

# CITY OF ROCHESTER HILLS

## ENGINEERING DESIGN STANDARDS

### CHAPTER 1

#### General Requirements and Submittals

The items found in this ~~section~~ **Chapter** contain the general requirements for the submittal of Engineering Construction Plans to the City of Rochester Hills for review, comment and approval. In addition, specific requirements pertaining to Water Mains, Sanitary Sewers, Storm Water Management, ~~Drains, Detention~~, Paving and Grading follow this ~~Section~~ **Chapter** and apply as stated within their respective context.

##### A. Land Improvement Permit Application

1. A properly completed Land Improvement Permit Application shall be submitted to the Engineering ~~Services~~ Division. The application form is available at the Engineering ~~Services~~ Division. The required materials listed on the form must be submitted along with the application.

##### B. Submittal

1. Three sets of complete engineering construction plans, bearing the seal of a ~~Registered~~ Professional Engineer, licensed to practice in the State of Michigan, shall be submitted to the ~~City Engineer~~ **Engineering Division** for review. Each plan sheet shall contain the project name, the project owner, ~~and~~ the City File Number (assigned by the City of Rochester Hills), ~~and the section number~~.
2. A Certified Boundary Survey of the site, prepared and sealed by a ~~Registered~~ Professional ~~Engineer~~ or Surveyor, licensed to practice in the State of Michigan, or a copy of the complete plat, shall be submitted along with the Engineering Construction Plans.
3. Plans shall be submitted on a twenty-four inches (24") x thirty-six inches (36") white ~~plan sheets~~ **prints** having ~~blue or black~~ **print** lines, and shall be neatly and accurately prepared.
4. All engineering construction plans shall contain the latest version of the applicable City of Rochester Hills' Standard Detail Sheets.
5. The cover sheet shall include a ~~location~~ map ~~at a scale of 1 inch = 2000 feet~~, showing the location of the proposed project, a symbol legend, ~~and~~ a sheet index, ~~a quantities table and a permit schedule~~.
6. Existing information, topography, utilities, etc., shall be shown in gray or lighter line weight, while proposed improvements shall be shown in dark and heavy black lines. The legend shall clearly refer to all line symbols used.

7. For projects having more than one sheet of plans, a general plan having a scale of one inch (1") equal to one-hundred feet (100') shall be provided showing the overall project, and indicating the size and general location of all improvements shown in the detailed plans. Street names, street and easement widths, lot lines, lot dimensions, lot numbers and ownership shall be shown on all plans.
8. Utilities shall be located in accordance with City Standards. ~~The minimum total easement width is 20 feet.~~ **Easement sideline shall be no closer than ten feet (10') from the utility.** Utilities shall be **typically** centered within easements and parallel to lot lines. Generally, utilities shall be constructed in the road right-of-way or in easements adjacent to the road right-of-way and shall not be located under existing or proposed pavement, including pathways and sidewalks. Side yard easements ~~are acceptable~~ **should be avoided if possible.**
9. Grading plans are required for all developments. Refer to *Grading and Rear Yard Drainage*, for specific requirements.
10. Engineering plans having a scale of no greater than one inch (1") equals fifty feet (50') horizontal and one inch (1") equals five feet (5') vertical (for profiles) shall be provided. Sanitary sewer and water main shall be shown on the same sheet. Plan and profile views are required on all gravity sewers. The profile, ~~where possible, shall~~ **should** be shown below the plan view on the same sheet.
11. Storm sewer and pavement shall be shown on the same sheets. Plan and profile views are required for all storm sewers. A plan view with centerline stationing shown is required on all paving plans. Show the top-of-curb line on profile.
12. In the profile view, all crossings of utilities must be shown. When a water main crosses **above** a sewer, an invert elevation for the water main shall be shown. The minimum vertical clearance between utilities shall be eighteen inches (18"). Class II sand backfill compacted to at least ninety-five percent (95%) of maximum unit weight is required between utilities.
13. Profiles of sewers shall indicate the size, material type and class of pipe, ~~type of bedding,~~ rim elevations of all structures, the length of pipe between structures, the slope of the pipe, numbering of structures, locations of service leads, and casting and cover type. **Bedding shall be shown if it differs from the typical trench detail.** The profile shall indicate the existing and proposed ground elevations above the route of the sewer. The inverts of all sewers, both existing and proposed, shall be given at manholes. The location of areas requiring compacted sand backfill shall be indicated on the profile.
14. ~~Elevations~~ **Vertical controls** shall be **in accordance with the** ~~on~~ U.S.G.S. Datum **and horizontal controls shall be in accordance with State Planar Coordinates.** A minimum of 2 ~~permanent~~ **project** benchmarks for the **vertical controls** ~~work~~ shall be indicated on ~~the plans~~ **each sheet. Two permanent benchmarks shall be included on the alignment and control sheet.**
15. Any areas that are considered to be "wetlands" as defined by the City of Rochester Hills or the Michigan Department of Environmental Quality (MDEQ) shall be ~~indicated~~ **shown** on the plans. ~~No~~ Improvements will **not** be **permitted** in wetlands unless the MDEQ and the City issue a permit or a letter of "No Authority" for such ~~improvements~~ **activity.**

Refer to Wetland and Watercourse Determination Section (Section 126, Article IV, Division II) in the City Code of Ordinances.

16. Finished ~~grade~~ exterior elevation shall be ~~indicated~~ shown at the corners of all buildings and for all utility structures. **Lowest floor elevation, including basement, shall be shown on the plans.**
17. Plans for landscaping or tree planting required by either City Ordinance or City Standard, relating to such items as greenbelts, street islands, detention basins, or landscape and open space areas, shall conform to the City Standards and shall be submitted to the Department of Planning and **Zoning Development** for review and approval prior to final site approval. **The approved landscape plans shall also be attached to the construction plans.**
18. All new grass areas that are required in the public right-of-way, by any City Ordinance or City Standard, and all existing grass areas that are disturbed by construction, shall be established or restored in conformance with the City's Standard Specifications.
19. Street names shall be approved by the City. The Department of Public Services charges a fee to the Developer for the installation of permanent street signs. All permanent street name and traffic control signs shall be installed by the City, and the cost of these signs shall be paid by the Developer.
20. The Developer's consulting engineer shall forward plans for approval to any public utility (gas, electric etc.) and to any Federal, State or County agency whose facilities or rights-of-way may be affected by the proposed construction. Permits for such construction, if required, shall be the responsibility of the Developer. **The City shall approve all plans for public utilities.**
21. For all developments, two (2) mylar copies ~~a minimum of 3 mils thick~~, of **a complete set of as-built plans including, but not limited to, all as-built drawings for sanitary sewers, storm sewers, water mains, detention basins, streets, roads, sidewalks, safety paths, grading, basis of designs, drainage maps and calculations**, shall be provided by the Developer prior to final approval and acceptance by the City.
22. After the plans are approved by the City and prior to any construction, six (6) complete sets for field construction shall be submitted to the Engineering ~~Services~~ Division. The plans shall ~~be stamped "For Construction" and~~ be sealed and signed on the cover sheet by the Licensed Engineer responsible for their preparation. **The plans shall be rubber-stamped instead of embossed.** All updated revisions from outside agencies shall be included on the plans. **The City will stamp the construction plans approved and disperse as follows:**
  - Three - City of Rochester Hills
  - Two - Owner
  - One - Engineer

**These approved plans shall be the only ones used during construction.**

23. **Construction Plans shall include the following sheets (when applicable) and the order shall be maintained as indicated:**

Cover Sheet  
Overall Plan, General Notes & Legal Descriptions  
Existing Conditions  
Demolition Plans  
Construction Staging Plans  
Overall Grading Plans  
Detailed Grading, Soil Erosion Control Plans & Tree Protection Fencing Plans  
Sanitary Sewer & Water Main Plan & Profile Plans (including basis of design)  
Road & Storm Sewer Plan & Profile  
Drainage Area Map  
Traffic Staging/Signing/Paving  
Soil Boring Data Sheets  
Applicable Detail Sheets  
Landscape Plans & Details  
Natural Features Plan

Revisions shall be identified if submitted after construction approval.

24. The City encourages the incorporation of cross access agreements and may require them.