
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11		
		R24 INSULATION	\$820.00		
		R40 EXPOSED FLOOR	\$1,295.00		
		FURNACE 96%	\$300.00		
		Drain water Heat Recovery System (Power pipe C3-72)	\$2,050.00		
		Energy Advisor	\$1,850.00		
	Administration	\$500.00			
Site Supervisor (includes 2 day delay)	\$400.00				
Air Tightness Materials	\$60.00				
Management Fee (12%)	\$1,881.77				
TOTAL	\$17,813.19	4%			

	IT8b	1.5 ACH	\$250.00	
		R15 INSULATION TO SLAB	\$2,546.31	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$4,362.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		FURNACE 96%	\$300.00	
		Drain water Heat Recovery System (Power pipe C3-72)	\$2,050.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$1,732.00	
		TOTAL	\$16,165.31	3%
		IT8c	2.5 ACH	\$150.00
	R15 INSULATION TO SLAB		\$2,546.31	
	USI 1.4 SHGC 0.35 WINDOW UPGRADE		\$4,362.00	
	1" EPS INSUL TO FOUNDATION WALL		\$1,498.11	
	R24 INSULATION		\$820.00	
	R40 EXPOSED FLOOR		\$1,295.00	
	R5 EXTERIOR INSULATION		\$3,807.00	
	FURNACE 96%		\$300.00	
	Drain water Heat Recovery System (Power pipe C3-72)		\$2,050.00	
	Energy Advisor		\$1,850.00	
	Administration		\$500.00	
	Site Supervisor (includes 2 day delay)		\$400.00	
	Air Tightness Materials		\$60.00	
	Management Fee (12%)		\$2,033.05	
	TOTAL	\$21,671.47	5%	
Estimated 2 - 4 week construction delays				
	IT9	1.5 ACH	\$200.00	
		R15 INSULATION TO SLAB	\$2,546.31	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$5,831.00	
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		R5 EXTERIOR INSULATION	\$3,807.00	
		FURNACE 96%	\$300.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Drain water Heat Recovery System (Power pipe C3-72)	\$2,050.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$1,947.61	
		TOTAL	\$28,255.03	6%
		1.5 ACH	\$200.00	

STEP 4	IT9a	R15 INSULATION TO SLAB	\$2,546.31	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$5,831.00	
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		*R8 EXTERIOR W/ RAIN SCREEN	\$8,838.00	
		FURNACE 96%	\$300.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Drain water Heat Recovery System (Power pipe C3-72)	\$2,050.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$2,551.33	
		TOTAL	\$33,889.75	7%
	IT10	1.0 ACH	\$400.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI .8 SHGC 0.35 WINDOW UPGRADE	\$5,831.00	
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		R5 EXTERIOR INSULATION	\$3,807.00	
		FURNACE 96%	\$300.00	
		Furnace downsize savings	-\$300.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	
		Drain water Heat Recovery System (Power pipe C3-72)	\$2,050.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$2,049.84	
		TOTAL	\$31,327.21	7%
	IT11	1.0 ACH	\$400.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI .8 SHGC 0.35 WINDOW UPGRADE	\$5,831.00	
		2" EPS INSUL TO FOUNDATION WALL	\$4,590.92	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		R5+2" EXTERIOR W/ RAIN SCREEN	\$10,407.00	
		FURNACE 96%	\$300.00	
		Furnace downsize savings	-\$300.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	
		Drain water Heat Recovery System (Power pipe C3-72)	\$2,050.00	

		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$2,841.84	
		TOTAL	\$41,812.02	9%
	IT12	1.0 ACH	\$400.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI 1.00 SHGC 0.25 WINDOW UPGRADE	\$5,831.00	
		1" EPS INSUL TO FOUNDATION WALL	\$1,498.11	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		*R8 EXTERIOR W/ RAIN SCREEN	\$8,838.00	
		FURNACE 96%	\$300.00	
		Furnace downsize savings	-\$300.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$2,287.33	
		TOTAL	\$32,045.70	7%
	IT13	1.0 ACH	\$400.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI 1.00 SHGC 0.25 WINDOW UPGRADE	\$5,831.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		*R8 EXTERIOR W/ RAIN SCREEN	\$8,838.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$2,893.23	
		TOTAL	\$28,503.49	6%
	Estimated 4 - 6 week construction delays			
	IT14	1.0 ACH	\$400.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI 1.00 SHGC 0.25 WINDOW UPGRADE	\$5,831.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		*R10 EXTERIOR W/ RAIN SCREEN	\$10,600.00	
		FURNACE 96%	\$300.00	
		Furnace downsize savings	-\$300.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	

STEP 5		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$3,153.12	
		TOTAL	\$34,795.38	7%
	IT15	1.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$0.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI 1.20 SHGC 0.40 WINDOW UPGRADE	\$5,831.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		*R15 EXTERIOR W/ RAIN SCREEN	\$16,550.00	
		FURNACE 96%	\$300.00	
		Furnace downsize savings	-\$300.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$3,867.12	
		TOTAL	\$41,059.38	9%
	IT16	1.0 ACH	\$400.00	
		R20 INSULATION TO SLAB	\$2,966.26	
		USI 1.20 SHGC 0.40 WINDOW UPGRADE	\$5,831.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		*R10 EXTERIOR W/ RAIN SCREEN	\$10,600.00	
		FURNACE 96%	\$300.00	
		Furnace downsize savings	-\$300.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$3,153.12	
		TOTAL	\$34,795.38	7%

MEDIUM HOME				
		Current Building Code Minimum Build Cost	\$518,000.00	
STEP	OPTIONS	UPGRADES	COST	Percentage Increase
STEP 1	IT5	3.0 ACH	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.4 SHGC 0.25	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		FURNACE 96%	\$650.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,078.45	
		TOTAL	\$19,398.88	4%
	IT6	3.0 ACH	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.6 SHGC 0.35	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		FURNACE 96%	\$650.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Added 5% Natural Ventilation	\$800.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,174.45	
		TOTAL	\$20,294.88	4%
	IT14	3.0 ACH	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.4 SHGC 0.35	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		FURNACE 96%	\$650.00	
		A/C 18 SEER	\$4,500.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,318.45	
		TOTAL	\$21,638.88	4%
		3.0 ACH	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.4 SHGC 0.35	\$7,658.00	
		R24 BATTS BELOW GRADE WALL INSUL	\$991.25	

STEP 2	IT7	R24 + R40 EXPOSED FLOOR	\$1,000.00	
		FURNACE 96%	\$300.00	
		R4 EXTERIOR W/ RAIN SCREEN	\$5,750.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Added 5% Natural Ventilation	\$800.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,941.40	
		TOTAL	\$27,453.08	5%
	IT8	3.0 ACH	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.4 SHGC 0.35	\$7,658.00	
		R24 BATTS BELOW GRADE WALL INSUL	\$991.25	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Add R5 to Foundation Walls	\$1,634.30	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,315.52	
		TOTAL	\$21,611.50	4%
	IT15	2.0 ACH	\$100.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.4 SHGC 0.35	\$7,658.00	
		R24 BATTS BELOW GRADE WALL INSUL	\$991.25	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		HRV 70% (DOWNGRADE)	\$0.00	
		Add R5 to Foundation Walls	\$1,634.30	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,027.52	
		TOTAL	\$18,923.50	4%
	IT16	3.0 ACH	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		UPGRADE WINDOWS TO USI 1.4 SHGC 0.35	\$7,658.00	
		R24 BATTS BELOW GRADE WALL INSUL	\$991.25	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		HRV 70% (DOWNGRADE)	\$0.00	
		Add R5 to Foundation Walls	\$1,634.30	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	

		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$2,015.52	
		TOTAL	\$18,811.50	4%
STEP 3	IT9	2.5 ACH	\$100.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		ADD 1" R5 INSUL TO THE FOUNDATION WALLS	\$1,634.30	
		ADD 1" R4 TO PONY WALLS	\$1,838.59	
		R4 EXTERIOR W/ RAIN SCREEN	\$5,750.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$3,186.40	
		TOTAL	\$29,739.72	6%
	IT10	2.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$250.00	
		Add R20 to slab	\$6,237.84	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		FURNACE 96%	\$300.00	
		Add R10 to Foundation Walls	\$3,251.40	
		R4 EXTERIOR W/ RAIN SCREEN	\$5,750.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$3,570.87	
		TOTAL	\$33,328.11	6%
	IT17	2.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$250.00	
		ADD R20 INSUL TO THE SLAB	\$6,237.84	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		CHANGE HRV TO 70%	\$2,500.00	
		FURNACE 96%	\$300.00	
		R10 INSUL TO FOUNDATION WALLS	\$3,251.40	
		R4 TO EXTERIOR WALLS	\$5,750.00	
		*R10 EXTERIOR W/ RAIN SCREEN	\$13,800.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$5,226.87	
		TOTAL	\$48,784.11	9%
		2.5 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$250.00	

	IT18	ADD R16 INSUL TO THE SLAB	\$3,262.43	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$7,658.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		CHANGE HRV TO 70%	\$2,500.00	
		Add R5 to Foundation Walls	\$1,634.30	
		R4 plus R4 TO EXTERIOR WALLS	\$11,500.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$3,673.77	
		TOTAL	\$34,288.50	7%
	IT19	1.0 ACH	\$400.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		USI 1.2 SHGC 0.25 WINDOW UPGRADE	\$10,289.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		FURNACE 96%	\$300.00	
		Energy Advisor	\$1,850.00	
		Administration	\$500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Management Fee (12%)	\$2,167.37	
		TOTAL	\$20,228.80	4%
Estimated 2 - 4 week construction delays				
STEP 4	IT11	1.5 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$200.00	
		ADD R20 INSUL TO THE SLAB	\$6,237.84	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$10,289.00	
		R24 INSULATION	\$820.00	
		R40 EXPOSED FLOOR	\$1,295.00	
		R5+2" EXTERIOR W/ RAIN SCREEN	\$10,407.00	
		FURNACE 96%	\$300.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		HEAT PUMP 14.5 SEER	\$2,650.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$4,819.06	
		TOTAL	\$44,977.90	9%
	IT13	1.5 ACH	\$200.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		USI 0.8 SHGC 0.35 WINDOW UPGRADE	\$15,289.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		R15 to Foundation Walls	\$3,251.40	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	

		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$3,415.54	
		TOTAL	\$31,878.37	6%
IT20		1.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$400.00	
		ADD R20 INSUL TO THE SLAB	\$6,237.84	
		USI 1.4 SHGC 0.35 WINDOW UPGRADE	\$10,289.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		*R8 EXTERIOR W/ RAIN SCREEN	\$13,600.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$4,438.42	
		TOTAL	\$41,425.26	8%
Estimated 4 - 6 week construction delays				
STEP 5	IT12	1.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$400.00	
		ADD R20 INSUL TO THE SLAB	\$6,237.84	
		USI 0.8 SHGC 0.35 WINDOW UPGRADE	\$15,289.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		*R8 EXTERIOR W/ RAIN SCREEN	\$13,600.00	
		R10 to Foundation Walls	\$2,356.83	
		HEAT PUMP @14.5 SEER	\$2,650.00	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$6,133.64	
		TOTAL	\$57,247.31	11%
	IT21	0.6 ACH	\$1,500.00	
		ADD R16 INSUL TO THE SLAB	\$3,262.43	
		USI 0.8 SHGC 0.35 WINDOW UPGRADE	\$15,289.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		R5 EXTERIOR INSULATION	\$5,150.00	
		R10 to Foundation Walls	\$2,356.83	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		HEAT PUMP @14.5 SEER	\$2,650.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$4,894.59	

	IT22	TOTAL	\$45,682.85	9%
		0.6 ACH	\$1,500.00	
		ADD R20 INSUL TO THE SLAB	\$6,237.84	
		USI 0.8 SHGC 0.35 WINDOW UPGRADE	\$15,289.00	
		R24 + R40 EXPOSED FLOOR	\$1,000.00	
		R5 EXTERIOR INSULATION	\$5,150.00	
		R10 to Foundation Walls	\$2,356.83	
		HRV 80% (W/ POSCH BATH FANS)	\$2,500.00	
		HEAT PUMP @14.5 SEER	\$2,650.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$5,251.64	
		Management Fee (12%)	\$5,881.84	
		TOTAL	\$54,897.15	11%

DUPLEX				
		Current Building Code Minimum - Build Cost	\$887,000.00	
STEP	OPTIONS	UPGRADES	COST	Percentage Increase
STEP 1	BASE	3.0 ACH	\$0.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$270.00	
		TOTAL	\$2,520.00	0.3%
STEP 2	IT1	3.0 ACH	\$0.00	
		ADD R12 INSUL TO THE SLAB	\$4,470.42	
		R24 + R40 EXPOSED FLOOR	\$1,450.00	
		UPGRADE WINDOWS TO USI 1.6 SHGC 0.35	\$3,822.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$1,439.09	
		TOTAL	\$13,431.51	2%
	IT2	2.5 ACH	\$250.00	
		ADD R12 INSUL TO THE SLAB	\$4,470.42	
		UPGRADE WINDOWS TO USI 1.6 SHGC 0.35	\$3,822.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$1,295.09	
		TOTAL	\$12,087.51	1%
	IT2a	2.5 ACH	\$200.00	
		ADD R12 INSUL TO THE SLAB	\$4,470.42	
		UPGRADE WINDOWS TO USI 1.6 SHGC 0.35	\$3,822.00	
		Downgrade FND wall to 2x4@24"OC - R14 batts	-\$10.00	
		Energy Advisor	\$1,500.00	
		Administration	\$500.00	
		Site Supervisor (includes 1 day delay)	\$210.00	
		Air Tightness Materials	\$40.00	
		Management Fee (12%)	\$1,287.89	
		TOTAL	\$12,020.31	1%
		2.5 ACH	\$200.00	
		ADD R16 INSUL TO THE SLAB	\$5,267.08	
		R24 + R40 EXPOSED FLOOR	\$1,450.00	
		UPGRADE WINDOWS TO USI 1.6 SHGC 0.35	\$8,085.00	
		HRV 80% (W/ POSCH BATH FANS)	\$5,000.00	

STEP 3	IT3	R5 to Foundation Walls	\$2,059.90		
		Energy Advisor	\$1,850.00		
		Administration	\$500.00		
		Site Supervisor (includes 2 day delay)	\$400.00		
		Air Tightness Materials	\$60.00		
		Management Fee (12%)	\$2,984.64		
		TOTAL	\$27,856.62	3%	
	IT3a	2.5 ACH	\$150.00		
		ADD R12 INSUL TO THE SLAB	\$4,470.42		
		R24 + R40 EXPOSED FLOOR	\$1,450.00		
		UPGRADE WINDOWS TO USI 1.40 0.40	\$8,085.00		
		Energy Advisor	\$1,850.00		
		Administration	\$500.00		
		Site Supervisor (includes 2 day delay)	\$400.00		
		Air Tightness Materials	\$60.00		
		Management Fee (12%)	\$2,035.85		
		TOTAL	\$19,001.27	2%	
	Estimated 2 - 4 week construction delays				
		IT4	1.5 ACH	\$400.00	
			ADD R16 INSUL TO THE SLAB	\$5,267.08	
R24 + R40 EXPOSED FLOOR			\$1,450.00		
R10 to Foundation Walls			\$2,970.60		
FURNACE 96%			\$1,300.00		
R5 EXTERIOR INSULATION			\$6,800.00		
Windows to USI 1.4 SHGC 0.35			\$10,862.00		
HRV 80% (W/ POSCH BATH FANS)			\$5,000.00		
Drain water Heat Recovery System (C3-72)			\$4,100.00		
Energy Advisor			\$2,000.00		
Administration			\$1,500.00		
Site Supervisor (includes 2 day delay)			\$400.00		
Air Tightness Materials			\$60.00		
Additional Design Fees			\$1,500.00		
Management Fee (12%)			\$5,233.16		
TOTAL			\$48,842.84	6%	
IT6a			1.5 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$5,267.08		
		R24 + R40 EXPOSED FLOOR	\$1,450.00		
		Windows to USI 1.4 SHGC 0.40	\$10,862.00		
		*R10 EXTERIOR W/ RAIN SCREEN	\$16,762.00		
		R10 to Foundation Walls	\$2,970.60		
		FURNACE 96%	\$1,300.00		
		Drain water Heat Recovery System (C3-72)	\$4,100.00		
		Energy Advisor	\$2,000.00		
		Administration	\$1,500.00		
		Site Supervisor (includes 2 day delay)	\$400.00		
		Air Tightness Materials	\$60.00		
		Additional Design Fees	\$1,500.00		

STEP 4		Management Fee (12%)	\$5,780.60	
		TOTAL	\$53,952.28	6%
	IT6b	1.5 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$5,267.08	
		R24 + R40 EXPOSED FLOOR	\$1,450.00	
		Windows to USI 1.4 SHGC 0.40	\$10,862.00	
		*R10 EXTERIOR W/ RAIN SCREEN	\$16,762.00	
		R10 to Foundation Walls	\$2,970.60	
		HEAT PUMP @14.5 SEER	\$5,300.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$5,768.60	
		TOTAL	\$53,840.28	6%
	IT6c	1.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$5,267.08	
		R24 + R40 EXPOSED FLOOR	\$1,450.00	
		Windows to USI 1.4 SHGC 0.40	\$10,862.00	
		R10 to Foundation Walls	\$2,970.60	
		FURNACE 96%	\$1,300.00	
		Drain water Heat Recovery System (C3-72)	\$4,100.00	
		*R15 EXTERIOR W/ RAIN SCREEN	\$24,600.00	
		Energy Advisor	\$2,000.00	
		Administration	\$1,500.00	
		Site Supervisor (includes 2 day delay)	\$400.00	
		Air Tightness Materials	\$60.00	
		Additional Design Fees	\$1,500.00	
		Management Fee (12%)	\$6,721.16	
		TOTAL	\$62,730.84	7%
Estimated 4 - 6 week construction delays				
STEP 5	IT5a	1.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$5,267.08	
		R24 + R40 EXPOSED FLOOR	\$1,450.00	
		R10 to Foundation Walls	\$2,970.60	
		*R15 EXTERIOR W/ RAIN SCREEN	\$24,600.00	
		Windows to USI 1.4 SHGC 0.40	\$10,862.00	
		FURNACE 96%	\$1,300.00	
		HEAT PUMP @ 14.5 SEER	\$5,300.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$7,059.56	
		TOTAL	\$65,889.24	7%

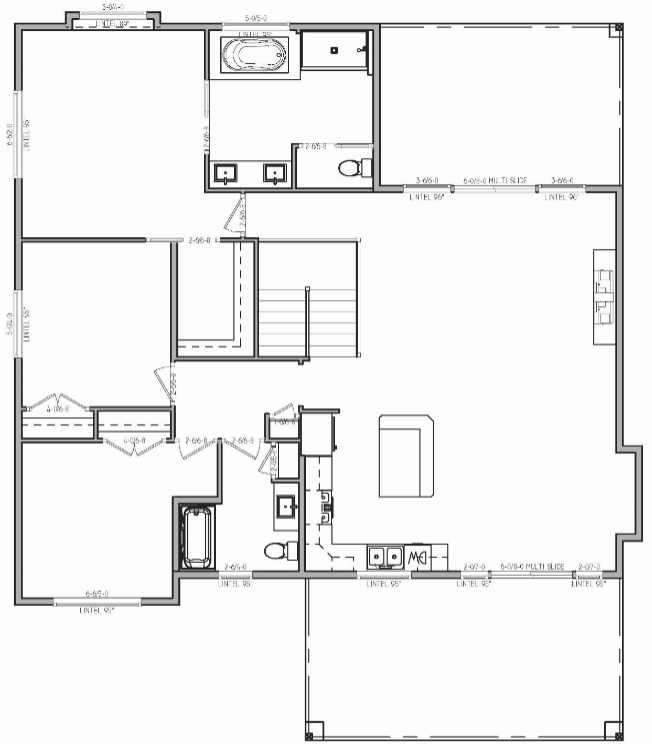
STEP 3	IT5b	1.0 ACH (INCLUDED IN EXTERIOR AIR BARRIER)	\$0.00	
		ADD R16 INSUL TO THE SLAB	\$5,267.08	
		R5 to Foundation Walls	\$2,059.90	
		R24 + R40 EXPOSED FLOOR	\$1,450.00	
		*R10 EXTERIOR W/ RAIN SCREEN	\$17,762.00	
		FURNACE 96%	\$1,300.00	
		Windows to USI 1.4 SHGC 0.40	\$10,862.00	
		HEAT PUMP @ 14.5 SEER	\$5,300.00	
		Energy Advisor	\$2,500.00	
		Administration	\$2,000.00	
		Site Supervisor (includes 2 day delay)	\$500.00	
		Air Tightness Materials	\$80.00	
		Additional Design Fees	\$2,000.00	
		Management Fee (12%)	\$6,129.72	
		TOTAL	\$57,210.70	6%

APPENDIX ‘D’

Archetypes

Typical Regional Archetypes

- Small Home
- Medium Home
- Duplex



SMALL SFD

Grade Level Entry
 2307 Sq Ft Finished
 Three bedrooms, Two Baths

Code Min. Build Cost: \$464,125.00

Date:

Appliances

Kitchen	Fridge:	WRF535SMHZ	Whirl Pool
Kitchen	Range:	YWEE745H0FS	Whirl Pool
Kitchen	Range Hood/Micro:	YWMH31017AS	Whirl Pool
Kitchen	Dishwasher:	WDTA50SAHZ	Whirl Pool
Laundry	Washer:	WFW7590FW	Whirl Pool
Laundry	Dryer:	YWED75HEFW	Whirl Pool

Audio / Video

Family Room	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Great Room	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Master Bed	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Den	1	Telephone	

Cabinets

Kitchen	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Kitchen Island	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Bath 1 Ensuite	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides

Date:

Bath 2 Main Bath	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Laundry	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Bath 3 Lower Powder	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides

Countertops

Kitchen	Type:	Laminate	Edge:	Square
Bath 1	Type:	Laminate	Edge:	Square
Bath 2	Type:	Laminate	Edge:	Square
Laundry	Type:	Laminate	Edge:	Square
Bath 3	Type:	Laminate	Edge:	Square

Central Vac & Security

Central Vac	Rough in:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Finish:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
	Vac Pan Locations:	N/A								
	Vacuum Location:	Garage								
Security	Rough in:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Finish:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Date:

Concrete

Foundation	25 MPA	Ftgs & Walls		
Basement Slab	30 MPA	4" Polished		
Garage Slab	32 MPA	Polished c/w Saw Cuts		
Front Entry	30 MPA	Exposed Aggregate	Colour:	N/A
	Details:	120 Sq. Ft.		
Driveway	32 MPA	Exposed Aggregate	Colour:	N/A
	Details:	500 Sq. Ft.		
Main Patio	32 MPA	Broom Finish	Colour:	N/A
	Details:	275 Sq. Ft.		

Electrical

Service Size	125 Amp					
Meter Location	Front Right - Garage					
Panel Location	Garage					
In-Floor Heat	No					
Cabinet Lighting	No					
LED Pot Lights	No	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>		
Pool	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	Location:	
Hot Tub	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	Location:	

Date:

Flooring

Vinyl Plank	All Floors		
	Contractor Grade		Grout:
	Details:		
Tile 1	Kitchen Splash		
	Contractor Grade		Grout:
	Details:	Counter top to underside of uppers	
Tile 2	Bathroom Splash - All		
	Contractor Grade		Grout:
	Details:	4" Floor Tile, Vanity Width	
Tile 3	Shower & Tub Surrounds		
	Contractor Grade		Grout:
	Details:	4" tile perimeter – Sides / Top	

Heating & Cooling

Furnace	Goodman GMSS920603BN - 92% Eff single stage – or equal	
Air Conditioner	Goodman GSX140301 - 14.5 SEER single stage 2.5 TON – or equal	
	Location:	Side yard – Paving stone pad
Thermostat	Goodman Communicating digital thermostat with WiFi communication	
HRV	NU Air 145	
Humidifier	White Rogers flow through bypass humidifier	
Fireplaces	Great Room	Heat and Glow DB3732
	Details:	Direct vent out wall
Primary Fan	110 CFM .8 Sone bathroom fans minimum – Broan QTXE110C	

Date:

Insulation

Trussed Attic Areas	R50 BATTs - Blown
2x6 Exterior House Walls	R22 BATTs
Outside Strap Walls Against Concrete Basement	R20 BATTs
Garage Attic Area	R50 BATTs
Box joist Ends	2 lb Spray Foam
Window and Door Openings	2 lb Spray Foam
Exterior Envelope	6MIL Poly Vapor Barrier

Interior Finishes

Dry Wall	Living Space & Garage	
	Finish:	Taped, Filled & Sanded – Level 4 Finish
	Corners:	Square Corner Bead
	Ceiling:	Textured
	Unfinished Areas	
	Details:	Finish Walls in Mechanical with drywall – board only
Baseboard	1/2" x 5 1/2" flat stock	
Casing	3/4" x 3 1/2" Flat Stock	
Window Liner	Wood - Primed	
Stairs	Tread Species:	Standard Construction / Finish as per flooring specs
Interior Railing	Railing:	1 3/4 x 4 1/4 Poplar E4E
	Wall Rail:	1 3/4 x 4 1/4 Poplar E4E
	Spindles:	Black, Round
	Post:	4 5/8 box post
Fireplace 1	Tile walls & Hearth	

Date:

Closets	Wire:	All
Shower Glass	Ensuite	Door Panel 29" x 80" w/Chrome Towel Bar handle, Full height c/w side and return panels
Mirrors	Bath 1:	~74" x 42"
	Bath 2:	~42" x 42"
	Bath 3:	~38" x 42"

Paint

Paint 1	All areas		Color TBD			Eggshell
Base / Case	All Areas		Color TBD			Semi Gloss
Doors	All Areas		Color TBD			Semi Gloss
Ceilings			Textured			N/A
Railing	Type:	Painted		Colour:	TBD	
Exterior Doors	Front Entry		Stain	Colour:	TBD	
	Garage to House		Paint	Colour:	TBD	
	Main Patio		Paint	Colour:	TBD	
	Lower Patio		Paint	Colour:	TBD	
Garage Door	Steel – Site finished			Colour:	TBD	

Plumbing

Water Heater	Utility Room	80 Gallon Electric
Hose Bib 1	Garage	

Date:

Hose Bib 2	Lower Patio
Irrigation	TBD
Radon Pipe	Location as per plan
Laundry	One, as per plan

Plumbing Fixtures

Bath 1 Ensuite	Sink:	36861 DROP-IN BASIN-RECT-1 H-CERAMIC-WHI
	Sink Faucet:	US01C FAU/SINK KUBIK CHR
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
	Shower:	B3X 6036 - Alcove
	Shower Faucet:	R93-SPEX 2W RGHIN T/P VLV W/O CART PEX, TUS71C TRIM FOR KUBIK VALVE, 4665C HND SHOWER RAIL, P774C ELBOW, P518C TOP SHOWER ARM SQUA CHR, P450C 10" SHWRHEAD PRO COMPONENTS CHR
	Soaker Tub:	102722-000-001 Cocoon 6032
	Tub Faucet:	US02C BATH FAUCET 2H SQUARE CHR.
Bath 2	Sink:	36861 DROP-IN BASIN-RECT-1 H-CERAMIC-WHI
	Sink Faucet:	US01C FAU/SINK KU BIK CHA
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
	Shower / Tub:	5697 HYTEC 60X34 LH TUB/SHOWER WHITE
	Shower Faucet:	TUS71C TRIM FOR KUBIK VALVE, P891C WALL-MOUNT TUB SPOUT, 384C 10 CM (4") SHOWER HEAD
Bath 3	Sink:	36861 DROP-IN BASIN-RECT-1 H-CERAMIC-WHI
Lower Bath	Sink Faucet:	US01C FAU/SINK KUBIK CHR.

Date:

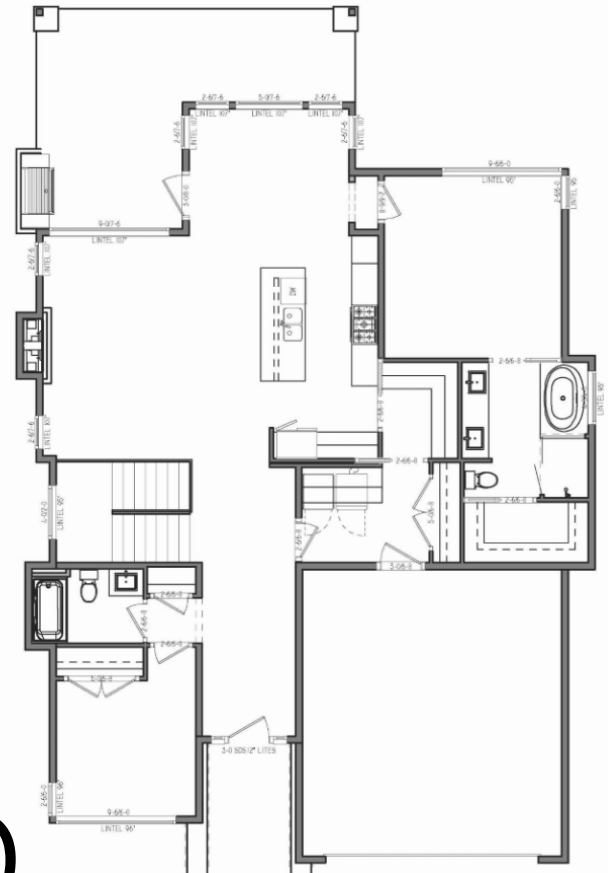
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
Laundry	Sink:	1OC MUSTEE LAUNDRY SINK WHITE
	Sink Faucet:	NJ201 C KITCHEN FAUCET
Kitchen	Sink:	Drop in - ss
	Sink Faucet:	NJ201 C KITCHEN FAUCET

Windows & Doors

Windows	All										
	Vinyl						White				
	Screens:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Low E:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	
Exterior Doors	Front Door	Classic 3 panel – VG Fir – Site Stain									
		Stain:	TBD				Glass:	Satin Etch			
		Hardware:	Brass Stuttgart Lever, Trim Size 1.5" x 11" Contemporary Modern Brass Trim Plate SN								
		Jamb:	Brick Mold				Height:	8.0			
	Garage to House	Fiberglass slab									
		Colour:	TBD								
		Hardware:	Brass Stuttgart Lever, Trim Size 1.5" x 11" Contemporary Modern Brass Trim Plate SN								
		Jamb:	Brick Mold				Height:	6-8			
Interior Doors 1	All Main Floor										
	Door Style:	Shaker									
	Hardware:	Taymor “Stockholm” Levers									
						Height:	6-8				
Interior Doors 2	All Lower Floor										
	Door Style:	Shaker									

Date:

	Hardware:		Taymor “Stockholm” Levers		
				Height:	6-8
Garage Door	Door:	Wayne Dalton - Classic Steel Model 8300			
	Drive:	Liftmaster - 8550 - Belt Drive - 3/4 HP - DC- Battery Back-up			
	Control:	Multi- Function Control Panel			



MEDIUM SFD

Rancher – Walk Out Base.

2806 Sq Ft Finished

Four bedrooms, Three Baths

Code Min. Build Cost: \$518,000.00

Date:

Appliances

Kitchen	Fridge:	WRF535SMHZ	Whirl Pool
Kitchen	Range:	YWEE745H0FS	Whirl Pool
Kitchen	Range Hood/Micro:	YWMH31017AS	Whirl Pool
Kitchen	Dishwasher:	WDTA50SAHZ	Whirl Pool
Laundry	Washer:	WFW7590FW	Whirl Pool
Laundry	Dryer:	YWED75HEFW	Whirl Pool

Audio / Video

Family Room	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Great Room	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Master Bed	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Den	1	Telephone	

Cabinets

Kitchen	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Kitchen Island	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Pantry	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides

Date:

Ensuite	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Bath 2	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Laundry	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Bath 3	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides

Countertops

Kitchen	Type:	Builder Grade - Quartz	Edge:	Square
Pantry	Type:	Laminate	Edge:	Square
Bath 1	Type:	Builder Grade - Quartz	Edge:	Square
Bath 2	Type:	Builder Grade - Quartz	Edge:	Square
Laundry	Type:	Laminate	Edge:	Square
Bath 3	Type:	Laminate	Edge:	Square

Central Vac & Security

Central Vac	Rough in:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Finish:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
	Vac Pan Locations:	N/A								
	Vacuum Location:	Garage								
Security	Rough in:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Finish:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Date:

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Concrete

Foundation	25 MPA	Ftgs & Walls		
Basement Slab	30 MPA	4" Polished		
Garage Slab	32 MPA	Polished c/w Saw Cuts		
Front Entry	30 MPA	Exposed Aggregate	Colour:	N/A
	Details:	120 Sq. Ft.		
Driveway	32 MPA	Exposed Aggregate	Colour:	N/A
	Details:	500 Sq. Ft.		
Lower Patio	32 MPA	Broom Finish	Colour:	N/A
	Details:	275 Sq. Ft.		

Electrical

Service Size	200 Amp					
Meter Location	Front Right - Garage					
Panel Location	Garage					
In-Floor Heat	No					
Cabinet Lighting	No					
LED Pot Lights	No	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>		
Pool	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	Location:	
Hot Tub	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	Location:	

Date:

Flooring

Vinyl Plank	All Main floor - except Laundry, Den, Ensuite			
	Contractor Grade		Grout:	
	Details:			
Tile 1	Laundry, Ensuite, Bath 2, Bath 3			
	Contractor Grade		Grout:	
	Details:			
Tile 2	Custom Shower			
	Wall Tile	12x24 on walls	Grout:	
	Pan Tile	Pebble	Grout:	
	Details:	Drop shower ceiling to 8'-0"		
Tile 3	Kitchen Splash			
	Contractor Grade		Grout:	
	Details:	Counter top to underside of uppers		
Tile 4	Bathroom Splash - All			
	Contractor Grade		Grout:	
	Details:	4" Floor Tile, Vanity Width		
Tile 5	Shower Surrounds			
	Contractor Grade		Grout:	
	Details:	4" tile perimeter – Sides / Top		
Carpet	Stairs, All lower floor - except Bath 3, Mechanical			
	Contractor Grade		Grout:	
	Details:			

Heating & Cooling

Furnace	Goodman GMSS920603BN - 92% Eff single stage – or equal		
Air Conditioner	Goodman GSX140301 - 14.5 SEER single stage 2.5 TON – or equal		
	Location:	Side yard – Paving stone pad	
Thermostat	Goodman Communicating digital thermostat with WiFi communication		
HRV	NU Air 145		
Humidifier	White Rogers flow through bypass humidifier		

Date:

Fireplaces	Great Room	Heat and Glow DB3732
	Details:	Direct vent out wall
Primary Fan	110 CFM .8 Sone bathroom fans minimum – Broan QTXE110C	

Insulation

Trussed Attic Areas	R50 BATTs - Blown
2x6 Exterior House Walls	R22 BATTs
Outside Strap Walls Against Concrete Basement	R20 BATTs
Garage Attic Area	R50 BATTs
Box joist Ends	2 lb Spray Foam
Window and Door Openings	2 lb Spray Foam
Exterior Envelope	6MIL Poly Vapor Barrier

Interior Finishes

Dry Wall	Living Space & Garage	
	Finish:	Taped, Filled & Sanded – Level 4 Finish
	Corners:	Square Corner Bead
	Ceiling:	Textured
	Unfinished Areas	
	Details:	Finish Walls in Mechanical with drywall – board only
Baseboard	1/2" x 5 1/2" flat stock	
Casing	3/4" x 3 1/2" Flat Stock	
Window Liner	Wood - Primed	

Date:

Stairs	Tread Species:		Standard Construction / Finish as per flooring specs	
Interior Railing	Railing:	1 ¾ x 4 ¼ Poplar E4E		
	Wall Rail:	1 ¾ x 4 ¼ Poplar E4E		
	Spindles:	Black, Round		
	Post:	4 5/8 box post		
Fireplace 1	Tile walls & Hearth			
Closets	Wire:	All		
Shower Glass	Ensuite		Door Panel 29" x 80" w/Chrome Towel Bar handle, Full height (~63" x 92") side and return panels	
Mirrors	Ensuite:	~86" x 42"		
	Powder:	~30" x 42"		
	Bath 3:	~60" x 42"		

Paint

Paint 1	All areas		Color TBD			Eggshell
Base / Case	All Areas		Color TBD			Semi Gloss
Doors	All Areas		Color TBD			Semi Gloss
Ceilings			Textured			N/A
Railing	Type:	Painted		Colour:	TBD	
Exterior Doors	Front Entry		Stain	Colour:	TBD	
	Garage to House		Paint	Colour:	TBD	
	Main Patio		Paint	Colour:	TBD	
	Lower Patio		Paint	Colour:	TBD	
Garage Door	Steel – Site finished			Colour:	TBD	

Date:

Plumbing

Water Heater	Utility Room	80 Gallon Electric
Hose Bib 1	Garage	
Hose Bib 2	Lower Patio	
Irrigation	TBD	
Radon Pipe	Location as per plan	
Laundry	One, as per plan	

Plumbing Fixtures

Bath 1 Ensuite	Sink:	U1812WH 18X12 VC UC LAV WHIT
	Sink Faucet:	US01C FAU/SINK KUBIK CHR
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
	Shower:	Custom Tiled floor & walls
	Shower Faucet:	R93-SPEX 2W RGHIN T/P VLV W/O CART PEX, TUS71C TRIM FOR KUBIK VALVE, 4665C HND SHOWER RAIL, P774C ELBOW, P518C TOP SHOWER ARM SQUA CHR, P450C 10" SHWRHEAD PRO COMPONENTS CHR
	Soaker Tub:	106170-000-001 EXHIBIT6036 BATH WHI
	Tub Faucet:	US02C BATH FAUCET 2H SQUARE CHR.
Bath 2 Powder	Sink:	U181 2WH 18X12 VC UC LAV WHIT
	Sink Faucet:	US01C FAU/SINK KUBIK CHR.
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT

Date:

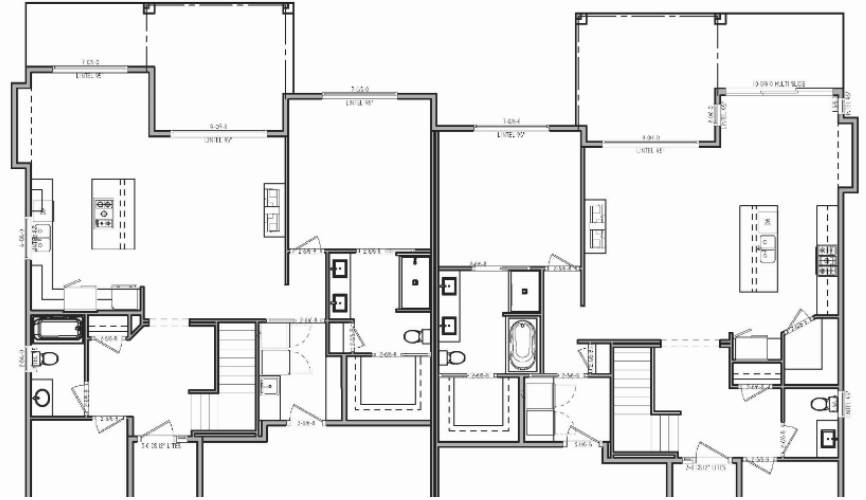
Bath 3 Lower Bath	Sink:	36861 DROP-IN BASIN-RECT-1 H-CERAMIC-WHI
	Sink Faucet:	US01C FAU/SINK KU BIK CHA
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
	Shower / Tub:	5697 HYTEC 60X34 LH TUB/SHOWER WHITE
	Shower Faucet:	TUS71C TRIM FOR KUBIK VALVE, P891C WALL-MOUNT TUB SPOUT, 384C 10 CM (4") SHOWER HEAD
Laundry	Sink:	1OC MUSTEE LAUNDRY SINK WHITE
	Sink Faucet:	NJ201 C KITCHEN FAUCET
Kitchen	Sink:	QDUA1831/8 SINK CUSINE U/M PREM DBL OH
	Sink Faucet:	NJ201 C KITCHEN FAUCET

Windows & Doors

Windows	All										
	Vinyl						White				
	Screens:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Low E:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	
Exterior Doors	Front Door	Classic 9 lite SDS – VG Fir – Site Stain									
		Stain:	TBD				Glass:	Satin Etch			
		Hardware:	Brass Stuttgart Lever, Trim Size 1.5" x 11" Contemporary Modern Brass Trim Plate SN								
		Jamb:	Brick Mold				Height:	8.0			
	Garage to House	Fiberglass slab									
		Colour:	TBD								
		Hardware:	Brass Stuttgart Lever, Trim Size 1.5" x 11" Contemporary Modern Brass Trim Plate SN								
		Jamb:	Brick Mold				Height:	6-8			
Interior Doors 1	All Main Floor										

Date:

	Door Style:		Shaker		
	Hardware:		Taymor “Stockholm” Levers		
			Height:	6-8	
Interior Doors 2	All Lower Floor				
	Door Style:		Shaker		
	Hardware:		Taymor “Stockholm” Levers		
			Height:	6-8	
Garage Door	Door:	Wayne Dalton - Classic Steel Model 8300			
	Drive:	Liftmaster - 8550 - Belt Drive - 3/4 HP - DC- Battery Back-up			
	Control:	Multi- Function Control Panel			



DUPLEX

Rancher – Walk Out Base.
4432 Sq Ft Finished
Three bedrooms, Three Baths

Code Min. Build Cost: \$887,000.00

Date:

Appliances

Kitchen	Fridge:	WRF535SMHZ	Whirl Pool
Kitchen	Range:	YWEE745H0FS	Whirl Pool
Kitchen	Range Hood/Micro:	YWMH31017AS	Whirl Pool
Kitchen	Dishwasher:	WDTA50SAHZ	Whirl Pool
Laundry	Washer:	WFW7590FW	Whirl Pool
Laundry	Dryer:	YWED75HEFW	Whirl Pool

Audio / Video

Family Room	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Great Room	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Master Bed	1	TV Prewire	1 Cat6, 1Cat5e, 1 Coax
Den	1	Telephone	

Cabinets

Kitchen	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Kitchen Island	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Pantry	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides

Date:

Ensuite	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Bath 2	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Laundry	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides
Bath 3	Style:	Shaker
	Species:	Thermo-foil c/w White melamine parts
	Colour:	White
	Hardware:	Builder grade cabinet pulls / side mount draw slides

Countertops

Kitchen	Type:	Builder Grade - Quartz	Edge:	Square
Pantry	Type:	Laminate	Edge:	Square
Bath 1	Type:	Builder Grade - Quartz	Edge:	Square
Bath 2	Type:	Builder Grade - Quartz	Edge:	Square
Laundry	Type:	Laminate	Edge:	Square
Bath 3	Type:	Laminate	Edge:	Square

Central Vac & Security

Central Vac	Rough in:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Finish:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
	Vac Pan Locations:	N/A								
	Vacuum Location:	Garage								
Security	Rough in:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Finish:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Date:

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Concrete

Foundation	25 MPA	Ftgs & Walls		
Basement Slab	30 MPA	4" Polished		
Garage Slab	32 MPA	Polished c/w Saw Cuts		
Front Entry	30 MPA	Exposed Aggregate	Colour:	N/A
	Details:	120 Sq. Ft.		
Driveway	32 MPA	Exposed Aggregate	Colour:	N/A
	Details:	500 Sq. Ft.		
Lower Patio	32 MPA	Broom Finish	Colour:	N/A
	Details:	275 Sq. Ft.		

Electrical

Service Size	200 Amp					
Meter Location	Front Right - Garage					
Panel Location	Garage					
In-Floor Heat	No					
Cabinet Lighting	No					
LED Pot Lights	No	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>		
Pool	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	Location:	
Hot Tub	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	Location:	

Date:

Flooring

Vinyl Plank	All Main floor - except Laundry, Den, Ensuite			
	Contractor Grade		Grout:	
	Details:			
Tile 1	Laundry, Ensuite, Bath 2, Bath 3			
	Contractor Grade		Grout:	
	Details:			
Tile 2	Custom Shower			
	Wall Tile	12x24 on walls	Grout:	
	Pan Tile	Pebble	Grout:	
	Details:	Drop shower ceiling to 8'-0"		
Tile 3	Kitchen Splash			
	Contractor Grade		Grout:	
	Details:	Counter top to underside of uppers		
Tile 4	Bathroom Splash - All			
	Contractor Grade		Grout:	
	Details:	4" Floor Tile, Vanity Width		
Tile 5	Shower Surrounds			
	Contractor Grade		Grout:	
	Details:	4" tile perimeter – Sides / Top		
Carpet	Stairs, All lower floor - except Bath 3, Mechanical			
	Contractor Grade		Grout:	
	Details:			

Heating & Cooling

Furnace	Goodman GMSS920603BN - 92% Eff single stage – or equal		
Air Conditioner	Goodman GSX140301 - 14.5 SEER single stage 2.5 TON – or equal		
	Location:	Side yard – Paving stone pad	
Thermostat	Goodman Communicating digital thermostat with WiFi communication		
HRV	NU Air 145		
Humidifier	White Rogers flow through bypass humidifier		

Date:

Fireplaces	Great Room	Heat and Glow DB3732
	Details:	Direct vent out wall
Primary Fan	110 CFM .8 Sone bathroom fans minimum – Broan QTXE110C	

Insulation

Trussed Attic Areas	R50 BATTs - Blown
2x6 Exterior House Walls	R22 BATTs
Outside Strap Walls Against Concrete Basement	R20 BATTs
Garage Attic Area	R50 BATTs
Box joist Ends	2 lb Spray Foam
Window and Door Openings	2 lb Spray Foam
Exterior Envelope	6MIL Poly Vapor Barrier

Interior Finishes

Dry Wall	Living Space & Garage	
	Finish:	Taped, Filled & Sanded – Level 4 Finish
	Corners:	Square Corner Bead
	Ceiling:	Textured
	Unfinished Areas	
	Details:	Finish Walls in Mechanical with drywall – board only
Baseboard	1/2" x 5 1/2" flat stock	
Casing	3/4" x 3 1/2" Flat Stock	
Window Liner	Wood - Primed	

Date:

Stairs	Tread Species:		Standard Construction / Finish as per flooring specs	
Interior Railing	Railing:	1 ¾ x 4 ¼ Poplar E4E		
	Wall Rail:	1 ¾ x 4 ¼ Poplar E4E		
	Spindles:	Black, Round		
	Post:	4 5/8 box post		
Fireplace 1	Tile walls & Hearth			
Closets	Wire:	All		
Shower Glass	Ensuite		Door Panel 29" x 80" w/Chrome Towel Bar handle, Full height (~63" x 92") side and return panels	
Mirrors	Ensuite:	~86" x 42"		
	Powder:	~30" x 42"		
	Bath 3:	~60" x 42"		

Paint

Paint 1	All areas		Color TBD			Eggshell
Base / Case	All Areas		Color TBD			Semi Gloss
Doors	All Areas		Color TBD			Semi Gloss
Ceilings			Textured			N/A
Railing	Type:	Painted		Colour:	TBD	
Exterior Doors	Front Entry		Stain	Colour:	TBD	
	Garage to House		Paint	Colour:	TBD	
	Main Patio		Paint	Colour:	TBD	
	Lower Patio		Paint	Colour:	TBD	
Garage Door	Steel – Site finished			Colour:	TBD	

Date:

Plumbing

Water Heater	Utility Room	80 Gallon Electric
Hose Bib 1	Garage	
Hose Bib 2	Lower Patio	
Irrigation	TBD	
Radon Pipe	Location as per plan	
Laundry	One, as per plan	

Plumbing Fixtures

Bath 1 Ensuite	Sink:	U1812WH 18X12 VC UC LAV WHIT
	Sink Faucet:	US01C FAU/SINK KUBIK CHR
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
	Shower:	Custom Tiled floor & walls
	Shower Faucet:	R93-SPEX 2W RGHIN T/P VLV W/O CART PEX, TUS71C TRIM FOR KUBIK VALVE, 4665C HND SHOWER RAIL, P774C ELBOW, P518C TOP SHOWER ARM SQUA CHR, P450C 10" SHWRHEAD PRO COMPONENTS CHR
	Soaker Tub:	106170-000-001 EXHIBIT6036 BATH WHI
	Tub Faucet:	US02C BATH FAUCET 2H SQUARE CHR.
Bath 2 Powder	Sink:	U181 2WH 18X12 VC UC LAV WHIT
	Sink Faucet:	US01C FAU/SINK KUBIK CHR.
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT

Date:

Bath 3 Lower Bath	Sink:	36861 DROP-IN BASIN-RECT-1 H-CERAMIC-WHI
	Sink Faucet:	US01C FAU/SINK KU BIK CHA
	Toilet:	3075120.020 STUD BOWL RH/RH/EU\IVH Fi6L&4.8L, 4000104.020 STUDIO UNLINED TANK WHT, COMES WITH SOFT CLOSE SEAT
	Shower / Tub:	5697 HYTEC 60X34 LH TUB/SHOWER WHITE
	Shower Faucet:	TUS71C TRIM FOR KUBIK VALVE, P891C WALL-MOUNT TUB SPOUT, 384C 10 CM (4") SHOWER HEAD
Laundry	Sink:	1OC MUSTEE LAUNDRY SINK WHITE
	Sink Faucet:	NJ201 C KITCHEN FAUCET
Kitchen	Sink:	QDUA1831/8 SINK CUSINE U/M PREM DBL OH
	Sink Faucet:	NJ201 C KITCHEN FAUCET

Windows & Doors

Windows	All										
	Vinyl					White					
	Screens:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Low E:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	
Exterior Doors	Front Door	Classic 9 lite SDS – VG Fir – Site Stain									
		Stain:	TBD				Glass:	Satin Etch			
		Hardware:	Brass Stuttgart Lever, Trim Size 1.5" x 11" Contemporary Modern Brass Trim Plate SN								
		Jamb:	Brick Mold				Height:	8.0			
	Garage to House	Fiberglass slab									
		Colour:	TBD								
		Hardware:	Brass Stuttgart Lever, Trim Size 1.5" x 11" Contemporary Modern Brass Trim Plate SN								
		Jamb:	Brick Mold				Height:	6-8			
Interior Doors 1	All Main Floor										

Date:

	Door Style:		Shaker		
	Hardware:		Taymor “Stockholm” Levers		
				Height:	6-8
Interior Doors 2	All Lower Floor				
	Door Style:		Shaker		
	Hardware:		Taymor “Stockholm” Levers		
				Height:	6-8
Garage Door	Door:	Wayne Dalton - Classic Steel Model 8300			
	Drive:	Liftmaster - 8550 - Belt Drive - 3/4 HP - DC- Battery Back-up			
	Control:	Multi- Function Control Panel			