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Hardscape & Landscape Construction – Code Requirements

Questions have become more common recently on the applicability of the code for hardscape and landscape construction, and whether the code applies to these types of construction. The most common hardscape and landscape construction being questioned includes, but is not limited to patios, stairways, stairs, landings and retaining walls, and are often constructed out and away from buildings. These elements of a construction project are not always completed by the building contractor, and more commonly by a landscape contractor. The following code sections are from the Michigan Residential Code (MRC), and are considered by the department as applicable to hardscape and landscape construction. This is not a complete list of code requirements, as each project has its own unique elements and code may apply in a different manner to each specific situation. This document includes the applicable code sections that are most commonly questioned.

Code Definitions considered applicable in this document – as defined in the Michigan Residential Code:

- ACCESSORY STRUCTURE. A structure that is accessory to and incidental to that of the dwelling(s) and that is located on the same lot.
- BUILDING. "Building" means a combination of materials, whether portable or fixed, forming a structure affording a facility or shelter for use or occupancy by persons, animals, or property.
- DWELLING. Any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.
- DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.
- GUARD. A building component or a system of building components located near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to the lower level.
- HANDRAIL. A horizontal or sloping rail intended for grasping by the hand for guidance or support.
- PUBLIC WAY. Any street, alley or other parcel of land open to the outside air leading to a public street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and that has a clear width and height of not less than 10 feet (3048 mm).
- RAMP. A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope)
- STAIR. A change in elevation, consisting of one or more risers.
- STAIRWAY. One or more flights of stairs, either interior or exterior, with the necessary landings and connecting platforms to form a continuous and uninterrupted passage from one level to another within or attached to a building, porch or deck.
- STRUCTURE. "Structure" means that which is built or constructed, an edifice or building of any kind, or a piece of work artificially built up or composed of parts joined together in some definite manner.

R101.1 Title. These provisions shall be known and cited as the Michigan Residential Code for 1- and 2-family dwellings and will be referred to as "the code."

R101.2 Scope. The provisions of the Michigan Residential Code for 1- and 2-family dwellings shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached 1- and 2-family dwellings and townhouses not more than 3 stories above grade plane in height with a separate means of egress and their accessory structures.

The MRC applies to all residential structures as described. Using the definition of accessory structure, structure, and the scope of the code as described in R101.2, hardscape and landscape structures fall under the provisions of the MRC unless specifically exempted from code compliance by a section of the code.

R101.3 Intent. The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighters and emergency responders during emergency operations.

MRC Section R101.3 provides for the safety of not only the property owner, but also others who may be on the premises or property, including emergency response personnel. As related to hardscape and landscape structures, structural strength and life safety are the items noted in this section that are considered most applicable.

R102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

MRC Section R102.2 requires compliance with the regulations that govern construction. Structures constructed under the MRC do require licensed contractors unless the construction is being performed by the owner who will be occupying a property and structure. Landscape contractors are typically not licensed residential builders, which does create an issue with the department potentially issuing a permit to an unlicensed contractor. As such, the general contractor (builder) often becomes involved to add the hardscape/landscape construction to their building permit as they are licensed residential builders The licensing requirement comes from 1980 PA299 Article 24.

R105.1 Permit Required. Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the building official and obtain the required permit.

MRC Section 105.1 requires that permits be obtained prior to construction of structures, unless the code specifically exempts the construction from permits. The party responsible for construction needs to obtain a building permit unless the construction is exempt from the permit process.

R105.2 Work exempt from permit. Exemption from the permit requirements of the code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of the code or any other laws or ordinances of this jurisdiction. Permits are not required for any of the following:

(only the applicable exceptions are included here):

- A retaining wall that is not more than 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
- A sidewalk and driveway not more than 30 inches (762 mm) above adjacent grade and not over any basement or story below and are not part of an accessible route.
- Decks not exceeding 200 square feet (18.58 m2) in area, that are not more than 30 inches (762 mm) above grade at any point as prescribed by Section R312.1.1, are not attached to a dwelling or its accessory structures, are not within 36 inches (914 mm) of a dwelling or its accessory structures, and do not serve any ingress or egress door of the dwelling or its accessory structures.

The items noted in MRC 105.2 are the code exceptions to permits being required. An important sentence in this section also indicates that construction exempt from permits does not negate code compliance. Code compliant construction is still required even when a permit is not. Therefore enforcement of the code requirements for structure and life safety can still be enforced, even if the work is of a type that is exempted from a building permit.

R105.3 Application for permit. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the department of building safety for that purpose. (1972 PA 230 requires that the permit applicant be licensed for all residential related construction covered by the MRC).

MRC Section R105.3 requires that permits be obtained prior to construction of structures, unless the code specifically exempts the construction from permits.

R105.8 Responsibility. It shall be the duty of every person who performs work for the installation or repair of building, structure, electrical, gas, mechanical or plumbing systems, for which this code is applicable, to comply with this code.

MRC Section R105.8 requires that the party responsible for the specific construction on a project to comply with all applicable sections of the code, including obtaining a permit, code compliant construction and the inspection process. This includes being licensed as a residential builder if required by law.

R311.1 Means of egress. **Dwellings** shall be provided with a means of egress in accordance with this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the required egress door without requiring travel through a garage. The required egress door shall open directly into a public way or to a yard or court that opens to a public way.

MRC Section R311.1 requires that a dwelling have a code compliant path of travel in order to safely exit a dwelling. This section does not exempt other structures from code compliance for all or the elements of means of egress unless exempted by a specific code section. Hardscape and landscape construction (stairs, ramps, patios, retaining walls, etc) meet the definition of structure and are required to comply with the codes unless exempted by specific

sections of the code. Even if exempted, the construction still has to comply with the applicable provisions of the code for structure and life safety.

R311.3 Floors and landings at exterior doors. There shall be a landing or floor on each side of each exterior door. The width of each landing shall be not less than the door served. Every landing shall have a dimension of not less than 36 inches (914 mm) measured in the direction of travel. The slope at exterior landings shall not exceed 1/4 unit vertical in 12 units horizontal (2 percent).

MRC Section R311.3 does not exempt other structures from compliance with the landing requirements if they are not dwellings. This section applies to all structures, including dwellings, with exterior doors provided as the section is not specific to the required means of egress.

R311.3.1 Floor elevations at the required egress doors. Landings or finished floors at the required egress door shall be not more than 1-1/2 inches (38 mm) lower than the top of the threshold.

Exception: The landing or floor on the exterior side shall be not more than 73/4 inches (196 mm) below the top of the threshold provided the door does not swing over the landing or floor.

Where exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to grade by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.

MRC Section R311.3.1 applies specifically to required egress doors, which refers to the requirements for a means of egress from a dwelling, as noted in MRC Section R311.1. Therefore doors other than the required means of egress do not have to comply with this section.

R311.3.2 Floor elevations for other exterior doors. Doors other than the required egress door shall be provided with landings or floors not more than 73/4 inches (196 mm) below the top of the threshold.
Exception: A top landing is not required where a **stairway** of not more than two risers is located on the exterior side of the door, provided that the door does not swing over the stairway.

MRC Section R311.3.2 applies to all other doors in or on a structure except a required means of egress (required means of egress is address separately in the previous code section). As such, this section is not limited to dwellings, and it applies to all structures.

R311.4 Vertical egress. Egress from habitable levels including habitable attics and basements not provided with an egress door in accordance with Section R311.2 shall be by a ramp in accordance with Section R311.8 or a **stairway** in accordance with Section R311.7.

MRC Section R311.4 applies to buildings and their means of egress from the building that provide access to a public way, which is typically considered a safe distance and area away from the building being served by the means of egress. The reference to Section R311.2 requires that the egress door size requirements be provided in order to refer to the door as an egress door.

R311.7.1 Width. **Stairways** shall be not less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 41/2 inches (114 mm) on either side of the stairway and the clear width of the stairway at and below the handrail height, including treads and landings, shall be not less than 311/2 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides.

MRC Section 311.7.1 applies to stairs meeting the definition of a stairway. Stairways, per definition, are those stairs on the building's interior, or adjacent to the exterior and serving porches, patios, decks, etc. Stairs located outside of the area defined as stairways do not have to comply with the width requirements of this section if they are not part of the means of egress to a public way.

R311.7.3 Vertical rise. A flight of **stairs** shall not have a vertical rise larger than 147 inches (3734 mm) between floor levels or landings.

MRC Section R311.7.3 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building.

R311.7.4 Walk line. The walk line across winder treads shall be concentric to the curved direction of travel through the turn and located 12 inches (305 mm) from the side where the winders are narrower. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. If winders are adjacent within the flight, the point of the widest clear stair width of the adjacent winders shall be used.

MRC R311.7.4 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building.

R311.7.4.1 Riser height. The maximum riser height shall be 81/4 inches (210 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

MRC Section R311.7.4.1 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building. Exceeding the maximum riser height creates an unsafe stair(s) and can lead to user injury.

R311.7.4.2 Tread depth. The minimum tread depth shall be 9 inches (229 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of **stairs** shall not exceed *the smallest by more than 3/8 inch (9.5 mm). Winder treads shall have a minimum tread depth of 10* inches (254 mm) measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point. Within any flight of **stairs,** the greatest winder tread depth at the 12-inch (305 mm) walk line shall not exceed the smallest by more than 3/8 inch (9.5 mm).

MRC Section R311.7.4.2 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building. Stair treads not in compliance with the minimum tread depth creates an unsafe stair(s) and can lead to user injury.

R311.7.6 Landings for **stairways**. There shall be a floor or landing at the top and bottom of each stairway. The width perpendicular to the direction of travel shall be not less than the width of the flight served. Landings of shapes other than square or rectangular shall be permitted provided that the depth at the walk line and the total area is not less than that of a quarter circle with a radius equal to the required landing width. Where the stairway has a straight run, the depth in the direction of travel shall be not less than 36 inches (914 mm).

MRC Section R311.7.6 requires landings at stairways. By definition, stairways are those stairs that are interior, or located on the exterior and serving patios, porches, decks, etc. to provide a path of egress to the public way, which is typically a safe distance and area away from the building being served by the means of egress. As this section is specific to stairways, it does not apply to stairs located away from the building, and defined as a "stairway".

R311.7.7 **Stairway** walking surface. The walking surface of treads and landings of stairways shall be sloped not steeper than one unit vertical in 48 inches horizontal (2-percent slope).

MRC Section R311.7.7 applies to stairways. By definition, stairways are those stairs that are interior, or located on the exterior and serving patios, porches, decks, etc. to provide a path of egress to the public way, which is typically a safe distance and area away from the building being served by the means of egress. As this section is specific to stairways, it does not apply to stairs located away from the building, and defined as a "stairway".

R311.7.8 Handrails. Handrails shall be provided on not less than one side of each continuous run of treads or flight with four or more risers.

MRC Section R311.7.8 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building. This requirement also applies to ramps (sloped walking surface with a slope greater than 1 in 20).

R311.7.8.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

MRC Section R311.7.8.1 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building. This requirement also applies to ramps (sloped walking surface with a slope greater than 1 in 20).

R311.7.8.2 Continuity. Handrails for **stairways** shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1 1/2 inches (38 mm) between the wall and the handrails.

MRC Section R311.7.8.2 requires continuity of handrails for stairways. By definition, stairways are those stairs that are interior, or located on the exterior and serving patios, porches, decks, etc. to provide a path of egress to the public way, which is typically a safe distance and area away from the building being served by the means of egress.

R311.7.8.3 Grip-size. Required handrails shall be of one of the following types or provide equivalent graspability.

MRC Section R311.7.8.3 is not specific to dwellings or stairways, therefore this section applies to all stairs. By definition, stairs are a change in elevations with 1 or more risers. Unlike the definition of a stairway, stairs can be located inside, outside, adjacent to, or away from the building. This requirement also applies to ramps (sloped walking surface with a slope greater than 1 in 20).

R311.8.1 Maximum slope. Ramps **serving the egress door** required by Section R311.2 shall have a slope of not more than 1 unit vertical in 12 units horizontal (8.3-percent slope). All other ramps shall have a maximum slope of 1 unit vertical in 8 units horizontal (12.5 percent).

MRC Section R311.8.1 - This section limits application of the requirements of maximum 1 in 12 slope to only those ramps serving an egress door. All other ramps are to comply with the maximum 1 in 8 slope.

R311.8.2 Landings required. There shall be a floor or landing at the top and bottom of each ramp, where doors open onto ramps, and where ramps change directions. The width of the landing perpendicular to the ramp slope shall be not less than 36 inches (914 mm). R311.8.3 Handrails required. Handrails shall be provided on not less than one side of ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33-percent slope).

MRC Section R311.8.2 requires landings at the top and bottom of a ramp. This section is not specific to certain types of projects or structures and therefore applies to all ramps.

R311.8.3.1 Height. Handrail height, measured above the finished surface of the ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

MRC Section R311.8.3.1 requires code compliant handrail height for all ramps. This section is not specific to certain types of projects or structures and therefore applies to all ramps.

R311.8.3.2 Grip size. Handrails on ramps shall comply with Section R311.7.8.3.

MRC Section R311.8.3.2 requires code compliant handrail graspability for all ramps. This section is not specific to certain types of projects or structures and therefore applies to all ramps.

R311.8.3.3 Continuity. Handrails where required on ramps shall be continuous for the full length of the ramp. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 11/2 inches (38 mm) between the wall and the handrails.

MRC Section R311.8.3.3 requires code compliant handrail continuity for all ramps. This section is not specific to certain types of projects or structures and therefore applies to all ramps.

R312.1 Guards. Guards shall be provided in accordance with Sections R312.1.1 through R312.1.4.

R312.1.1 Where required. Guards shall be located along open-sided walking surfaces, including stairs, ramps and landings that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point

within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a guard.

R312.1.2 Height. Required guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches (914 mm) in height as measured vertically above the adjacent walking surface or the line connecting the leading edges of the treads.

R312.1.3 Opening limitations. Required guards shall not have openings from the walking surface to the required guard height that allow passage of a sphere 4 inches (102 mm) in diameter.

MRC Section R312 applies to all areas with open sided walking surfaces with more than 30 inches of elevation change from the walking surface to the elevation below. . As such, Hardscape and Landscape construction must comply with the guardrail requirements found in Section R312 when applicable.

Using these interpretations, Hardscape and Landscape construction is required to comply with the applicable codes. For purposes of enforcement of the MRC, Hardscape and Landscape construction shall comply with the following MRC Sections where applicable:

R105.1 Permit Required
R105.2 Work exempt from permit
R105.3 Application for permit
R105.8 Responsibility
R311.3 Floors and landings at exterior doors
R311.3.2 Floor elevations for other exterior doors
R311.7.1 Width - Stairways
R311.7.3 Vertical rise - Stairs
R311.7.4 Walk line - Stairs
R311.7.4.1 Riser height - Stairs
R311.7.4.2 Tread depth - Stairs
R311.7.6 Landings for stairways
R311.7.7 Stairway walking surface
R311.7.8 Handrails - Stairs
R311.7.8.1 Height - Stairs
R311.7.8.2 Continuity - Stairways
R311.7.8.3 Grip-size - Stairs
R311.8.1 Maximum slope - Ramps
R311.8.2 Landings required - Ramps
R311.8.3.1 Height. Handrail - Ramps
R311.8.3.2 Grip size. Handrails - Ramps
R311.8.3.3 Continuity. Handrails – Ramps
R312.1 Guards
R312.1.1 Where required - Guards
R312.1.2 Height - Guards
R312.1.3 Opening limitations - Guards

The list provided herein is not intended to be the only code requirements that may be applicable to Hardscape and Landscape construction. Other code requirements for structure and safety may also apply if applicable to the specific construction project.

This document have been prepared by Martin Van Berlo, Building Official – Emmet County, September 2022.

information to the area contractors.

Hardscape & Landscape Construction – Permits and Inspections - Another area where extensive code review and research has been completed by the department is that of hardscape and landscape construction. Patios, decks, stairs, ramps, landings, etc. are subject to permits unless specifically exempted by the building codes. This includes structures that are part of the hardscape and landscape construction on a site. The building code definition of structure applies to such construction, and as such is subject to the permit and inspection process. Code compliant decks, patios, ramps, stairs, guard and handrail systems, etc. will be required where applicable and required by the building codes. When the general contractor has control over all work on the project site, hardscape and landscape construction can be covered under the project's building permit. If others are in control of the hardscape and landscape construction, without the involvement of the general contractor, or the construction takes place on a site where there is no other construction, then a separate building permit becomes necessary for inspections and approvals. The State of Michigan licensing laws and regulations indicate that a licensed residential builder is required for the construction of all residential structures. These laws and regulations provide no exceptions for this licensing requirement other than for a homeowner performing their own installations. This may present an issue for a landscape contractor to obtain a building permit as a licensed residential builder is needed. Communication between the general contractor and the landscape contractor may prove beneficial in assuring that any hardscape or landscape construction is properly permitted by persons licensed for residential construction. If these types of projects are located within 500 feet of a lake, river or stream, a Soil Erosion and Sedimentation Permit may also be required. Structures that are elevated or extend above grade may need zoning approval as well. Be sure to check with the local zoning authority before starting construction to verify if zoning approval is necessary.