



Engineering Division
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General Construction Requirements

1. Right-of-Way Accessibility

For all new home / major renovation work the public right-of-way must remain accessible at all times throughout the duration of construction, except during replacement of deficient city sidewalk. Any damage to sidewalks must be temporarily repaired within 24 hours. Sidewalks must be repaired with compacted cold patch, rolled smooth to provide a trip-free, walkable hard surface with compacted asphalt or cold patch. Temporary sidewalk or pavement repairs must be maintained until permanent restoration is completed.

Sidewalks and roadways must be free of dirt and debris, swept clean on a daily basis.

2. Excavation:

Where any utilities, water, sewer, gas, electric, telephone, or any other either public or private, are encountered, the Permittee shall provide adequate protection for them, and shall be responsible for any damages to such utility or utilities arising from his operations. When it is apparent that construction operations may endanger the foundation of any utility, or the support of any structure in the right-of-way, the Permittee shall notify the utility owner of this possibility and shall take such steps as may be required by the Engineering Division, such as sheeting, shoring and bracing to provide temporary support of utilities or structures.

Construction equipment and excavated material shall be stored on private property at all times.

3. Backfill and Compaction:

The complete trench, holes, pits and areas around structures shall be backfilled with sand or other approved granular backfill material, approved by the Engineering Division, placed in successive layers not more than nine (9) inches in depth, loose measure, and each layer shall be thoroughly compacted by tamping to 95% Modified Proctor Density. Backfill shall be tested using the Nuclear Gauge Method for Controlled Density. The density testing shall be provided by the Permittee.

Test reports shall be given to the Engineering Division prior to the final inspection. All expenses associated with the density testing shall be borne by the Permittee. Any excavation within the right-of-way shall be maintained by the Permittee until backfill and compaction is complete. On gravel roads, the top twelve (12) inches within the roadbed shall be backfilled with 22A road gravel and stabilized with road oil or as otherwise directed by the city.

4. Pavement Removal and Replacement:

Removal of existing curbing, sidewalks and pavement shall be to the nearest joint of an existing, acceptable pavement slab or curb and gutter in the opinion of the Engineer. **The City reserves the right to dictate the limits of curb, curb and gutter, sidewalks and pavement removal or restoration** when alterations are proposed or required as part of a development or installation. The alteration limits shall be set to achieve a proper, durable restoration that will integrate with existing and future improvements. Deficient pavement, in the opinion of the Engineer, includes sunken, cracked, broken, and scaled pavements; curbing, sidewalks and pavement, not meeting the standard dimensions, slope or thickness or causing the ponding of water. The limits of removal will be determined by the city for replacement at the time of plan review or site visit. All existing curbing, sidewalks and pavement or portions thereof, along the frontage of a development that is substandard

or deficient will be reviewed for replacement when a proposed cut is made into any of the curb or pavement. Alterations of road and curbing on public right-of-way shall be installed to current standards, widths, cross sections and slopes as dictated by City Code, City of Royal Oak Standard Specifications for Construction or City Engineer.

The existing pavement, curbing, and curb and gutter shall be saw cut full depth prior to removal of the pavement. The pavement shall be cut so that the opening is a minimum of five **(5) feet wide** and at least one (1) foot wider on each side than the trench. In no case shall an open cut result in a remaining slab width of less than five (5) feet from the pavement removed to an existing joint. The pavement to be removed shall be broken along the edges with air hammers to prevent cracking, chipping or spalling of the adjacent remaining pavement. The pavement and curb and gutter replacement shall be standard concrete mixes (MDOT 3500 6.0-sack mix design as listed in 2020 MDOT Standard Specifications Table 1004-1) unless high early concrete is specifically approved. The mix design for the P1 and high early concrete shall meet the requirements of the MDOT 2020 Standard Specifications for Construction and shall be approved by the Engineering Division prior to use in the work. The current Standard Specifications for Construction are available online: www.romi.gov/engineering.

Pavement and curb and gutter replacement shall match existing thickness and shall be anchored to the existing pavement with expansion-anchored lane-ties (3/4" for 8" or thicker pavement and 5/8" for pavement less than 8") located at the center of the pavement and shall be spaced at 36" center to center. The pavement replacement elevation of concrete base course shall match existing with a bituminous cap to match the thickness of the existing bituminous cap. A minimum 2-foot wide butt joint is required wherever concrete pavement, curb or gutter abuts bituminous pavement or cap. The bituminous cap mixture shall meet the requirements listed in the city's Standard Specifications for Construction. The joint pattern of the new pavement shall match the existing pavement. The pavement area shall be **temporarily patched** and maintained with 4" of compacted smooth cold patch bituminous material placed level with adjacent pavement at the completion of each and every day if permanent pavement is not installed the same day.

The permanent pavement replacement shall be started within five (5) working days of completion of the underground work. The pavement shall be open to vehicular traffic at the end of each and every working day, unless otherwise approved by the Engineering Division.

5. Sidewalk and Driveway Approach Removal and Replacement:

Concrete driveway approaches and sidewalk within the influence of the driveway shall be minimum six inches **(6") thick**. The sidewalk and driveway approach shall be removed to the closest joint, saw cutting at the joint prior to removal. The sidewalk and driveway approach replacement shall be transit mix concrete and shall meet all the requirements of the MDOT 3500 6.0-sack mix design as listed in 2020 MDOT Standard Specifications Table 1004-1 and shall be approved by the city prior to use in the work. Concrete finish shall be as required in the current version of the City of Royal Oak Standard Specifications for Construction.

The joint pattern of the sidewalk and driveway approaches shall match the existing joints or those approved on plans for the work. All sidewalks and driveway approaches shall be **temporarily patched** and maintained with stone base and **3" of compacted smooth cold patch** placed level with adjacent pavement/sidewalk at the completion of each and every working day if permanent sidewalk and driveway approaches are not installed the same day. The permanent sidewalk and driveway approach replacement shall be completed within five (5) working days of completion of the underground work or after removal. **All handicap ramps affected by the work shall be upgraded to be compliant with American Disabilities Act (ADA) guidelines and City Standards which includes adjacent road and curb as determined by the City of Royal Oak.**

6. Restoration of Landscape Areas:

A. Lawns:

The Permittee shall be responsible to restore all lawn areas in the right-of-way disturbed in conjunction with the construction operation(s) authorized under this permit. Restoration of lawn areas on local streets shall be with 2" (minimum) of topsoil and **Class A Sod**. Restoration of lawn areas on major roads shall consist of 3" of topsoil and seeding by means of hydro-seeding and shall have the following composition* of seeds:

| | |
|------------------------|--|
| 30% Park Kentucky Blue | 30% Dawson Red Fescue |
| 30% Fults Puccinellia | 10% Pennfine Perennial Rye, minimum purity 97% |

**This seed composition shall be certified by the supplier of the seed mixture*

Seeding shall be used on local streets only with prior approval of the engineering division. Existing soils shall be excavated and compacted such that all newly installed topsoil can be placed and compacted flush with back of curb and sidewalks meeting the thickness requirements previously stated. No blocking of drainage by lawns is permitted.

The Permittee shall be responsible to establish and maintain the growth of lawn areas after sod is installed or after the lawn seed has germinated and has started to grow. All areas shall be watered twice daily for a minimum of 2 weeks. All lawn seeded areas shall have at least 90% growth to be considered established before permit can be closed.

B. Trees, Shrubs and other Landscaped Areas:

For commercial work and new home / major reconstruction work, the Permittee is required to have at least one healthy tree along the property frontage (two trees required for a corner lot). If at least one healthy tree does not exist, one of the following types of trees must be installed under the Engineering Permit:

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|--------------------|----------------------------------|----------------------|--|
| Ginkgo | (<i>Ginkgo biloba</i>) | Armstrong Red Maple | (<i>Acer rubrum</i>) |
| Little Leaf Linden | (<i>Tilia cordata</i>) | Autumn Blaze Maple | (<i>Acer freemanii</i>) |
| Sycamore | (<i>Platanus occidentalis</i>) | Norway Maple | (<i>Acer platanoides</i>) |
| Honey Locust | (<i>Gleditsia triacanthos</i>) | Sugar Maple | (<i>Acer saccharum</i>) |
| Sawtooth Oak | (<i>Quercus acutissima</i>) | Zelkova | (<i>Zelkova serrata</i>) |
| Swamp White Oak | (<i>Quercus bicolor</i>) | Frontier™ Hybrid Elm | (<i>Ulmus carpinifolia x Ulmus parvifolia</i>) |
| Red Oak | (<i>Quercus rubra</i>) | Triumph™ Hybrid Elm | (<i>Ulmus 'Morton Glossy'</i>) |
| Hackberry | (<i>Celtis occidentalis</i>) | Accolade™ Hybrid Elm | (<i>Ulmus japonica x Ulmus wilsoniana</i>) |

New trees shall be minimum 2.5-inch caliper. Trees shall be installed as specified in the Royal Oak Standard Specifications for Construction – Restoration and in Section 815 of the MDOT 2020 Standard Specifications for Construction.

If the greenbelt width is less than 4.5 feet wide, a new tree is not required.

All vegetation within the right-of-way shall be carefully protected from damage or injury during all construction operations. Existing trees in the right-of-way must be protected with a construction fence surrounding the tree in two layers. A minimum of 4 stakes must be used to anchor the fence. The fence will be no less than five feet square around the tree or to the edge of greenbelt. The Permittee shall replace, at the Permittee's expense, all dead or dying trees or other plantings damaged by the work, as directed by the Engineering Division. The tree or planting replacement shall be equal in size and species to those damaged by the work.

The Permittee is responsible for obtaining permission, permits and instructions from the City of Royal Oak Parks and Forestry Department prior to trimming or cutting of any trees in the right-of-way. When installing any utility, no open trenching will be allowed adjacent to trees within a radius of $\frac{1}{2}$ foot for each inch of tree diameter measured from the center of the tree. Trees eight (8) inches in diameter or less shall require a boring eight (8) feet long. Trees over 8 inches in diameter, as measured four (4) feet above the ground surface, shall require a utility boring the length of one (1) foot for each inch of tree diameter. This work shall be done with an approved boring machine. The boring will be done with or without casing as needed, and the diameter of the auger shall not exceed four (4) inches of the outside diameter of the pipe to be installed. The cavity between the outside of the pipe and undisturbed ground shall be sealed at both ends of the bore with 2500 p.s.i. unconfined compressive strength concrete, a minimum of eight (8) inches thick.

7. Soil Erosion:

Soil erosion measures shall include complying with City of Royal Oak codes, permit requirements, as well as Office of the Oakland County Water Resources Commissioner (OCWRC) soil erosion requirements.

At a minimum:

- All stockpile areas on private property require a silt fence along the perimeter.
- All downstream catch basins require an inlet filter (silt sacks).

8. City Sewer Lead Policy

The following policy was established by the City Commission on March 27, 1984 regarding sewer system responsibility:

- Maintenance of sewer mains within the city are the responsibility of The City of Royal Oak.
- Maintenance of sewer service lines, which run from the sewer main to private property, **including the connection to the sewer main**, will be the responsibility of the individual property owner.

Connecting a private sewer lead to a city sewer shall only be made to sound pipe free of major deterioration and damage. Damaged city sewer main determined by the engineer to be unsound due to a private sewer lead connection shall be replaced by the permittee in accordance with city standards such that the new connection may be made. Refer to the city's *Standard Specifications for Construction* for more information.