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ROSEVILLE GARDEN STATION

General Conditions

All blank spaces in these specifications that apply to this building are to be filled in. Items that do not apply are to be crossed out.

The general conditions herein set forth shall apply to any contract given under these specifications and shall be binding upon every sub-contractor as well as General Contractor.

The plans, elevations, sections, and detail drawings, together with these specifications, are to form the basis of the contract and are to be of equal force. Should anything be mentioned in these specifications and not shown in the drawings, or vice versa, the same shall be followed as if set forth in both, as it is the intent of these specifications and accompanying drawings to correspond and to embody every item and part necessary for the completion of the structure. The contractor shall comply with all health and building ordinances that are applicable.

The contractor will see that the water, gas, and electric meters when installed will be in his name and agrees to pay for heat and electricity when required, to complete said building.

The contractor will provide the owner with a full release of liens before final payment is made.

The contractor will have lot surveyed, staked, grade set, and apply for necessary building permits. All sub-contractors will take out their own permits and pay for same.

The contractor must provide and maintain a bathroom facility for workers at all times during the project.

The contractor shall keep site clean at all times during construction. All debris shall be placed into a dumpster daily.

No Smoking is allowed at anytime inside the house.

2-10 Home Buyers Warranty Program; Contractor must enroll and register the house in a 2-10 Home Buyers Warranty Program approved by the Owner. The guarantee covering materials and labor under Minn. Stat. 327A.01-.08. Other guarantees in excess of this one year shall be specified by manufacturers. Furnish Owner with all guarantees, certifications, including insulation and carpeting. Warranty will be for the sale price of the home. Warranty time to start on the sale date to the end buyer.

Project Closeout; (Before Final Draw Approval)

- Complete all items listed in the Specifications and Drawings
- Close all permits and provide a Certificate of Occupancy
- Provide 4 extra keys and 2 garage door remotes
- Provide a packet including all manuals, warranties, and literature for all products provided.
- Notify CM for final inspection and complete any punch list items generated by both the CM and CPED inspection.

EXCAVATING, BACKFILLING & FINAL GRADING

The work under this section shall consist of furnishing all equipment, performing all necessary labor for excavating work as shown in the working drawings. Excavate to a depth required, or to solid formation suitable for the foundation, and to dimensions one foot greater in size than the outside dimensions of the masonry. The topsoil removed from the excavating shall be stored on the site. Sufficient clean excavating materials shall be retained to bring the grade up to the necessary level to receive the topsoil. Contractor must backfill with compact material. Contractor to provide 8" of granular material under concrete slabs. Contractor will be responsible for putting in the 4" aggregate base for the driveway at the time of backfilling. If additional earth is required for grading, it shall be furnished and hauled by the contractor. The contractor shall do all necessary rough grading, allowing for proper drainage from the buildings. It will be a one-time sod grade.

Trench Settling Warranty: Carefully compact during backfill to prevent settling. For a period of one (1) year, repair and/or replace to like new condition any damage to building structure, sidewalks, steps, retaining walls and landscaping caused by trench settling. Fill any trench settling over 3". Pay special attention compacting under new retaining walls, steps, and sidewalks.

Basement Egress Window Wells; Install proper size corrugated steel window wells securely fastened to the foundation. Install drain tile "T" with cap. Install 12" deep of large river rock. Maintain a minimum of 8" below window sill. Install escape ladder fastened into the well.

Sewer & Water:

Excavating contractor responsible for bringing the domestic 1" copper water line and sewer connection.
Contractor to compact during backfill of sewer and water.

Driveway:

Driveway to be ASPHALT.

CONCRETE

Poured Concrete Walls;

Per plans

Basement Concrete Slab;

- Install per detail on Sheet A0.1
- Install Min. 6" Rock Base
- **Install 2" Rigid Insulation under slab per plan**
- Install 6 mil polyethylene sheet vapor barrier under concrete slab.
- Install 3 ½" concrete slab
- Install tooled or saw cut control joints, within 48 hrs of pour, in an effort to control cracking. Control joints shall be a minimum of ¼ the thickness of the slab.

Garage Floor;

Minimum 3 1/2" concrete slab with wire mesh

Exterior Flat Work;

- Install per Civil Drawings

Waterproofing and Drain Tile System;

Waterproofing; Install a 60 mil peel-stick waterproofing membrane material designed for this application. Cover entire below grade exterior foundation wall surface, overlapping onto the top and down the edge of the footing.

Drain Tile System; Around the exterior and interior perimeter of the foundation install 4" perforated, fabric wrapped, flexible plastic drain tubing, set in a bed of binder rock, with a positive drain slope to the sump pit (min. 4" drop). Cover with binder rock after the system has been inspected and approved by the CM.

All egress window wells will be connected to drain tile system with plastic "T" using same application as drain tile system. Drain tube to be covered with perforated end.

Sump basket to have a sealed air-tight lid.

Install minimum ½ HP sump pump vented to exterior with 1 ½" x 10' hose installed at exterior.

ROUGH CARPENTRY

The contractor shall and will provide all necessary carpenter labor. He shall lay out all work and be responsible for all measurements. All work shall be done in substantial conformity with the plans and specifications. Any variations, changes or amendments thereof, that have been approved in writing by the contracting parties, shall be the responsibility of the contractor to complete.

GIRDERS or supporting beams shall be as required by the size of the building, and as shown on the plans. If wood girders are used, they shall be structural grade lumber designed for the loads and span.

If wood posts are used, concrete or hard burned brick shall be placed at base of each post.

If steel girders and columns are used, bearing surface at wall ends of girders shall be steel bearing plates. Bearing surface at bottom of column shall be steel bearing plate. Columns should be clamped or welded to girder at top.

WOOD JOISTS shall be doubled under all partitions paralleling run of joists; if the partition is not a bearing wall partition, cross blocking between the Headers and trimmers around opening for stairways, chimneys, etc., shall be doubled.

All framing material to be construction grade, floor and ceiling joists (or outside trusses) shall be according to plan.

Structural Insulated Panels (SIPs)

The General Contractor shall provide and pay for the SIP exterior wall and rim joist panels.

Provide the required engineered drawings by panel manufacturer to obtain the building permit.

This house will use 6 1/2" thick SIPs per plan for the 1st and 2nd floor exterior walls. Include all required panels, headers, fasteners, blocking, cleats, sealants, tapes, and adhesives.

The General Contractor is responsible to pay for, schedule the SIPs delivery, provide and install all panels per the manufacturer's recommendations.

Manufacturer; Extreme Panel Technologies, Inc. Contact; Perry Penske 1-800-977-2635, or approved equal.

Contact Perry Penske with any questions regarding the installation of the panels.

EXTERIOR WALL SHEATHING shall be 7/16" oxboard with Tyvek or equal.

PLATES shall be of same size as studs, placed single at bottom and double at top.

TRUSSES shall be according to engineering requirements. Trusses shall be securely spiked to plates.

STAIRS to be installed according to plan and local building codes.

TREADS to be not less than 10 inches and riser not more than 7 3/4 inches. Stairs leading from first to second floor shall be as shown on plan. Three stair jacks shall be provided for each stair and shall be according to building code.

FLOORING shall be ¾" tongue and groove plywood and securely nailed and glued to each bearing.

Labor to include: All rough framing per plan

Set all doors and windows to manufacturer's specs

Framing of column bases and posts

House wrap

Loading roof w/ roof shingles

Forklift

Fasteners

EXTERIOR ELEVATION

LP SmartSide Lap Siding, O.S. Corners, I.S. Corners, and Window / Door Trim;

- Cover wall sheathing including gable ends with house wrap and tape all seams. Overlap flashing.
- Install LP SmartSide Wood Grain Trim at all 1x1 inside and 1x4 outside corner boards.
- All penetrations through the siding must be set through an LP SmartSide 1x square block.
- Install new metal drip cap above all windows and doors.
- Install 1x4 LP SmartSide Wood Grain Trim surround at all windows and doors.
- Install new primed wood grain, LP SmartSide Lap Siding with 7" exposure at Lower Body and 5" exposure at Upper Body per plan. Include butt-joint flashing pieces, starter strip, and drip caps at all windows and doors. Install siding in strict accordance to the manufactures' installation instructions.
- Caulking; Using VULKEM urethane caulk around windows, doors, and all other areas.
- Finish paint Siding and trim with Sherwin Williams, Duration Paint, Satin Finish...ONLY
- Paint Color Schedule:
 - o Lower Body 7" Exposure Lap Siding; Color: TBD
 - o Upper Body 5" Exposure Lap Siding and Dormer; Color: TBD
 - o Window Trim, Outside Corners, Fascia/Soffits; Color: TBD

SOFFIT & FASCIA material shall be LP Smartside.

Exterior Entry Doors;

Front Door Install new pre-hung, insulated steel door. Thermatru TS291

Service Door Install new pre-hung, insulated steel door. Thermatru TT210

Assure minimum of 1" clearance for rugs.

- Insulate and foam around the perimeter of all doors to assure an air-tight seal.

Install new Schlage lever Lock Set; Color Bronze. Common key all doors on house & garage.

- Finish Paint Doors

Exterior Color; Sherwin Williams

Interior Color; Sherwin Williams

Combination Storm Doors; Install Front and Rear storm doors. Larson # 370-81, Screen-Away Storm Door, pre-finished White. Install wind chain and closers. and closers. Color:

Windows;

- Contractor is responsible to verify all window rough-openings with the SIP manufacturer.
- Install Vector, Diplomat Series, per plan. Double-Hung, Fixed, Awning, and Casement vinyl windows, with insulated, Low-E, Argon glass sash with full screens, locks and pulls, color White. Windows must be Energy-Star Rated. Assure smooth operation of all windows. Install per window manufacturer recommendations.
- Contractor is responsible to assure that each bedroom has a Legal size Egress window.
- Hazardous Locations; Contractor is responsible to install Tempered Glass as required by code at all Hazardous Locations.
- Properly flash all windows per the attached Flashing Procedures sheet.
- Insulate and foam around the perimeter of all windows to assure an air-tight seal.
- Basement Egress Windows (2); Install proper size legal egress casement windows and metal wells with ladder.

DECKING: Trex Transcends composite decking, fascia, and railing.

Use Transcends post sleeves for deck screen

Azek PVC used for deck screen 5 1/2" boards, white, quarter round trim at top of columns

DECK POSTS: HG&B 8" plain square Perma-Wrap column, split shaft, white. Traditional column cap and base

GARAGE DOORS to be 25 gauge raised panel insulated doors with struts, Clopay Classic Collection or equal.

Garage door opener to be included

OPTION:

Keypad

Roofing @ House and Garage;

- Install ice and water barrier to 6 foot at all drip edges, wrap up sidewall/roof junctions and at all penetrations.
- Install flashings including kick-out flashing where roof edged terminates along house wall.
- Install matching roof vents.
- Install d-style drip edge at all roof edges including gable rakes and returns.
- Install galvanized, frost-proof plumbing vent stacks, flashing, flashing at all roof/sidewall joints.
- Install Tamko Architectural Style Shingles. Color:

Gutters and Downspouts;

Along all roof edges of the house and front porch; Install 5" seamless, pre-finished or galvanized metal gutters, with large style 6" down spouts with 6' extensions leading water towards the front and rear of the property.

Color:

Insulation and Air-Sealing;

Inspections; GMHC will pay for independent insulation inspections. One inspection before drywall installation and one upon completion to verify the work. Contact CM to schedule.

Seal Attic Bypasses; Seal air-tight at ceiling level any penetration through the 2nd floor space into the attic. Includes plumbing stacks, electrical boxes, wires, ducts, and bathroom fans.

Insulate and foam seal around all windows and doors

Vapor Barrier; Install 6-mill poly on ceiling, seal with Tremco all edges, tape all seams.

Attic Insulation: Insulate attic to minimum **R50 Cellulose Insulation**. Install air chutes at all openings.

Closed Cell Foam Insulation; spray on 3" thick Closed Cell Foam Insulation @ 1st Floor Rim Joist and Bay Ceiling.

Weather strip, insulate, and seal attic hatch.

Provide Certificate of Insulation to CM.

Radon Mitigation Active System; Install a complete radon mitigation active system with attic fan.

Install a sub-slab vent for the Radon Gas. Install 8" of 3/4 inch stone. Grade and tamp soil to provide solid base. Install the 3/4" stone and install a 6" PVC Tee connected to a 4" PVC pipe in the stone base vented above the roof line to a Schedule 20 PVC varmint guard cap and flashed to the roof with a metal based neoprene boot. The vent should be installed a minimum of 12" above the roof and a minimum of 10' away from any window or other opening that could bring the exhausted radon gases into the residence. Install a continuous 6 mill plastic vapor barrier between the stone and the concrete sealed carefully to the vent pipe. Seal all holes in the slab with concrete and seal all cracks with a low VOC caulk. Install a Fantech HP 2190 Radon fan unit in specified location wired directly to the electrical panel from a junction box installed within 6' of the fan. Use rubber boots to connect the fan to the 4" vent.

Interior Product Requirements:

- All Paints, Stains, and Varnishes must meet the Green Seal G-11 Environmental Standard
- Interior Paints; Use Sherwin-Williams or approved best grade paints and primers meeting the Green Seal G-11 Environmental Standard
- Interior Varnishes: Use only Low VOC Water Based Varnish on floors and millwork
- Caulks and Sealants: Comply with regulation 8, rule 51, Bay Area Air Quality Management
- Any Particleboard and MDF with exposed edges or sides must be sealed with low-VOC sealant

Millwork; Includes Baseboards, Casings, Interior Doors, Stair Parts, and Miscellaneous.

Base Shoe; Install base shoe at all wood floor and cabinet locations.

Interior Columns, Stairway Skirts and Railings, and other finished millwork areas to be Oak per plan.

NOTE: Finish Basement stairway down to basement floor.

All Millwork Finish; Stain with water based stain and varnish with water based low VOC products.

MILLWORK SPEC			
	STYLE/DESCRIPTION	SPECIES	COLOR
INTERIOR DOORS	2 PANEL SOLID CORE	MASONITE	WHITE
INTERIOR DOOR HARDWARE	SCHLAGE	SEVILLE	ORB
HINGES			ORB
HANDRAIL	6010	POPLAR	STAINED
NEWEL	4040	POPLAR	STAINED
BALUSTERS	5015	POPLAR	STAINED
CASING	F111	POPLAR	STAINED
BASE	F219	POPLAR	STAINED
CLOSET SHELVING	WIRE SHELVING		
OPTION:			
F157 CASING POPLAR, OAK, MAPLE			
F238 BASE POPLAR, OAK, MAPLE			
F130 CASING POPLAR, OAK, MAPLE			
F280 BASE POPLAR, OAK, MAPLE			
6-PANEL POPLAR, OAK, MAPLE			
3-PANEL POPLAR, OAK, MAPLE			
ROD IRON BALUSTERS			

CABINET SPEC					
LOCATION	SPECIES	DOOR STYLE	UPPERS	COLOR	
KITCHEN	POPLAR	SHAKER/FLAT PANEL	42"	STAINED	
1/2 BATH	POPLAR	SHAKER/FLAT PANEL	N/A	STAINED	
MASTER BATH	POPLAR	SHAKER/FLAT PANEL	N/A	STAINED	
FULL BATH	POPLAR	SHAKER/FLAT PANEL	N/A	STAINED	
OPTION:					
OAK CABINETS EACH					
MAPLE CABINETS EACH					
PAINTED CABINETS					
FIREPLACE MANTLE					
FIREPLACE BUILT INS					
LOWER LEVEL BATH					
5 PIECE DRAWERS					
RAISED PANEL DOORS					
STAGGERED UPPERS					
FULL EXTENSION DRAWER SLIDES					
FULL EXTENSION SOFT CLOSE DRAWER SLIDES					

COUNTERTOP SPEC				
LOCATION	TYPE	EDGE	COLOR	ITEM #
KITCHEN	LAMINATE	WOOD		
1/2 BATH	CULTURED MARBLE	EASED		
MASTER BATH	CULTURED MARBLE	EASED		
FULL BATH	CULTURED MARBLE	EASED		
OPTION:				
BASE GRANITE KITCHEN				
BASE GRANITE 1/2 BATH				
BASE GRANITE MASTER BATH				
BASE GRANITE FULL BATH				
CULTURED MARBLE LOWER LEVEL BATH				
BASE GRANITE LOWER LEVEL BATH				
UNDERMOUNT KITCHEN SINK PREP				
UNDERMOUNT KITCHEN SINK ALLOWANCE				
UNDERMOUNT LAV SINK PREP				
UNDERMOUNT LAV SINK WHITE ALLOWANCE				
QUARTZ KITCHEN				
QUARTZ 1/2 BATH				
QUARTZ MASTER BATH				
QUARTZ FULL BATH				
QUARTZ LOWER LEVEL BATH				

ROOM FINISH SCHEDULE					
ROOM	FLOOR COVERING	BASE	CASING	WALLS	CEILING
REAR ENTRY	CERAMIC TILE	F219	F111	S/R	KNOCK DOWN

1/2 BATH	CERAMIC TILE	F219	F111	S/R	KNOCK DOWN
KITCHEN	ENGINEERED WOOD	F219	F111	S/R	KNOCK DOWN
DINING	ENGINEERED WOOD	F219	F111	S/R	KNOCK DOWN
LIVING ROOM	ENGINEERED WOOD	F219	F111	S/R	KNOCK DOWN
FRONT ENTRY	ENGINEERED WOOD	F219	F111	S/R	KNOCK DOWN
STEPS UP	CARPET	F219	F111	S/R	KNOCK DOWN
BEDROOM #1	CARPET	F219	F111	S/R	KNOCK DOWN
BEDROOM #2	CARPET	F219	F111	S/R	KNOCK DOWN
BEDROOM #3	CARPET	F219	F111	S/R	KNOCK DOWN
MASTER BATH	CERAMIC TILE	F219	F111	S/R	KNOCK DOWN
FULL BATH	CERAMIC TILE	F219	F111	S/R	KNOCK DOWN
LAUNDRY ROOM	CERAMIC TILE	F219	F111	S/R	KNOCK DOWN
OPTION:					
CERAMIC TILE SURROUND FIREPLACE					
CERAMIC TILE SHOWER WALLS MASTER BATH TO CEILING					
CERAMIC TILE SHOWER FLOOR MASTER BATH					
CERAMIC TILE TUB WALLS FULL BATH TO CEILING					
CERAMIC TILE BACKSPLASH IN KITCHEN					
CULTURED STONE SURROUND TO MANTLE ON FIREPLACE					
CULTURED STONE SURROUND TO CEILING ON FIREPLACE					
BASEMENT FINISH	CARPET				
BEDROOM #4	CARPET				
LOWER LEVEL BATH	CERAMIC TILE				

Ceilings;

Install new 5/8" drywall on all ceilings. Including stairway to basement.
Tape 3-coats. Finish with knock-down texture and prime all ceilings with a drywall primer.
NOTE: Finish Basement stairway down to basement floor.
Finish paint all ceilings flat finish.
Color; Sherwin Williams, SW 6140 Moderate White
Interior Paints; Use only paints/primers meeting the Green Seal G-11 Environmental Standard

Walls;

Install new 1/2" drywall on all walls including stairway to basement. Install protective corners on all exposed drywall edges.
Tape 3-coats. Finish smooth and prime all walls with a drywall primer.
NOTE: Finish Basement stairway down to basement floor.
Finish paint all walls flat finish.
Color; Sherwin Williams, SW 6142 Macadamia
Interior Paints; Use Sherwin-Williams or approved best grade paints and primers meeting the Green Seal G-11 Environmental Standard

Hardware;

- Install Schlage "Seville" Lever Handle sets; Color Bronze.
- All hardware to be Bronze. Includes railing brackets, doors stops at all doors, etc...
- All cabinet and vanity doors and drawers to have Bronze 4" loop pulls

Bathroom Accessories – At all bathrooms Install matching Bronze towel bars, towel rings, and paper holder as shown on the drawings for each bathroom.

Install mirrors located and sized per plan.
Install shower doors on all shower units, chrome metal, obscured glass
Install curtain rod on tub surrounds

Appliances

Whirlpool Energy-Star Stainless Steel Finish Package
Refrigerator with Ice-Maker: WRT1L1TZYS
Dishwasher; WDF510PAYS
Electric Range; Slide-In Electric Range - GY397LXUS
Microwave, Free Standing; WMC30516AS
Washer:
Dryer:

Plumbing;

Warranty — The entire plumbing system shall meet the requirements of the MN State Building Code, and the City of MPLS Building Inspections Department.

Main Water Supply – Install new copper line from the street main to house mechanical room. Arrange with city to turn water service on. Install new meter as required. Locate water meter in the mechanical room area.

Sewer Service — Install new sewer service from the street main to house.

Water Supply – All water supply pipes to be PEX.

Pipes to be of proper size throughout. Install new PEX to all fixture locations. Water pressure to be full and adequate for household uses. Install shut-off valves and backflow preventers.

Water Heater – Energy Star Rated, Gas fired, powered-direct-vent through sidewall, 50 gallon A.O. Smith, or approved equal. Include installation and all utility hook-ups.

Floor Drain– Install new floor drain.

Hose Bib —Install two anti siphon frost-proof type one at front and rear of house.

Gas –Install piping, connections and shut-offs for water heater, furnace and future clothes dryer. Hook-up furnace and water heater.

Kitchen:

Stainless steel, two compartments, 10" Deep, 22x33 inch Moen sink.
Moen faucet..Series-Chateau, Model # 7430 w/ 2.0 GPM aerator.
Install, hook-up and level dishwasher.
Run new water line and hook up ice-maker.

Bathrooms—Install all water supply, waste and vent as required for 3 bathrooms per plan.

Full Bathroom Fixtures;

Toilet; Install White Kohler or ProFlow 1.28 GPF Toilet. Rear of tank to be maximum 1 inch from wall behind. Include seat.
Cultured marble (white-on-white) sink top per plan
Install Moen Lav faucet—Series-Chateau, Model # 4621. w/ 1.5 GPM aerator.

Install new Moen Tub/Shower faucet w/ 2.0 GPM aerator.

Fiberglass 1-Piece 60" Tub & Shower unit @ 2nd Floor Full Bath. (Note; No bathroom wall tile)

Master Bathroom Fixtures;

Toilet; Install White Kohler or ProFlow 1.28 GPF Toilet. Rear of tank to be maximum 1 inch from wall behind. Include seat.

Two - Cultured marble (white-on-white) sink top per plan

Install (two) Moen Lav faucet—Series-Chateau, Model # 4621. w/ 1.5 GPM aerator.

Install new Moen Shower faucet w/ 2.0 GPM aerator.

Fiberglass 1-Piece 48" Shower unit (Master Bath)

½ Bathroom Fixtures;

Toilet; Install White Kohler or ProFlow 1.28 GPF Toilet. Rear of tank to be maximum 1 inch from wall behind. Include seat.

Cultured marble (white-on-white) sink top per plan

Install Moen Lav faucet—Series-Chateau, Model # 4621. w/ 1.5 GPM aerator.

Basement Bathroom Rough-In; Include complete rough-in for future basement bathroom includes toilet, sink, and shower. Cover shower drain hole.

Laundry – Install new single laundry sink in the basement and provide stopper. Securely fasten to floor or wall. Install proper laundry hook ups to the basement laundry sink.

Install ½ HP Sump Pump. Vent to exterior. Install exterior 10' hose

PLUMBING OPTIONS:

WATER SOFTENER

UPGRADED CHROME PACKAGE

OIL RUBBED BRONZE BATH FIXTURE PACKAGE

ELONGATED TOILET EACH

UPGRADED KITCHEN FAUCET

UPGRADED KITCHEN FAUCET W/ PULLOUT

MASTER FIBERGLASS SHOWER BASE ONLY

CREDIT FOR NO SHOWER SUPPLIED MASTER BATH (CERAMIC OPTION)

FULL BATH FIBERGLASS TUB BASE ONLY

Electrical;

Warranty - The entire electrical system shall meet the requirements of: the MN State Building Code, and the City of MPLS Inspections Department.

Main Panel – Install new 200 AMP panel and service. Clearly identify all circuits.

Devices / Lighting – Install Ivory outlets, lighting, switching, cable, and phone per plan.

Mechanical System—Wire as required for the Furnace and Air-Conditioner

Air-to-Air Exchange Unit; Provide dedicated outlet for the air-exchanger

Direct Vent Water Heater; Provide dedicated outlet for the water heater

Alarm System Outlet—Provide dedicated outlet inside alarm box for the alarm system.

Sump Pump Outlet—Provide dedicated outlet for the sump pump.

Laundry—Install outlets for washer and gas dryer.

Radon Attic Fan: Install a Fantech HP 2190 Radon fan unit in attic wired directly to the electrical panel from a junction box installed within 6' of the fan.

Use rubber boots to connect the fan to the 4" vent.

Smoke Detectors – Provide and install new smoke detectors per code.

CO Detectors – Install 3 new CO Detectors, one on each level.

Telephone/Cable TV– Install in each bedroom, living room and kitchen.

Door Chimes – Install door chimes to both the front and rear entry doors.

½ Bathroom; Install GFI outlet and Energy-Star rated Panasonic exhaust fan

Full Bathroom and Master Bathroom; Install GFI outlets and Energy-Star rated Panasonic exhaust fans with Lights

Kitchen – (See Kitchen Plan)

Install GFI outlets per code.

Install dedicated outlets for microwave, refrigerator, and dishwasher (connect DW)

Install Electric Outlet as required for Electric Range.

Install switched outlet for future disposal.

Provide and install the following new Energy Star Light Fixtures;

All Fixtures are available at Ferguson.Com. All fixtures are Oil Rubbed Bronze Color.

85842MROI - 3 Bulb; Kitchen/Dining Ceiling

Sea Gull S69460BLE782 "Sussex" Multi Light Pendant – Kitchen Island Ceiling

Recessed w/ White Trim - 1 Bulb; Kitchen above Sink

85810WSOI - 2 Bulb; Front Entry, Living Room, Rear Entry, 2nd Floor Hallway, All 3 Bedrooms, Master Closet,

Progress PP514477 "Torino" ; Stair Landing

85132WSOI - 2 Bulb; All Bathrooms

Energy-Star rated Broan Ceiling Vent Fan with Light; Master Bath and 2nd Floor Full Bathroom

Energy-Star rated Broan Ceiling Vent Fan; ½ Bathroom

Sea Gull S79121BLE15 Ceiling Mounted Light - - Front Porch

Maxim M86924BK "Side Door" Outdoor Entrance Wall Light w/ Motion Detector; Exterior... Rear Entry, Garage Service Door

Spot Light w/ Motion Detector - 1 Bulb; Exterior...Garage Peak above Overhead Door

ELECTRICAL OPTIONS:

FIREPLACE

BASEMENT FINISH

ELECTRONIC ZONE CONTROL

ELECTRONIC AIR CLEANER

GARAGE HEATER

HVAC;

Warranty - The entire Heating and Ventilation system shall meet the requirements of: the MN State Building Code, and the City of MPLS Inspections Department.

Heating, Cooling, and Ventilation System; provide and install the entire Heating, cooling, and Ventilation system per the attached specifications and duct layout by "Building Knowledge"

Duct Work-

This house will be using SIP exterior wall system.

Install new metal supply and return ductwork per the duct layout by "Building Knowledge" below.

Return Air Ducts to be completely metal ducted from furnace to register.

Seal all supply and return ducts, including elbow joints, with metal tape or mastic.

NOTE: do not run any ducts in unconditioned spaces.

Verify all duct run locations with the CM before installation.

System to be operable and ready to use at project completion. Assure proper air flow to all rooms.

Air-Conditioning – Provide and install a Goodman (or approved equal) 13 SEER air conditioning system.

Testing; Test fire and balance entire system and controls. Assure proper air flow to all rooms

Thermostat – Install new **Honeywell programmable setback thermostat** including all wiring, connections.

Kitchen Ventilation— Install Panasonic ceiling fan exhaust vented to exterior.

Laundry Ventilation— Install rigid metal ductwork thru wall down to floor for future dryer.

Bathroom Ventilation— Install (2) Energy-Star rated Panasonic FV-08VKSL3 w/ Light @ Master and Full baths. Install a Panasonic FV-08VKSL at ½ bath. Properly vented to the exterior per the manufacture's recommendations in each bathroom.

· **Heat Recovery Ventilation**-- Furnish and Install properly sized Broan or VanEE air-to-air exchange unit system for whole house ventilation.

Furnish and install remote wall control on 1st floor near t-stat.

System Sizing

- Heating load is less than 35 kBtu/hr - see attached Manual J report
- Install high efficiency, dual stage, sealed combustion natural gas furnace with variable speed ECM motor: like the Goodman GMVC950453BX
- Cooling load is 1.8 tons
- Install 2.0 ton, minimum 13 SEER air conditioner with AHRI matched evaporator coil
- Ventilation system sized to Minnesota mechanical code
- Total ventilation rate = $(1,758 \text{ sq. ft.} \times 0.02) + [15 \times (3 \text{ BRs} + 1)] = 95 \text{ CFM}$
- The total ventilation rate to be satisfied by small HRV plus CFM capacity of bath fans
- Continuous ventilation rate = $95 \text{ CFM} \times 0.5 = 48 \text{ CFM}$
- Install HRV wall control in hallway near thermostat
- Install Altitude or Deco-Touch wall control
- 2 Panasonic bath fans with lights, one in each bathroom
- Panasonic WhisperGreen FV-08VKSL3 w/ Light
- Control fans with push-button or crank timers
- Allows fan to run post-occupancy to purge moisture after baths/showers
- Balance HRV per manufacturer's instructions

Duct Sizing and Installation

- Ducts are sized assuming a furnace blower that can move 800 CFM at 0.6 inWC
- Trunks and branches to be installed in the attic
- Install ducts as close to the ceiling drywall as possible
- Encapsulate ducts with a minimum of 2" of high density spray foam
- The trunks will be running perpendicular to the roof trusses, ensure the foam fills the gap between the trunk and ceiling drywall
- Since the ductwork in the attic will be encapsulated with foam, sealing of duct seams with tape or mastic is not necessary
- Install balancing dampers at the take-off for all accessible branches
- Install balancing dampers at the boot for all branches that will not be accessible at finish
- All grilles and registers listed are Truair model numbers
- www.truair.com
- Supply and return airflow to be tested at finish
- Airflows to be within +/- 20% of design flow rate
- All ductwork in the mechanical room - all of the seams, elbows and connections, including the the air handler cabinet and filter assemblies, to be sealed with water-based mastic
- Seal all boots to ceiling and sidewall drywall
- Total duct leakage to be tested at finish
- Duct leakage not to exceed 8 CFM per 100 square feet of conditioned area at 25 pascals
- $8 \times (1,758 \text{ sq. ft.} / 100) = 141 \text{ CFM} @ 25 \text{ Pa}$
- Provide sealed filter cabinet with a minimum MERV 8 filter

HVAC OPTIONS:

GAS LINE DRYER
GAS LINE FIREPLACE
GAS LINE RANGE
GAS LINE TO PATIO
BASEMENT FINISH
ELECTRIC ZONING
ELECTRONIC AIR CLEANER
GARAGE HEATER

Final Clean-up;

- The complete project shall be maid-cleaned.
- All debris removed from the site at the completion of the contract.
- Remove all labels, clean all glass (outside and inside)
- Clean and vacuum all finish flooring
- Clean all light fixtures
- Clean plumbing fixtures, counter tops, cabinets (outside and inside).
- Open up all floor registers, remove debris and vacuum out ducts.
- In basement clean and sweep floor
- Clean the outside of the furnace, water heater, air-exchanger and any other equipment.
- Clean out garage and sweep floor
- Install small rug or carpet remnants inside of front and rear entry doors.