

PROJECT MANUAL

FOR

SB THRIVE, LLC

3301 East McKinley Avenue
South Bend, Indiana

SEPTEMBER 7, 2023

BID PACKAGES 1 - 26

Prepared for:



South Bend
Heritage

Prepared by:

ALLIANCE
ARCHITECTS

929 Lincolnway East, Suite 200
South Bend, IN 46601

ABONMARCHE

315 West Jefferson Blvd.
South Bend, IN 46601

For Bids Due
OCTOBER 18, 2023

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INVITATION TO BID

Notice is hereby given that South Bend Heritage will receive sealed bids for Bid Packages for the construction of a new neighborhood with a mix of townhouses, duplexes and apartment buildings (six-plexes), along with a site office/community room, located in South Bend, Indiana.

FOR THE PROJECT: **SB THRIVE, LLC**
3301 East McKinley Avenue
South Bend, IN 46615

BID PACKAGES 1 – 26

BY THE OWNER: SB THRIVE, LLC
803 Lincoln Way West
South Bend, IN 46616

BID OPENING: **2:00 p.m. EST on Wednesday, October 18, 2023**

Bids received after that time will be returned unopened.

The sealed Bids will be privately opened.

DOCUMENT AVAILABILITY: **Friday, September 15, 2023**

CONTRACT TIME: Shall not exceed 720 calendar days from Owner Notice to Proceed. First 42 units before December 31, 2024.

All work for the complete construction of the project will be under multiple prime contracts with the Construction Manager/General Contractor (CM/GC), based on bids received and on combinations awarded. The Construction Manager will manage the construction of the project.

The Owner reserves the right to accept or reject any bid (or combination of bids) and to waive any irregularities in bidding. No bidder may withdraw his bid for a period of sixty (60) calendar days after the date set for bid opening.

Construction shall be in full accordance with the Bidding and Contract Documents which are on file with the Owner and may also be examined by prospective bidders at the following locations:

OFFICES OF THE ARCHITECT:

ALLIANCE ARCHITECTS
929 Lincolnway East, Suite 200
South Bend, IN 46601

OFFICES OF THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC):

SOUTH BEND HERITAGE
803 Lincoln Way West
South Bend, IN 46616

OFFICES OF THE CIVIL ENGINEER:

Abonmarche, Inc.
315 West Jefferson Blvd.
South Bend, IN 46601

PLAN ROOMS: MACIAF
3215-A Sugar Maple Business Court
South Bend, Indiana 46628

The Contract Documents are on file and available for public inspection during regular working hours at the offices of the CM/GC, South Bend Heritage, 803 Lincoln Way West, South Bend, IN 46616. Contact: Safa Saddawi Telephone (574) 274-5678 and MACIAF, 3215-A Sugar Maple Business Court, South Bend, IN 46628. Additionally, the **Contract Documents will be available for inspection or purchase at ARC Document Solutions (ARC), located at 1303 Northside Blvd., South Bend, IN 46615, <http://www.e-arc.com> (574) 287-2944, toll free (800) 783-7231.** There will be a non-refundable charge of the cost for reproduction as set by ARC for every set of documents for all bidders.

Bidders must direct all questions in writing during the bidding period to South Bend Heritage, Ron Perry; ronp@sbheritage.org.

The successful bidders will submit their Federal Identification Number to the CM/GC, prior to signing the contract. In the absence of an F.I.N., they must submit their Social Security Number.

An out-of-state contractor will be obligated to show proof that they are registered with the Indiana Secretary of State to conduct business in the State of Indiana.

A pre-bid meeting will be held on September 28, 2023, at 1:00 p.m. at the Charles Martin Center located at 802 Lincolnway West, South Bend, IN. Confirm attendance via email to ronp@sbheritage.org.

Prevailing Wage Rates will be applicable to this project. The CM/GC will provide a listing of all applicable wage rates to the bidders. The successful bidder is required to submit weekly certified payroll forms (Form WH-347) to the CM/GC within two weeks of the applicable payroll date.

END OF SECTION

PROCUREMENT SCOPE

A. GENERAL

1. RELATED DOCUMENTS

- a. Project includes total construction of a 54-unit neighborhood, all in accordance with plans and specifications prepared by Alliance Architects dated 8/10/2023 and 9/7/2023 and civil drawings prepared by Abonmarche, Inc. dated 8/29/2023. Refer to Specifications Section B.1. Summary of Work, b. Project Description.
- b. **Invitation to Bid.** The requirements set forth in Division 1. GENERAL REQUIREMENTS shall apply to all contractors and/or subcontractors.

2. SCOPE

- a. Each contractor is responsible to familiarize themselves with the entire contents of the Construction Documents and their respective bid packages. Specifications and Drawings listed under each bid package are for reference and may not include every aspect of the bid package.

3. WORK COVERED BY CONTRACT DOCUMENTS

a. **GENERAL**

- 1) All work for the complete construction of this project will be under multiple prime contracts with the South Bend Heritage Construction Manager/GC.
- 2) Each contractor is responsible for their own cutting and patching where necessary.

b. **BID PACKAGE 1 – EARTHWORK**

- 1) Installation of erosion control measures.
- 2) Site preparation work.
- 3) Earthwork including site excavation, special excavations, compaction, rough grading and finish grading.
- 4) Placement and compaction of all engineered fill.
- 5) Placement, finish grade and compaction of all subbase materials for walks, exterior slabs and pavements.
- 6) Installation of water service and sanitary sewer from city mains to building area.
- 7) Installation of storm drainage system, structures and piping.

c. **BID PACKAGE 2 – BUILDING CONCRETE**

- 1) Construction of concrete footings and foundation walls.
- 2) Application of damp-proofing and insulation.
- 3) Construction of concrete building slab, including front and rear porches and stoops.
- 4) Placement, finish grade and compaction of floor slab course, including granular filled radon system pit.
- 5) Excavation, backfill and subgrade compaction for building footprints.
- 6) Underground sleeves for security, fire alarm and access control.

d. **BID PACKAGE 2A – TERMITE CONTROL (BY OWNER)**

- 1) Termite control for building foundation and under slab areas

- e. **BID PACKAGE 3 – ASPHALT PAVING**
 - 1) Placement of all asphalt paving for parking and drives.
 - 2) Painting of all pavement markings and stripes.
 - 3) Provide and install handicap parking signs.

- f. **BID PACKAGE 4 – SITE CONCRETE**
 - 1) Construction of all concrete walks, curbs and exterior slabs.
 - 2) Construction of accessible curb ramps.

- g. **BID PACKAGE 5 – METALS**
 - 1) Provide all structural steel, miscellaneous metals, and stair railings.
 - 2) Installation by others.

- h. **BID PACKAGE 6 – GENERAL TRADES 1: FRAMING/ ROUGH CARPENTRY**
 - 1) Construction of wood framed walls, floors, and roof trusses.
 - 2) Construction of exterior walls and installation of insulated sheathing and taped joints.
 - 3) Construction of wood framed stairs.
 - 4) Installation of sill seals at exterior walls.
 - 5) Installation of all exterior wall windows and perimeter flashing tape.
 - 6) Installation of temporary enclosures and protection.
 - 7) Provide and install all exterior joint sealants.
 - 8) Provide and install all wood blocking, including as needed for planned firestopping assemblies.
 - 9) Construction of all wood decking.
 - 10) Provide and install flooring underlayment.
 - 11) Construct project construction sign. Sign board to be provided by Owner.
 - 12) Construction of all gypsum linear panels and associated metal studs and track.
 - 13) Construction of plywood insulation protection at attic access openings.
 - 14) Install exterior doors.

- i. **BID PACKAGE 7 – GENERAL TRADES II: FINISH CARPENTRY AND ARCHITECTURAL WOODWORK**
 - 1) Provide all finish carpentry.
 - 2) Installation of all interior doors/frames, access doors, attic access doors, door hardware.
 - 3) Installation of casework and countertops.
 - 4) Installation of all toilet room, bathroom accessories.
 - 5) Provide and install joint sealants.
 - 6) Installation of Specialties, mailboxes, unit address numbers.
 - 7) Installation of interior window sills.
 - 8) Installation of steel stair railings.
 - 9) Installation of window blinds.
 - 10) Installation of exterior stair handrail.
 - 11) Install or set in place all appliances, including splash guard at each range.
 - 12) Install closet shelving.

- j. **BID PACKAGE 8 – INSULATION**
 - 1) Provide and install all building insulation including perimeter walls, interior walls, ceilings, and attic.
 - 2) Provide interior sound batt insulation.

- k. **BID PACKAGE 9 – ROOFING**
 - 1) Provide and install fiberglass-based asphalt shingle roof.

- 2) Provide and install roof flashing, roof/wall flashing, and pre-finished trim.
 - 3) Provide and install all roof accessories.
- l. **BID PACKAGE 9A – GUTTERS AND DOWNSPOUTS**
- 1) Provide and install all gutters and downspouts.
 - 2) Extension of storm drain piping from roof building roof drains to storm sewer system, including cleanout.
 - 3) Provide and install splash blocks at downspouts.
- m. **BID PACKAGE 10 – SIDING AND TRIM**
- 1) Provide and install vinyl siding, including vinyl accessories and PVC trims and columns.
 - 2) Provide and install all preformed soffit systems and fascias.
 - 3) Construction of exterior plywood mounting blocks at electrical meters and plywood phone/data panels.
- n. **BID PACKAGE 11 – WINDOWS (OWNER)**
- 1) Provide all window units.
 - 2) Installation by others.
- o. **BID PACKAGE 12 – DOORS AND HARDWARE (OWNER)**
- 1) Provide all steel doors/frames.
 - 2) Provide all wood doors/frames.
 - 3) Provide all access panels and attic access doors.
 - 4) Provide all door hardware.
 - 5) Installation by others.
- p. **BID PACKAGE 13 – GYPSUM DRYWALL**
- 1) Provide and install gypsum wallboard systems.
 - 2) Provide and install sound board on walls.
- q. **BID PACKAGE 14 – RESILIENT FLOORING**
- 1) Provide and install all resilient flooring, wall base and trim accessories, (excludes carpeted areas).
- r. **BID PACKAGE 15 – CARPET**
- 1) Provide and install all carpet systems including vinyl wall base and trim accessories.
- s. **BID PACKAGE 16 – PAINTING**
- 1) Provide and install all paint systems.
- t. **BID PACKAGE 17 – SPECIALTIES (OWNER)**
- 1) Provide corner guards.
 - 2) Provide fire extinguishers and cabinets.
 - 3) Provide postal specialties.
 - 4) Provide window blinds.
 - 5) Installation by others (See Bid Package 9 - General Trades II - Finish Carpentry).
- u. **BID PACKAGE 18 – RESIDENTIAL APPLIANCES (OWNER)**
- 1) Provide all kitchen appliances for Community Room, Kitchen and Apartment Units.
 - 2) Provide all Laundry Room washer appliances.
 - 3) Installation by others.

- v. **BID PACKAGE 19 – CASEWORK (OWNER)**
 - 1) Provide all pre-manufactured casework.
 - 2) Installation by others.

- w. **BID PACKAGE 20 – FIRE SPRINKLER SYSTEM**
 - 1) Provide and install complete automatic fire sprinkler system.
 - 2) Provide and install firestopping.
 - 3) Provide and install fire department connection, flow and tamper switches.

- x. **BID PACKAGE 21 – MECHANICAL**
 - 1) Provide and install all plumbing systems from stub 5 feet outside of building including domestic water, fire service water, sanitary, sewer and gas.
 - 2) Provide and install all heating, ventilating and air conditioning systems.
 - 3) Provide and install firestopping.
 - 4) Install residential appliances with water connections.
 - 5) Provide and install passive radon system piping from below slab to above the roof.

- y. **BID PACKAGE 22 – ELECTRICAL**
 - 1) Provide and install all electrical systems for building and site.
 - 2) Provide and install firestopping.
 - 3) Install appliances with electrical connection (cord with cord-connected appliances).

- z. **BID PACKAGE 23 – SPECIAL SYSTEMS**
 - 1) Provide and install complete fire alarm, intercom system, and access control systems.
 - 2) Provide and install security camera system, including design of system.

- aa. **BID PACKAGE 24 – SITE IMPROVEMENTS**
 - 1) Construct screen walls and trash enclosure screen walls, and bollards.
 - 2) Install benches and raised gardens.
 - 3) Provide and install fencing.

- bb. **BID PACKAGE 25 – LANDSCAPING**
 - 1) Provide and install plant materials.
 - 2) Provide and install lawns, including all open lawns, no-mow lawns, and native habitat areas.
 - 3) Install crushed limestone walking surfaces.

- cc. **BID PACKAGE 26 – IRRIGATION**
 - 1) Installation of irrigation system.
 - 2) Installation of drip irrigation system.

4. PRIME CONTRACTS

- b. The multiple prime contracts are defined by Bid Packages which designate one or more various disciplines of work. These Bid Packages are being packaged to maintain job scheduling. Due to this fast-track method, time is of the essence in performance of this work.
- c. A construction progress schedule, which defines milestone progress for this project, will be issued with each Contract. This schedule will be preliminary and is meant to define

the project goals. A more detailed schedule will be developed after contracts are awarded.

- c. The Bid Package Subdivisions (BPS) being considered under this Bid Package are as follows:

a)	<u>BPS</u>	<u>Description</u>
	1	EATHWORK
	2	BUILDING CONCRETE
	2A	TERMITE CONTROL
	3	ASPHALT PAVING
	4	SITE CONCRETE
	5	METALS
	6	GENERAL TRADES I – FRAMING/ROUGH CARPENTRY
	7	GENERAL TRADES II – FINISH CARPENTRY AND ARCHITECTURAL WOODWORK
	8	INSULATION
	9	ROOFING
	9A	GUTTERS AND DOWNSPOUTS
	10	VINYL AND POLYMER SIDING
	11	WINDOWS
	12	DOORS AND HARDWARE
	13	GYPSUM DRYWALL
	14	RESILIENT FLOORING
	15	CARPET
	16	PAINTING
	17	SPECIALTIES
	18	RESIDENTIAL APPLIANCES
	19	CASEWORK
	20	FIRE SPRINKLER SYSTEM
	21	MECHANICAL
	22	ELECTRICAL
	23	SPECIAL SYSTEMS
	24	SITE IMPROVEMENTS
	25	LANDSCAPING
	26	IRRIGATION

- d. Future Bid Packages will be added under subsequent phases of construction documents, which will, in total, define the overall scope of this project.

5. OWNER REQUIREMENTS AND USE OF PREMISES

- a. It is the intention of the Owner to award contracts to the successful Bid Package Sub-Division Contractors who submit the lowest and/or best bid. Any bidder, at his/her option may submit a combined bid made from any combination of individual bid package sub-divisions. A separate bid must be submitted for each bid package sub-division and applicable alternates in addition to the combined bid. Combined bids will not be considered unless the bidder also submits separate bids on each bid package sub-division and alternates contained in the combined bid. Voluntary alternates will be considered provided the bidder first submits a bid based on specified work.
- b. Abusive language, music radios, actions or disrespectful behavior by any workers directed to Construction Manager/GC's employees, visitors, or others while working on the project grounds is subject to immediate removal and dismissal.

- c. Designated smoking areas, parking areas, and construction trailer staging areas will be as directed by the Construction Manager/GC. No parking or loitering will be permitted on access roads or mobilization areas. Fire lanes shall be kept clear at all times to maintain access to the completed buildings and fire department connections.
- e. No materials may be stored within the building. Contractors shall be responsible for scheduling on time delivery of their materials or provide their own storage trailers on site, located as directed by the Construction Manager/GC.

6. LICENSE REQUIREMENTS

- a. All contractors shall be licensed as required by Local and State agencies. Contractors shall verify these requirements with the respective governing agencies.

B. PRODUCTS (Not used)

C. BID PACKAGE SUBDIVISION DESCRIPTION

- 1) All products listed will be furnished and installed unless otherwise noted. All Contractors shall be responsible for layout for their scope of work.
- 2) Refer to Drawings and Specifications referenced the Related Documents section above.

END OF SECTION

SPECIFICATIONS

SB THRIVE, LLC
South Bend Heritage
3301 East McKinley Avenue
South Bend, Indiana

July 17, 2023
Rev. September 7, 2023

A. DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS

1. This Specification, originally dated July 17, 2023, and revised September 7, 2023, or as later revised, supersedes and replaces all prior specifications for this project.
2. Bids will be due on **Wednesday, October 18, 2023** at the SBH offices by 2:00 p.m. (Received via mail, faxed, emailed, or dropped off by this time.) SBH offices are located at 803 Lincoln Way West, South Bend, IN 46616. Bids are to the attention of Ron Perry at 574.289.1066.
3. Throughout this document, South Bend Heritage Foundation, SB Thrive, LLC, SBH and SBHF shall all be interpreted as "Owner".
4. Bids not utilizing the attached Bid Form will not be accepted. Additional materials may be submitted. Voluntary alternates submitted in addition to the primary bid documents will be considered. One bid form per bid package.
5. Bidder References: Provide names and contact information for three prior clients in which your company demonstrated an ability to deliver a project under a demanding schedule or otherwise met your client's schedule expectations. One criterion for determining bidder responsiveness will be a demonstrated ability to deliver projects on schedule.
6. Bidder Registration: All bidders must notify SBH of their intention to bid by Wednesday, October 11, 2023. Project notices and addenda notices will be emailed to registered bidders only. Contractors who received an RFP invitation to bid emailed from SBH are considered pre-registered.
7. Full and complete Contractor markup on any positive value change orders to be disclosed on the Bid Form.
8. Bid the work according to the RFP documents. If you or your subs have questions about elements of the work, please contact SBH. If information is lacking, SBH will issue new guidelines (Addendums) to all Bidders. References to work by subcontractor shall refer to all divisions of work unless specifically assigned to a particular subcontractor by the bid package description contained in the RFP.
9. Voluntary Alternates:
 - a. Bidders may submit voluntary alternates. Voluntary alternates will only be considered if bidder has first provided a bid for the work as specified. List voluntary alternates on a separate form or additional copy of the bid form. Number and clearly describe the scope of each voluntary alternate.
 - b. SBH will also consider a voluntary alternate in which two or more separate bid packages are linked for a combined bid amount different than the sum of the separate bid amounts.
10. Approved Equal (Substitutions): No substitutions of specified products are permitted without written approval from SBH.
11. Contract between General Contractor and Subcontractor: The successful bidders will be expected to execute AIA Document A401, latest edition, Standard Form of Agreement Between Contractor and Subcontractor or an equivalent SBH agreement. Review copies of this agreement are available from SBH.

12. Applications for Payment:
 - a. Draw requests will be made from the Contractor to the Owner at no less than 30-day intervals utilizing AIA G702 and G703 forms. Payment will be made only for work in place at time of the application for payment. Materials purchased and stored may be billed if covered against loss by a certificate of insurance acceptable to SBH.
 - b. Monthly applications are due to SBHF on the 25th of each month. Payment may be expected from SBH in not less than 30 days or more than 45 days.
13. Notice to Proceed: No billable work or commitments of any sort are to begin on the project until after the Contractor has received a written notice to proceed from the Owner. Notice to proceed will be issued to all contractors at the same time at least one (1) week prior to the start of construction.
14. Schedule for Construction: See Division 1.
15. Retainage: Contract will be executed with 5% retainage on each subcontractor draw. Retainage will be released upon Substantial Completion of the Contract minus an amount ascribed to specific punch list items until those items are completed and as otherwise described in AIA A201.
16. Prevailing Wage and Certified Payrolls: This project falls under prevailing wage guidelines. Certified payrolls are required. See Appendix A. Project Wage Decision and Appendix B. HUD 4010. The Contracting Officer shall be Alyssa Alscott, Department of Community Involvement, South Bend, Indiana at 574.235.9951. Prevailing wages will be reviewed and will be issued via Addendum.
17. Insurance: Certificates of insurance will be required prior to start of the Work. Refer to attached minimum limits of liability. South Bend Heritage Foundation, Inc. shall be named as additional insured under the Contractors' Comprehensive General Liability Policy.
18. MBE and WBE:
 - a. South Bend Heritage is committed to minority and women's business enterprise participation in this project.
 - b. As a requirement for bidding on this project, all bidders shall provide written documentation evidencing the bidder's good faith efforts to further South Bend Heritage Foundation's desire to facilitate local worker and MBE/WBE participation in this project. Such documentation shall include a listing of all MBE/WBE's contacted including: (1) the name and address of the MBE/WBE; (2) the type of contact made (i.e. telephone, written solicitation, etc.); (3) the date of the contact; (4) the nature or type of services or goods requested; and (5) the result of the contact.
 - c. Responsive bidders shall include this written evidence of their good faith efforts including copies of outreach and copies of email exchanges inviting and receiving quotes or other responses from MBE/WBE firms or other documentation of efforts to encourage and secure competitive quotes from MBE/WBE and local businesses to be included in the benefits of building this project. Written documentation of letters of introduction, invitations to forging majority/minority strategic alliances for capacity building including but not limited to mentoring, extensions of assistance on payroll, insurance, bonding, line of credit, technical skills or business skills will be accepted as further evidence of good faith effort.
 - d. All bidders are actively encouraged to reach out to the MBE/WBE firms in St. Joseph County and make real good faith efforts to forge constructive and lasting business partnerships.
19. Copies of the winning bid forms will be available from the Owner after the Contract is awarded and construction has commenced.

B. DIVISION 1 - GENERAL

1. Summary of the Work:
 - a. Refer to the individual bid package descriptions in a separate document. These bid packages are not specifications. They merely divide the work into biddable portions and refer to the Specifications. The scope of work described in each bid package does not limit the Contractors' responsibility to understand the entire project and the required coordination of their work with other trades.
 - b. Project Description: Project consists of complete construction of residential structures: nine (9) duplexes, five (5) townhouse buildings and three (3) apartment buildings (six-plexes) with 54 total dwelling units and a site office/community room building on four (4) sites in South Bend, Indiana. Project includes site development of the sites to include parking, curbs and walks, signage, grading and landscaping, all as shown on the Project Drawings by Alliance Architects and Abonmarche.
2. Printed Documents: To order prints of the Drawings (full or half size) and associated RFP documents, contact ARC (previously South Bend Drafting Supply), 1303 Northside Blvd., South Bend IN, 574-287-2944. Interested bidders are responsible for purchasing and picking up bid packages from ARC.
3. Coordination and Precedence of the Contract Documents: The documents included in the Contract are intended to be complementary and to describe a complete work. In case of a difference between Drawings and Specifications, the Specifications shall govern.
4. Means and Methods: The Drawings are meant to indicate the general scope of the bid package as related to the site plan, floor/roof plans, and elevations, and are not intended to be fully detailed construction documents. Contractor is responsible for all construction means and methods. This wood frame residential structure and all parts thereof, shall be designed and constructed in strict compliance with the Indiana Residential Code 2018 (IRC) to safely support all loads without exceeding the allowable stresses for materials of construction in structural members and connections. This includes concrete foundation walls/footings, floor, wall and roof framing, beams, lintels, and wind/lateral loading. The building structural design shown on the Drawings is a guide for Bid Package 6 bidders. Variations from the design shown shall be approved by the Owner and Architect. The site office/community room and the six-plex buildings shall comply with the Indiana Building Code 2014 (IBC 2012 referenced).
5. South Bend Heritage reserves the right to reject any or all bids, and to waive any irregularities in bidding and to make an award in the best interest of the South Bend Heritage Foundation and the City of South Bend.
6. Minor Changes: The subcontractor will advise the Owner of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time.
7. Requests for Information (RFI): The subcontractor may submit a request for information to SBH to seek clarifications or resolution to questions that arise during the course of the Work that are not covered in the Construction Documents. The SBH will respond within five (5) days.
8. Architects Supplemental Instructions (ASI): The Architect or SBH may issue supplemental instructions which include a detailed description of a clarification or proposed change with supplementary or revised Drawings and Specifications. If the ASI results in a change to the Contract Sum and/or Contract Time, the Contractor will prepare and submit an estimate within ten (10) days.
9. Potential Change Orders (PCO) Change Orders (CO): The subcontractor may propose a change by submitting a PCO request for change to the SBH, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation.

10. Permits:
- a. The *Utility Verification Form* from the SB BOPW will be coordinated and paid for by the Owner.
 - b. The occupancy permit (if required); plumbing permit fee shall be paid by the subcontractor; water main taps and stop valves to be installed by the City of South Bend.
 - c. The sewer inspection fee, if required, to be paid by the subcontractor. Sewer lateral shall be installed to each building site by the City of South Bend.
 - d. The sewer excavation fee (for excavation within the property line) to be paid by contractor installing the lateral only if required by the BOPW. It is the Contractor's responsibility to determine if this fee applies for the base bid condition.
11. Schedule: Construction is expected to begin approximately Fall 2023. Notice to Proceed will be issued to all contractors at least one (1) week prior to start date. Subcontractors may not begin work until satisfaction of all pre-construction requirements. The Schedule is of the essence for this project. Refer to the schedules for each bid package as outlined in the bid package descriptions. Schedules are provided for bidding and general coordination purposes. Contractors will be notified by SBH if adjustments to the schedule are made.
12. Adverse Weather: N/A.
13. Bidder References: Provide names and contact information for three (3) prior clients in which your company demonstrated an ability to deliver a project under a demanding schedule or otherwise met your client's schedule expectations. One criterion for determining bidder responsiveness will be a demonstrated ability to deliver projects on schedule.
14. Meetings and Coordination:
- a. Standard Pre-Construction Meeting: Date and agenda to be determined.
 - b. The following shall be provided by each subcontractor in advance of the meeting:
 - Draft schedule of values on AIA G702/G703.
 - c. SBH is responsible for the coordination of schedules, submittals, and the Work to assure efficient and orderly sequence of installation of interdependent construction elements.
15. Energy Code Compliance: This project will meet the energy code using the performance path.
16. Submittals and/or Shop Drawings:
- a. Submittals from Contractors to Architect or Owner and SBH are required for the following:
 - Truss and framing package showing primary structural calculations and loading.
 - Panelized wall system if used and other primary structural elements. Identify portions of walls to be bracing wall panels or shear walls.
 - Windows - fabricator submittal / shop drawings / energy standard compliance.
 - Exterior doors - manufacturer submittal including assembly U-values and glazed door SHGC values.
 - Interior doors - manufacturer submittal.
 - Door hardware - manufacturer submittal.
 - Gypsum wallboard and gypsum liner panels.
 - Sound board.
 - Cabinetry layout - vendor drawing based on field verified dimensions.
 - All exterior finish materials and colors, including colored flashing - material sample with color applied.

- Roofing shingle and underlayment - physical sample from manufacturers.
 - All interior finish trim materials and colors - finish manufacturer samples.
 - Floor finishes - carpet, pad, vinyl, underlayment.
 - HVAC heat/cooling load calculations. Manual J.
 - All HVAC equipment - manufacturer submittals.
 - All plumbing equipment and fixtures - manufacturer submittals. Include left or right hand qty.
 - All required close-out documents and OEM manuals.
 - Electrical service equipment and electrical panels.
- b. Submit three (3) copies of paperwork and one (1) physical sample (if required above) for approval. SBH will respond within three (3) days with approval, conditional approval, or rejection for revision and re-submittal. PDF emailed submittals in lieu of paper submittals are acceptable. Email submittals to Ron Perry at ronp@sbheritage.org.
17. Schedule of Alternates: None.
18. Allowances: None.
19. Construction Facilities:
- a. SBH shall maintain at least one (1) complete full-size and bound set of Drawings and Specifications at the job site for all subcontractors to reference and make as-built notations.
 - b. Subcontractor to install temporary electric service. AEP accounts for temporary power is the responsibility of SBH.
 - c. Dumpsters provided and paid by SBH.
 - d. Port-a-potty shall be provided and maintained on site by SBH.
20. On-Site Storage: To the greatest extent possible, this project will operate with "just in time" delivery of all materials. Staging of materials on site outside of the period scheduled for that trade is not permitted unless pre-arranged with SBH and in Contractor-provided storage container. Storage of material for current use in structures already completed is not permitted. Staging of materials for more than one group at a time is not permitted unless pre-arranged with SBH and in contractor-provided storage container.
21. Safety: It is SBH's responsibility to maintain and enforce an environment of safe work practices at the job site.
22. Cutting, Notching, and Drilling: Structural floor members shall not be cut, bored or notched in excess of the limitations specified in section 502.8 of the Indiana Residential Code. Engineered lumber members shall not be cut or notched in excess of the limitations specified in the manufacturer's recommendations and in accordance with IRC Section 502.8.2.
23. Field Measurements: Each Contractor or Subcontractor shall obtain his own lines and/or grades and be responsible for the same.
24. Adjustment to Building Conditions: Contractor must obtain written consent of the Architect for any changes. Any change necessary to pass immovable obstructions shall be made by the Contractor without additional cost.
25. Anchor Bolts, Sleeves, Etc.: Shall be set by each subcontractor requiring their use. Sleeves to be sealed by same as required by Local and State Codes.
26. Drawings: Drawings are not to be scaled; written dimensions will govern in all cases.

27. Lifting Devices and Hoisting Facilities: Shall be provided by each subcontractor. Proper bracing and safety equipment is required.

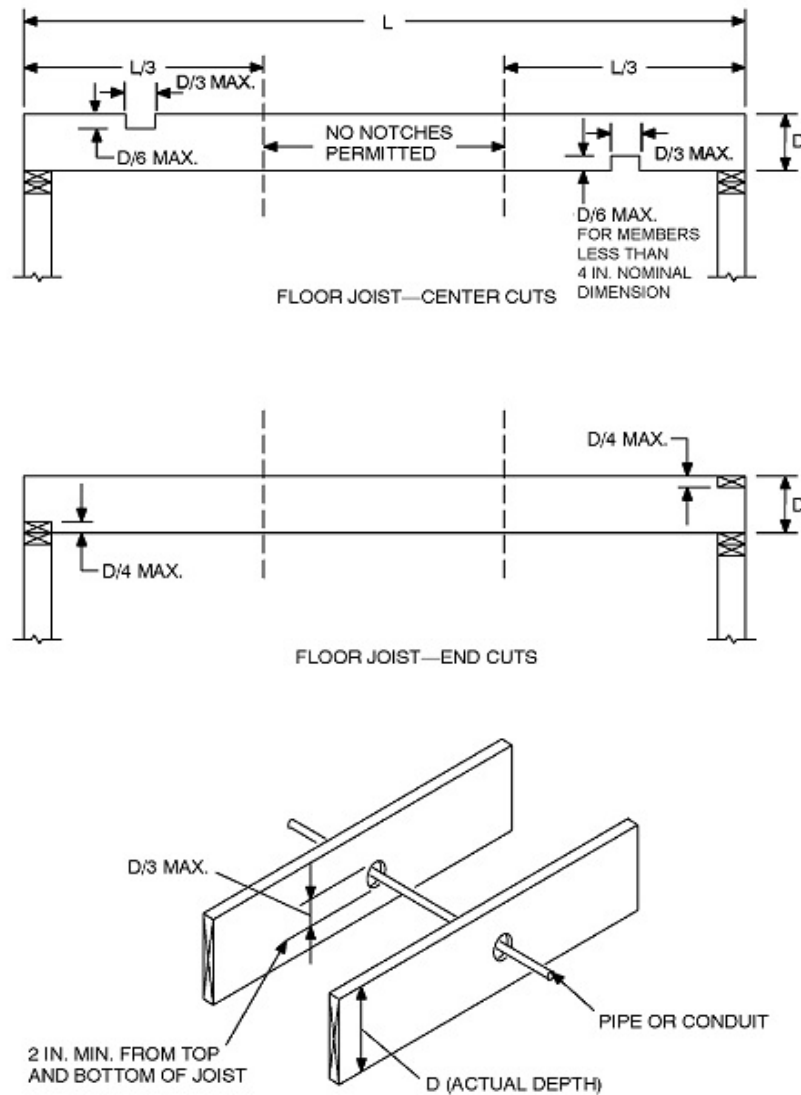


FIGURE R502.8 CUTTING, NOTCHING AND DRILLING

28. Job Site Debris and Cleaning: Premises will be left each day by each subcontractor broom clean. SBH is responsible to enforce a clean and tidy job site.
29. Temporary Controls:
- Construction materials shall be stored off the ground and covered to avoid absorption of moisture and damage.
 - Mechanical ducts shall be sealed during construction.
 - Temporary Enclosures and Protection: To be provided by framing subcontractor unless noted otherwise. Give one (1) key each to Architect and Owner for all locks on doors.

30. Construction Sign: Subcontractor to furnish and erect an 8'-0" x 8'-0" construction sign at the site. The design and layout will be provided by the Architect.
31. Construction Waste Management:
 - a. All dumpsters by SBH.
 - b. Job site to be maintained in a clean and orderly condition. Each contractor is generally responsible for depositing debris generated by their work into the SBH provided dumpster.
32. Contract Closeout:
 - a. As defined in Construction Agreement.
 - b. Punch List Procedures: Contractors shall walk through each unit with SBH to determine the punch list and which items shall be monetized on the final punch list.
 - c. Operation and maintenance manuals of all systems shall be required.
 - d. Record Drawings: At the completion of the project, each subcontractor shall submit one (1) complete set of "as built" drawings, which highlights in red all changes which deviate from original contract documents.

C. DIVISION 2 - EXISTING CONDITIONS

1. Geotechnical Report: Geotechnical Evaluation Report dated 4/6/22 by Weaver Consultants Group is available from SBH for review by subcontractors.

D. DIVISION 3 - CONCRETE

1. All concrete shall be installed in accordance with ACI 318 of the American Concrete Institute with latest revisions.
2. Portland Cement: ASTM C150 Type 1 cement.
3. All exterior concrete for walks, step, and pads shall be a minimum 4,000 psi, maximum 4" slump, 4-7% air entrainment with limestone aggregate. Concrete placed in the City right-of-way shall be in accordance with South Bend Department of Public Works specifications. With course aggregate of 1-1/2" maximum size, either clean, hard washed, screened limestone or gravel free of dust and excess lime materials.
4. All footing and foundation wall concrete shall be minimum 3,000 psi, maximum 4" slump.
5. Fine aggregate shall consist of natural sand free of dust, lumps or flaky particles, shale, alkali, organic matter, loam or other deleterious material.
6. Establish the top of foundation wall above at finish grade noted on Project Drawings.
7. Foundation walls to be 8" thick reinforced concrete as shown on the Project Drawings.
8. Reinforcing Steel: All reinforcing steel shall comply with ASTM E614 with a 305 deformation. Reinforcement shall be unpainted, uncoated and free from excessive rust, loose scale or other coating character which will reduce or destroy the bond.
9. Reinforcing Fibers: Provide reinforcing fibers in all concrete slab-on-grade construction within the building. Fibers shall be polypropylene fibrillated fibers as manufactured by S1 Concrete Systems, Chattanooga, Tennessee or Architect approved equal.
10. Welded Wire Fabric: Welded wire fabric shall conform to ASTM A185.

11. Foundation Anchors: Provide 1/2" diameter x 10" long Simpson Titen HD HDG within 12" of the corner and either side of door openings. Space bolts a maximum 6' o.c. (U.N.O.).
12. Where noted on the Project Drawings, install 4" Schedule 40 PVC pipe with "T" stubbed through slab for passive radon system. Locate as noted on Project Drawings. Provide 4' x 4' x 10" deep pit with pea gravel in lieu of granular subgrade material noted above. Center pit on radon pipe location.
13. Drain Tile: Install drain tile along footer where downspouts are noted to be connected to storm drainage system on the Project Drawings. Drain to be 4" diameter HDPE flex perforated pipe and fabric sleeve. Route to nearest yard inlet.
14. Underslab Plumbing: All trenching for underslab plumbing shall be backfilled with granular material.
15. Slab-on-Grade Installation: Prior to placing concrete floor slabs, inspect vapor barrier for proper connection to foundation wall and seal at all pipe penetrations. Repair as required.
16. Vapor Barrier: Refer to Division 7.
17. Porch deck and steps to be poured concrete. Refer to plans.
18. Slabs-on-Grade: Sawcut control joints 25% of slab depth and spaced as shown on Project Drawings to coordinate with interior wall locations. Slope to drain.
19. Concrete Walks, Curbs, Etc.: Concrete shall be leveled off and troweled sufficiently to bring mortar to the surface then wood float finish. Provide expansion joints 3/8" thick pre-formed material (on 40' maximum centers and/or where shown on Project Drawings). Score walk transversely at intervals not exceeding with the walk. Walk cross-slope shall be maximum 2%.
20. Curing: Freshly placed concrete shall be protected from pre-mature drying and excessively hot or cold temperatures. It shall be maintained in a moist condition and at a constant temperature for a least seven (7) days after placement. Use methods as approved by the Architect.
21. Soils Check: All footing trenches, slab fill must be checked and approved an approved soils engineer prior to placing any concrete. Such checks will be at the Contractor's expense, and it will be the sole responsibility of the Contractor to notify the soils engineer at such times as the inspection is required.
22. Concrete Replacement: In the event concrete is placed which does not meet or exceed the strength requirements as herein specified, all such concrete shall be removed and replaced with concrete of the specified strength. This removal and replacement shall be at the Contractor's expense.
23. Cast-in-Place Concrete Finishes: Interior floor slabs shall receive steel trowel finish. Exterior concrete slabs, walks, stoops, etc., shall have a broom finish.

E. DIVISION 4 - MASONRY (Not Applicable)

F. DIVISION 5 - METALS

1. Fasteners and Connections: Per details and Specifications. Simpson Strong Tie (SST) or approved equal.
2. Roof Truss/Wall Clips: Shall be Simpson STC Clips. Utilize at non-bearing interior walls.
3. Steel rebar and reinforcing mesh to meet or exceed IBC and IRC 2018 requirements.
4. Aluminum flashing per Drawings. .027" minimum thickness, prefinished where visible on the exterior of the building.
5. Exterior Stair Rail: 1-1/4" Schedule 40, A316 stainless steel. Submit shop drawings.

G. DIVISION 6 - WOOD AND PLASTICS

1. Rough Carpentry:

a. Framing and Rough Carpentry:

- 1) All lumber shall be grade-stamped by an agency certified by the Board of Review of the American Lumber Standards Committee as of 1991. Lumber shall be graded as follows:
- 2) Interior and Exterior Load Bearing and Non-Load Bearing 2 x 4 Wall Framing (Less Than 8' Long): Stud Grade "SPF" (Spruce/Pine/Fir) with moisture content not exceeding 19%. Studs installed vertically shall be finger jointed.
- 3) Interior and Exterior Load Bearing and Non-Load Bearing Wall Framing 2 x 6 and Larger and 2 x 4 8' or Longer: No. 2 or Better "SPF" (Spruce/Pine/Fir) with moisture content not exceeding 19%. Studs installed vertically shall be finger jointed.
- 4) Wall Plates, Blocking and Furring: No. 1/2 "SPF" (Spruce/Pine/Fir) with moisture content not exceeding 19%.
- 5) Structural Framing Members (Rafters, Joists, Rim Boards, Wall Framing Members, Headers and Beams Over 10' long, etc.): So. Pine. No. 2. Refer to Drawings for requirements of structural members noted which may differ from those specified herein. In case of discrepancies, the larger specified value will govern.

b. Engineered Framing Materials:

- 1) Laminated Veneer Lumber (LVL): Microllam LVL by Weyerhaeuser Trus Joist Engineered Wood Products or equal (Fb = 2,600 psi, E = 2.0 x 10⁶, Fv = 285 psi, minimums).
- 2) Parallel Strand Lumber (PSL): Shall be Parallam as manufactured by Weyerhaeuser Corporation or Architect approved equal. Properties of PSL shall be: E = 2.0 x 10⁶ PSI, Fb = 2,900 PSI, Fv = 290 PSI. Sizes shall be as noted on Drawings.
- 3) Joists: TJI Joists by Weyerhaeuser Trus Joist Engineered Wood Products or equal. Comply with all manufacturer's requirements for detailing - including allowable hole cut limitations.
- 4) Rim Board: 1-1/8" thick TJ Rim Board by Trust Joist Engineered Wood Products.

c. Panelization and stick-framing are both acceptable base bid approaches. Please note your chosen approach on the bid form. Install post-installed foundation anchors within 12" of each corner, either side of doors, and max. 6' OC unless noted otherwise.

d. Floor Sheathing: APA 48/24, 3/4" or 23/32" sheathing and single-floor rated T & G sheathing, PS 1 EXT. Floor sheathing with butt joint construction shall be installed with joint spacing of 1/8" or less. All joints greater than 1/8" shall be filled so as to provide a solid substrate for installation of lightweight concrete.

e. Roof Sheathing: 1/2" APA rated sheathing, Exposure 1 with span rating 24/16. Nail with 8d nails at 6" o.c. on edges and 12" o.c. intermediate.

f. Composite Insulating Wall Sheathing: Oriented-Strand-Board, Exposure 1 Sheathing, 7/16" thick with factory-laminated, water-resistive barrier exterior facer, and with rigid foam plastic insulating board laminated to interior face. Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(28) Air Barrier, Air Sealing, Building Envelope Testing, and Insulation 701.4.3.2.

- 1) Provide Huber Engineered Woods, LLC, zip system "R" sheathing.
- 2) Span Rating and Performance Category of Sheathing Layer: Not less than 24/16; 7/16 Performance Category.
- 3) Thickness: 1-1/2".
- 4) Thermal Resistivity: R Value 6.6 deg F x h x sq.ft./BTU x in. x 75 deg F.
- 5) Edge Profile: Square edge.

- 6) Exterior Facer: Medium-density; phenolic-impregnated polymer-modified sheet material meeting requirements for ASTM D779 Grade D weather-resistive barrier in accordance with ICC AC38 and AC310, with fastener spacing symbols in exterior facer for 16" in center spacing, with the following characteristics.
 - a) Water Resistance of Coatings, ASTM S2247: Pass 14-day exposure test.
 - b) Moisture Vapor Transmission, ASTM E96: Not less than 12 perms.
 - c) Water Penetration, ASTM E331: Pass at 2.86 lbf/dt.
 - d) Wind Driven Rain, TAS-100: Pass.
 - e) Accelerated Weathering, ASTM G154: Pass.
- 7) Fasteners:
 - a) Fasteners, General: Size and type complying with manufacturer's written instructions for project conditions and requirements of authorities having jurisdiction.
 - b) Corrosion Resistance: Hot-dipped zinc coating, ASTM A153/A153M.
 - c) Nails, Brads and Staples: ICC AC116 and ICC AC201.
 - d) Power Driven Fasteners: ICC-ES-1539 or NER-272.
 - e) Wood Screws: ASME B 18.6.1.
- 8) Sheathing Joint and Penetration Treatment Material:
 - a) Self-Adhering Stem and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC AC148.
 - (1) Basis of Design Products: Provide Huber Engineered Woods; Zip System Tape.
 - (a) Thickness: 0.012".
- 9) Insulating Composite Wall Sheathing Installation:
 - a) Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.
 - b) Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant installation and with adjacent building air and moisture barrier components to provide complete, continuous air and moisture barrier.
 - c) Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports. Install cut panel edges adjacent to uncut panels with remaining sheathing reveal or to outside corner.
 - d) Install panels with laminated facer to exterior.
 - e) Stagger end joints of adjacent panel runs.
 - f) Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:
 - (1) IBC: Table 2304.9.1 Fastening Schedule.
 - (2) Fastener spacing shall be in accordance with the structural drawings.
 - g) Apply seam tape at all panel seams, penetrations, and facer defects or cracks to form continuous weathertight surface.
 - (1) Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.
- g. Wall Sheathing: ½" APA rated sheathing, PS1, Exposure 1 with span rating 24/16. Nail with 8d nails at 6" o.c. edge and 12" o.c. intermediate unless noted otherwise. Provide at exterior walls and shear walls as noted.
- h. Shear Wall Sheathing (Interior Use): Shall be 3/8" plywood or OSB APA 24/16 sheathing rated exposure 1 with butt joints.
- i. 3/4" fire-resistant plywood at all electrical panels. 4' x 4' sheet at each duplex and townhouse building. See elevations for size, and coordinate with electrical equipment being supplied.
- j. Draftstop Sheathing: Thermo-Ply Standard Structural Grade Sheathing by OX Industries.
- k. All trusses for all structures to be designed with energy heel height noted on the Drawings.

- l. Wood Preservatives: All wood in contact with concrete or masonry, except interior wall plates, shall be pressure treated. Retention to be 0.40 minimum.
- m. Provide and install 2x blocking. Inspect Drawings for all cabinetry, shelves, handrails, towel bars, toilet paper holder, grab bars, mirrors, shower rods, etc., and provide 2x blocking as required. 2x blocking to be provided in all standard unit bathrooms to allow future addition toilet grab bars per Fair Housing Act. Shower units shall have integral backing for grab bars and shower seats per Fair Housing Guidelines and the ADA.

Provide blocking to secure fiberglass shower edges and additional framing as required to secure any interior walls for lateral stability.

2. Shop Fabricated Wood Trusses:

a. Shop Drawings and Structural Calculations:

- 1) Furnish complete shop drawings and erection drawings showing all components.
- 2) The shop drawings shall include a copy of the structural design calculations stamped and certified by an Architect or Engineer registered in the State of Indiana.
- 3) The fabricator shall be responsible for the design of all members.
 - a) Design in accordance with all applicable state and local building codes and regulations.
 - b) Design members for all dead, live and suspended loads as noted on the Drawings.
 - c) Coordinate with the Architect for connections and details.
 - d) Sizes of prefabricated members shown on the Drawings are for architectural purposes and are not to be construed to mean they are sized for structural adequacy.
 - e) Fabricator must immediately notify Architect if sizes shown are insufficient to meet the design criteria.
- 4) Shop drawings shall also include bracing and bridging and installation instructions. Obtain Architect's approval prior to fabricating any materials or proceeding with the work.

b. Design Requirements:

- 1) All members shall be designed in accordance with live and dead loads as shown on the Drawings using allowable properties for the materials in accordance with AITC Specification No. 117 for dry conditions of use.
- 2) Deflection Criteria:
 - a) Floor Trusses ($E = 1.9 \times 10^6$ psi minimum)
 - Maximum live load deflection = $L/480$
 - Maximum total deflection = $L/360$
 - Maximum live load deflection over doors and windows = $1/2"$
 - b) Roof Trusses
 - Maximum live load deflection = $L/360$
 - Maximum total deflection = $L/240$
 - Maximum live load deflection over doors and windows = $1/2"$
- 3) Camber:
 - a) Camber all beams and floor trusses for 1.5 times the dead load deflection.
 - b) Camber all roof trusses for total dead load deflection plus $1/2$ live load deflection.
 - c) Tolerance on camber shall be $1/4" \pm$.

c. Standards:

- 1) Wood Trusses: Truss girders and roof trusses shall be as shown on the Drawings.
- 2) Units are to be manufactured in strict accordance with the manufacturer's printed details and as approved by the TPI design specifications for metal plate connected wood trusses and NFPA NDS.

3. Wood I-Joists:

- a. Code Approvals: All products shall be designed and manufactured to the standards set forth in the ICC Evaluation Service, Inc. Report ESR-1153.
- b. Products:
 - 1) "Trus Joist" products as manufactured by Weyerhaeuser.
 - 2) Wood I-joists shall be designed to fit the dimensions and loads as shown on the Drawings.
- c. Shop Drawings:
 - 1) Submit shop drawings showing layout and detail necessary for determining fit and placement in the building.
 - 2) Fabrication shall not proceed until Architect or Engineer has approved all submittals.
- d. Materials:
 - 1) Flange members, web members, and adhesives shall conform to provisions of the ICC-ES ESR-1153.
 - a) TJI 11-7/8" - 210.
 - b) TJI 16" - 230.
- e. Identification: Each joist and rim board shall be identified by a stamp indicating the series and ICC-ES Report, number, manufacturer's name, plant number and the independent inspection agency's logo.
- f. Installation:
 - 1) Contractor shall give notification to the Architect and manufacturer prior to installation of Trus Joist products to review and discuss product installation guidelines.
 - 2) Performance Standards: Products shall be proven by testing and evaluation in accordance with the provisions of ASTM D5055.
 - 3) Fire Rating/Sound Ratings: Fire and sound ratings are to be established in accordance with assemblies as detailed in ICC ES ESR-1153 or the *Directory of Listed Products*, published by Intertek Testing Services.
 - 4) Warranty: The products delivered shall be free from manufacturing errors or defects in workmanship and material. The products, when correctly installed and maintained, shall be warranted to perform as designed for the normal and expected life of the building.

4. Soffits: See Drawings for 2x framed soffits and lowered ceiling locations.

5. Finish Carpentry:

- a. Countertops:
 - 1) Plastic Laminate: Formica or equal (matte finish) with B-D Interior APA plywood or particle board backing. Provide post formed back splashes and applied end splashes at counter tops. Minimize countertop seams to greatest extent possible. Submit sample for Owner approval.
 - 2) Bathroom Countertops: Shall be Swanstone Ellipse vanity tops, 22" deep with matching side splash. Where fit between walls, trim sides equally to maintain sink centerline.
 - 3) Provide mounting blocks for range hood as required at wall cabinet over range.
- b. Window Sills: Shall be imitation marble with 3/4" overhang.
- c. Medicine Cabinet/Mirror in Full Bathrooms: Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, subparagraph 1(a)(16) Kitchen and Vanity Cabinets 602.1.15. Install recessed medicine cabinet for any full

bath. At apartments, provide 16" x 20" Jensen model #868M22XWHZ with mirrored door. At duplexes, provide Jensen model #615 cabinets with woodgrain surface and a separate mirror. Mirror for other bathrooms.

- d. Install the following accessories shown on enlarged plans in each bathroom:
- 1) 1x towel bar (24") in half bathrooms.
 - 2) 1x towel bars (24") in full bathrooms with 1x towel bar (18") or one (1) towel hook. See Drawings for designation and type.
 - 3) 1x toilet paper holder.
 - 4) 24 x 36 mirror. Mount 40" max. a.f.f.
 - 5) Shower curtain rod at each tub/shower, shower and ADA transfer shower unit. Single, straight rod with screw attachment. 72" a.f.f.
 - 6) At ADA units, 1x 36" grab bar and 1x 42" grab bar.
 - 7) Community Room (Men's Room/Women's Room) paper towel dispenser.

Color of bathroom accessories to be brushed nickel. Provide shop drawings, product data and samples for Owner or Architect approval.

- e. Interior Trim:
- 1) Interior door casing, trim is 1 1/16" x 3.5" colonial factory PFJ. "Picture frame" each door opening. At windows, install casing trim apron at sill.
 - 2) Except where vinyl base is noted, baseboard is 9/16" x 5.25" colonial base factory PFJ. Cope all inside corners.
 - 3) 1/2" x 3/4" base-shoe at all non-carpeted floor edges where wood base is installed.
 - 4) 1x skirt trim at all stairways. Painted.
 - 5) Interior doors are pre-hung and primed. Refer to Division 8.

- f. Shelves:
- 1) All linen and closet shelves to be 1 x 12 solid wood or prefinished melamine material.
 - 2) All laundry room shelves to be 12" deep wire system.
 - 3) Cleats and metal shelf support brackets secured to framing. Brackets 48" OC maximum.
 - 4) Hanging rods to be 1-1/4" dia. wooden dowel.

- g. Stairs:
- 1) From First Floor to Second Floor at duplexes and townhouses shall be finished as follows:
 - a) Half wall cap where occurs - 5/4 oak, Stain/polyurethane finish. Eased edges.
 - b) Stair treads and risers to be carpeted.

- h. Railings:
- 1) Interior Stair Rail: 1-3/4" unfinished solid red oak wall rail. Return to wall as required.
 - a) Mounting Bracket: 2-3/4 x 2-3/4" matte black prefinished wrought iron handrail bracket as manufactured by L.J. Smith Stair Systems.
 - 2) Exterior Stair Rail: See Division 5 for material.
 - 3) Guardrail: Structural steel tube, ASTM A500, Grade B electric resistance welded tubing.
 - a) Railings: 2" x 1-1/2" x 14-ga.
 - b) Verticals: 2" x 1-1/2" x 14-ga.
 - c) Ballusters: 3/4" x 3/4" cold rolled steel bar, ASTM A108.

- i. Wood Brackets: 4 x 6 timber, southern yellow pine.

- j. Porch Columns:
- 1) Manufacturer: Melton Classics, Inc., Lawrenceville, Georgia (800-963-3060).
 - 2) Columns: Meltoncraft cellular PVC columns:
 - a) Meltoncraft column cover, 6" x 8'-0" (V.I.F.), square, no taper.

- b) Meltoncraft Tuscan style column cover, 8" x 8'-0" (V.I.F.), square, no taper.
 - c) Meltoncraft column cover, 10" x 8'-0" (V.I.F.), tapered, square column. (Dimension is width at base.)
 - d) Column finish is to be field installed paint. See Division 9.
6. Vented Soffits (Eave and Rake Areas): Perforated aluminum panel. Color per schedule. Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(10) Prefinished Materials 601.7.
7. Front Porch Soffit: Beaded wood panels. Stained.
8. Exterior Trim: Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(10) Prefinished Materials 601.7.
- a. Manufacturer: Azek Exteriors, the Azek Company, 1330 West Fulton Street, Suite 350, Chicago, IL 60607.
 - b. Rake End Trim: Azek 5/4 x 5-1/2" Trim Board (smooth).
 - c. Frieze Board with Crown:
 - 1) Azek 5/4 x 10 Trim Board (smooth).
 - 2) Azek Ram's Crown (AZM-6934).
 - d. Corner Trim:
 - 1) Azek 5/4 x 7-1/4" wide.
 - 2) Azek 5/4 x 3-1/2" wide.
 - e. Window Trim:
 - 1) Head:
 - a) Azek 4/4 x 2 Cap, over.
 - b) Azek 5/4 x 6 Trim Board (smooth).
 - 2) Jamb: Azek 5/4 x 4 Trim Board (smooth).
 - 3) Sill: Azek Historic Sill (AZM-6930).
 - f. Band Board Trim: Azek 5/4 x 7-1/4" (smooth).
 - g. Skirt Board:
 - 1) Azek Water Table (AZM-6935).
 - 2) Azek 5/4 x 10 Trim Board (smooth).

Paint all cut ends prior to installation.

H. DIVISION 7 - THERMAL AND MOISTURE PROTECTION

1. Exterior Siding: Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(10) Prefinished Materials 601.7.
- a. Vinyl Clapboard Siding: CertainTeed Monogram .046 double 5" vinyl siding and associated accessory trims, starter strips, J-channel, and incidental materials as otherwise selected for a complete job, smooth finish. Color to be selected by Architect.
 - 1) CertainTeed Vinyl Mounting Blocks: Dryer vent, exhaust vent, kitchen hood vent, lighting, etc. Match siding color. Submit appropriate mounting block to Architect for review.
 - b. Vinyl Shingle Siding: CertainTeed Cedar Impressions Triple 5" Straight Edge Sawmill Shingles, or equivalent, polymer based, to comply with ASTM D7254. Color to be selected by Architect from manufacturer's standard colors.

- c. Board and Batten: CertainTeed Single 8" Vertical Board and Batten, vinyl, rough cedar finish. Color to be selected by Architect from manufacturer's standard colors.
- 2. Gable End Vent: 0.019 aluminum, standard integral nailing fin, fiberglass insect screen, triangle gable vent as manufactured by American Louver and Vent. Baked-on enamel finish. Color by Architect.
- 3. Vapor Barrier: Under slab; Stego Wrap Vapor Barrier (15 mil) by Stego Industries, LLC. Extend vapor barrier to perimeter of slab. Seal vapor barrier to foundation wall.
- 4. Cellulose Insulation (Attic): See Drawings for insulation types, R-values, and locations. Loose blown attics to be R38.
- 5. Insulation Baffle: Owens Corning Raft-R-Mate 22-1/2" x 48" Attic Insulation Rafter Baffle, proper vents.
- 6. Fiberglass Batt Insulation (Walls): R15 at stud wall with kraft paper vapor barrier. At Contractor's option, provide cellulose insulation, minimum R15. Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(29) Grade I Insulation Installations 701.4.3.2.1.
- 7. Fiberglass Batt Insulation (Cathedral Ceiling): R38 with kraft paper vapor barrier.
- 8. Refer to Division 8 for attic scuttle insulation cut sheet.
- 9. Spray Foam - Closed Cell: Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(28) Air Barrier, Air Sealing, Building Envelope Testing, and Insulation 701.4.3.2.
 - a. Rim Joist Seal: At two-story structures only, between first and second floor, 2-1/2" closed cell 2 PCF spray foam from top of first floor top plate to underside of floor deck above.
 - b. Behind All Exterior Wall Electrical Boxes: Low expansion closed cell foam to seal box.
- 10. Low Expansion Foam: At windows and doors perimeters. Foam bead to be continuous.
- 11. Dimensional Fiberglass Asphalt Roof Shingles and Underlayment:
 - a. Acceptable Manufacturers: Owen Corning® Oakridge II (30yr); GAF Timberline "Natural Shadow"; approved equal.
 - b. Colors per schedule are chosen from the GAF line. Assume similar colors for other manufacturers. Submittal required.
 - c. Include matching starter strip, ridge cap.
 - d. Install per manufacturer specifications over underlayment per Drawings.

See Drawings for roof deck details including minimum .027 pre-finished flashing/drips/fascia; continuous ridge vent; and self adhered ice/water shield. Install ice/water shield at roof eaves only.
- 12. Ice and Water Membrane:
 - a. At eaves and as otherwise required by code.
 - b. Acceptable Manufacturers: GAF "Stormguard"; Owens Corning "Weatherlock Flex Flexible"; approved equal.
- 13. Fascia Drip Edge: "D-Style", 0.032" aluminum, Kynar finish shingle roof drip edge as manufactured by K & M Sheet Metal. Color by Architect.

14. Roof Ridge Vent:
- a. Continuous ridge vent.
 - b. Acceptable Manufacturers: Cor-A-Vent; GAF Cobra; or approved equal.
15. Aluminum Gutters and Downspouts: Provide continuous gutters and downspouts, with prefinished aluminum and 1/8" per foot slope minimum. Fasten according to manufacturer's recommendation. Provide splash guards at all down spouts. Provide product data and samples for Owner or Architect approval.
16. Sill Sealer: Provide Conservation Technology structural gaskets BG63 at wall plates on foundation walls.
17. Sealant:
- a. Continuous draftstop bead between the subfloor and the bottom exterior wall plate at upper floor walls.
 - b. Set all ext. door thresholds in continuous bead of sealant. One (1) 10-oz. tube per door.
 - c. Set all windows sills in continuous bead of sealant. Alternately, windows may be shimmed up to allow for low expansion foam below sill by insulation contractor. Verify window RO. Coordinate with WRB installation specifications.
 - d. Where noted elsewhere in Specifications.
 - e. Wallboard gap around bath fans installed into ceilings shared with attic.
 - f. At attic scuttle per manufacturer's spec.
 - g. At mechanical penetrations between unconditioned spaces and conditioned spaces or wall cavities.
- Acceptable Sealant Manufacturers: Dow Corning 795; Tremco Spectrum 2; approved equal.
18. Sealant/Caulk - Other Locations:
- a. Sealant at tub/flooring edge and stool perimeter noted under Division 15.
 - b. Exposed caulk/sealants at painted trim per Division 9.
- Caulk used at interior and exterior exposed painted surfaces may be acrylic latex. Paintable. Acceptable manufacturer: DAP Alex Plus acrylic latex caulk plus silicone 35 year; approved equal
19. Fire resistant caulking to be 3M Fire Barrier Sealant system or approved equal.
20. Gypsum Wallboard Adhesive: Continuous bead:
- a. Between the bottom plate and the drywall; and
 - b. Between the top plate and the drywall; and
 - c. Around window and door RO's.
21. Window Sill Adhesive:
- a. "Nail Power Premium Quality Construction Panel Adhesive" as manufactured by:
 - 1) Magic Seal Corporation.
 - 2) Or Architect-approved equal.

22. Subfloor Adhesive: "Nail Power Subfloor Construction Adhesive" as manufactured by Magic Seal Corporation or Architect-approved equal.

I. DIVISION 8 - OPENINGS

1. General: Provide shop drawings, product data and samples for Owner or Architect approval. Refer to Door and Window Schedules for additional information.
2. Interior Doors, Hardware, and Keys:
 - a. Craftmaster 1-3/8" Carrara smooth panel interior door. Pre-hung pine jambs, eased edge stop, and satin nickel hinges. Door panel and frames to be pre-finished.
 - b. CC to provide interior pocket door frames by framer where occurs.
 - c. Hardware: Schlage lever style handle - Accent or Flair; Finish: Satin Nickel; Passage function for all interior doors unless noted otherwise; Bathroom door locksets shall be Privacy function with standard emergency unlock feature; Closet doors to match; install door bumpers/stops throughout.
 - d. Undercut all interior doors 1/2" a.f.f.
3. Exterior Entry Doors (General): Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(14)(b) Flashing 602.1.9.
 - a. Temporary Entry Doors: Install temporary door panel into the installed frames at front and rear entry door locations. Provide keyed construction lock. Provide SBH with keys for distribution to contractors.
 - b. Residential Duplexes: Front Entry Door: Therma-Tru, Smooth Star S606SDL fiberglass; per schedule; Swing: as noted per Drawings; Finish: painted. No brick-mould trim. Provide exterior casing trim to match windows. Flashing per Division 7.
 - c. Six-Plex and Community Building: Front Entry Door: 1-3/4", as manufactured by Marvin, insulated, 6-panel, Ultimate Commercial Door. See Drawings for door style and glazing. Exterior fluoropolymer finished clad aluminum frames. Color to be selected from manufacturer's standard colors. Sill to be thermal barrier low profile saddle type. Mill finish aluminum. Divided lites will be 5/8" SDL without spacer.
 - d. Hardware - Front Entry Door (Duplexes): Schlage Front Entry Handleset - F60 Addison; Finish: Satin Nickel. F60ADD609FLAADD.
 - e. Hardware - Rear Entry Door (Duplexes): Schlage security knob and deadbolt; Finish: Satin Nickel. F51A-619 with F series lever and matching deadbolt keyed alike.
 - f. Temporary Entry Doors: Install temporary door panel into installed frames at front and rear entry door locations. Provide keyed construction lock. Provide SBH with keys for distribution to contractors.
 - g. Separate deadbolt with thumb turn function. Entry sets at front, exterior rear, and detached garage service doors.
 - h. Keys: Provide Owner with 2 sets of keys for each house. Keys are each individual house and garage to match.
4. Attic Access Door:
 - a. 22" x 42" Air-tight attic access scuttle door. Minimum R38. No lock option required.

- b. Acceptable Manufacturers: Battic Door EZ Hatch 42 or approved equal. Install per manufacturer specifications with sealants per Division 7.
5. Windows: Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(14)(b) Flashing 602.1.9. Pella 250 Series vinyl single-hung windows. Tempered where required by code. Maximum U-value: 0.29. Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, Subparagraph 1(a)(30) Fenestration Air Leakage 701.4.3.4.
- a. Provide window opening control device (wood) complying with ASTM F2090 to all windows where sill is below 36" a.f.f. (reference I.B.C. Section 1013.8 Window Sills).
 - b. Confirm bedroom window egress dimensions and area comply with the code.

J. DIVISION 9 - FINISHES

1. Gypsum Board:
- a. 1/2" thick board on all walls, ceilings, and stair ceilings leading to the second floor; 1/2" thick water resistant board on all walls and ceilings at tub/shower locations.
 - b. 5/8", Type "X" gypsum board. Fire code "C" at fire-rated partitions, walls and ceilings where indicated on Drawings.
 - c. Walls to be finished smooth. Uniform light knockdown texture on ceilings. Rated assemblies as required per Drawings/Wall Schedule.
 - d. All wallboard products used on this project must contain a minimum of 50% recycled content.
 - e. Submittals required for wallboard.
2. Sound Barrier: 440 Sound Barrier, Class C Fire-Rated, Molded, Recycled Post Consumer Paper, Cellulose Fiber Structural Panel, 1/2" thick, as manufactured by the Homasote Company.
3. Paint Systems: Sherwin-Williams; approved equal.
- a. Interior Paint:
 - 1) Preparation of All Surfaces: Caulk and nail hole spackle.
 - 2) Walls: One (1) coat primer + two (2) coat Eggshell finish; assume two (1) color different than ceiling color for all walls.
 - 3) Ceilings: One (1) coat primer + one (1) coat flat finish; Sherwin-Williams ProMar 200.
 - 4) Door Casing, Window Sill Aprons, Base: One (1) coat Semi-Gloss Finish (trim installed primed) and touch up as required; Sherwin-Williams Pro-Classic.
 - 5) Walls: One (1) coat primer + two (2) coats satin finish; Sherwin-Williams Harmony Low VOC.
 - 6) Windows: Prefinished.
 - 7) Stair Handrail and Wall Cap: Stain/polyurethane.
 - 8) Stair Stringers: Match trim painting specification.
 - 9) Note that windows are installed pre-finished white semi-gloss.
 - b. Interior Colors:
 - 1) All ceilings to be painted SW6119 "antique white" flat matte.
 - 2) All interior non-bedroom walls to be painted SW6106 "Kilim Beige" eggshell.
 - 3) All bedroom and bedroom closet walls to be SW6108"Latte" eggshell.
 - 4) Half wall caps and handrails stain and poly finish.
 - 5) Provide color sample submittal for Owner or Architect approval.

- c. Exterior Paint:
 - 1) Preparation of all surfaces, caulk, and prime paint prior to applying finish coat.
 - 2) Trim: Smooth, pre-primed surface - two (2) coat semi-gloss exterior latex.
 - 3) Composite Columns: Semi-gloss finish as per manufacturer's requirements. Provide paint color sample submittal for Owner or Architect approval.
 - 4) See Division 6 for description of aluminum soffit, fascia, porch ceiling, etc.
 - d. Exterior face of exterior entry doors to be painted one of two accent colors.
 - 1) Accent Colors: (refer to Division 6, exterior finish schedule for locations)
 - Option #1: TBD
 - Option #2: TBD
 - 2) Assume that all colors are deep (clear) base colors.
 - 3) Caulk used at interior and exterior exposed painted surfaces per Division 7. Color to be determined.
4. Floor Finish:
- a. All vinyl flooring to be click LVT floating floor. Waterproof with attached pad. 12mm wear layer. Color to be determined.
 - 1) Submittal on vinyl LVT required.
 - 2) Location of Vinyl: Vinyl flooring to be at all kitchens, bathrooms, laundry areas, living rooms, and a 3' x 3' area inside front and rear door if not otherwise noted as vinyl.
 - b. Underlayment: APA-rated underlayment, 1/4" thick.
5. Carpet Floor Finish:
- a. All carpet/pad must meet Carpet and Rug institute's Green Label certification.
 - b. Carpet to be min. 35oz. nylon cut textured pile with min. 3.5 wear rating and integral stain repellent. Color to be determined.
 - c. Install over .5" rebond pad with min. 6-lb. density.
 - d. Acceptable Manufacturers: Shaw; Armstrong; Mohawk; or approved equal.
 - e. Submittal on carpet and pad required.
 - f. Location of Carpet: Carpet to be at all bedrooms, and hallways outside bedrooms except at six-plex where hall is LVT.
 - g. Carpet at stairs to second floor at townhouses and duplexes.
 - h. Transition strips to be aluminum. Color to be determined.
 - i. Underlayment: APA-rated underlayment, 1/4" thick.
6. Vinyl Treads and Risers: Johnsonite (Tarkett) Safe-T-Grip, square nose, visually impaired (VIVG), 12" tread depth with 7" integral riser, 2" wide safety grit tape insert, up to two (2) colors as selected by Architect.

K. DIVISION 10 - SPECIALTIES

- 1. House Numbers: Metal min. 4" tall. Color: Black. Coordinate location of house numbers with SBH.
- 2. Mailboxes: USPS approved post-mounted horizontal metal mail box. Color: Black. Minimum size: 8" wide x 10" tall x 21" deep. Mount +48" on decorative post (+42" at ADA units). See Site Plan for locations.

L. DIVISION 11 - EQUIPMENT

1. See Division 26 for appliances to be set in place, connected and tested.
2. Garbage disposal (at Community Room only) shall be installed in this project and provided by SBH.

M. DIVISION 12 - FURNISHINGS

1. Casework:

- a. Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, subparagraph 1(a)(16) Kitchen and Vanity Cabinets 602.1.15.
- b. Reference NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS, Paragraph C. Execution, subparagraph 1(a)(42)(a) Cabinets 901.5.
- c. Acceptable Manufacturers:
 - 1) Contractor's Choice.
 - 2) Advanta Cabinets.
 - 3) Kraftmaid.
 - 4) Merillat.
- d. Workmanship, General:
 - 1) Machine parts for accurate fit and assemble with appropriate fastenings and adhesives to result in true, square, level, and plumb units.
 - 2) Verify dimensions of other trades to be built into casework.
 - 3) Provide removable or false backs for access or concealment of plumbing items.
 - 4) Scribe tops and backsplashes to walls and other adjoining vertical surfaces.
 - 5) There shall be a 1-1/2" maximum scribe with casework at end walls unless shown otherwise.
 - 6) Casework components shall be solid hardwood or hardwood plywood with wood veneer.
 - (1) No particleboard will be allowed.
- e. Casework Construction:
 - 1) All Cabinets shall be constructed of plywood.
 - 2) Boxes:
 - a) Base Cabinets:
 - (1) Two Plywood Stretcher Rails.
 - (2) 3-8" Plywood Back, Bottom and Sides.
 - (3) 3/4" x 1 1/2" Solid Wood Face Frame with 3" Center Stile.
 - (4) 1/2" Half-Depth Plywood Shelf.
 - (5) 3/8" x 4" High Plywood Recessed Toe-Kick (Recessed 3 3/8" Deep).
 - (6) Cabinet Interior features Natural Maple Laminate.
 - b) Wall Cabinets:
 - (1) 1/2" Plywood Top and Bottom.
 - (2) 3/4" x 1 1/2" Solid Wood Face Frame.
 - (3) 3/8" Plywood Sides and Backs.
 - (4) Cabinet Interior features Natural Maple Laminate.
 - 3) Fixed and Adjustable Shelves and Dividers:
 - a) 3/4" plywood with wood veneer and edge banding.
 - b) Number of adjustable shelves provided, unless indicated otherwise on the Drawings or on the Schedule:
 - (1) Tall Casework:
 - (a) Four (4) up to 84"
 - (b) Five (5) up to 90"
 - (c) Six (6) up to 96"

- (2) Base Casework:
 - (a) One (1) up to 36"
- (3) Wall-Hung Casework:
 - (a) One (1) up to 24"
 - (b) Two (2) up to 30"
 - (c) Three (3) up to 42"
- 4) Doors:
 - a) Doors shall be Contractor's Choice:
 - b) Hinged Doors (Unit Kitchens):
 - (1) Contractor's Choice "Newberry Birch", Color by Architect, stile and rail, square recessed panel.
 - (2) Doors 48" and less in height shall have two (2) hinges per door.
 - c) Hinged Doors (Community Room Kitchen):
 - (1) Contractor's Choice "Newberry Birch", Color by Architect, stile and rail, square recessed panel.
 - (2) Doors 48" and less in height shall have two (2) hinges per door.
- 5) Drawers:
 - a) All wood drawer with 1/2" sides and back and 3/8" bottom.
 - b) All styles feature natural wood finish.
 - c) 20" deep drawer box with stapled butt joint construction.
 - d) Drawer bottom stapled into sides, front and back.
 - e) Self-closing, epoxy-coated guides for smooth, quiet action.
 - f) Rated at 100 lbs. capacity per drawer.
 - g) Adjustable side-mount drawer guides with double rails for more stability.
 - h) Built-in Drawer Stop.
 - i) Drawer Face:
 - (1) Constructed of 3/4" minimum plywood.
 - (2) Glued and dovetail jointed.
- 6) Cabinetry Pulls: At standard and visitable units, top and bottom door edges have 15 degree reverse bevel without pulls. Provide stainless steel 4" wire pulls at ADA unit cabinet doors and drawers.
- 7) Finish: Multi-step process featuring stain sealer and multi-coat varnish.
- 8) Removable Sink Bases and Cabinets:
 - a) Where indicated on the Drawings, provide removable sink bases.
 - b) Provide end panels as required, so that a finished appearance is visible if the sink bases are removed.
 - c) At removable base cabinets, provide operable drawers.

- f. Countertops: Refer to item G.5. Finish Carpentry.
- 2. Window Treatments: Purchased and installed by subcontractor.
- 3. Provide shop drawings, product data and samples for Owner or Architect approval.

N. DIVISION 21 - FIRE SUPPRESSION

- 1. Automatic Fire Sprinkler System (Apartment Building):
 - a. Codes: The entire installation shall be in full compliance with applicable sections of the 2012 International Building Code and NFPA 13R which shall be considered as part of these Specifications. The system will be subject to approval of the nearest insurance office (ISO), the Owner's insuring agency, the local fire prevention bureau and any other state or local inspection bureau having jurisdiction.
 - b. Design, Coverage and Permits: Sprinkler system layout shown on Drawings is diagrammatic. Locations and types of fire protection piping and heads shall be verified in the field by the sprinkler Contractor. Sprinkler Contractor is to design system to meet all applicable codes, is to provide certified drawings of sprinkler revisions to the local authority having jurisdiction

for approval and is to pay any fees from all state and/or local agencies for design review and approval before proceeding with any work. Provide Architect with two (2) copies of approved permits, drawings and release letters.

- 1) Utilize appropriate design methods required by NFPA 13R, latest edition.
- c. Coordinate all work with other trades in order to eliminate possible conflicts.
- d. Testing: After system is complete, the Contractor shall perform a hydrostatic test on each wet system at 200 psi for two (2) hours. Follow procedure as outlined by NFPA and provide any additional tests as may be required by NFPA and ISO.
- e. Sprinklers: All shall bear U.L. and FM approval; manufacturers/suppliers to be Central, Viking, Gem or Reliable.
 - 1) Wall-Mounted or Pendant Heads: Heads exposed to view shall have chrome finish.
 - 2) Dwelling Units: In gypsum board ceiling areas, utilize concealed pendant type. Otherwise, utilize quick response sidewall heads.
- f. Cabinet: Locate in the existing spare cabinet, one (1) sprinkler wrench for each size and type head. Provide only the required quantity of each type of head as designated in NFPA standards.
- g. Pipe & Fittings: Shall conform to NFPA 13 and NFPA 14 Standards, latest edition.
 - 1) Pipe shall be Ductile Iron per ANSI utilizing mechanical joists or threaded connections.
 - a) CPVC pipe up to 1" is acceptable where allowed by Building Code.
 - b) Type "L" hard copper pipe is acceptable up to 3/4" and where located above a suspended ceiling.
- h. Hangers: Support all sprinkler piping, valves and other components as specified in accordance with NFPA and local requirements. Hangers shall be U.L. approved.
- i. Install sprinkler piping in heated space only.
- j. Provide firestopping sealant at all fire-rated wall and floor penetrations.

O. DIVISION 22 - PLUMBING

1. Contractor shall furnish and install complete and efficient residential plumbing system. All work shall be in accordance with all applicable codes and is subject to City inspection(s). Make all final connections to City water and sewer systems.
2. Provide 5/8" water meter "ram's horn" base and fittings as required for City of South Bend 5/8" water meter. Installation of a ball valve shutoff at the 1" copper water supply line is to occur during plumbing rough in. Refer to Division 2 for information on water supply line from city stop valve.
3. Coordinate all below-slab plumbing and floor drains, with site and foundation work as required.
4. Potable Water:
 - a. Pipe:
 - 1) Seamless Type "L" hard copper, ASTM B88.
 - 2) PEX tubing complying with NSF 14, NSF 61, and ASTM F876/F877 may be used within apartment units. Provide red piping for hot water and blue piping for cold water.
 - b. Fittings: Shall be wrought copper solder joint fittings, ASTM B61, ANSI B16.22.
 - 1) Wrought copper solder joint fittings, ASTM B61, ANSI B16.22.

- 2) Press Fittings: Copper and copper alloy press fittings shall conform to material requirements of ASME B16.18 or ASME B16.22 and performance criteria of IAPMO Ps 117. Sealing elements for press fittings shall be EPDM. Sealing elements shall be factory installed or an alternative supplied by fitting manufacturer.
 - 3) Fittings for PEX piping shall comply with ASTM F1807, ASTM F1865, ASTM F1960, ASTM F2098 and ASTM F2159.
5. Waste, Vent and Storm:
- a. PVC pipe Schedule 40 with DWV style fittings.
 - 1) Shall meet deflection standards of ASTM D3033.
 - b. NO-HUB cast iron pipe and fittings.
6. Condensate Piping:
- a. PVC pipe Schedule 40 with DWV style fittings.
 - b. Type "L" hard copper, ASTM 88 with wrought copper solder joint fittings.
7. Natural Gas:
- a. Pipe: Black steel, ASTM A53 or A106 Grade B, Schedule 40, furnace welded or seamless.
 - b. Fittings:
 - 1) Malleable Iron Fittings: ASTM A47, class 150, ANSI B16.3 (except gas over 2 psi).
 - 2) Welded Fittings (Butt Welded): ASTM A234, Grade B, WPB, ANSI B16.9.
 - c. Piping 2" and Smaller: Screwed fittings (except gas over 2 psi).
8. Provide and install PEX water supply lines to all plumbing fixtures, water heater and appliances. No PEX joints permitted inside wall cavities except at necessary branch fittings to fixture termination devices. Either color code (a) all cold as blue and hot as red or (b) all white.
- a. Distribution system to be branch layout.
 - b. Install PEX per manufacturer specifications with appropriate supports, clips, and required accessories.
 - c. Recessed laundry box at all washer/dryer locations.
9. All exterior mechanical penetrations through the WRB per Division 7.
10. Provide braided SS connections at water closets, lavatories and kitchen sink. Locate water closet connection 3" above top of baseboard trim for stools located against interior walls. Quarter turn shut off valve at each plumbing fixture connection. Dishwasher connection in kitchen sinkbase cabinet to be dual valve such that dishwasher can be isolated from the kitchen faucet.
11. Provide and install two (2) exterior hose bibb faucets (freeze proof) per building at duplexes and one (1) per unit at townhomes. See apartment plumbing drawings for hose bibb locations. Plumb separate soft water system loop adjacent to water heater for future use.
12. Provide and install one (1) PVC floor drain in unit mechanical room.
13. Cutting, notching, and drilling or structural members per the code and per manufacturer's instructions.

14. Pipe Installation:
- a. Run piping straight and direct as possible, parallel with walls, partitions, structural elements and other piping and neatly spaced for service and insulation. Hang piping at or in ceiling from construction above, as close as possible to bottom of slabs, beams, etc. Maintain maximum headroom at all times. Coordinate with other trades prior to installation.
 - b. Pipe shall be cut accurately to measurements established at building and shall be worked into place without springing or forcing.
 - c. Arrange piping for maximum accessibility for maintenance and repair, and to properly clear windows, doors and other openings.
 - d. Use reducing fittings for changes in pipe sizes.
 - e. Provide dielectric couplings wherever copper and ferrous pressure pipe and/or fittings meet.
 - f. Install piping isolators at each pipe hanger and pipe support for hot and cold water piping. Isolators shall be galvanized steel with felt padding by Tolco or Elmdor/Stoneman.
15. Fire caulk to be 3M Fire Barrier Sealant system or approved equal.
16. Sealants: Clear silicone sealant at base of stool at drop-in lavatories.
17. Protect tubs during construction with cardboard or equivalent tub liner.
18. Water Heaters (Duplexes and Townhomes):
- a. See Water Heater Schedule on the Drawings. Acceptable water heater manufacturers are Bradford White; State; Rheem.
 - b. Energy factor to be ≥ 0.64 at duplexes and 0.70 at townhomes. 6-year limited tank warranty.
 - c. Water heater insulation blanket is not required. Water heater installation must have heat traps in the piping connection design.
 - d. At townhouses, provide concentric ventilation kit. At duplexes, provide B-vent to roof with vent cap.
19. Water Heaters (Apartment Building):
- a. See Water Heater Schedule on the Project Drawings.
 - b. Provide 5-year manufacturer's limited warranty.
 - c. Minimum efficiency shall be 96% thermal efficiency.
 - d. Provide side wall vent termination kit, flow switch and low water cutoff kit.
 - e. Maximum working pressure 150 psi.
20. Point-of-Use Water Heaters (Community Room):
- a. See Water Heater Schedule on Project Drawings.
 - b. Acceptable manufacturers are Rheem, Bradford White, and State.
 - c. Provide 5-year heating chamber warranty.

- d. Activation flow shall be 0.3 gpm maximum.
 - e. Unit shall be WQA certified lead free, certified to UL499.
21. Thermal Expansion Tanks:
- a. Shall be carbon steel with baked epoxy finish, stainless steel connection and FDA-approved heavy-duty butyl bladder.
 - b. Performance Limitations:
 - 1) Maximum Design Temperature: 240°F.
 - 2) Maximum Design Pressure: 150 psi.
22. Garbage Disposal: At Community Room kitchen only, provide and install garbage disposal, switched at wall as shown on Project Drawings. Product noted below.
23. Refer to Drawings for Site Plan, Floor Plans, Elevations (for exterior wall openings), and Mechanical/Electrical Systems Reference Plan.
24. Plumbing Fixtures: Provide shop drawings and product data for Owner or Architect approval. Verify left/right handed for each location per plans and site plan. (that is, check for mirrored plans!)
- a. See Plumbing Fixture Schedule on the Drawings.
 - b. Kitchen:
 - 1) Garbage Disposal: Insinkerator Badger 1.

P. DIVISION 23 - HVAC

- 1. Contractor shall furnish and install complete and efficient residential HVAC system. All work shall be in accordance with all applicable codes and is subject to City inspection(s). Make all final connections to water, sewer and gas systems
- 2. System Design: HVAC contractor to provide written heating and cooling calculations to verify equipment and ductwork sizes. Manual J. Provide these calculations after Contract award and before start of work. Coordinate any required adjustments or changes with the Architect.
- 3. HVAC Equipment:
 - a. Acceptable HVAC Equipment Manufacturers: York; Goodman; Carrier; Rheem; Lennox; Armstrong. See Furnace and Condenser Schedule on the Drawings.
 - b. Gas furnaces shall be minimum 95% efficient with matched direct expansion coil.
 - c. Provide filter slot with sliding closure panel. Filter to be standard 1" type and sized for airflow. Provide filter. AC unit shall meet SEER² of 14 min.
- 4. Above-Ground Ductwork:
 - a. All rigid ductwork shall be galvanized steel, fabricated and installed according to the latest edition of the SMACNA HVAC Duct Construction Standards, with ducts cross-broken (all flat surfaces greater than 12" in any direction), braced and stiffened with turning vanes in all square elbows. Minimum gauge shall be as follows:
 - 1) Exposed ductwork shall be 26 gauge minimum except where flexible ductwork is shown on Drawings.
 - 2) Concealed ductwork over 14" shall be 28 gauge minimum. Where rectangular ducts are installed against two gypsum board surfaces, duct board with reinforced Foil Face Scrim may be used.

- 3) Concealed ductwork under 14", including boots and connections, shall be 30 gauge minimum.
 - b. All supply air ducts, all outside air ducts, exhaust ducts in the attic and all mixed air ducts shall be insulated with blanket fiberglass, 1-1/2" thickness, with FSK vapor barrier. Fiberglass insulation shall have a minimum density of 1.5 pcf. Insulation shall be Owens-Corning, or Manville. Seal all joints, seams and edges with matching FSK tape.
 - c. Flexible duct shall be Thermaflex or Architect-approved equal. Provide Flex Flow elbow duct supports at all 90° bends. Ducts shall be M-KC series with R4.2 in heated space and R6 in the attic.
5. Grilles, Registers, Diffusers and Louvers: Titus, Hart & Cooley or approved equal. Diffusers shall be multi-directional unless indicated otherwise on Drawings. All air outlets must be supplied with an integral balancing device.
 6. All ductwork joints, seams, collars, cleats, and connections to be sealed with specified mastic or UL181 rated tape. Framed bays that served as RA chases to be checked and sealed/caulked prior to wallboard installation, especially at cavity tops and where they connect through floor assemblies.
 7. Provide gas supply piping to all listed gas appliances. Shut offs, drip legs, and other as required. Coordinate gas line pressure test with city of South Bend inspector at same time as rough-in inspection.

Installation, testing, and inspection of the gas piping from the gas meter location to the furnace are to occur during rough-in. All exterior mechanical penetrations through the WRB per Division 7.
 8. Cutting, notching, and drilling or structural members per code and per manufacturer's recommendations.
 9. Provide and install all dryer vent ducts, exterior wall vent caps, recessed wall boxes behind dryers. Seal all venting ductwork joints and connections with alum. tape or fluid applied mastic duct sealant. Recessed clothes dryer box may be plastic type. No flex or semi-rigid duct is permitted.
 10. Exterior dryer vent closure mounted on 5/4 wood trim block sized for vent. Acceptable dryer vent caps are: Heartland; Lambro Ind. 289W; approved equal. Where vents occur in soffit, provide Deflecto "Undereve Vent".
 11. Condensate Drain: 3/4" PVC piping. Extend to drain with 1/2"/10 feet slope minimum.
 12. Thermostat: Hardwired. Programmable. Honeywell RTH7500D or approved equal.
 13. The following appliances shall be provided:
 - a. Range Hood: Vented to exterior at kitchen range. Broan QML30WW. 3.25" x 10" ducted to exterior via wall cabinet above unit. Provide Broan 639 wall cap.
 - 1) Duct sealing and sealant at WRB per Division 7.
 - b. See Exhaust Fan Schedule on the Drawings.
 - e. Ceiling Dampers: At apartment building, provide ceiling radiation dampers complying with UL555C at bath exhaust fans in the ceiling and at all ceiling diffusers.

Q. DIVISION 26 - ELECTRICAL

1. Contractor shall furnish and install complete 100 amp electrical service.
 - a. 24 slot main breaker panel surface mounted on fire resistant plywood panel.

- b. Acceptable Manufacturers: Square D; Siemens ITE;
 - c. Clearly print description of each circuit at breaker box.
 - d. All work shall be in accordance with all applicable codes and is subject to City of South Bend inspection(s).
 - e. Electrical service to the house is to be underground.
2. Meter bases to be installed on trim block provided by siding contractor. Do not install meter base directly to sheathing or WRB. Coordination is required per Division 7.
 3. Temporary Power: Where noted on schedule, provide 4 x 4 post, plywood panel, meter base, breaker box, and two (2) quad exterior GFCI receptacles. Overhead service cable coordinated with Owner and electric utility.
 4. Coordinate phone/data and cable services, installation, routing and connections with Owner. Coordinate with utility providers for underground drops. Provide cable connection in each bedroom and living room. Route each cable to location on plywood adjacent to electrical panel. Leave looped at panel without termination.

Phone wiring to be CAT-6E. Coaxial wire to be RG6.

No daisy-chain configuration - each cable and coaxial wire is separate. Terminate each cable at wall plate.

5. All exterior mechanical penetrations through the WRB per Division 7.
6. Wiring:
 - a. Wiring Materials:
 - 1) Wire to be 98% conductivity soft or annealed copper, to ASTM specifications.
 - 2) Wire insulation must conform to all IPCEA and NEMA Standards for voltage and environmental conditions encountered.
 - b. Wire Sizes: Sizes to be not less than indicated. Branch circuit wire to be No. 12 AWG minimum. Wire for branch circuits of 120 volts, more than 100' long, from panel to load center, to be No. 10 AWG minimum.
 - c. Insulation:
 - 1) Insulation types shall be as follows unless noted otherwise:
 - a) No.8 AWG, or Larger Wire: Type RHW, THWN or XHHW. XHHW for interior use only.
 - b) Smaller Than No.8 AWG: Type THWN, THHN, XHHW, except that 16 AWG wire for Class 2 remote-control circuits and signal circuits may be commercial fixture wire Type RF-2 or TF. XHHW for interior use only.
 - 2) All Wire Sizes for Ambient Temperatures in Excess of 75°C: Types RHH, THHN or SA.
7. Devices:
 - a. Materials:
 - 1) All devices shall be specification grade, 20-amp minimum unless otherwise indicated or required. Standard color to be white unless noted otherwise. Confirm color with Architect.
 - 2) Acceptable Manufacturers:
 - a) Hubbell
 - b) Arrow-Hart
 - c) Pass & Seymour

- d) General Electric
- e) Leviton
- 3) Switches shall be quiet type, totally enclosed, back and side wired, 120-277 volt rated. Service type shall be as indicated (i.e., single pole, three-way, etc.) and in accordance with the following (Hubbell model numbers are used for reference purposes). Switches in dwelling units to be rocker type.
 - a) Single Pole: #CS120 series.
 - b) Single Pole Rocker: #DS115LA series, provided at handicapped-accessible dwelling units.
 - c) Three Way: #CS320 series.
 - d) Three Way Rocker: #DS315LA series, provided at handicapped-accessible dwelling units.
 - e) Double Pole: #CS220 series.
 - f) Combination Sensor/Switch: #MS2000LA.
 - g) Occupancy Sensor: #OMNIDIARP.
- 4) Receptacles shall be grounding type with grounding strap unless otherwise indicated, totally enclosed, back and side wired. Service type shall be as indicated (i.e., single outlet, duplex, etc.) and in accordance with the following (Hubbell model numbers are used for reference purposes, unless noted otherwise):
 - a) 2-Pole, 125-Volt, Simplex: 5261LAA (15A), 5361LAA (20A).
 - b) 2-Pole, 125-Volt, Duplex: SNAP5262LAA (15A), SNAP53626LAA (20A).
 - c) 2-Pole, 125-Volt, Duplex, Ground Fault: GFRST15SNAPLA (15A), GFRST20SNAPLA (20A).
 - d) Single-Pole, Switch with One Receptacle: RC108LA.
 - e) Weather-Resistant 125-Volt Duplex: GFWRST20LA.
 - f) Provide NEMA standard configuration for special outlets rated above 20-amp and/or above 125-volt unless otherwise required for a particular piece of equipment. Coordinate exact types with actual equipment provided.
- 5) Device plates shall be one piece with unbreakable plastic for all new single and multi-ganged devices. Color to match device color, unless noted otherwise. Where plate is replaced at existing devices to remain, provide matching cover plates.

8. Raceways:

- a. Materials: Provide the following types of raceways for the specified application or location indicated:
 - 1) Rigid Galvanized Steel: Where specifically indicated on the Drawings or required by code or utility company.
 - 2) Electrical Metallic Tubing (EMT): Only within buildings and where not exposed to mechanical injury.
 - 3) Exposed Surface Raceway: Only where indicated on plans or as directed by the Architect.
 - 4) MC Cable: Only as indicated on plans.
- b. Acceptable Manufacturers:
 - 1) Conduit: Rigid Steel, IMC and EMT:
 - a) Allied Tube and Conduit
 - b) Westem-Tube
 - c) Republic Conduit
- c. Sleeves to be Schedule 40 black steel or Schedule 80 PVC.
- d. Connection to Utility Transformer: Contractor to seek out the requirements for new feed to building with the electric utility. All materials and details for a new building feed shall conform to those requirements.

9. Feeders and Branch Circuits:
- a. System to be complete from service to distribution equipment and from distribution equipment to outlets, motors, appliances, transformers, controls, etc.
 - b. Verify current and overload protection of equipment requiring electrical connection. Install feeders and branch circuits of proper size for actual equipment provided. If feeder sizes will deviate from that shown on Drawings, notify the Architect/Engineer for direction before proceeding.
 - c. Verify that all circuits servicing fixed equipment will operate at less than 2% voltage drop under normal operating conditions.
10. Grounding:
- a. Main Service disconnecting means grounding:
 - 1) Make grounding and bonding connections at the building main service equipment or main disconnecting means and extend the grounding electrode conductor to the point of entrance of the metallic water service main. Make connections to the water pipe by a suitable grounding clamp. If flanged pipes are encountered, make connections with the lug bolted to the street side of the flange connection. Enclose the grounding conductor in rigid metal conduit and solidly bond the grounding conductor to the conduit at entry and exit wherever used. The raceway for main grounding electrode conductor shall be exposed and accessible to allow for interconnection with ground conductors of all communications systems.
 - 2) In addition to the grounding system indicated above, make ground connections to driven ground rods on the exterior of the building with a maximum resistance to ground of 5 OHMS under normally dry conditions. Three driven ground rods set in a triangular arrangement shall be utilized, spaced not less than 10' on centers. Make a ground connection to 20' of building footing reinforcing bars. Driven ground rods shall be located in unpaved areas only. Rods shall be fully driven with at least 2" of cover over top of rod.
 - 3) Ground main power distribution transformer secondary neutrals, as required for service system grounding.
 - b. Telephone System Grounding:
 - 1) Provide one (1) #6 AWG in 3/4" conduit from apartment building ground conductor raceway to ground bus in telephone equipment room.
 - 2) Television Service Panel and Telephone Service Panel: Coordinate grounding requirements with service providers.
11. Color of all devices and cover plates to be light almond.
12. Combination smoke and CO detectors per code. Hardwired with battery backup per code. Hush feature. Acceptable manufactures: Kidde; First Alert.
13. Provide one (1) ceiling fan J-box per unit in bedroom. Separate control for light/fan. Location to be finalized in the field.
14. Refer to Drawings for Floor Plans, Elevations, and Mechanical/Electrical Systems Reference Plan.
15. Doorbell: Hardwired chime and button. Button at front door. Exterior doorbell button must be self-lit.
16. Light switches to be located 46" above finished floor as measured to top of rough-in box. Receptacles shall be minimum 18" above finished floor. See Drawings for device height where they are over a counter surface or serve an appliance.
17. Motion Light: Install one (1) switched motion light at rear of each unit.

18. Provide one (1) 220v dryer receptacle at laundry location at each dwelling unit. Breaker as required.
19. Provide one (1) 220v range receptacle at kitchen range location. Breaker as required.
20. Exhaust Fan and Fan/light Connections:
 - a. Wire main bathroom fan for continuous operation by switching the red (high speed) leg and leaving black wire (low speed) hot. At all other bathroom, all fan features wired for switch function.
 - b. Range Hood Power: Receptacle in cabinet over range hood.
21. Coordinate power to mechanical and plumbing systems, including but not limited to:
 - Garbage disposal switched at wall.
 - Gas water heater.
 - Point-of-Use water heaters.
 - Ventilation systems listed above.
22. Appliances shall be uncrated and set in place by Contractor, and hooked up and tested:
 - a. Standard Range: Model number to be determined by Owner.
 - b. Front-Control Range (at ADA Units): Model number to be determined by Owner.
 - c. Refrigerator:
 - 1) Units: Model number to be determined by Owner.
 - 2) Community Building: Model number to be determined by Owner.
 - d. Standard Dryer: Model number to be determined by Owner.
 - e. Front-Load Dryer (at ADA Units): Model number to be determined by Owner.
 - f. Standard Washer: Model number to be determined by Owner.
 - g. Front Load Washer (at ADA Units): Model number to be determined by Owner.
 - h. Dishwasher:
 - 1) Units: Model number to be determined by Owner.
 - 2) Community Building: Model number to be determined by Owner.
23. Light Fixtures:
 - a. LED Luminaires:
 - 1) Components: UL 8750 recognized or listed as acceptable.
 - 2) Tested in accordance with IES LM-79 and IES LM-80.
 - 3) LED Estimated Useful Life: Minimum of 50,000 hours at 70% lumen maintenance, calculated based on IES LM-80 test data.
 - b. Acceptable Manufacturers:
 - 1) General Electric
 - 2) Advance
 - 3) Universal
 - 4) Jefferson
 - 5) Motorola
 - 6) Magnetek
 - 7) Sylvania

- c. Dimmable LED Drivers:
 - 1) Dimming Range: Continuous dimming from 100% to 10% relative light output unless dimming capability to lower level is indicated, without flicker.
 - 2) Control Compatibility: Fully compatible with the dimming control to be installed.
 - d. Emergency Lighting Units:
 - 1) Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
 - 2) Operation: Upon interruption of normal power source or brownout condition exceeding 20% voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
 - 3) Battery: Size battery to supply all connected lamps, including emergency remote heads where indicated.
 - 4) Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
 - 5) Provide low-voltage disconnect to prevent battery damage from deep discharge
 - e. Fixture Schedule: Refer to Drawings.
24. Unit Signaling Devices:
- a. Sensory-Impaired Annunciator Kit: Shall be CFA Series 7005-G5 by Edwards Signaling. Kit includes 6536-G5 Horn/Strobe, 592 Transformer and 620 Push Button with 147-10 Mounting Plate. Locate as shown on plans.
 - b. Door Chime Kit: Shall be Nutone Model BK110NBWH chime kit with hardwired pushbutton and transformer.
 - c. Installation - Sensory-Impaired Annunciator Kit: Shall be installed at location as noted on the Drawings in accordance with manufacturer's written instructions. Provide 2-gang renovation box for horn/strobe.
25. Fire Alarm System (Six-Plex, Apartment Buildings and Site Office/Community Room):
- a. The fire alarm system shall consist of all necessary hardware equipment and software programming to perform the following functions:
 - 1) Fire Alarm and Detection Operations:
 - a) Door hold-open devices.
 - b) Monitoring fire suppression systems.
 - c) All other equipment as indicated in the Drawings and Specifications.
 - b. System shall conform to applicable state and local codes and comply with NFPA 72 requirements as applicable. All equipment shall be UL approved.
 - c. System Description:
 - 1) General: Full system shall be a complete, non-coded, addressable/conventional, microprocessor-based fully field programmable fire alarm system with initiating devices, notification appliances, and monitoring and control devices as indicated on the Drawings. System shall have excess capacity to add strobes in the future via booster panels located on each floor.
 - 2) In accordance with NFPA 72, National Fire Alarm Code, the system shall comply with Paragraphs 3-8.2.4 and 3-8.2.5 for Public Address functions.
 - 3) System shall also include, but not be limited to: Class "A" expander module, battery set, fire communicator, flow alarm, tamper switch, fire alarm sounder, smoke detectors at common areas, stand-alone strobes and horn/strobe devices at sensory impaired units.

- d. The vendor shall provide shop drawings for fire alarm system approval prior to component installation, in accordance with International Building Code Section 907.1.1, the Drawings and these Specifications. The shop drawings will include, but not be limited to, the following:
- 1) Floor plans.
 - 2) Locations of alarm-initiating and notification appliances, clarifying existing and new.
 - 3) Alarm control and trouble signaling equipment.
 - 4) Power connections for new devices.
 - 5) Battery calculations.
 - 6) Conductor types and sizes for new devices.
 - 7) Manufacturers, model numbers and listing information for new equipment, devices and materials.
- e. Products:
- 1) Fire Alarm System Components: Provide components as manufactured by Honeywell, Siemens/ Cerberus Pyrotronics system, or by Edwards.
- f. Execution:
- 1) System Wiring:
 - a) Provide 18 AWG shielded twisted pair to each new device. Signal wire shall be two conductor, 14 AWG fire alarm signal wire. Reuse existing wiring and boxes where possible.
 - b) Wiring shall be in accordance with the requirements of the National Electrical Code and NFPA. The fire alarm system, including raceways and wiring, shall be completely installed and wiring shall be properly tagged and color coded. The electrical contractor shall make final connections as shown and required by the equipment manufacturer's wiring instructions. Coordinate as required.
- g. The complete fire alarm system shall interface with the fire protection sprinkler system such that activation of any sprinkler head will activate the fire alarm system.
- h. System Test: The manufacturer's authorized representative shall perform a quality inspection of the final installation and in the presence of the electrical contractor and Owner's representatives, shall perform a complete functional test of the system, including sound test of horn devices. A system certification verifying the proper system operation shall be required prior to acceptance.

R. DIVISION 27 - COMMUNICATION

1. Door/Intercom System: Provide multi-tenant security audio/video intercom system, G Series, and manufactured by A-1 Phone with the following components:

- a. Video Entrance Station(s) Equipment List:

Model	Description
GT-DMB-N	3-in-1 Video Entrance Station with NFC Reader The GT-DMB-N is a video entrance station with a stainless steel panel for the GT Series multi-tenant video intercom system. It is equipped with a PTZ camera which captures a 170° wide angle view. The keypad allows for direct dialing and authorized entry access. A 3.5" color LCD displays a greeting message, tenant directory, and system status. The entrance station shall be surface mounted (use SBX-GTDMB surface mount box).
GF-3B	3-Module Back Box

b. Tenant Station(s) Equipment List:

Model	Description
GT-1M3	Video Tenant Station with 3.4" Display
GT-MCX	Building-To-Building Network Adaptor
GT-RY	External Signaling / Option Relay

c. Additional Equipment List:

Model	Description
GT-BC	Audio Bus Control Unit
GTW-DP	Distribution Point Wiring Terminal Strip
GT-VPC	Video Bus Control Unit
GT-4Z	4-Way Video Distribution Adaptor
W-DIN11	DIN Rail Mounting Bracket
PS-2420UL	24V DC Power Supply, 2A, UL Listed

d. Access Control:

Model	Description
AC-PROX-1G	Mullion/1 Gang Box Combo Proximity Reader (4" to 6" Max. Read Range); indoor/outdoor; HID/AWID/Aiphone 40 Bit Compatible
AC-PF-40	ABS 125 KHZ Proximity Key Tag (with Brass Ring - 40-Bit Format)

- e. Subcontractor to provide submittal with equipment list, data sheets, and wiring schematic.
- f. Install all items in accordance with the manufacturer's instructions. Refer to the door specifications for the electric strike information.

S. DIVISION 31 - EARTHWORK

1. "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed. The subcontractor shall be responsible for familiarizing himself with the existing site conditions. Earthwork includes the following:
 - a. Excavation and preparation of subgrade for building slabs, curbs, walks, pavements and site improvements included as part of this work.
 - b. Dewatering to keep subgrades and excavations dry.
 - c. Placement of topsoil and finish grading of lawn areas included as part of this work.
2. Soil Materials - Definitions:
 - a. Satisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GP, SW and SP. (Sand and gravel soil types).
 - b. Restricted soil materials are defined as those complying with ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT. (Silts, clays and organic soil types).

- c. Subbase Material: INDOT #53 graded mixture of natural gravel, natural stone, crushed gravel, crushed stone, or recycled concrete.
 - d. Backfill and Fill Materials: Soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter,
 - e. Drainage Course: Clean, free-draining granular soil containing not more than 10%, by dry weight, passing a No. 200 sieve.
 - f. Topsoil - Banked: Contractor shall clean existing topsoil suitable for reuse to remove subsoil, clay lumps, brush, grasses, weeds and other litter, and free of roots, stumps, stones larger than one inch (1") in any dimension, and other extraneous or toxic substance harmful to plant growth.
 - g. Topsoil - New: Soil shall have a defined granular or blocky structure and shall be free from non-soil material, brick and other building materials and wastes, potential sharps, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the topsoil unsuitable for use.
3. City of South Bend to construct roads and sidewalks at corners, including curb ramps, and form building pads to approximate subgrade elevations. Following building construction, South Bend forces will install sidewalks which occur in the right-of-way. At building pads, perform excavation to the lines and depths indicated on the plans for foundations at each building site to limit grading to within parcel lines indicated on the Project Drawings. In cases where large rocks or tree stumps are discovered during excavation, report conditions to Architect.
 4. Remove vegetation, trees, stumps, vegetation debris, "restricted" soil materials, obstructions, and deleterious materials from ground surfaces prior to placement of fill material. Items removed from building sites shall be removed from the project area and disposed of properly.
 5. Contractor to be familiar with the finish grading plan for each building and export excess materials to the soil and topsoil stockpiles in the project as designated.
 6. Erosion Control: Erosion control measures installed prior to start of building construction shall be maintained. Additional erosion control silt fence shall be installed between building sites and moved as the project progresses. Each contractor shall be responsible to keep tracked vehicles and wheeled vehicles from removing soils from the project site. Use of mats and temporary gravel parking beds minimize movement of equipment from the project site to minimize carrying soils into roadway and roadway construction areas. Where storm drain inlets exist adjacent to building, maintain inlet protection as shown on project details. Comply with IDEM requirements, with weekly reports by GC.
 7. Structure Excavation:
 - a. Excavate to the depth indicated on the Drawings unless unsatisfactory conditions are encountered. If such conditions occur, the excavation shall be carried to a depth where satisfactory soil conditions are covered which would provide suitable support for construction. Such additional depth shall be filled with compacted granular fill. The width of such fill shall be, at minimum, twice the footing width.
 - b. The trenches for column footings, foundations, areas, pits, etc., are to be dug and formed, level, square and to full dimensions and depths indicated on plans. Excavate to a point not less than 1'-6" outside of exterior foundation line to permit erection of forms.
 - c. Grade all floor, walk, and pavement areas to $\pm 1/2$ " of finish subgrade.
 - d. Shoring and Bracing: All excavations shall be properly shored as required to prevent cave-in. Excavation walls should be sloped, shielded or shored in accordance with current Occupational Safety and Health Administration (OSHA) guidelines and requirements.

8. Prevent surface water and ground water from entering excavations and from ponding on prepared subgrades. Reroute surface water away from excavated areas to avoid water accumulating within excavations.
9. Dewatering: Where, during construction, water accumulates at construction site, coordinate with the Owner a location for dewatering operations to occur. In general, water from dewatering pumps shall be directed to adjacent storm water ponds or sediment removal prior to entering storm system.
10. Backfill excavations as promptly as work permits, but not until acceptance of construction below finish grade including:
 - a. Inspections, testing, approval and recording locations of underground utilities.
 - b. Removal of concrete formwork.
 - c. Removal of trash, rubbish and debris.
 - d. Installation of drainage tile where shown on the Project Drawings.
11. Slabs on Grade: At building slab on grade, provide prepared subgrade of clean native sand and gravel, free of organic matter. Compacted to uniform density and prepare for specified vapor barrier. See Project Drawings for required thickness of subgrade material.
12. Rough Grading: Work grades to provide for positive surface drainage. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.
13. Finish Grading: Prior to placement of concrete walks, remove all debris, trash, roots, branches and stones larger than 2" from topsoil materials. Place topsoil around building and correct settlement irregularities to within 1" of final grade. Do not place organic materials where walks are to be poured.
14. Final Grading: Rake site to remove debris, stones, roots, etc., to a minimum depth of three inches (3") in all lawn and planting areas, unless otherwise noted. Remove debris and fine grade smooth. Add topsoil as required to provide base for lawn seeding.
15. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
16. Remove waste materials, including excess soils, excess topsoil that cannot be spread to levels indicated, unacceptable excavated material, trash and debris, and dispose off-site in a legal manner.

T. DIVISION 32 - EXTERIOR IMPROVEMENTS

1. Landscaping:
 - a. Power rake building site and remove remaining surface debris from the project.
 - b. Provide additional topsoil around each building to establish final grade.
 - c. Grass Seed: Grass seed to be general purpose sun shade/sun blend. Grass seed to be planted after September 1, 2023.
 - d. Watering Newly Planted Areas: Water seeded areas at initial planting and at regular intervals following until individual building site is turned over to the Owner. Owner is responsible for watering lawn areas thereafter.

- e. Lawn Repair: At time of building turnover to the Owner, lawn areas shall be inspected for initial growth and coverage. Repair damaged areas and reseed (spot seed) areas where required.
 - f. Provide vinyl edging, landscape fabric, mulch and landscape planting as indicated on the Project Drawings at each site. See Site Landscape Plans for dimensions and layout of landscape beds.
2. Splash Blocks and Downspout Connections: At downspouts, install pre-cast concrete splash blocks. Set each splash block firmly into soil materials and set to direct water away from building foundation. Where downspout connections are indicated on Project Drawings, provide transition caps at each downspout and with no more than 6" of drain tile extension.
 3. Asphalt Pavement: As shown on Drawings. Asphalt pavement materials shall meet the INDOT Standard Specifications as noted and shall be supplied by an INDOT-certified asphalt plant.
 4. Curbs and Walks: Shall be as noted on Drawings. Concrete materials shall have a minimum compressive strength of 3,500 psi. Comply with City of South Bend requirements for size, dimensions, joints and finish. Obtain permits as necessary. Coordinate installation with work being performed by the City of South Bend.
 5. Concrete Driveways: Shall be as shown on the Drawings. Concrete materials shall have a minimum compressive strength of 3,500 psi. Saw cuts shall be placed at intervals no greater than 9 feet.
 6. Fencing: As shown on Drawings.
 7. Raised Planter Garden Beds: Shall be Durable Greenbed 4' x 12' x 2' rectangular raised garden bed. (<https://durablegreenbed.com>). Wall cap to be Western Red Cedar.
 8. Exterior Signage: Shall be furnished and installed by Owner. Owner shall also obtain City permit for exterior sign.

U. DIVISION 33 - UTILITIES

1. Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult SBH immediately for directions. Locate the City-provided sewer lateral and adjust sanitary layout to provide the most efficient route to the connection.
2. Utilities:
 - a. Water: At each duplex and townhouse, provide new 1" type K copper water line from stop valve at property line to each apartment. Route water line under footing to future meter location. Leave 12" vertical extending above slab and cap line. Provide pressure test with accordance with City of South Bend Water Department. Provide sleeve where copper piping passes through foundation or concrete slab per code. At six-plex buildings, provide 2" Type K copper water line to the location shown on the Drawings.
 - b. Fire Protection Water Service: Provide 2" type K copper water line to sprinkler riser location. Install double check detector valve. Valve to be supported with wall brackets with drain extending to nearest floor drain.
 - c. Sanitary: Extend 6" SDR35 PVC from lateral provided at each building as shown on plumbing drawings. Provide two-way cleanout where piping passes through foundation wall. All cleanout caps in lawn areas to be inverted type. Mark cleanouts to protect from damage. All cleanouts, including the one at the City-provided lateral, shall be lowered to finish grade.

- d. Storm Sewer: As shown on the drawings. Storm sewer pipe shall be SDR35 PVC or approved equal. Inlets and manholes shall be precast concrete. Castings in curbs shall be Neenah R-3010 or approved equal. Castings in pavement shall be Neenah R-4370 or approved equal. All sediment shall be removed from inlets and manholes upon completion of asphalt pavement.
3. Site Drainage: Shall be as noted on Drawings.

APPENDIX A
Wage Requirements

"General Decision Number: IN20230051 08/11/2023

State: Indiana

Construction Type: Residential

Counties: Elkhart, La Porte and St Joseph Counties in Indiana.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>◆ Executive Order 14026 generally applies to the contract.</p> <p>◆ The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>◆ Executive Order 13658 generally applies to the contract.</p> <p>◆ The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2023.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
 0 08/11/2023

ELEC0153-006 06/08/2022

	Rates	Fringes
ELECTRICIAN.....	\$ 25.25	15.74

ENGI0150-034 05/01/2021

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Backhoe/Excavator/Trackhoe..	\$ 42.15	37.20
Bobcat/Skid Steer/Skid		
Loader.....	\$ 42.15	37.20
Bulldozer.....	\$ 42.15	36.05
Loader.....	\$ 42.15	37.20

ENGI0150-052 06/01/2022

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Grader/Blade.....	\$ 30.75	34.25
Roller.....	\$ 29.40	34.25

LABO0081-006 04/01/2022

	Rates	Fringes
LABORER (Pipelayer).....	\$ 31.74	23.63

LABO0081-007 06/01/2022

	Rates	Fringes
LABORER (Common or General).....	\$ 37.34	26.03

PLUM0136-013 04/01/2023

	Rates	Fringes
PLUMBER.....	\$ 41.02	20.43

UAVG-IN-0010 05/17/2023

	Rates	Fringes
SHEET METAL WORKER.....	\$ 41.86	28.82

SUIN2023-011 05/17/2023

	Rates	Fringes
BRICKLAYER.....	\$ 26.27	4.31
CARPENTER.....	\$ 23.43	9.44
ROOFER.....	\$ 27.22	14.47

WELDERS - Receive rate prescribed for craft performing

operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

APPENDIX B
HUD Federal Labor Standards

A. APPLICABILITY

The Project or Program to which the construction work covered by this Contract pertains is being assisted by the United States of America, and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

(1) MINIMUM WAGES

- (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment, computed at rates not less than those contained in the wage determination of the Secretary of Labor (which is attached hereto and made a part hereof), regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH1321)) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place, where it can be easily seen by the workers.

(ii) Additional Classifications.

- (A) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:
- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination;
 - (2) The classification is utilized in the area by the construction industry; and
 - (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor, the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division ("Administrator"), Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget ("OMB") under OMB control number 1235-0023.)
- (C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, or HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1235-0023.)

(D) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (1)(ii)(B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1235-0023.)

(2) **Withholding.** HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The U.S. Department of Labor shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(3) **Payrolls and basic records.**

(i) **Maintaining Payroll Records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification(s), hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid.

Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1235-0023 and 1215-0018)

(ii) **Certified Payroll Reports.**

(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/forms> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the U.S. Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1235-0008.)

- (B)** Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (1)** That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;
 - (2)** That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;
 - (3)** That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract; and
- (C)** The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by subparagraph (a)(3)(ii)(b).
- (D)** The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph (a)(3)(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the U.S. Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency (where appropriate), to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman’s hourly rate) specified in the contractor’s or subcontractor’s registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice’s level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination.

Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program.

If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed, unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (iii) **Equal employment opportunity.** The utilization of apprentices, trainees, and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

- (5) **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this Contract.
- (6) **Subcontracts.** The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs (1) through (11) in this paragraph (a) and such other clauses as HUD or its designee may, by appropriate instructions, require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.
- (7) **Contract termination; debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
- (8) **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this Contract.
- (9) **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.
- (10) **Certification of Eligibility.**
- (i) By entering into this Contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) Anyone who knowingly makes, presents, or submits a false, fictitious, or fraudulent statement, representation or certification is subject to criminal, civil and/or administrative sanctions, including fines, penalties, and imprisonment (e.g., 18 U.S.C. §§ 287, 1001, 1010, 1012; 31 U.S.C. §§ 3729, 3802).

(11) Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic, to whom the wage, salary, or other labor standards provisions of this Contract are applicable, shall be discharged or in any other manner discriminated against by the contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The provisions of this paragraph (b) are applicable where the amount of the prime contract exceeds **\$100,000**. As used in this paragraph, the terms “laborers” and “mechanics” include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek, unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph B(1) of this paragraph, the contractor, and any subcontractor responsible therefor, shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph B(1) of this paragraph, **in the sum set by the U.S. Department of Labor at 29 CFR 5.5(b)(2)** for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph B(1) of this paragraph. In accordance with the Federal Civil Penalties Inflation Adjustment Act of 1990 (28 U.S.C. § 2461 Note), the DOL adjusts this civil monetary penalty for inflation no later than January 15 each year.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages, as provided in the clause set forth in subparagraph B(2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph B(1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs B(1) through (4) of this paragraph.

C. HEALTH AND SAFETY

The provisions of this paragraph (c) are applicable where the amount of the prime contract exceeds **\$100,000**.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his or her health and safety, as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The contractor shall comply with all regulations issued by the Secretary of Labor pursuant to 29 CFR Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96), 40 U.S.C. § 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract, so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

APPENDIX C
National Green Building Standard
Design Requirements

NATIONAL GREEN BUILDING STANDARD DESIGN REQUIREMENTS

A. General

1. General Conditions:

- a. The General Conditions, Modifications to General Conditions, Supplementary or Special Conditions and any Instructions to Bidders shall apply to all Divisions of work.
- b. The requirements of State, Local or appropriate codes applicable to the work, whichever is the most stringent is a requirement of all Divisions of work.

2. Work of this Section:

- a. National Green Building Standard (NGBS) - ICC 700-2020 Certification requirements.
- b. The intent of this project is to achieve a Silver Rating level.
- c. Contractor shall coordinate work and requirements with Owner Contracted Green Rater for NGBS certification. Pertinent to NGBS certifications the role of the Green Rater is to guide the construction team with certification process; review documentation, verify green requirements are met; and to perform third-party testing.
- d. Green Rater:
 - 1) Energy Diagnostics, Inc.
Chris Schwarzkopf
 - 2) HERS Rater: Tyler Wentland
Energy Diagnostics, Inc.

3. References:

- a. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1) ASHRAE 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
 - 2) ASHRAE 62 - Ventilation for Acceptable Indoor Air Quality.
 - 3) ASHRAE 90.1 - Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.
 - 4) ASHRAE 129 - Measuring Air-Change Effectiveness.
- b. ASTM International:
 - 1) ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
 - 2) ASTM E903 - Standard Test Method for Solar Absorption, Reflectance, and Transmittance of Materials Using Integrating Spheres.
- c. Bay Area Air Quality Management District: BAAQMD Regulation 8, Rule 51.
- d. Adhesive and Sealant Products. Carpet and Rug Institute: CRI Green Label Testing Program.
- e. Forest Stewardship Council: FSC Guidelines - Forest Stewardship Council Guidelines.
- f. Green Seal: GS-11 - Product Specific Environmental Requirements.
- g. Sheet Metal and Air Conditioning Contractors: SMACNA IAQ - IAQ Guidelines for Occupied Buildings under Construction.
- h. South Coast Air Quality Management District: SCAQMD Rule 1168 - Adhesive and Sealant Applications.

- i. U.S. Environmental Protection Agency:
 - 1) EPA 832-R-92-005 - Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
 - 2) EPA Baseline IAQ - Testing for Indoor Air Quality, Baseline IAQ, and Materials Section 01445
 - 3) EPA 402-K-01-002 - A Step-by-Step Guide on how to Build Radon-Resistant Homes
 - j. ENERGY STAR Qualified Homes: Thermal Enclosure System Rater Checklist & Instructions
4. Submittals:
- a. The contractor shall submit the following items directly to the Green Rater.
 - 1) Signed and initialed NGBS Durability Checklist
 - 2) Copy of the Vendor Notice sent to Wood Suppliers
 - 3) Refrigerant Charge Test Result (per AC equipment manufacturer's instructions)
 - 4) Ice and water barrier, roofing underlayment, sill seal product window/door self-adhesive flashing, kitchen and bath cabinetry, door hardware and light switches.
 - 5) Submit ACCA Manual J and Manual D calculations for each unit type.
 - b. Signed NGBS Accountability Form certifying that all products meet or exceed the specified requirements.
 - c. The contractor shall submit cut-sheets of products intended to comply with Environmentally Preferable Products (EEP). EPP criteria are as follows:
 - 1) Low Emissions Requirement - See specific requirements for Low-VOC paints, Adhesives and Sealants at end of this section.
 - 2) Kitchen and bath cabinet material certification regarding no formaldehyde content.
5. Quality Assurance:
- a. Perform work in accordance with the NGBS ICC-700-2020 for prerequisites and credits pertinent to this project.
 - b. Maintain one copy of NGBS Rating System document on site.
 - c. Perform inspections to assure conformance to NGBS Inspection Checklist throughout construction of the project.
 - d. Monitor closely any requests for substitution for products that are related to NGBS prerequisites and credits. Unless reviewed thoroughly substitutions may jeopardize projects' ability to obtain certification.
 - e. Perform storm water management and erosion control work in accordance with EPA Best Management Practices or local erosion and sedimentation control standards, whichever is more stringent.
 - f. Perform work without use of CFC based refrigerants in HVAC building systems.
 - g. Perform ventilation work in accordance with ASHRAE 62.
 - h. Develop and implement construction indoor air quality management plan including the following:
 - 1) Comply with minimum requirements of SMACNA IAQ.
 - 2) Protect stored and installed absorptive materials from moisture damage.
 - a) Store materials on elevated platforms under cover, and in dry location.
 - b) When materials are not stored in enclosed location, cover tops and sides of material with secured waterproof sheeting.

- 3) Protect HVAC equipment during construction.
 - a) Shut down return side of HVAC system whenever possible during heavy construction or demolition.
 - b) When HVAC system is operated during heavy construction, furnish disposable temporary filters.

B. Products

1. Product Substitution: Monitor closely any requests for substitution for products that are related to NGBS prerequisites and credits. Unless reviewed thoroughly substitutions may jeopardize projects' ability to obtain certification.

C. Execution

1. NGBS Prerequisites and Credits:

- a. Project team and Mission Statement: A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and development. The project's green goals and objectives are written into a mission statement.
 - 1) Soil Disturbance and Erosion 503.3(2): Soil disturbance and erosion are minimized by one or more of the following: (also see Section 504.3)
 - a) Tunneling instead of trenching
 - b) Use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment
 - c) Shared utility trenches or easements
 - d) Placement of utilities under paved surfaces instead of yards
 - e) At least 75% of total length of the utilities on the lot are designed to use one or more alternative means.
 - 2) 503.3(3) Limits of clearing are demonstrated on the lot plan.
 - 3) Landscape Plan 503.5: (Provide Landscape Plan Covering, Building Fronts Only) A plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment.
 - a) Turf grass species, other vegetation, and trees are selected and specified on the lot plans that are native or regionally appropriate for local growing conditions.
 - b) Non-invasive vegetation that is native or regionally appropriate for local growing conditions is selected to promote biodiversity.
 - c) Plants with similar watering needs are grouped (hydrozoning) and shown on the lot plan.
 - 4) Environmentally Sensitive Areas 503.7: The lot is in accordance with the following:
 - a) The lot does not contain any environmentally sensitive areas that are disturbed by the construction.
 - 5) On-Site Supervision and Coordination 504.1: On-site supervision and coordination are provided during on-the-lot clearing, grading, trenching, paving, and installation of utilities to ensure that specified green development practices are implemented. (also see Section 503.3)
 - 6) Soil Disturbance and Erosion Implementation 504.3(1) and (2): On-site soil disturbance and erosion are minimized by one or more of the following in accordance with the SWPPP or applicable plan: (also see Section 503.3)
 - a) Sediment and erosion controls are installed on the lot and maintained in accordance with the stormwater pollution prevention plan, where required.
 - b) Limits on creating and grading are staked out on the lot
 - c) Utilities on the lot are installed using one or more alternative means:
 - (1) tunneling instead of trenching,
 - (2) use of smaller equipment,
 - (3) use of low ground pressure equipment, use of geomats,
 - (4) shared utility trenches or easements,
 - (5) other.

- 7) Smoking prohibitions 505.9: Signs are provided on multifamily and mixed-use lots prohibiting smoking at the following locations:
 - a) Smoking is prohibited within 25 feet (7.5 m) of all building exterior doors and operable windows or building air intakes within 15 (4.5 m) vertical feet of grade or a walking surface.
 - b) Smoking is prohibited on decks, balconies, patios and other occupied exterior spaces.
 - c) Smoking is prohibited at all parks, playgrounds, and community activity or recreational spaces.
- 8) Material Usage 601.2: (Provide letter from the structural Engineer stating the project complies) :
 - a) Higher-grade or higher-strength of the same materials than commonly specified for structural elements and components in the building are used and elements or component sizes are reduced accordingly
- 9) Prefabricated Components 601.5: Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building:
 - a) floor system.
 - b) roof system.
- 10) Prefinished Materials 601.7: Prefinished building materials or assemblies listed below have no additional site-applied finishing material are installed.
 - a) exterior trim not requiring paint or stain (90% or more).
 - b) window, skylight, and door assemblies not requiring paint or stain on one of the following surfaces:
 - (1) exterior surfaces and interior surfaces (90% or more).
- 11) Capillary Breaks 602.1.1: A capillary break and vapor retarder are installed at concrete slabs in accordance with ICC IRC Sections R506.2.2 and R506.2.3 or ICC IBC Sections 1907 and 1805.4.1.
- 12) Moisture Control Measures 602.1.7: Moisture control measures are in accordance with the following:
 - a) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.
 - b) Insulation in cavities is dry in accordance with manufacturer's instructions when enclosed (e.g., with drywall).
 - c) The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or cavity enclosure.
- 13) Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the finish flooring to be applied (602.1.7.2).
- 14) Flashing 602.1.9: Flashing is provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details are provided in the construction documents and are in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.
 - a) Flashing is installed at all of the following locations, as applicable:
 - (1) around exterior fenestrations, skylights, and doors
 - (2) at roof valleys
 - (3) at all building-to-deck, -balcony, -porch, and -stair intersections
 - (4) at roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets
 - (5) at ends of and under masonry, wood, or metal copings and sills
 - (6) above projecting wood trim
 - (7) at built-in roof gutters, and
 - (8) drip edge is installed at eave and rake edges.
 - b) All window and door head and jamb flashing is either self-adhered flashing complying with AAMA 711-13 or liquid applied flashing complying with AAMA 714-15 and installed in accordance with fenestration or flashing manufacturer's installation instructions.

- 15) Ice barrier 602.1.13: In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves of pitched roofs and extends a minimum of 24 inches (610 mm) inside the exterior wall line of the building.
- 16) Kitchen and Vanity Cabinets 602.1.15: All kitchen and vanity cabinets are certified in accordance with the ANSI/KCMA A161.1 performance standard or equivalent.
- 17) Roof Water Discharge 602.3: A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 feet (1524 mm) away from perimeter foundation walls.
- 18) Finished Grade 602.4: Finished grade at all sides of a building is sloped to provide a minimum of 6 inches (150 mm) of fall within 10 feet (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 2 percent.
- 19) Water is directed to drains or swales to ensure drainage away from the structure (602.4.3).
- 20) Hazardous Waste 605.1: The construction and waste management plan shall include information on the proper handling and disposal of hazardous waste. Hazardous waste is properly handled and disposed.
- 21) Energy Performance 700:
 - a) 702.2.2 Energy cost levels above the minimum energy efficiency requirements. The buildings shall comply with Section 702 Performance Path.
- 22) Adopting Entity review 701.3: A review by the Adopting Entity or designated third party shall be conducted to verify design and compliance with Chapter 7.
- 23) HVAC System Sizing 701.4.1.1: Space heating and cooling system is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. Equipment is selected using ACCA Manual S or equivalent.
- 24) Duct Systems 701.4.2:
 - a) Duct Air Sealing 701.4.2.1: Ducts are air sealed. All duct sealing materials are in conformance with UL 181A or UL 181B specifications and are installed in accordance with manufacturer's instructions.
- 25) Ducts and Plenums 701.4.2.2: Building framing cavities are not used as ducts or plenums.
- 26) Duct System Sizing 701.4.2.3: Duct system is sized and designed in accordance with ACCA Manual D or equivalent.
- 27) Insulation and Air Sealing 701.4.3:
 - a) Building Thermal Envelope Air Sealing 701.4.3.1: The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material:
 - (1) All joints, seams and penetrations.
 - (2) Site-built windows, doors, and skylights.
 - (3) Openings between window and door assemblies and their respective jambs and framing.
 - (4) Utility penetrations.
 - (5) Dropped ceilings or chases adjacent to the thermal envelope.
 - (6) Knee walls.
 - (7) Walls, ceilings, and floors separating conditioned spaces from unconditioned.
 - (8) Behind tubs and showers on exterior walls.
 - (9) Common walls between dwelling units or sleeping units.
 - (10) Attic access openings.
 - (11) Joints of framing members at rim joists.
 - (12) Top and bottom plates.
 - (13) Other sources of infiltration.

- 28) Air Barrier, Air Sealing, Building Envelope Testing, and Insulation 701.4.3.2: Building envelope air barrier, air sealing envelope tightness, and insulation installation is verified to be in accordance with this Section and Section 701.4.3.2.1. Insulation installation other than Grade 1 is not permitted.
- a) Testing: Building envelope tightness is tested. Testing is conducted in accordance with ASTM E779 using a blower door at a test pressure of 1.04 psf (50 Pa). Testing is conducted after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances. Testing is conducted under the following conditions:
 - (1) Exterior windows and doors, fireplace and stove doors are closed, but not sealed;
 - (2) Dampers are closed, but not sealed, including exhaust, intake, makeup air, backdraft and flue dampers;
 - (3) Interior doors are open;
 - (4) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed;
 - (5) Heating and cooling systems are turned off;
 - (6) HVAC duct terminations are not sealed; and
 - (7) Supply and return registers are not sealed.
 - b) Visual Inspection: The air barrier and insulation items listed in Table 701.4.3.2(2) are field verified by visual inspection.
- 29) Grade I Insulation Installations 701.4.3.2.1: Field-installed insulation products to ceilings, walls, floors, band joists, rim joists, conditioned attics, basements, and crawlspaces, except as specifically noted, are verified as Grade I by a third-party are in accordance with the following:
- a) Inspection is conducted before insulation is covered.
 - b) Cavity insulation uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging).
 - c) Cavity insulation compression or incomplete fill amounts to 2 percent or less, presuming the compressed or incomplete areas are a minimum of 70 percent of the intended fill thickness; occasional small gaps are acceptable.
 - d) Exterior rigid insulation has substantial contact with the structural framing members or sheathing materials and is tightly fitted at joints.
 - e) Cavity insulation is split, installed, and/or fitted tightly around wiring and other services.
 - f) Exterior sheathing is not visible from the interior through gaps in the cavity insulation.
 - g) Faced batt insulation is permitted to have side-stapled tabs, provided the tabs are stapled neatly with no buckling, and provided the batt is compressed only at the edges of each cavity, to the depth of the tab itself.
- 30) Fenestration Air Leakage 701.4.3.4: Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m²), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m²), when tested in accordance with NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled. For site-built fenestration, a test report by an accredited, independent laboratory verifying compliance with the applicable infiltration rate shall be submitted to demonstrate compliance with this practice. This practice does not apply to field-fabricated fenestration products.
- 31) Lighting in Building Thermal Envelope 701.4.3.5: Luminaires installed in the building thermal envelope which penetrate the air barrier are sealed to limit air leakage between conditioned and unconditioned spaces. All luminaires installed in the building thermal envelope which penetrate the air barrier are IC-rated and labeled as meeting ASTM E283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All luminaires installed in the building thermal envelope which penetrate the air barrier are sealed with a gasket or caulk between the housing and the interior of the wall or ceiling covering.

- 32) High-Efficacy Lighting 701.4.4: A minimum of 75 percent of the total hard-wired lighting fixtures or the bulbs in those fixtures qualify as high efficacy or equivalent.
- 33) Energy Performance Analysis 702.2.2: Energy savings levels above the ICC IECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, lighting, appliances, and on-site renewable energy. Points are assigned using the following formula: Points = 30 + (percent above NGBS Reference Home) * 2
- 34) Recessed Luminaires 705.2.4: The number of recessed luminaires that penetrates the thermal envelope is less than 1 per 400 square feet (37.16 m²) of total conditioned floor area and they are in accordance with Section 701.4.3.5.
- 35) Installation and Performance Verification 705.6:
a) 705.6.1 Third-party on-site inspection is conducted to verify compliance with all of the following, as applicable. Minimum of two inspections are performed: one inspection after insulation is installed and prior to covering, and another inspection upon completion of the building. Where multiple buildings or dwelling units of the same model or sleeping units of the same model are built by the same builder, a representative sample inspection of a minimum of 15 percent of the buildings or dwelling units or sleeping units is permitted.
- 36) Water-Conserving Appliances 802.2:
a) Dishwasher
b) Washing Machine with a water factor of 6.0 or less
- 37) Shower Heads 802.4:
a) Less than 2.0 gpm.
- 38) Faucets 802.5.1:
a) 1.5 gpm or less
- 39) 802.5.2 Water-efficient residential kitchen faucets are installed in accordance with ASME A112.18.1/CSA B125.1. Residential kitchen faucets may temporarily increase the flow above the maximum rate but not to exceed 2.2 gpm.
a) 1.8 gpm maximum flow.
- 40) Water Closets 802.5.4: A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less in accordance with ASME A112.19.2/CSA B45.1 or ASME A112.19.14 as applicable. Tank-type water closets shall be in accordance with the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets.
a) All water closets are in accordance with Section 802.5.4(2).
- 41) Wood Materials 901.4: Structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.
- 42) Cabinets 901.5: A minimum of 85 percent of installed cabinets are in accordance with one or both of the following: (Where both of the following practices are used, only 3 points are awarded.)
a) All parts of the cabinet are made of solid wood or non-formaldehyde emitting materials such as metal or glass.
- 43) Interior Architectural Coatings 901.9: A minimum of 85 percent of the interior architectural coatings are in accordance with either Section 901.9.1 or Section 901.9.3, not both. A minimum of 85 percent of architectural colorants are in accordance with Section 901.9.2.
a) 901.9.1 Site-applied interior architectural coatings, which are inside the waterproofing envelope, are in accordance with one or more of the following:
(1) Zero VOC as determined by EPA Method 24 (VOC content is below the detection limit for the method)
- 44) Carbon Monoxide (CO) Alarms 901.13: A carbon monoxide (CO) alarm is provided in accordance with the IRC Section R315.

- 45) Non-Smoking Areas 901.15: Environmental tobacco smoke is minimized by one or more of the following:
- a) All interior common areas of a multifamily building are designated as non-smoking areas with posted signage.
 - b) Exterior smoking areas of a multifamily building are designated with posted signage and located a minimum of 25 feet from entries, outdoor air intakes, and operable windows.
- 46) Spot Ventilation 902.1:
- a) 902.1.1 Spot ventilation is in accordance with the following:
 - (1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.
 - b) Clothes dryers (except listed and labeled condensing ductless dryers) are vented to the outdoors.
 - 47) 902.1.3 Kitchen range, bathroom, and laundry exhaust are verified to air flow specification. Ventilation airflow at the point of exhaust is tested to a minimum of:
 - a) 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and
 - b) 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry.
 - 48) 902.1.4 Exhaust fans are ENERGY STAR, as applicable.
 - a) ENERGY STAR, or equivalent, fans operating above 1 sone
 - 49) Building Ventilation Systems 902.2:
 - a) 902.2.1 One of the following whole building ventilation systems is implemented and is in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4 and an explanation of the operation and importance of the ventilation system is included in either 1001.1(9) or 1002.2(11).
 - (1) Exhaust or supply fan(s) ready for continuous operation and with appropriately labeled controls
 - 50) Radon Reduction Measures 902.3: Radon reduction measures are in accordance with ICC IRC Appendix F or 902.3.1. Radon Zones as identified by the AHJ or, if the zone is not identified by the AHJ, as defined in Figure 9(1).
 - a) Buildings Located in Zone 1:
 - (1) a passive radon system is installed
 - 51) Radon Testing 902.3.2: Radon testing is mandatory for Zone 1.
 - a) Testing Specifications: Testing is performance as specified in (1) through (10).
 - (1) Testing is performed after the residence passes its airtightness test.
 - (2) Testing is performed after the radon control system installation is complete. If the system has an active fan, the residence shall be tested with the fan operating.
 - (3) Testing is performed at the lowest level within a dwelling unit which will be occupied, even if the space is not finished.
 - (4) Testing is not performed in a closet, hallway, stairway, laundry room, furnace room, kitchen or bathroom.
 - (5) Testing is performed with a commercially available test kit or with a continuous radon monitor that can be calibrated. Testing shall be in accordance with the testing device manufacturer's instructions.
 - (6) Testing shall be performed by the builder, a registered design professional, or an approved third party.
 - (7) Testing shall extend at least 48 hours or to the minimum specified by the manufacturer, which ever is longer.
 - (8) Written radon test results shall be provided by the test lab or testing party. Written test results shall be included with construction documents.
 - (9) An additional pre-paid test kit shall be provided for the homeowner to use when they choose. The test kit shall include mailing or emailing the results from the testing lab to the Owner.

- (10) Where the radon test result is 4 pCi/L or greater, the fan for the radon vent pipe shall be installed.
- 52) Living Space Contaminants 902.6: The living space is sealed in accordance with Section 701.4.3.1 to prevent unwanted contaminants.
- 53) 903.1 Plumbing is in accordance with the following:
a) Plumbing is not installed in unconditioned space.
- 54) Indoor Air Quality (IAQ) During Construction 904.1: Wood is dry before close-in (602.1.7.1(3)), materials comply with emission criteria (901.4- 901.11), sources of water infiltration or condensation observed during construction have been eliminated, accessible interior surfaces are dry and free of visible suspect growth (per ASTM D7338-10 section 6.3), and water damage (per ASTM D7338-10 section 7.4.3).
- 55) Indoor Air Quality (IAQ) Post Completion 904.2: Verify there are no moisture, mold, and dust issues per 602.1.7.1(3), 901.4-901.11, ASTM D7338 Section 6.3, and ASTM D7338 Section 7.4.3.
- 56) Microbial Growth & Moisture Inspection and Remediation 904.3: A visual inspection is performed to confirm the following:
a) Verify that no visible signs of discoloration and microbial growth on ceilings, walls or floors, or other building assemblies. Or If minor microbial growth is observed (less than within a total area of 25 square feet) in homes or multifamily buildings, reference EPA Document 402-K-02-003 (A Brief Guide to Mold, Moisture, and Your Home) for guidance on how to properly remediate the issue. If microbial growth is observed, on a larger scale in homes or multifamily buildings (greater than 25 sq ft), reference EPA document 402-k-01-001 (Mold Remediation in Schools and Commercial Buildings) for guidance on how to properly remediate the issue.
b) Verify that there are no visible signs of water damage or pooling. If signs of water damage or pooling are observed, verify that the source of the leak has been repaired, and that damaged materials are either properly dried or replaced as needed.
- 57) Building Construction Manual 1002.1: A building construction manual, including five or more of the following, is compiled and distributed in accordance with Section 1002.0. (Points awarded per two items. Points awarded for non-mandatory items.)
a) A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties' manuals.
b) A local green building program certificate as well as a copy of the National Green Building Standard, as adopted by the Adopting Entity, and the individual measures achieved by the building.
c) Warranty, operation, and maintenance instructions for all equipment, fixtures, appliances, and finishes.
- 58) Operations Manual 1002.2:
a) A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties' manuals.
b) Information on the importance and operation of the building's fresh air ventilation system.
c) A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).
- 59) Maintenance Manual 1002.3: Maintenance manuals are created and distributed to the responsible parties in accordance with Section 1002.0. Between all of the maintenance manuals, five or more of the following options are included.
a) A narrative detailing the importance of maintaining a green building. This narrative is included in all responsible parties' manuals.
- 60) Training of Building Owners 1002.4: Building owners are familiarized with the role of occupants in achieving green goals. On-site training is provided to the responsible party(ies) regarding equipment operation and maintenance, control systems, and occupant actions that will improve the environmental performance of the building. These include:
a) HVAC filters

- b) thermostat operation and programming
 - c) lighting controls
 - d) appliances operation
 - e) water heater settings and hot water use
 - f) fan controls
 - g) recycling and composting practices
 - h) Whole-dwelling mechanical ventilation systems
- 61) Multifamily Occupant Manual 1002.5: An occupant manual is compiled and distributed in accordance with Section 1002.0.
- a) NGBS certificate
 - b) List of green building features
 - c) Operations manuals for all appliances and occupant operated equipment including lighting and ventilation controls, thermostats, etc.