CITY OF PLYMOUTH
ENGINEERING GUIDELINES
&
STANDARD DETAIL SPECIFICATIONS FOR SANITARY SEWER, WATERMAIN, STORM SEWER & STREET CONSTRUCTION

March 2025

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

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FOREWARD

To standardize engineering requirements for Developers and Engineers performing work within the City of Plymouth, it is important that certain guidelines be adopted.

This manual, as well as the city's Standard Detail Specifications, outlines certain requirements and standards that should be incorporated into the preparation of plans and specifications for sanitary sewer, storm sewer, watermain, trails and street reconstruction within the City of Plymouth. Compliance with these documents will help provide quality projects and assure uniform performance standards for the citizens of Plymouth.

Michael J. Payne, P.E.
City Engineer / Deputy Public Works Director

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ENGINEERING GUIDELINES

The City of Plymouth Engineering Guidelines and Standard Detail Specifications are intended to supplement the Subdivision Regulations in Chapter 5 of the City Code. If any conflicts between the Engineering Guidelines or Standard Detail Specifications and the City Code are identified, the City Code shall supersede them. Where the term "City Engineer" appears, it shall refer to the City Engineer or an assigned designee.

I. GENERAL ENGINEERING REQUIREMENTS

As set forth in various sections of the city ordinances, developers of property within the City of Plymouth are required to submit certain plans and specifications for review and approval by the city. These include but are not limited to items such as grading plans, drainage plans, topographic surveys, plats, staging, street and utility plans and specifications. Competent professionals shall prepare these plans and specifications.

The professional services required of the developer might include an architect, land surveyor, planner, wetland specialist and engineer. "Project Engineer" in this document refers to a Professional Engineer registered in the State of Minnesota hired by the developer. The Project Engineer responsibilities include not only preparation of plans and specifications, but also field staking and full-time resident inspection to assure the city the completed project is in conformance with the approved plans and specifications.

Whenever public improvements or other conditions of approval are required with an approved development, a development contract is required between the developer/property owner and the city. This contract guarantees the city that all requirements will be satisfactorily completed by the developer. Within the development contract, the developer has a choice in determining how the required improvements will be handled. The developer can either construct and finance the improvements or request that they be installed under a public improvement project, if approved by the City Council.

1. Developer Installed Public Improvements

If the developer chooses to install required public improvements within the development, the following procedures shall be followed:

a. The developer shall submit plans, specifications, and copies of all design calculations to the city for review and approval. The developer shall submit an electronic copy in AutoCAD's DWG file format and PDF format, of the reviewed plans/construction documents. These plans are to be prepared by a registered Professional Engineer and shall be in accordance with city standards as outlined herein. The city's comprehensive plans for sanitary sewer, water, storm drainage and thoroughfare plans shall be adhered to in design considerations. All sanitary sewer and watermain testing shall be completed and copies of service ties submitted to the city prior to issuance of any service connection permits.

b. The developer shall submit a Grading, Drainage and Erosion/Sediment Control Plan to the city for review and approval. No work is to begin until all erosion and sediment control methods are in place and approved by the city's engineering division. All project operations must comply with the city's Erosion Control Ordinance (see Appendix A).

c. The developer shall provide proper notification of improvements to the responsible governmental agencies, watershed districts, etc. affected by said construction. All necessary permits shall be obtained by the developer and copies provided to the city's engineering division prior to commencing any work. All special requirements of the responsible agencies shall be complied with. The city is the responsible Local Government Unit (LGU) for implementation of the Wetland Conservation Act.

d. The Project Engineer will be responsible for not only plan and specification preparation, but also for providing staking and resident inspection of said improvements to assure compliance with the approved plans. **No individual shall serve as the inspector other than those having prior approval of the city. Written qualifications of each proposed inspector shall be presented to the city prior to scheduling the preconstruction conference.**

The inspector shall be distinct from the survey crew and have one of the following minimum qualifications:

- Graduate of a two-year program in civil technology from an accredited school with two years of municipal/civil construction inspection experience; or
- Technician with a minimum of six years of municipal/civil construction inspection experience: or
- Civil engineer-in-training with a minimum of one year of municipal/civil construction inspection experience; or
- Registered Professional Civil Engineer.

In addition, the Project Engineer shall provide weekly construction activity reports to the City Engineer. These reports will be due each Monday by 4:30 P.M. for the previous week commencing with the site grading. Included in the report shall be a construction schedule indicating percentage completed, a summary of all test results and an explanation of any problems and/or test failures and how they are being resolved. Failure to provide those reports may result in project shutdown.

e. The developer shall furnish to the city a list of contractors and sub-contractors being considered for retention by the developer for any of the public improvement work required in the project prior to the preconstruction meeting. The city has the right to reject any contractor or subcontractor deemed unacceptable for city work.

f. The contractor shall submit a list of suppliers as well as all certification tests of materials that will be used on the project to the City Engineer at the "pre-construction" meeting.

g. The contractor shall furnish and install a project sign for city projects as shown in Standard Detail Plate DWG-1.

h. Any changes to the approved plans and specifications shall be approved by the City Engineer in writing before changes are made in the field.

i. The city engineering division will provide periodic inspections of public improvement work and shall be notified 24 hours in advance of all scheduled tests so its representatives can be present at the

time tests are performed. The required tests will cover the sanitary sewer, watermain, storm sewer, street subgrade, base course, wear course, and curb and gutter. These inspections do not in any way lessen the responsibility of the developer to provide full time construction inspection.

j. Upon completion of all the utility and road work required on both the public and private portions of the project, the City Engineer will make the required final inspections of all work. This includes a final inspection of all site grading and approval by the City Engineer before any building permits will be issued. Before the final payment is made to the contractor by the developer, the City Engineer shall be satisfied that all work is satisfactorily completed in accordance with the approved plans and specifications, and the Project Engineer has submitted a written statement attesting to same. Acceptance of said work shall be made by resolution of the City Council upon the recommendation of the City Engineer and with the posting of the letter of credit for the warranty of the utilities and streets.

k. After all public improvements have been completed and properly inspected as specified above, and an acceptable maintenance guarantee provided, the public improvements will be scheduled for acceptance by the City Council subject to the following:

1) The Project Engineer must submit written certification to the City Engineer stating that all public improvements have been completed in accordance with the approved plans and specifications.

2) The Project Engineer shall provide the city with a complete set of record plans as spelled out in the Record Plans Standards, as outlined in this manual.

l. Guarantee Period - If within the time prescribed by the development contract, any of the work is found to be unacceptable, the contractor shall correct it promptly. The city shall give prompt notice after discovery of any unacceptable condition to the engineering firm or the developer responsible for the project. Unless otherwise noted in the development contract, the following requirements shall apply:

1) The contractor shall guarantee all work relating to utilities and their appurtenances, material and equipment furnished by them for a period of 2 years from the date of City Council acceptance of the work or project.

2) Final wear course placement on either the public or private roads will be allowed in a new housing development only after one freeze – thaw cycle and after 75% of all units have been issued a “certification of occupancy” (C.O.). Placement of wear course on new streets on non-housing projects shall be after one freeze – thaw cycle. An inspection of the roadway will be performed by the City Engineer prior to wear course placement. From this inspection, any deficiencies or damage to the street, sidewalk and curb will be noted and will need to be corrected prior to the placement of the wear course. The developer, after the first freeze thaw cycle and upon approval of the City Engineer, may pave the final wear course prematurely provided the street line items in the developments’ Letter Of Credit remains at 80% of their original amount until they are accepted. The streets acceptance process will remain unchanged and begin once 75% of the development units have a C.O. An inspection of the roadways, sidewalks and trails will be performed at that time and any repairs found, be corrected. If more than 50% of the curb is replaced, per specification section 2404.15J, the developer will be required to mill off all the wear course, replace all the curb and gutter, and repave the wear course.

3) The contractor shall guarantee all work relating to street, sidewalk, and trail construction including concrete curb and gutter, materials and equipment furnished by him for a period of one (1) year from the date of City Council acceptance of the work or project.

4) The developer or the developer's contractor shall provide a letter of credit for the required one or two-year duration to the city prior to city acceptance of street or utilities portions of the project.

2. Private Improvements

If private drives or utilities are included in a development, the following procedures are required:

a. The design cross section of private drives shall be in accordance with the public street design requirements.

b. **Whenever practical, public sewer and water lines shall not be placed under private drives.** A minimum of 20-foot utility and drainage easement will be required for any public utilities that are not constructed within the public street right-of-way. Depending on utility depth, a wider easement will be required by the City Engineer when deemed necessary for utility replacement. A minimum of 1.5:1 trench slope will be used in determining easement width.

c. Private utility installation requires a sewer/water permit from the city and will be required to meet all applicable city standards as determined by the City Engineer and/or Building Official.

d. As set forth in the Private Drives section of the City Zoning Ordinance, the entrance to each private drive must include design features that clearly differentiate it from a public street such as concrete apron or different paving material.

e. Private small utilities shall be installed per standard details STRT-19 and STRT20 in the Standard Detail Specification for Street Construction. Junction boxes shall not be installed on property lines that have public utilities installed under them.

II. CITY STANDARD PLANS

For the city to have standardized construction and record plans, the guidelines listed below shall be followed. (ORD. 2010-02, 2/23/2010)

1. General Requirements - City Standard Plans

a. A sheet indicating the components of the entire project with corresponding sheet numbers on each separate sheet and index shall be incorporated into the set of plans.

b. A complete set of approved project construction plans shall be submitted to the city's engineering division in AutoCAD's DWG and Adobe's PDF format prior to the preconstruction meeting.

c. The Project Engineer shall provide the city with a complete set of record plans as spelled out in the Record Plans Standards, as outlined in this manual.

d. For new residential developments, create separate sheets covering at a minimum the construction of:

1) Sewer and water.
2) Storm sewer and streets.
3) Grading, drainage, and erosion control.
4) Signage and striping if required.

e. All sheets shall be 22 inches by 34 inches (Ansi D).

f. Horizontal Scale 1 inch = 50 feet
Vertical Scale 1 inch = 10 feet

g. All utilities shall be located at the following approximate locations:

1) Sanitary sewer - on centerline of street right of way.
2) Watermain - 10 feet south or west of centerline.
3) Storm sewer - 10 feet north or east of centerline.

When designing a roadway that is u-shaped, the utilities shall remain on the same side of the street as they started. Crossing over to the other side of the street with the utilities to meet the above requirements is not required.

h. All detail drawings shall be on a separate sheet and referenced to the proper sheet. Use unmodified city Standard Detail Plates.

i. The profile shall be directly below the plan with the stationing aligned as closely as practical. Stationing shall be shown on the plan view as well as the profile. Center line stationing at each intersection shall be noted in the profile and or plan view.

j. All parcels shall be properly labeled with lot and block numbers and plat name, or P.I.D. in unplatted areas. Developed parcels shall have their address shown on the plan.

k. All streets shall be clearly labeled.

l. All match line breaks shall be clean with reference points clearly marked. All plans, which are broken by a match line, shall be on the same or consecutive sheets.

m. Existing utilities shall be shown in both plan and profile, stationed and labeled as existing.

n. Locations of gas, electric, telephone and other utility lines shall be shown.

o. Right-of-way and pavement or curb and gutter alignment data shall be shown.

p. All plans shall have properly placed north arrows for each plan view on the sheet. North arrows shall be orientated either up or to the left.

q. All manholes shall be numbered in both plan and profile with numbering starting at the lowest elevation manhole.

2. Sanitary Sewer - City Standard Plans

a. Stationing of sanitary sewer wyes shall be indicated "S" in front of the stationing.

b. All sanitary sewer services shall be drawn on the plan to the proposed length and the length noted. Indicate if jacked.

c. If the sanitary sewer wye only is to be constructed, it shall be noted as "Wye Only" after stationing.

d. All sanitary sewer main shall be shown in the profile with the appropriate information such as size, material, grades, invert elevations, etc.

e. The size, type, and invert elevation of all sanitary sewer services shall be shown on the plans. If risers are installed, the height of each riser shall be indicated on the plans and also drawn on the profile.

f. On combination sewer and water projects, services may be placed in the same trench with sanitary sewer services three feet downstream from water services. Locations will be noted on the plans with an "S & W" in front of the stationing.

g. All water services shall be located with at least two ties, using the following priority:

1) The served structure with address noted.
2) Neighboring structures with address noted.
3) Fire hydrants.
4) Manholes, catch basins, if curb and gutter is in.
5) Other permanent structures (bridges, telephone boxes, electrical boxes, etc.).
6) Power poles, trees, other semi-permanent items.

h. See Standard Detail Plate DWG-3 for all required notes to be shown on all record plan sheets.

3. Watermain - City Standard Plans

a. All hydrants, gate valves and tees shall be stationed at the bottom of the profile.

b. All curb stop boxes shall be indicated by a "W" in front of its stationing.

c. All water services shall be drawn to the proposed length and the length noted if other than 10 feet beyond the property line. Indicate if service is jacked.

d. All watermain shall be shown in the profile with the appropriate information such as size, material, depth below proposed grade, etc.

e. The size and type of all water services shall be noted on the plans.

f. All main line gate valves and curb stops shall be located with at least two ties, using the following priority:

1) Fire hydrants.
2) Manholes.
3) Catch basins.
4) Buildings or other permanent structures.
5) Power poles, trees, other semi-permanent items.

g. See Standard Detail Plate DWG-3 for all required notes to be shown on all record plan sheets.

h. Hydrants shall not be installed on the same side of the street as the sidewalk or trail.

4. Storm Sewer - City Standard Plans

a. Record plans of all ponding areas are required. Plans shall indicate spot elevations at 1 per 100 sq. ft. from the bottom of the pond to a minimum of 2 feet above the high-water level. Overlay spot elevations of previously approved master grading plan. Normal water elevation, high water elevation, and the acre-feet of storage for each ponding area along with the storm sewer outlet, shall be shown on the plans. The required 10:1 bench shall be clearly identified on the record plan.

b. All storm sewer shall be shown in the profile with the appropriate information such as size, material, grades, invert elevations, etc.

c. See Standard Detail Plate DWG-2 for all required notes to be shown on all record plan sheets.

5. Streets - City Standard Plans

a. Show where geotextile fabric has been placed and subgrade corrections made on the plan portion of the record plans. Also indicate if any surcharging has been used.

b. Show a typical street section and contractor's name on all sheets of the record plans.

c. See Standard Detail Plate DWG-2 for all required notes to be shown on all record plan sheets.

d. Show that all pedestrian ramps are in compliance with current ADA guidelines.

e. Stationing of the centerline at the beginning and ending of the project, as well as all intersections shall be placed in the drawing's profile. Stationing at the beginning of all streets shall start with 0+00.

III. DESIGN STANDARDS

The Project Engineer is solely responsible for providing a quality design that meets all applicable laws and design standards. The city has adopted the following design standards for public facilities within Plymouth. These standards are meant to enhance not replace sound engineering judgment and industry standards.

1. Sanitary Sewer - Design Standards

a. The following wastewater flows shall be used:

WASTEWATER UNIT FLOW RATES					
Land Use Type	Persons/ Unit	Gal/Cap/ Day (GCD)	Gal/Unit/ Day (GUD)	Units/ Acre	Gal/Acre/ Day (GAD)
LA - 1	3.0	90	270	3	810
LA - 2	2.5	85	213	6	1,275
LA - 3	2.2	80	176	9	1,584
LA - 4	2.0	75	150	12	1,800
Commercial/Industrial					1,000
Public Use					1,000
Parks and Open Space					250

b. Maximum spacing between manholes shall be 400 feet.

c. Minimum main line pipe grade for 8-inch diameter pipe shall be 0.40%.

d. All off road sanitary sewer manholes must be accessible to the city's maintenance vehicles. See Standard Specifications for Sanitary Sewer Detail SS-9. Alternate road materials may be proposed for consideration during plan review.

e. See the Standard Detail Specifications for Sanitary Sewer Construction for Standard Detail Plates.

2. Watermain - Design Standards

a. Watermain and water services shall be placed with minimum 7.5 feet of ground cover from the top of pipe to finished grade. A minimum vertical separation of 18 inches must be provided between the outer surfaces of the pipes, with preference that the watermain cross above the sewer, wherever possible. One full length of water pipe shall be located so both joints will be as far from the sewer as possible.

b. Watermain that is installed on a vertical slope with a 10% grade or stepper shall have all the joints along that slope tied.

c. Individual water services shall be a minimum of 1-inch outside diameter pipe or larger as determined by system design results when fire sprinklers are required. A minimum of 1.5-inches outside diameter pipe is required when fire sprinklers are needed.

d. Gate valves shall be required for all hydrants. (See Watermain Standard Detail W-2).

e. Hydrants shall be placed on the opposite side of a roadway from any sidewalk or trail that will be installed.

f. In high-pressure areas, (below elevation 945) the city will require pressure reducing valves within the structure at the service entrance.

g. In low-pressure areas, (above elevation 1015) the city will require pressure booster pumps.

h. See the Standard Detail Specifications for Watermain Construction for Standard Detail Plates.

3. Storm Sewer - Design Standards

a. The following values shall be used for hydraulic and hydrologic design unless variation is clearly supported by engineering data.

1) Rational Formula "C" coefficient
   a) Parks and Public 0.2
   b) LA1, LA2 0.4
   c) LA3, LA4 0.5 – 0.8
   d) Commercial/Industrial 0.6 – 0.9

2) Manning's "n" coefficient
   a) PVC 0.011
   b) HDPE 0.011
   c) RCP 0.013
   d) Grass Channel 0.030 – 0.040

3) Time of Concentration "Tc"
   a) Trunk Main 20 min.
   b) Laterals 10 – 20 min. (15 min. typical)
   c) Parking Lot 5 – 10 min.

4) Minimum velocity of 3 feet per second

b. Design of the storm drainage system shall be based on a 10-year frequency storm for local storm sewer, 10-year frequency storm for trunk storm sewer, and a 100-year frequency storm for ponds and open channels. The design storms shall be as defined in NOAA's Atlas 14, volume 8. Common values for 10-year frequency storms events are:

"Tc"	Intensity 10yr
10 min.	5.5 in. / hr
15 min.	4.5 in. / hr
20 min.	3.9 in. / hr

c. Emergency overflow (EOF) drainage routes shall be provided at all locations at least 1.5 feet below the lowest building opening. An overflow drainage route shall be constructed in a manner that will accommodate a 100-year storm. Pipe EOF's shall not be allowed unless approved by City Engineer

d. Any swale flatter than 2.0% must have drain tile installed to ensure adequate drainage. Any backyard swale longer than 400 feet or four residential lots will be required to have a storm sewer inlet. Other swales may require drain tile if determined by the City Engineer.

e. Storm sewer catch basins, catch basin manholes and manholes shall be designed with a minimum 4-foot build from the lowest invert to the top of casting or flow line of a catch basin grate.

f. Storm sewer shall be designed using minimum of 15 inches inner diameter, with the exception of draintile.

g. Approved surface water treatment options include NURP ponds, iron enhanced sand filter/trench/bench, green roofs, porous pavements, or approved equal. Native plantings are not approved treatment options. Refer to the Minnesota Storm water manual for design considerations.

h. Pond Design Parameters

1) Ponds intended to provide water quality shall be designed to NURP standards.

2) To promote settling and provide space for sediment accumulation, the average depth of the permanent pool shall be at least 4 feet with a maximum depth of 10 feet.

3) Basin side slopes shall be a maximum of 3:1 above and below the normal water level. A 10-foot-wide bench with a maximum slope of 10:1 shall be constructed extending into the pond from the normal water level. A minimum 5-foot-wide pond berm shall be constructed.

4) The pond should be wedge shaped with the inlet at the narrowest end and the outlet at the widest end. A length to width ratio of 3:1 or greater shall be used whenever possible. Distance between storm sewer outfalls and the pond outlet should be maximized. (See Standard Storm Sewer Plate ST-12).

5) An emergency overflow structure and stabilized (riprap or cable concrete) spillway shall be provided to accommodate discharges from storms greater than the design storm.

6) The high-water levels of the storm water ponding areas shall be based on a 100-year storm. The minimum freeboard above the established high-water levels for the lowest floor shall be 2 feet or as approved by City Engineer.

7) Adequate access for future maintenance including easements, grading and elimination of obstructions shall be provided. This may require the construction of access roads for heavy construction equipment. Access roads shall be constructed with an unobstructed 15-foot-wide minimum access including a 12-foot-wide driving surface with a maximum 7 % vertical grade and 3 % horizontal grade.

8) Sub-surface storm water features utilize the same design parameters, as applicable to their products.

i. Wetland Design Parameters

1) Designed outlet and emergency spillway are required.

2) Follow the Board of Soil and Water Resources (BWSR) recommended wetland management standards and hydrologic guidelines for bounce, inundation, and runout control.

3) All existing wetland sediment will be completely removed from the wetland buffer and mitigated area. No wetland sediment/soil shall be used as backfill in the wetland mitigation areas.

4) Prior to planting and seeding all newly constructed wetland and buffer areas shall be treated to control weed growth with herbicide that breaks down sufficiently within 14 days to allow planting.

5) For new wetland buffer areas adjacent to existing wetlands, two rows of perimeter control shall be installed along the edge of the wetland prior to any grading. After the buffer area has been graded, prepared, seeded, planted, and buffer monuments installed, a line of perimeter control shall be installed along the edge of the buffer area. All perimeter control shall be maintained in accordance with the city Erosion Control Ordinance.

6) Lowest floor elevation shall be 2 feet above the 100yr flood elevation, or 3 feet above the Ordinary High Water (OHW) of the public waters.

j. Water Quality Design Standards

1) Surface water runoff rate and volumes from proposed conditions shall be equal or less than existing conditions, for the 2, 10, and 100-year storm events.

2) All projects that create one or more acres of new or fully reconstructed impervious surface must design a stormwater management system that meets the Minnesota Pollution Control Agency's Minimal Impact Design Standards (MIDS). If the project uses a flexible treatment option, provide a description of how the project qualifies and is meeting the flexible treatment option.

k. See the Standard Detail Specifications for Storm Sewer Construction for Standard Detail Plates.

l. Drainage calculations shall be submitted using HydroCAD and MIDS calculator or approved equal.

4. Streets - Design Standards

a. Refer to the current version of the Road Design Manual Uniform Design Guide for MNDOT projects, and American Association of State Highway and Transportation Officials (AASHTO) current version of "A Policy on Geometric Design of Highways and Streets" (Green Book) for roadway design.

b. Soil testing is required to provide for a 20-year pavement design section. The Project Engineer shall provide recommendations for pavement design sections based on the existing subgrade soils. The design criteria, as outlined on the city's Standard Street Plate STRT-14 shall be used. Where soil tests indicate unsuitable soils, frost susceptible soils, or presence of excessive ground moisture, a recommendation by the Soils Engineer for corrective work is required.

c. The city minimum residential street width is 28 feet from back of curb to back of curb. Narrower streets may be allowed pursuant to the Subdivision Regulations in Chapter 5 of the City Code. Streets narrower than 28 feet back of curb to back of curb shall have parking restricted to one side. Private

drives shall have No Parking Fire Lane signs installed on both sides of the drive per street detail plate STRT-27. Additional parking restrictions may be required on a case-by-case basis.

d. The minimum grade for all new streets shall be three quarters of one percent (0.75%). The minimum grade for reconstructed streets shall be one half of one percent (0.50%). Grades within thirty (30) feet of intersections and grades for the turnaround portion of a cul-de-sac street shall not exceed three percent (3%). Otherwise, the maximum allowable grades on city streets and driveways shall be as follows:

1) Minor arterial – 5% maximum grade.
2) Collector – 6% maximum grade.
3) Local/residential – 7% maximum grade.

e. Driveways shall be designed with a 2% minimum grade and 10% maximum grade. They also may not be placed within 5 feet of a sewer or water service unless approved by the City Engineer.

f. A cul-de-sac must be provided for any dead-end street 150 feet or longer. If there will be driveway access for any street that is dead-ended for future expansion, a temporary turn-a-round must be provided. See Standard Street Detail Plate STRT-16.

g. The minimum diameter for a residential cul-de-sac is 90 feet from back of curb to back of curb. A commercial cul-de-sac shall have a minimum pavement diameter of 102 feet from back of curb to back of curb.

h. Ridged 6-inch PVC drain tile is required at all low point catch basins and on the uphill side of all in grade catch basins. See Standard Storm Sewer Detail Plate ST-9.

i. B6-18 concrete curb shall be installed along minor and major road arteries, outlots, parks, play lots, around radiuses, street reconstructs, development entrances or any sustained stretches with no driveways. Surmountable concrete curb shall generally be installed in all other areas where driveways are needed.

j. Retaining walls:

1) All walls over four feet in height shall be designed by a qualified Professional Engineer registered in the State of Minnesota.

2) A permit issued by the city's building division is required to construct all walls.

3) Retaining walls shall not be built within the street right-of-way or easements. All retaining walls, associated fences and landscaping will be considered private and shall be maintained by the property owners. If there is a storm sewer pipe penetration through the wall, then a steel casing for the storm sewer pipe shall be installed per detail ST-14. All efforts should be made to avoid installing utilities under or through a retaining wall.

4) All materials (including sealing) shall be in accordance with MnDOT specifications. Acceptable materials for wall construction are concrete big block, modular block or boulders. No timber, limestone or sandstone maybe used for wall construction.

All retaining walls which are determined by the City Engineer to support city infrastructure shall be of materials and constructed per Standard Detail Plate STRT-26. A minimum of 1.5:1 trench slope will be used in determining if a wall supports city infrastructure.

5) A fence shall be installed along the top of all walls 4 feet or taller.

k. See the Standard Detail Specifications for Street Construction for Standard Detail Plates.

5. Drawings - Design Standards

a. The following Standard Plates shall be used in the preparation of plans and specifications:

1) Project sign (city) Standard Detail Plate DWG-1.
2) Required notes on Street and Storm Sewer Record Plans Standard Detail Plate DWG-2.
3) Required notes on Watermain and Sanitary Sewer Record Plans Standard Detail DWG-3.

6. Trails and Parks - Design Standards

a. Pursuant to the Subdivision Regulations of the City Code, a sidewalk or trail is required along arterial and collector roadways consistent with the Comprehensive Plan. A sidewalk is required along one side of all local streets. And shall be installed along with the street construction.

b. Install culverts as necessary to accommodate cross drainage. Shallow culverts shall use sand bedding pursuant to Storm Sewer Standard Detail Plate ST-8.

c. Use 20-foot radius at all trail intersections.

d. The following Standard Detail Plates shall be used in the preparation of plans and specifications.

1) Typical trail cross-sections, Standard Detail Plate STRT-15.
2) MNDOT Pedestrian Curb Ramp 01, Standard Detail Plate STRT-3.
3) MNDOT Pedestrian Curb Ramp 02, Standard Detail Plate STRT-4.
4) MNDOT Pedestrian Curb Ramp 03, Standard Detail Plate STRT-5.
5) MNDOT Pedestrian Curb Ramp 04, Standard Detail Plate STRT-6.
6) MNDOT Pedestrian Curb Ramp 05, Standard Detail Plate STRT-7.
7) MNDOT Pedestrian Curb Ramp 06, Standard Detail Plate STRT-8.
8) Park Signs, Standard Detail Plate STRT-26.
9) Seeding and over-seeding rates, Standard Detail Plate SPP-1.
10) Root Correction - Balled and Burlapped, Standard Detail Plate TREE-1.
11) Root Correction - Container, Standard Detail Plate TREE-2.
12) Tree Planting- Balled and Burlapped, Standard Detail Plate TREE-3.
13) Shrub Planting, Standard Detail Plate TREE-4.
14) Planting on Slope, Standard Detail Plate TREE-5.
15) Crown Correction, Standard Detail Plate TREE-6.
16) Tree Staking - Single, Standard Detail Plate TREE-7.
17) Tree Staking - Multiple, Standard Detail Plate TREE-8.
18) Tree Protection, Standard Detail Plate TREE-9.

19) Tree Protection -Boring Under Crown, Standard Detail Plate TREE-10.
20) Tree Protection – Maintenance Road, Standard Detail Plate TREE-11.

IV. MISCELLANEOUS

a. It is the developer's responsibility to arrange for receiving water from public or private sources, secure necessary permits and pay regular charges. City water may be purchased at the Public Works facility, 14900 23rd Ave N or at the Zachary Lane Treatment Plant, 4295 Zachary Lane N. Under no circumstances shall hydrants be used to supply water.

b. Contractors shall not operate existing gate valves or hydrants.

c. Disposal of any wastewater or any test water into the city sanitary sewer system is not permitted.

d. A plan for the routing of construction traffic shall be submitted to the City Engineer for approval. If alternative major streets are available, the use of local city streets is prohibited. City streets that are utilized for access or egress to the construction site shall be kept free of dirt and other debris resulting from said construction. The developer shall maintain adequate control of dust.

e. All site grading must be completed, certified by the Project Engineer and all off-road grading equipment removed from the site before starting any public utility work.

f. It is the responsibility of the developer to protect and leave undisturbed those markers or monuments set for the subdivision of land.

g. Any material or labor supplied by the contractor or developer that is rejected by the City Engineer as defective or unsuitable shall be promptly removed, disposed of off the job site, and replaced with approved material. The rejected work shall be done anew to the specifications and approval of the city.

h. The developer and/or his contractor shall immediately repair or replace at his own expense any defective workmanship or material of which he is notified during the construction period, or within the one-or-two-year maintenance period after the date of final acceptance of the work, regardless of the approval and acceptance of the work.

i. The standard 10-foot drainage and utility easement adjacent to the street right-of-way shall be cleared, grubbed and graded for the placement of utilities. The only exception will be any hardwood trees or others that the City Forester authorizes to remain standing. See Standard Street Construction Detail STRT-30.

j. Pursuant to the Right-of-Way Ordinance (City Code Section 800 Subd. 5. A.), a permit is required to work in the public right-of-way. Contact the city's engineering division to apply for the permit or for any questions at (763) 509-5500. New construction for sewer, water, storm sewer and street work would be exempt in most situations. Small utilities installation, irrigation installation, landscaping, etc. are required to obtain a permit.

k. The City Engineer shall be notified at least 48 hours prior to commencing any work by calling (763) 509-5500. Contractors are subject to being shut down and or having work rejected if proper notification is not given to the city.

Work shall not commence before 7 a.m. nor extend beyond sunset Monday through Friday. On Saturdays, work hours are from 8 a.m. to 6 p.m. No work is permitted on Sundays or holidays unless authorized by the city. Existing roadways shall not be restricted between 7 a.m. to 9 a.m., and 3 p.m. to 6 p.m. unless approved by the City Engineer.

The definition of "work" includes the starting of equipment and delivery of materials to the job site.

l. Pursuant to the Subdivision Regulations of the City Code, streetlights shall be installed at all intersections and at other locations, as required by the City Engineer. Streetlights shall be installed by Xcel Energy or Wright–Hennepin Electric and shall include maintenance of the streetlights.

V. - STANDARD PLATES

CITY OF PLYMOUTH [6"]

(PROJECT NAME) [3"]
(PROJECT NO.) [2–1/2"]

PROCEED WITH CAUTION [6"]

FOR INFORMATION: [2–1/2"]
(PROJECT WEBPAGE)
(763) 509–5500

(CONTRACTOR'S NAME) [2–1/2"]
(ADDRESS)
(LOCAL PHONE NO.)

SCHEDULED COMPLETION DATE: [2–1/2"]
(DATE)

NOTE:
Sign shall be 4' x 6' with a white background with black letters, (no hand lettering) and of proper height to be readily visible from an automobile, and located as directed by engineer. Sign shall be mounted on 4"x 4" posts

( ) Project Specific Information

	STANDARD DETAILS STANDARD CITY PROJECT SIGN CITY OF PLYMOUTH	PUBLISHED 3–25 CITY PL. NO. DWG–1 REVISED 1–22

THE CITY OF PLYMOUTH REQUIRES THAT THE CONTRACTOR'S NAME, TYPICAL STREET CROSS SECTION AND THE FOLLOWING NOTES AND STATEMENTS BE PLACED ON EACH STREET OR STORM SEWER RECORD PLAN SHEET.

RECORD PLAN NOTES:

1. ALL HYDRANT BENCHMARKS ARE TOP NUT OF HYDRANT.
2. DISTANCES, ELEVATIONS AND TIES ARE BASED ON FIELD MEASUREMENTS TAKEN AFTER CONSTRUCTION.

RECORD PLAN COMPLETED BY: _____

DATE: _____

	STANDARD DETAILS REQUIRED NOTES ON STREET AND STORM SEWER RECORD PLAN CITY OF PLYMOUTH	PUBLISHED 3–25 CITY PL. NO. DWG–2 REVISED 3–11

THE CITY OF PLYMOUTH REQUIRES THAT THE CONTRACTOR'S NAME AND THE FOLLOWING NOTES AND STATEMENTS BE PLACED ON EACH WATERMAIN OR SANITARY SEWER RECORD PLAN SHEET.

RECORD PLAN NOTES:

1. ALL HYDRANT BENCHMARKS ARE TOP NUT OF HYDRANT.
2. DISTANCES, ELEVATIONS AND TIES ARE BASED ON FIELD MEASUREMENTS TAKEN AFTER CONSTRUCTION. WYE LOCATIONS SUPPLIED BY CONTRACTORS.
3. ALL TIES AND DISTANCES ARE TO THE CENTER OF SURFACE STRUCTURES.
4. ALL HYDRANTS AND HYDRANT GATE VALVES ARE RETAINED AND TIED BACK TO THE WATERMAIN TEE BY MEANS OF APPROVED MEGALUGS UNLESS OTHERWISE NOTED.
5. ALL SEWER SERVICES ARE LOCATED 3 FEET DOWNSTREAM OF WATER SERVICES IF SEWER AND WATER ARE IN THE SAME TRENCH.
6. ALL WATER SERVICES ARE 1 INCH H.D.P.E. AND ALL SEWER SERVICES ARE 4 INCH P.V.C. UNLESS OTHERWISE SPECIFIED.
7. ALL SEWER AND WATER SERVICES ARE EXTENDED 10 FEET BEYOND THE PROPERTY LINE UNLESS OTHERWISE NOTED.

RECORD PLAN COMPLETED BY: _____

DATE: _____

	STANDARD DETAILS REQUIRED NOTES ON WATERMAIN AND SANITARY SEWER RECORD PLAN CITY OF PLYMOUTH	PUBLISHED 3–25 CITY PL. NO. DWG–3 REVISED 3–11

SEED RATES, TIMES AND SUGGESTIONS

BEST TIME TO SEED OR OVERSEED LISTED IN ORDER OF HIGHEST GERMINATION RATES:

1. AUGUST 15 TO SEPTEMBER 15
2. NOVEMBER 15 TO DECEMBER 15 (DORMANT SEEDING)
3. APRIL 15 TO MAY 15

NEW SEEDING AND OVER SEEDING RATES: 6 LB. PER 1000 SQ. FT. (261 LBS. PER ACRE)

30%	PARADE KENTUCKY BLUE
20%	AQUILA KENTUCKY BLUE
20%	PARK KENTUCKY BLUE
30%	PERENNIAL RYE–DELRAY

DIVIDE SEED IN HALF AND SOW IN TWO DIFFERENT DIRECTIONS.

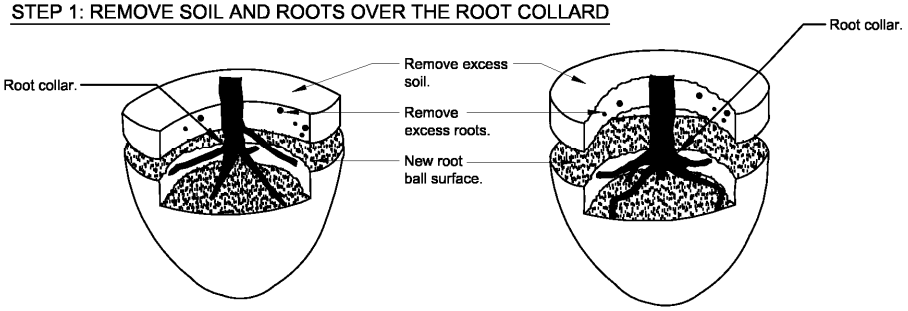
OVERSEEDING SUGGESTIONS:

1. CLIP GRASS TO 1" HEIGHT OR LESS.
2. AERATE AREA WITH DRAG MAT TO BREAK UP PLUGS.
3. REMOVE DEBRIS
4. FERTILIZE WITH PHOSPHOROUS FREE STARTER FERTILIZER AT RECOMMENDED RATE.
5. TOP DRESS AREA IF NECESSARY.
6. SEED AT SUGGESTED RATE WITH SEEDER THATCHER MACHINE PULLING DRAG MAT.
7. WATER

	STANDARD DETAILS SEEDING AND OVERSEEDING RATES CITY OF PLYMOUTH	PUBLISHED 3–25 CITY PL. NO. SPP–1 REVISED 3–11

Notes:
1- All trees shown are rejectable unless they undergo recommended correction.
2- First step 1, then step 2. Adjust hole depth to allow for the removal of excess soil and roots over the root collar.
3- Roots and soil may be removed during the correction process; substrate/soil shall be replaced after the correction has been completed.
4- Trees shall pass root observations detail following correction.

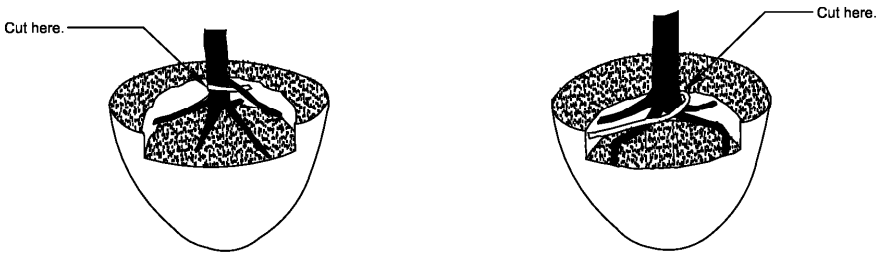
STEP 1: REMOVE SOIL AND ROOTS OVER THE ROOT COLLARD



Tree planted too deeply in root ball. Remove excess soil and roots to meet root inspection detail.

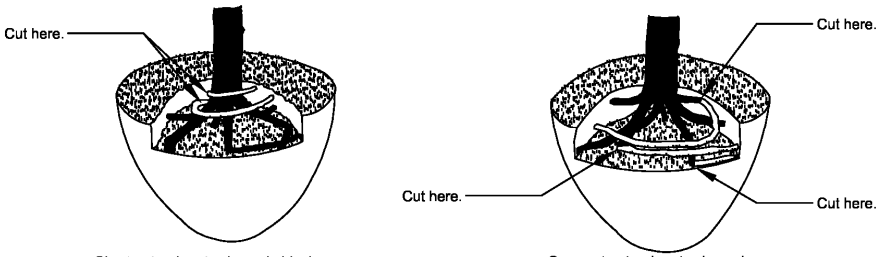
Tree planted too deeply in root ball. Remove excess soil and roots to meet root inspection detail.

STEP 2: REMOVE DEFECTS



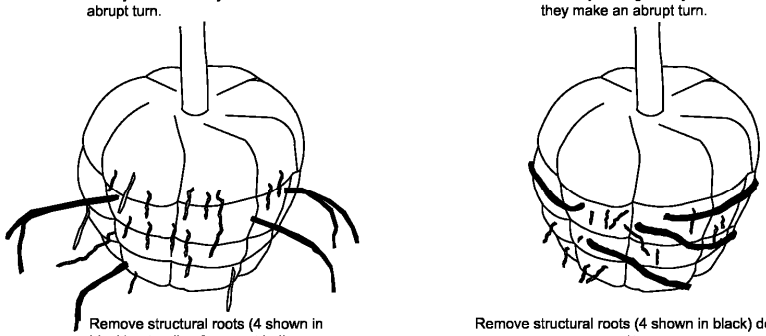
Five structural (large) roots shown in black. Remove structural (white) root wrapping root collar.

Four structural roots shown in black. Remove root (white) growing over structural roots.



Six structural roots shown in black. Remove structural roots (white) growing over root collar by cutting them just before they make an abrupt turn.

Seven structural roots shown in black. Remove structural roots (white) growing around or over root collar by cutting them just before they make an abrupt turn.



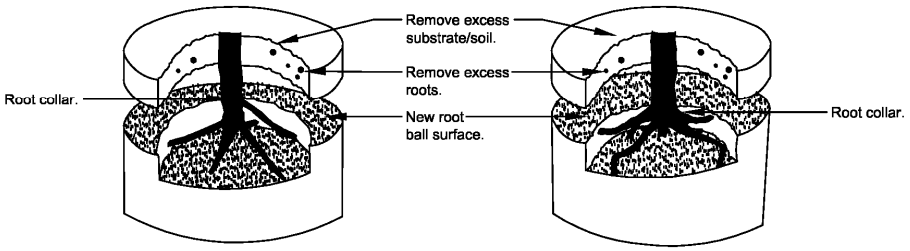
Remove structural roots (4 shown in black) extending from root ball.

Remove structural roots (4 shown in black) deflected on root ball periphery. Small roots (¼" or less) at the periphery of the root ball are not defined as defects and do not need to be removed.

	STANDARD DETAILS ROOT CORRECTION - BALLED & BURLAPPED CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-1

Notes:
1- All trees shown are rejectable unless they undergo recommended correction.
2- First Step 1, then Step 2. Roots and soil may be removed during the correction process; substrate/soil shall be replaced after correction has been completed.
3- Trees shall meet root observations detail following correction.
4- Small roots (1/4" or less) on the periphery of the root ball are common with container plant production. These small roots are not defined as "defects" and can be addressed at the time of installation (See root ball shaving container detail).

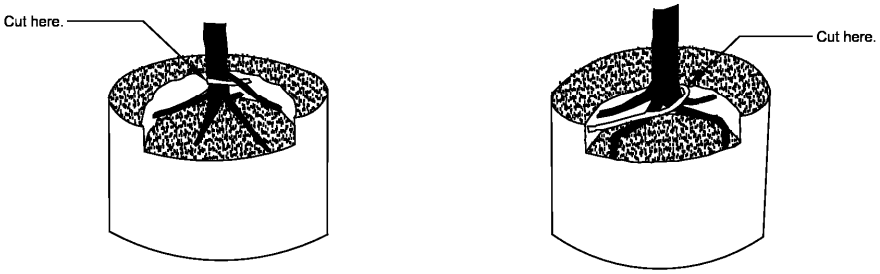
STEP 1: REMOVE SUBSTRATE OVER ROOT COLLAR



Tree planted too deeply in root ball. Remove excess substrate and roots to meet root inspection detail.

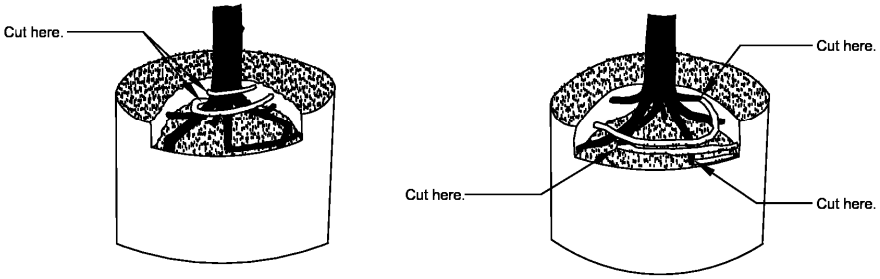
Tree planted too deeply in root ball. Remove excess substrate and roots to meet root inspection detail.

STEP 2: REMOVE DEFECTS



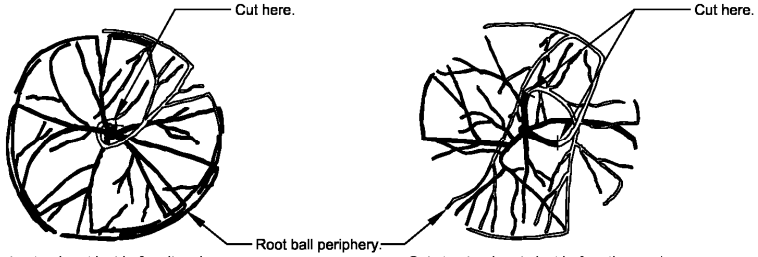
Five structural (large) roots shown in black. Remove structural root (white) wrapping root collar.

Four structural roots shown in black. Remove root (white) growing over structural roots.



Six structural roots shown in black. Remove roots (white) growing over root collar by cutting them just before they make an abrupt turn.

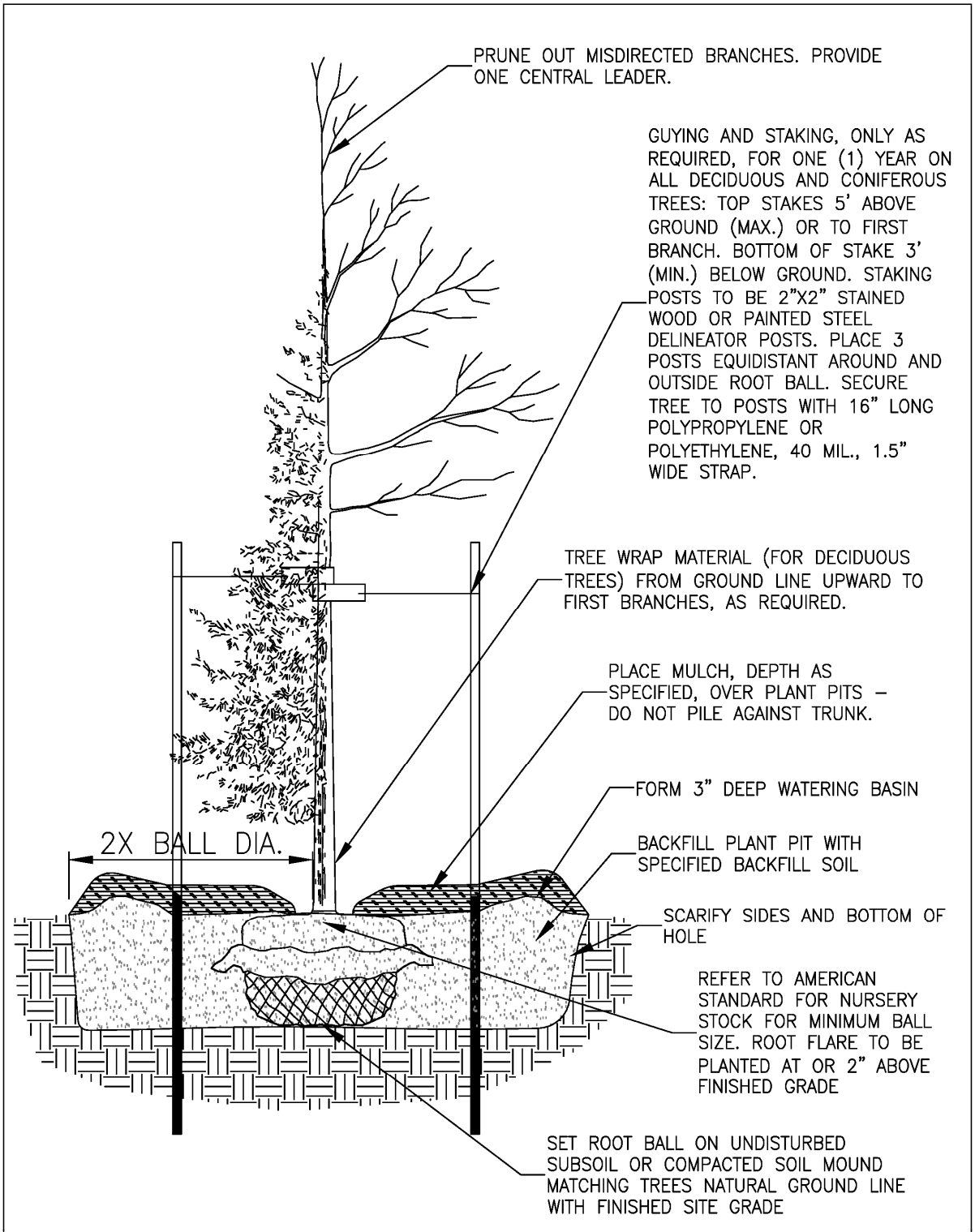
Seven structural roots shown in black. Remove structural roots (white) growing around or over root collar by cutting them just before they make an abrupt turn.



Cut structural root just before it makes abrupt turn. Pruning cut should be made tangent (parallel) to the trunk.

Cut structural roots just before they make abrupt turn by cutting tangent (parallel) to the trunk (two cuts shown).

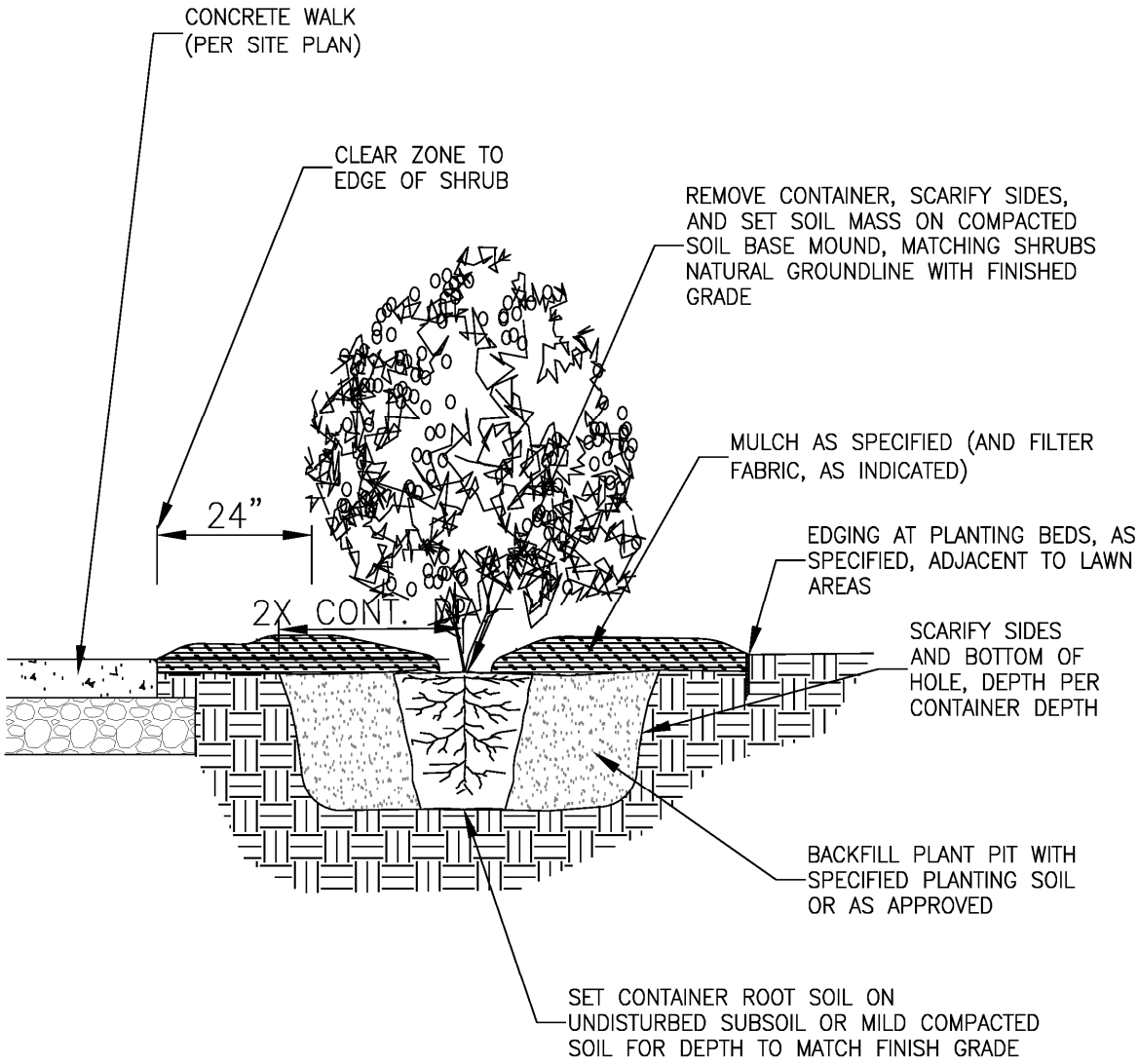
	STANDARD DETAILS ROOT CORRECTION - CONTAINER CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-2



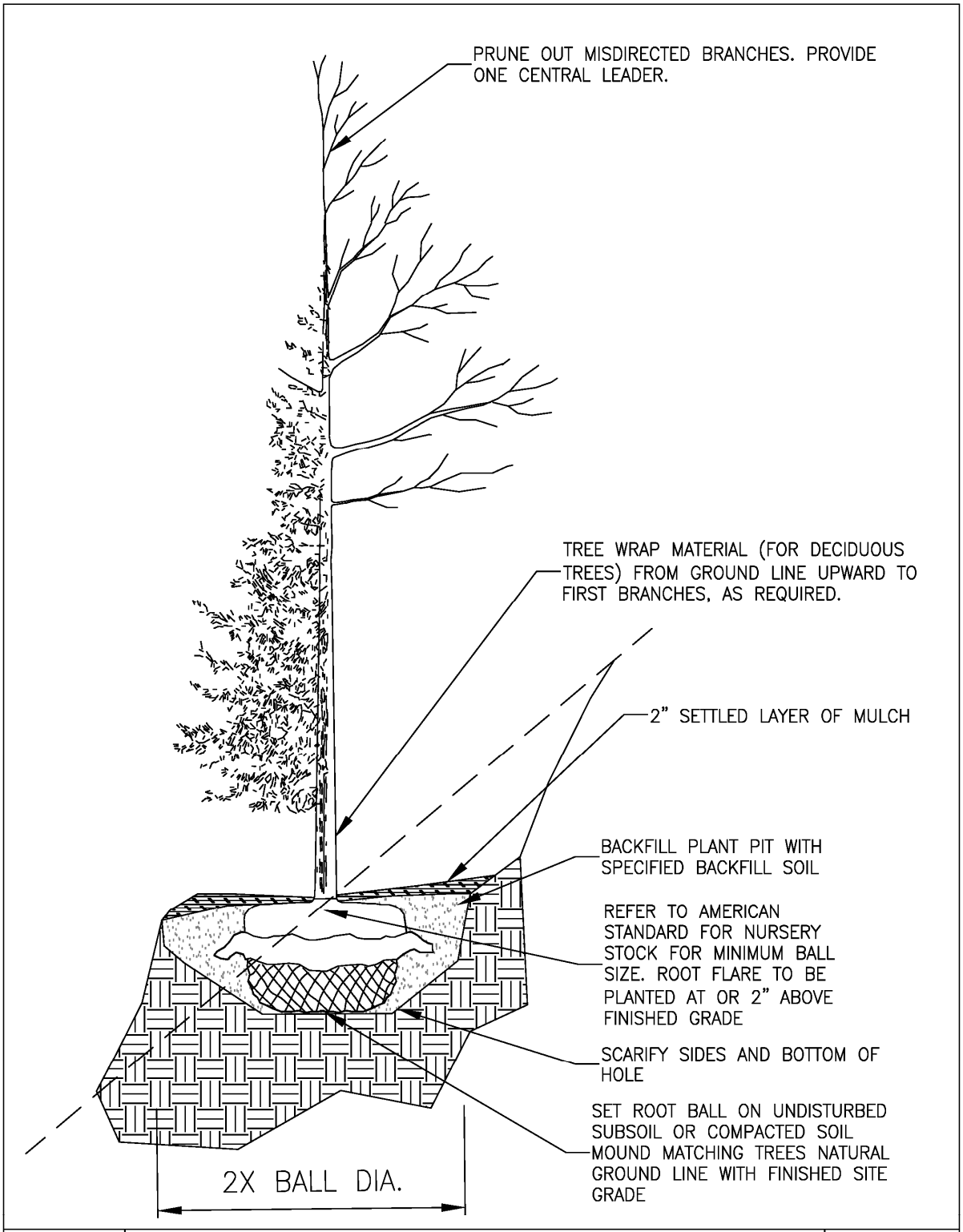
STANDARD DETAILS
TREE PLANTING BALLED AND BURLAPPED
CITY OF PLYMOUTH PARKS

PUBLISHED 11-25-24

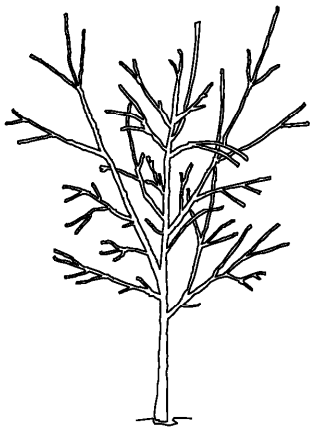
CITY PL. NO. TREE-3



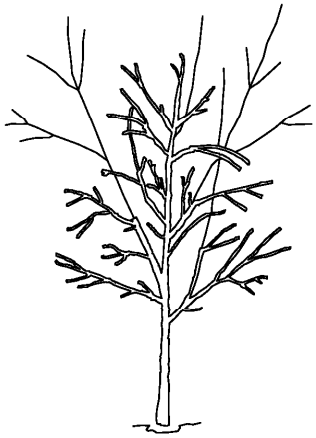
	STANDARD DETAILS SHRUB PLANTING CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-4



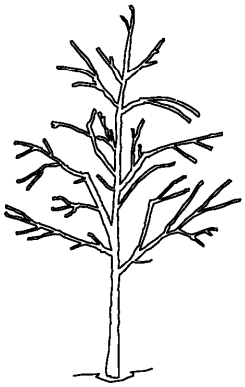
	STANDARD DETAILS PLANTING ON SLOPE CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-5



Before planting, tree has three codominant stems. The two that compete with the one in the center should be pruned to supress their growth.



Two competing stems were reduced substantially, in this case remvoing about 70% of their foilage using reduction cuts.



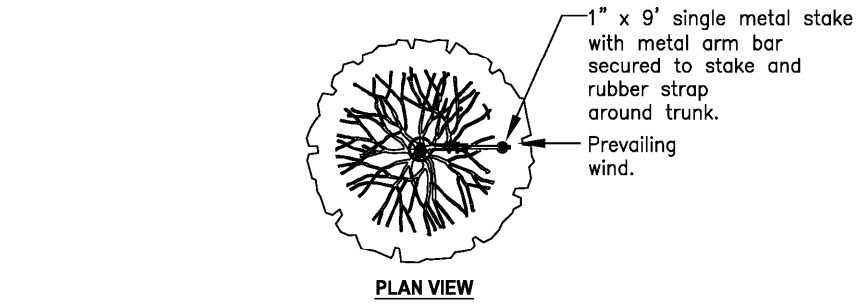
After pruning, tree has only one dominant stem.

Notes:
1- All trees shown are rejectable unless they undergo recommended treatment.
2- Tree shall meet crown observation detail following correction.

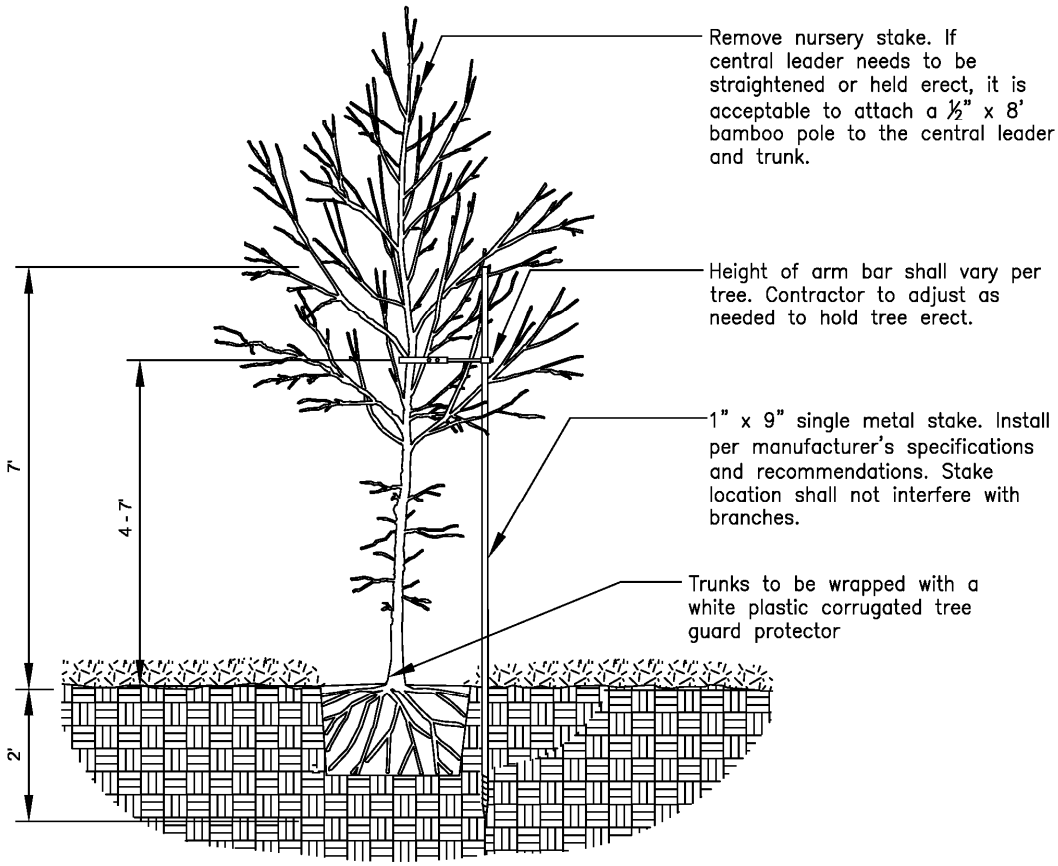
STANDARD DETAILS
CROWN CORRECTION
CITY OF PLYMOUTH PARKS

PUBLISHED
11-25-24

CITY PL. NO.
TREE-6

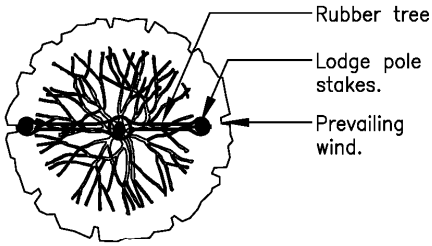


PLAN VIEW

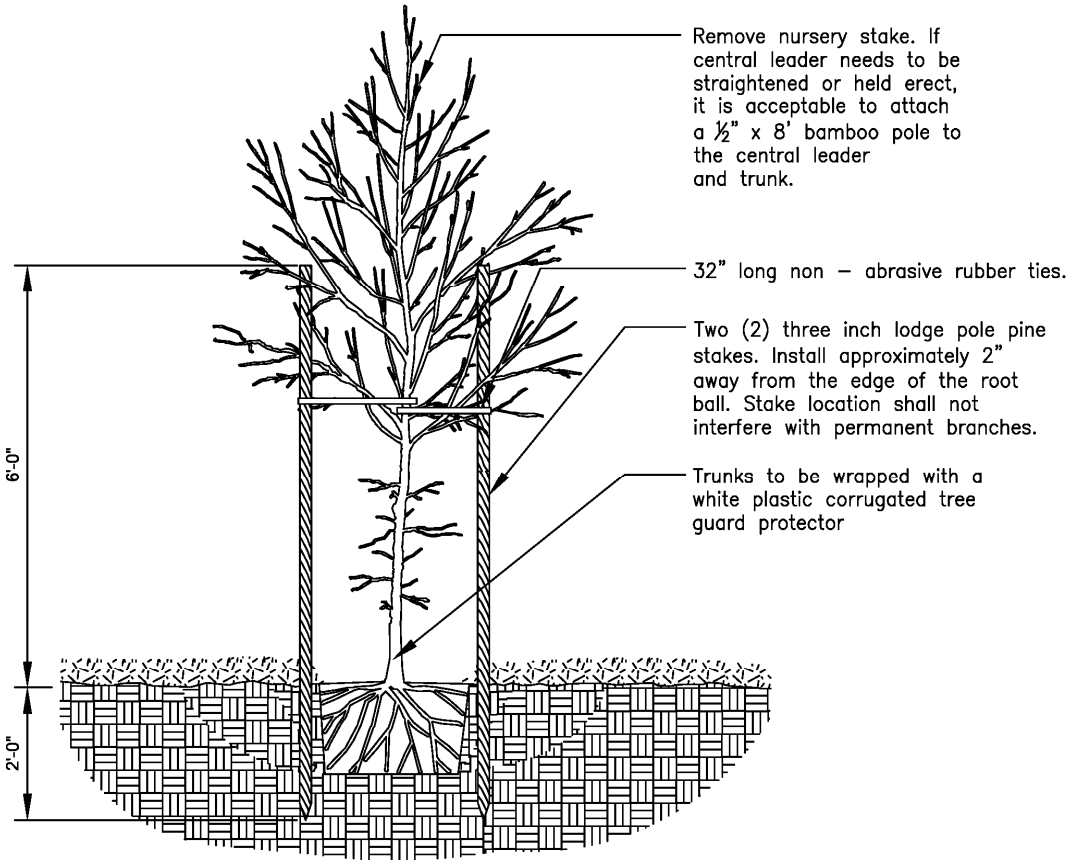


SECTION VIEW

	STANDARD DETAILS TREE STAKING - SINGLE CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-7

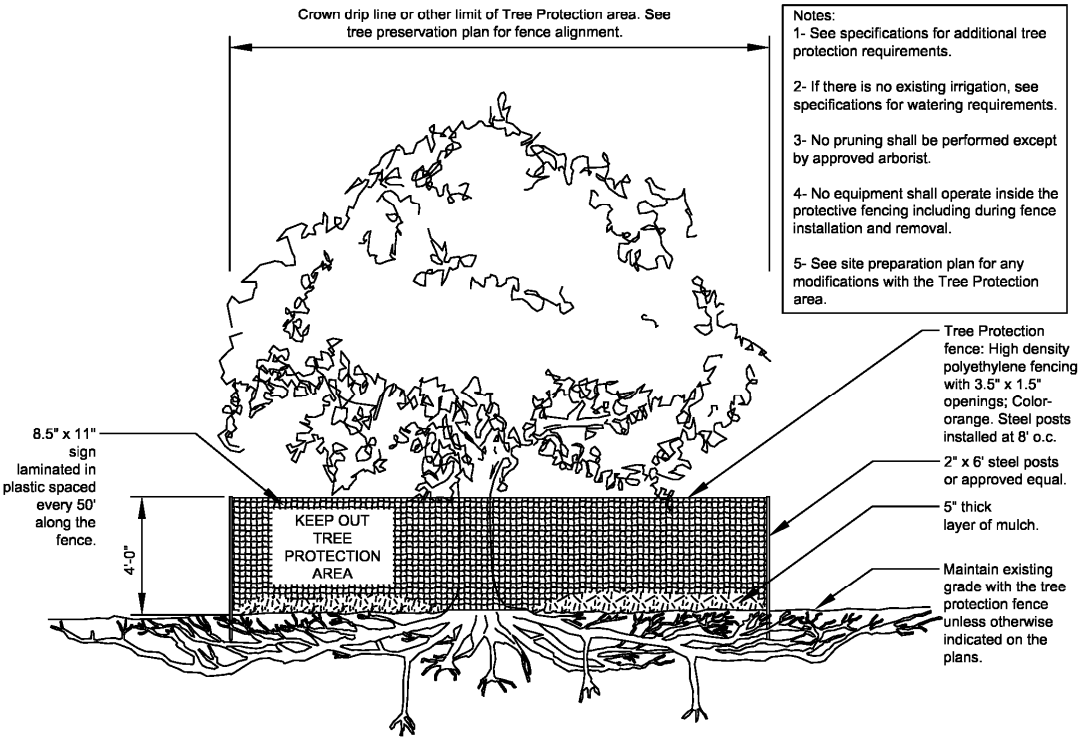


PLAN VIEW



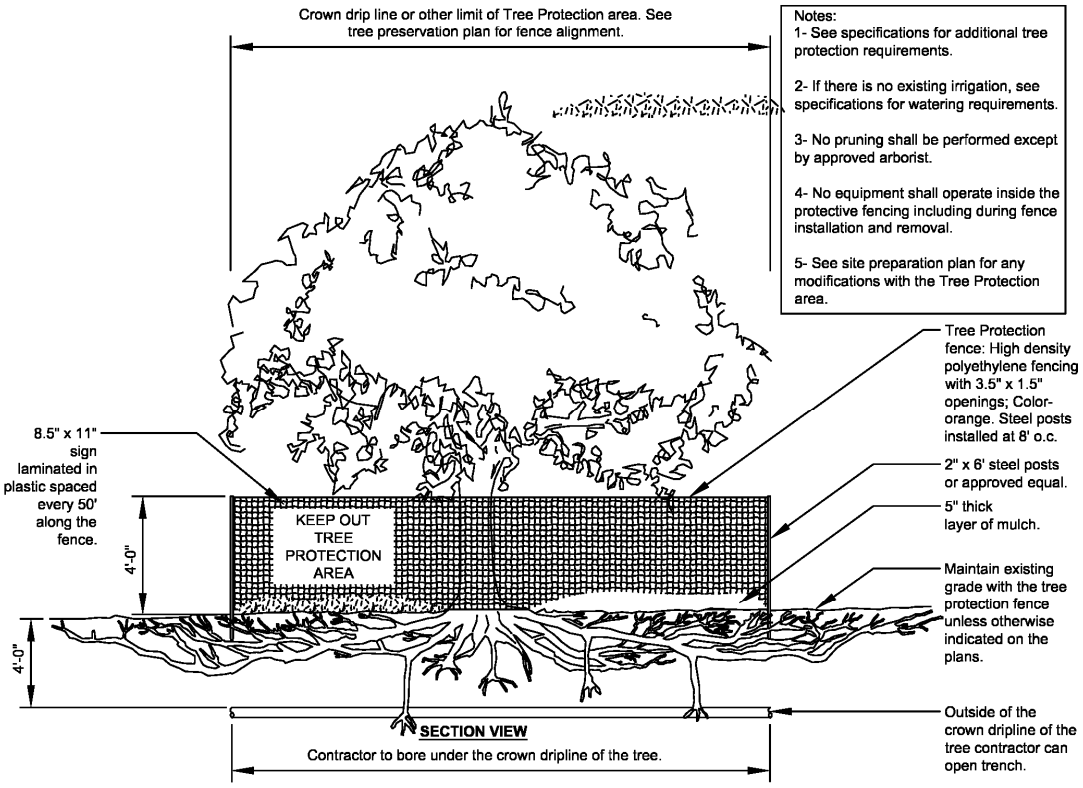
SECTION VIEW

	STANDARD DETAILS TREE STAKING – MULTIPLE CITY OF PLYMOUTH PARKS	PUBLISHED 11–25–24 CITY PL. NO. TREE–8

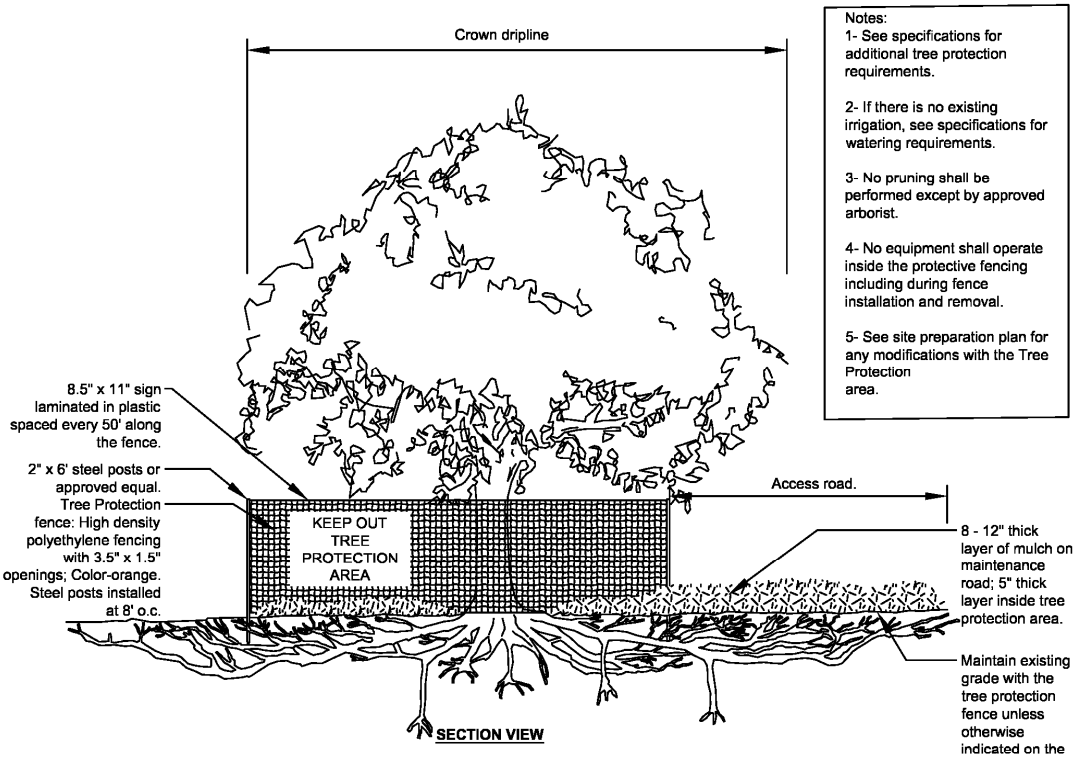


SECTION VIEW

	STANDARD DETAILS TREE PROTECTION CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-9



	STANDARD DETAILS TREE PROTECTION - BORING UNDER CROWN CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-10



	STANDARD DETAILS TREE PROTECTION - MAINTENANCE ROAD CITY OF PLYMOUTH PARKS	PUBLISHED 11-25-24 CITY PL. NO. TREE-11

APPENDIX A – EROSION CONTROL ORDINANCE

Section 425 - Grading and Erosion Control Plan

425.01. Grading and Erosion Control Plan

Subd.1. A satisfactory erosion control and grading plan consistent with the Minnesota Stormwater Manual must be approved by the City Engineer before a grading or building permit is issued for construction, if the construction will result in disturbing the soil.

Subd. 2. The grading and erosion control plan must provide spot elevations of proposed grades in relation to existing grades on the subject property and adjacent land. Areas where the finished slope will be steeper than 5 units horizontal to one (1) vertical shall be specifically noted. Also, location and type of erosion control devices shall be clearly labeled.

Subd. 3. Every effort shall be made to minimize disturbance of existing ground cover. No grading or filling shall be permitted within 40 feet of the ordinary high-water mark of a water body unless specifically approved by the city. To minimize the erosion potential of exposed areas, restoration of ground cover shall be provided within 5 days after completion of the grading operation.

Subd. 4. Every effort shall be made during the building permit application process to determine the full extent of erosion control required. The City Engineer may require additional controls to correct specific site related problems as normal inspections are performed.

Subd. 5. All erosion control noted on the approved plan shall be installed prior to the initiation of any site grading or construction. Noncompliance with the grading and erosion control plan shall constitute grounds for an order from the city to halt all construction.

Subd. 6. All grading and construction activity that results in disturbance of the ground shall comply with Minnesota Pollution Control Agency's General Permit to Discharge Stormwater Associated with construction activity No. MNR100001, the Minnesota Pollution Control Agency's General Permit to Discharge Stormwater Associated with Small Municipal Separate Storm Sewer Systems No. MNR040000, and the Minnesota Stormwater Manual.

(Ord. 2022-12, 8/16/2022)

Section 526 – Erosion Control

526.01. Erosion Control Plan

Prior to commencing any earth disturbing activity in a subdivision, the subdivider shall submit an erosion control plan for approval by the City Engineer. The plan shall be approved if it complies with the city's Zoning Ordinance and the requirements contained herein.

526.03. Erosion Control Measures

Subd. 1. The following erosion control measures are required for an erosion control plan:

a. The plan shall be suited to the topography and soils to create the least erosion potential.

b. The land shall be developed in increments of workable size on which adequate controls of erosion and siltation can be provided and maintained during the construction period. Grading operations and other land disturbing operations shall be staged so that the area being developed is not exposed for long periods of time without stabilization.

c. Temporary vegetation and/or mulching shall be used to protect the areas exposed during the development. No area shall be left denuded for a period longer than fourteen (14) days after initial site grading and other land disturbing operations. These areas shall be seeded, mulched and stabilized with erosion control netting or blanket acceptable to the City Engineer. Erosion control blanket shall be used on slopes of 3:1 or steeper.

d. Permanent vegetation and structures shall be installed within 30 days after completion of initial grading. If grading is not completed until after the planting season has expired, temporary erosion control measures, including dormant seeding and mulching, shall be implemented.

e. Sediment basins (debris basins, desilting basins, or silt traps) shall be installed and maintained to remove sediment from runoff waters from the land undergoing development. Storm sewer inlets shall be provided with debris guards and microsilt basins to trap sediment and avoid possible damage from blockage. The silt shall be removed when necessary. If sediment/siltation measures taken are not adequate and result in downstream sediment, the subdivider shall be responsible for cleaning out or dredging downstream storm sewers and ponds as necessary.

f. Before grading is commenced, all control measures as shown on the approved plan shall be installed.

g. Immediately after curb and gutter has been placed, cured, and backfilled, city approved erosion control measures shall be installed directly behind the curb. This requirement does not alter the subdivider's responsibility for sodding the boulevard.

h. Erosion control practices shall comply with Minnesota’s Pollution Control Agency’s general permit to discharge storm water associated with construction activity No. MN-R100001, the Minnesota Stormwater Manual, or other practices as approved by the City Engineer.

i. The subdivider shall be responsible for cleaning and maintenance of the storm sewer system (including ponds, pipes, catch basins, culverts, and swales) within the subdivision and the adjacent off-site storm sewer system that receives storm water from the subdivision. The subdivider shall follow all instructions it receives from the city concerning the cleaning and maintenance of the storm sewer system. The subdivider's obligations under this paragraph shall end after the erosion control is complete and financial guarantees have been released.

j. The subdivider shall be responsible for cleaning all streets in the subdivision and adjacent to the subdivision from silt and dirt from the subdivision.

Subd. 2. Financial Guarantee:

a. To guarantee compliance with erosion control measures, a financial guarantee in the form of a non-interest-bearing cash escrow or letter of credit satisfactory to the city in the amount of $1,500 per acre shall be provided to the city before work is commenced. Up to $2,000 of this amount shall be by cash deposit to be held by the City of Plymouth in a non-interest bearing account. The financial guarantee shall remain in place until all the subdivider's obligations under the erosion control plan have been satisfied.

b. If the city draws upon the financial guarantee, the subdivider shall within 10 days of the draw, deposit with the city additional security of the same type and amount that the city has drawn. No further inspections will be conducted, no new building permits will be issued, and all work shall stop within the development until the cash deposit for erosion control is restored to the pre-draw balance.

Subd. 3. Street Cleaning:

Prior to commencement of grading, the subdivider shall enter into a contract with an unrelated third party to scrape and sweep the streets in the subdivision and on abutting streets from soil and silt deposited on the streets. At a minimum, scraping and sweeping shall take place on a weekly basis. The city shall be furnished a copy of the contract. The contract shall further provide that the city may order cleaning of the streets and that the subdivider shall pay the cost. If the subdivider fails to do so, the city may draw on the subdivider's financial guarantee with the city and use it to provide payment for the cleaning.

Subd. 4. Enforcement:

a. The city may issue a stop work order halting all development work and building construction for noncompliance with the erosion control plan.

b. The city may draw down the posted financial guarantee and perform any work necessary to achieve compliance with the erosion control plan. The city will endeavor to give the subdivider advance notice of such action.

c. The subdivider shall pay to the city an administration fee of $500.00 for each violation of the erosion control plan. If the subdivider does not promptly pay the fee, the city may draw upon the posted financial guarantee to pay it.

(Ord. 2020-12, 10/13/2020)

APPENDIX B

RECORD PLAN STANDARDS

Street and Utilities Record Plan Standards
For The City of Plymouth

Each Record Plan must meet the following requirements

1. All electronic data must be provided designed in Autocad Civil 3D in Hennepin County coordinates.
2. The survey equipment must be accurate to within .03 feet in the X,Y, and Z direction.
3. Any pipe or structure which was removed with the plan cannot show up on the asbuilt. Label any abandoned pipe or structures and any details regarding how it was abandoned. (ex. blown full of sand / bulkhead)
4. The following plan sections must be updated when completing the asbuilts. removals, street, sanitary, storm, watermain, signals, lighting, signage, pavement marking, and bridge
5. Submit an electronic copy of the curb ramp compliance check list, APS compliance check list and asbuilts for review prior and approval prior to submittal of the final documents.

Information Required On All Record Plan Sheets

1. Contractor's name and address
2. Include "Record Plan" in the revision block and lower right corner
3. Typical street section for each unique street
4. Trail and sidewalk typical sections (if applicable)
5. Elevations to top nut of all hydrants
6. Include City Project number on every plan sheet
7. Show actual locations of all easements new and existing and label the easement with the Hennepin County document number if it is recorded prior to finalizing the asbuilt.
8. Date the work was completed
9. Date the record plan was completed
10. Provide a legend on each plan page depicting what the lines on the drawing represent.

- **Revise the original AutoCAD contract drawings noting the changes**

Cross out the incorrect information and put in correct elevations in italic font to inform the user that the information was field verified and is shown constructed.

Contact City of Plymouth engineering division (763) 509-5500 for specific questions regarding utility record plan requirements.

Information Required On All Sanitary and Watermain Sheets

1. Structures
    a. Elevations for top of casting and all inverts.
    b. Jack –bored casings (type, size, elevation and stationing).
    c. Force mains-tie all major bends.
    d. Lift stations must be as-built.
    e. All structures shall be identified as type, size (diameter), etc. on the plan or profile view.

2. Sanitary Sewer Main and Services
    a. Size, material type and invert elevation of all sanitary main and services shall be shown.

b. Risers (if installed)-the height of each shall be indicated on the plan and drawn on the profile.
c. If the sanitary sewer service lies in a separate trench from the water service, show 2 swing ties using same priority as gate valves.
d. Note if the sanitary sewer has tracer wire.
e. All sanitary services will be noted on the plans with an "S" preceding the stationing
f. Stationing must be provided as measured from the nearest downstream sanitary manhole.

3. Watermain and Services
    a. Size and material type of all watermain and services shall be shown.
    b. All watermain services shall be noted on the plans with a "W" preceding the stationing.
    c. Stationing must be provided as measured from the nearest downstream sanitary manhole.
    d. All new and existing watermain gate valves shall be tied with at least 2 ties using the following priority: Hydrants, manholes, and catch basins, power poles, building corners, light poles, and small utility pedestals. Ties can go up to 200 feet in length.
    e. Watermain fitting stations will be shown on the plan or profile view of the plan sheets.
    f. Show 2 swing ties to each curb stop using the same priority as gate valves.
    g. Show insulation if used

Information Required on all Street and Storm Sewer Sheets

1. Structures
    a. Elevations for top of casting and all inverts.
    b. Jack–bored casings (type, size, elevation, and stationing).
    c. All structures shall be identified as type, size (diameter), etc. on the plan or profile view.
2. Show all new and existing storm sewer mainlines and laterals including size, material, class, depth of cover and insulation on the plan and profile sheets.
3. Show areas utilizing geotextile fabric on the plans using hatches and text the stationing.
4. Show material type, size, and location of drain tile.
5. Show 2 swing ties from each drain tile clean out.
6. Show any casings installed for irrigation or small utilities.
7. Show all final street grades on profile sheets.
8. Show the right-of way width for each street.
9. Show the back-of-curb width for each street.
10. Show all signage installed on the streets.

Information Required on all Signal and Lighting Sheets

1. Survey the location of all older and newly installed street light wiring, RRFB wiring, signal wiring, and push button wiring so that the actual location is provide in the asbuilt. New and existing wiring should be clearly shown on the plan.
2. The location of the control cabinet needs to be shown in the plan in the asbuilt location.
3. Label the type of pole, and luminaire model, style and color with the name of the vendor.
4. Label the source of power for the signals, lighting, or RRFB.
5. Label the type of signal head.
6. Label the contractor who installed the signal, lighting, or RRFB.

Information Required on all Bridge Sheets

1. Provide all plan sheets used in the design of the bridge. Modify the sheets to show how the bridge was constructed.
2. The plans must include the manufacturer of the bridge lighting along with the model number of the fixtures and controller. Also, include the contact information for the manufacturer of the bridge railing.

Submittal of Record Plans (Revised 3-2025)

1. Submit a PDF drawing file created from the original AutoCAD drawings to the City of Plymouth engineering division for review and comments. The review set will be sent back noting any needed changes.

2. After final comments from the city have been completed, supply the city with one complete set of record plans in AutoCAD (.DWG and PDF) file formats by individual, full size sheets, plot configuration files (.CTB) and the Point-Northing-Easting-Zenith-Descriptor (PNEZD) comma delineated ASCI data file for all elements in the project using Hennepin County coordinates.

Grading Record Plan Standards
For The City of Plymouth

Information Required On All Record Plan Sheets (Revised 3-2025)

1. Contractor's name and address.
2. Include "Record Plan" in the revision block and lower right corner.
3. The name and date of the record plan preparer.
4. Include the city project number on every plan sheet.

- **Revise the original AutoCAD contract drawings noting the changes**

Contact City of Plymouth engineering division (763) 509-5500 for specific questions regarding grading record plan requirements.

Information Required on all Pond, Grading and Rain Garden Sheets

Information is required as outlined in the developer's agreement, in addition to the following:

1. Within 30 days after completion of the grading, the developer shall provide the city with a record grading plan certified by a registered land surveyor or engineer that all ponds, swales, and ditches have been constructed on public easements or land owned by the city. The record plan shall contain site grades and field verified elevations of the following:
   a. Cross sections of ponds.
   b. Location and elevations along all swales, emergency overflows, wetlands, wetland mitigation areas (if any), ditches, locations and dimensions of borrow areas/stockpiles.
   c. Lot corner elevations and house pads.
   d. Top and bottom of retaining walls.
2. One (1) spot elevation shot for every 100 square feet from pond bottom to 2 feet above the High-Water Level (HWL).
3. Over lay as-built shots in contrasting color on previously approved master grading, pond and rain garden plan sheets.
4. Note any changes in contours.
5. Include final elevations of storm drainage structures and inverts.
6. Include final elevations of EOF's.
7. At the time of the final street construction and before acceptance of the streets the developer shall submit proof of verification at critical locations, that all ponds, swales and ditches are still graded per the approved development grading plan.

8. Provide a survey of all drainage system features such as EOF's, swales, ponds, storm water BMPs, storm structure rim elevations, F.E.S inverts, drain tile structure elevations etc. after all lot building is completed and final stabilization of the site is completed. The list of features to be surveyed above is not comprehensive and will be determined by the engineering division for each project.

9. Provide volume calculations for all basins that show the design versus as-built info.

10. After final wear course is paved, a professional engineer shall provide certification that all new basins are installed and functioning as designed.

Submittal of Record Plans

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2. After final comments from the city have been completed, supply the city with one complete set of record plans in AutoCAD (.DWG and PDF) file formats by individual, full size sheets, plot configuration files (.CTB) and the Point-Northing-Easting-Zenith-Descriptor (PNEZD) comma delineated ASCI data file for all elements in the project using Hennepin County coordinates.