



Design & Construction Standards

Goals & Objectives

Program Goals

The Design and Construction Standards are intended to serve as a framework for describing, evaluating, and measuring excellence in the design, construction and rehabilitation of residences, commercial properties, and the surrounding exterior environments including green spaces, parking lots, and streetscapes. The overarching goal of this blueprint is to inspire investment (both personal and monetary) in the community in a manner that imbues the neighborhoods with a sense of stability, vitality, and desirability. The objective is to create a community of neighborhoods that feel both timeless and current, while maintaining the spirit, uniqueness and sense of place that makes each neighborhood distinct.

Performance Statements

Contractor Qualifications

- Iowa law requires all contractors and businesses performing "Construction" work within Iowa to register with the Iowa Division of Labor and renew annually. Contractors working on Invest DSM projects must be registered with the Iowa Division of Labor and maintain a current contractor license for the duration of the project.
- Contractors must maintain adequate insurance for the duration of the project.
 - General Liability (required) - Covers potential injury on the construction site
 - Builder's Risk (required) - Covers property under construction
 - Worker's Compensation - Coverage as required by state law
 - Business Owner's Policy (optional)
 - Personal Liability (optional)
- Plumbing, mechanical, HVAC, refrigeration, sheet metal and hydronic systems trades must maintain a current license through the State of Iowa Plumbing & Mechanical Systems Board for the duration of the project.
- Subject to approval of Invest DSM, homeowners may serve as general contractor or perform portions of the work for projects on their own property. Homeowners who wish to do so must

provide proof of their expertise, licensure (as applicable to trades listed above), or evidence of the successful completion of prior similar work.

- Contracted work should be completed by companies or tradespeople with demonstrated successful experience in the specific project types, size/scope, details, materials, products, and equipment used.

Warranty

- All products, materials, and equipment shall be installed in accordance with the instructions to preserve the manufacturer warranties. The contractor shall retain all warranty documentation and turn it over to the homeowner at the completion of the project.
- Contractors shall provide a minimum 1-year warranty on workmanship for Tier 2 and Tier 3 projects.
- For new construction, a Builders Warranty is required. The time period shall be at least 1 year.
- When selecting between similar products, the product offering the most comprehensive or longest warranty period is preferred.
- More durable, longer lasting, and low maintenance products are preferred.

Building Codes and Approvals

- The owner or contractor shall obtain all applicable permits required by the City of Des Moines before starting construction. Applicable permits are required to be passed before payment of milestone draws will be issued.
- The adopted codes shall serve as the minimum construction standard. Projects are encouraged to exceed the minimum standard.

Energy and Efficiency

- Projects are encouraged to include energy efficient components. When comparing similar products or equipment, the option with the more efficient efficiency rating is preferred.
- New appliances and equipment should carry Energy Star certification.
- Projects where insulation is disturbed or interior space reconfigured may be required to add attic/roof and wall insulation. All insulation should be installed in accordance with applicable building codes and best practices to reduce likelihood of condensation/ice dams including:
 - Proper insulation type and location
 - Proper attic venting
 - Proper location of moisture barrier and vapor barrier
 - Proper R-Value
 - No installation of radiant barrier ("reflective blanket") in attic
- Replacement and new window U-value should exceed code minimum and be Energy Star rated for the Northern Climate Zone
- Utilize Mid-American and other State/Local rebate programs when available.
- When projects impact the building "envelope", consider the following improvements:
 - Insulation: Alignment with code requirements is not always physically possible when working on an existing home. Consultation with a professional is advised. Meet or exceed code minimum R-value and insulation type when feasible.

- Air Sealing: Seal the envelope from the interior and exterior to reduce air infiltration.
- Solar and geothermal systems are generally encouraged as a means of decreasing a home's fossil fuel consumption.
 - Geothermal - Invest DSM will pay for 10% of the out-of-pocket cost of this component, up to a maximum amount of \$5,000.
 - Solar - Invest DSM will pay for 20% of the out-of-pocket cost of this component, up to a maximum amount of \$10,000.
- Projects may be required to upgrade the furnace to 95+% efficient if the age of the existing equipment exceeds 25 years or is less than 80% efficient, or when a substantial renovation or major addition is built. New HVAC equipment should be sized in accordance with the applicable codes to provide adequate heating, cooling, and distribution.

General Requirements for Contractor During Construction:

Construction Schedule

- Prepare a schedule for the owner with major dates identified
- Work to be done expeditiously and completed promptly to minimize the impact and disruption to the neighborhood
- Work hours in accordance with local noise ordinance

Health & Safety

Disturbing existing materials in older homes can create hazards where they did not necessarily exist before. Contractors must take care to properly identify, work around, and remediate hazardous materials to ensure their safety and the safety of homeowners. When potentially hazardous materials are discovered through the course of construction, the contractor shall be responsible for following all applicable rules and regulations for assessment, worker protection, notification, and remediation.

- Lead paint
 - Where it remains in good condition and is not on a "friction or impact" surface (like doors and windows), lead paint is not necessarily considered a hazard. However, demolition and remodeling work can destabilize lead paint and create lead paint chips/dust.
 - Work on homes constructed before 1978 must comply with State and Federal lead paint safety guidelines.
 - Contractors must follow all applicable certification, notification, and lead-safe work practice requirements (<https://idph.iowa.gov/Environmental-Health-Services/Lead-Professional-Certification>)
- Radon
 - Radon is a natural radioactive invisible gas and does not have an odor. It can migrate through basement floors into a house and can cause cancer. Iowa is considered "high risk" for radon gas.

- A radon test is required for projects that include finished space in a basement or major air sealing. Invest DSM will cover 100% of the cost of radon testing as part of the approved project scope.
- A radon mitigation system is a required component of all Invest DSM projects where the radon test results show levels at or above 4 pCi/L, that include finished basement space, and/or that significantly increase the level of air sealing in occupied spaces throughout the house. Invest DSM will cover 50% of installing the cost of a radon mitigation system.
- Asbestos
 - Asbestos is a mineral fiber extensively used in older homes in insulation, mastics/adhesives, floor tiles, window glazing, and sometimes plaster. When disturbed and airborne, asbestos fibers can cause respiratory disease.
 - Asbestos that is disturbed as part of a remodeling project must be abated by a qualified contractor.
 - Asbestos-containing materials in good ("non-friable") condition are not necessarily a hazard and may remain in place if not disturbed.
- Fuel Oil
 - Older Des Moines homes may have fuel oil storage tanks from prior furnace systems. These tanks are considered hazardous and should be evaluated/removed by qualified professionals if disturbed as part of a remodeling project.
- Other Hazardous Materials
 - Any unknown material discovered through the course of demolition and remodeling work should be left undisturbed, evaluated, and remediated as necessary to preserve the health of workers and homeowners.

Demolition (where applicable)

- Refer to the Health and Safety section for additional demolition requirements.
- Demolition to be conducted quickly and efficiently.
- Provide temporary support as required to maintain the remaining structure during demolition and construction.
- Install dust barriers between work areas and adjacent indoor spaces when applicable.

Site Maintenance and Staging

- Secure the work area from unauthorized access throughout the project. Install safety barriers, fencing and caution tape as necessary to mark off dangerous areas.
- Materials shall be organized, stacked and neatly stored. Protect stored materials from damage and water/weather.
- Debris and refuse shall be collected weekly and disposed of appropriately.
- Public Right of Way access at sidewalk and street to remain open when safe to do so.
- Street and sidewalk will be cleaned of soil tracked from the site.

Design Considerations

Project Design

- Additions, new construction, and other exterior improvements should relate to the existing context with compatible: Scale, Massing, Form, Material, and Setback
- Additions, new construction, and other exterior improvements must meet the established district zoning criteria.

Additions

- Additions are encouraged to increase the square footage of smaller homes.
- Additions should be appropriate in scale to the home and neighborhood.
- Additions should architecturally appropriate in materials, texture, and rhythm compatible with current home and surrounding context.

Garages

- Garages are encouraged on Homeowner Renovations and Rental Rehab projects and where space permits a two-car garage is required.
- Garages are required on Single Family Developer projects and where space permits a two-car garage is required.
- Garages are required to have electrical service.
- Garages should face and have access off an alley where applicable.
- Exterior materials should match or be complementary to the primary structure.

Siding

- Preference for wood products or fiber cement board. On historic homes, there is a preference for a 4" reveal or match the existing siding appearance. The context of the surrounding block will be considered.
- Vinyl siding minimum 0.042 inches thick; where not prohibited by local historic district regulations. Factors to consider when evaluating appropriateness of vinyl siding include; existing siding material, surrounding block context, aesthetics, installation details, and budget. New builds and complete home renovations require wood products or fiber cement board.
- Preference for durable products with a longer lifespan.
- Vented masonry with an air space between the veneer and framing (cavity wall) is preferred. Direct-applied veneer is acceptable. All masonry must be properly detailed and installed to prevent moisture accumulation.
- If vinyl siding is being installed over existing historic original hard wood siding, the original siding and trim should be retained.
- Non-historic failing and or deteriorating siding must be removed if vinyl siding is being installed. House should be properly wrapped with new weather barrier before installation of vinyl siding.

Roofing

- Roofs showing visible signs of deterioration must be repaired or replaced. (Ex. Curling Shingles, Lifting Shingles, Missing Shingles, Hole In Roof, Visible and or Known Leaks, Etc.)
- "Architectural grade" asphalt shingles with a minimum 25-year warranty are required. Remove existing shingle layers back to sheathing.
- Install ice and water shield in accordance with building code.
- Assess condition of sheathing in conjunction with other roof repairs. Repair/replace deteriorated sheathing.
- Provide all trim, accessories, vents, boots, flashing, gutters, and sealants as required for a complete and watertight installation of all roofing products.
- Visible roof areas should be a neutral color.
- Metal roofs are not eligible for Invest DSM funding.

Windows

- Encourage the restoration of historic windows when practical.
 - Repair deteriorated connections and wood elements
 - Replace sashes beyond repair
 - Refresh wood (linseed oil) and glaze window panes
 - Scrape/paint deteriorated finishes on original wood sashes/frames
 - Install brass and compressible rubber weatherstripping
 - Rehang sash weights
 - Install new vented storm windows (wood or durable aluminum)
- Replacement windows should match the original windows they are replacing in type, size, configuration, and muntin pattern, or be architecturally appropriate for the structure.
 - Preference for restoring original window openings when replacing windows that have been reduced.
 - Glazing for replacement windows should be double or triple pane insulated
 - Select appropriate coatings (low-e, tint) for the windows' location and orientation.
- Preference for fiberglass, wood, or aluminum clad windows. Vinyl windows may be acceptable but should be EnergyStar rated for the Northern Climate Zone.
- Contractor shall install windows in accordance with manufacturer instructions and industry best practice. Provide all required fasteners, flashings, sealants, and insulation. Replace/repair interior and exterior trim as required on replacement windows.
- Make necessary repairs to headers, framing, sheathing, and cladding as required when replacing windows.
- Replacement windows should have a minimum 1-year manufacturer and installation warranty.

Decks

- Decks should be located on or near the rear of the structure and should be architecturally compatible in style and scale.
- Use of wood for decking and railings is encouraged, composite material is acceptable.
- Provide frost footings and treated wood substructure in accordance with the City deck guidelines.
- Wood decks should be stained or sealed rather than painted.

Front Porches

- Preference for open porches to encourage community engagement.
- Restoration of previously open porches that have been enclosed is encouraged.
- Porch materials should be durable and architecturally appropriate to the structure. Materials may include wood, brick, stone, concrete, wrought iron, or steel.
- Wood floorboards that are stained or sealed are preferred to a painted finish.
- Porches should have a roof that is architecturally integrated with the structure and front yard “decks” cannot be funded.
- Porch steps or other front door stairs should have enclosed risers.
- Porches should have appropriate skirting that hides the structure. This may include brick, stone, concrete or wood. Skirting should have ventilation.
- Precast “front stoops” may not be included in Invest DSM project scope.

Mechanical Systems

- Upgrades to plumbing and electrical systems to bring them in line with current codes is encouraged and will be required for major renovations.
- Replacement of water heaters greater than 10 years old is encouraged. Where feasible, new water heaters should be electric or 95+% efficient direct vent.
- Upgrading and replacement of air conditioning coils and condenser units greater than 15 years of age is encouraged.
- Projects may be required to upgrade the boiler or furnace to 95+% efficient if the age of the existing equipment exceeds 25 years or is less than 80% efficient, or when a substantial renovation or major addition is built. New HVAC equipment should be sized in accordance with the applicable codes to provide adequate heating, cooling, and distribution.
- The use of heat pumps (ground source, air source, and mini splits) is encouraged for their efficiency and use of renewable energy.

Kitchens

- Cabinetry should be considered Mid-grade or higher. Plywood boxes and solid wood frames are preferred. Mid-grade particle board boxes with plywood reinforcement may be acceptable.
- Appliances should be compatible in finish, unless there is a specific and defined design goal. Appliances considered mid-grade will be the standard. Luxury brands will not be eligible for full reimbursement.
- Countertops are required to be solid material products; Mineral product Quartz, Granite, Marble) Acrylic resin (Corian for example). Wood counters should be limited to accent, dining, and chopping block areas.
- Flooring should be a durable, water resistant material of a higher quality. Options include:
 - Hardwood - Solid or engineered planks
 - Luxury Vinyl Tile/Plank (LVT, LVP) - Mid-range residential wear layer (12 mil minimum)
 - Ceramic tile - Preferred installation over an isolation membrane to increase durability and water resistance. Preference for tiles of at least 1 square foot in size for kitchen flooring.

- Lighting should be designed to provide both “task” and general overhead illumination. Utilize a combination of fixture types that include recessed can/puck, “feature” fixtures, and under-cabinet lighting to add value.
- Installation of a kitchen filtration fan is required as part of all kitchen remodel projects. Recirculating is acceptable but exterior venting preferred.

Bathrooms

- Preferred bathroom ratio (include at least one bathtub in the home):
 - 2 bedrooms - 2 Bathrooms
 - 3 bedrooms - 2 bathrooms (one ensuite) and 1 powder room
 - 4 bedrooms - 3 bathrooms (one ensuite) and one powder room
- Bathroom floor must be durable, water-resistant and slip resistant. Options include:
 - Ceramic Tile (preferred) - Preferred installation over an isolation membrane to increase durability and water resistance. Bathroom floor tile may be 1” (mosaic sheet) or larger.
 - Luxury Vinyl Tile/Plank (LVT, LVP) - Mid-range residential wear layer (12 mil minimum)
- Tub/shower surrounds must be durable and water-tight. Install all products in accordance with manufacturer instructions to maintain warranty.
 - Ceramic/porcelain Tile (preference) - Must be installed over a suitable substrate such as Kerdi or other tile backer board, with all associated tapes, sealants, and waterproofing layers installed per manufacturer instructions.
 - Prefabricated fiberglass surrounds (acceptable but not preferred) - Must be compatible with the associated tub or shower base. Provide all required blocking, sealants, and accessories for a complete and water-tight installation.
 - Provide insulation in enclosed spaces behind tubs on exterior walls.

Paint and Coatings

- General
 - Provide compatible coatings (paint or stain/finish) for all new and unfinished exposed materials.
 - Paint should contain minimum 35% solids
 - Low VOC coatings, particularly for interiors, are preferred
- Interior coatings
 - Prime and paint all new drywall and plaster repairs
 - Prime/paint or stain/finish all new wood material
- Exterior Coatings
 - Exterior paint schemes should be appropriate to the architectural style and period of the home, and should complement the neighborhood color palette. A minimum of two colors on homes is required.
 - New wood composites intended to be painted should be sealed according to manufactures specifications (including cuts) prior to installation.
 - Paint or seal all exposed wood. Exception for cedar intended to weather and other specialty woods that do not require coating.
 - Follow manufacturer instructions for application of products.

Fences

- Elimination/reduction of fenced front yards is encouraged unless architecturally appropriate and with a contextually appropriate urban edge. Invest DSM funds cannot be used for fences in the front yard.
- Fence heights will be determined by the applicable Zoning Code regulations.
- Chain link and other wire mesh fences are ineligible for Invest DSM funding
- Fence design should be architecturally compatible with buildings on the site
- Materials
 - High quality materials including wood, aluminum, steel, and vinyl composites are acceptable materials.
 - Aluminum and steel manufactured fences must be factory painted or powder coated.
 - Fasteners in wood fences must be stainless steel or coated for the appropriate application.
 - Structural metal fence posts must be galvanized.
 - Hardware must be factory painted or powder coated.

Site

General Site Requirements

- Confirm that all new work is in compliance with the City Zoning and Site Plan Ordinance before starting construction.
- Before construction, locate all underground utilities via Iowa One Call.
- Correct existing drainage deficiencies when grading is part of the scope of work.
- Provide positive slope of minimum 6" fall within the first 10' away from new structures. If that cannot be provided, construct drains or swales to ensure drainage away from the structure.
- Hard surfaces (pavers and concrete) must slope minimum 2% away from structures.
- Ensure that site work does not create runoff that negatively impacts adjacent structures or properties.
- Install and maintain erosion control measures as required to prevent soil and stormwater runoff from the site. Comply with City and State SWPPP requirements.
- Use of LID (Low impact design) elements including permeable paving, rain gardens, and other onsite stormwater retention/detention measures is encouraged.

Hardscape

- Repair or replace sidewalk sections that are spalling or heaving. Sunken sections may be mudjacked or reset.
- Retain brick pavers if historic and appropriate to the setting.
- Eliminate abandoned curb cuts.
- Provide hard surface material (permeable or impermeable) at driveways and parking pads.

Landscaping

- Landscape plantings to be durable and climate appropriate
- Preference for native and low maintenance plant species when appropriate
- Planting of species determined to be invasive by the Iowa DNR will not be permitted
- A diverse planting palette to encourage seasonal interest and less disease and pests
- Encourage the use of groundcover and planting beds in areas where lawn grass is difficult to maintain
- Remove dead, diseased or dying trees that may damage structures if they fall. Removed trees must be replaced. Potentially dangerous but otherwise healthy trees may be remediated with cable stays or other interventions recommended by an arborist.
- Repair site plantings and elements disturbed during demolition and construction.
- Contractor to water and maintain new landscaping until project completion and turnover to the homeowner. Provide instructions to the homeowner on proper planting maintenance.