

# Article 1 General

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## **I. General**

### **A. Purpose and Guiding Principles**

1. These City of Ann Arbor Public Services Area Design Standards and Construction Specifications (“Standards”) set minimum standards for the design and construction of Public Improvements (see Section II (Definitions) of this Article) as well as govern the installation of other improvements in public rights-of-way.
2. Where so indicated in these Standards, or where governed by other City Code, these Standards also apply to construction of private improvements such as service leads or elements that may have an impact on public infrastructure.
3. Where standards or specifications are not given, the best practice in design, materials, and workmanship shall be followed and, in all cases, shall be subject to the approval of the Public Services Area Administrator (PSAA).
4. These Standards are intended to set minimum standards for materials and equipment to be furnished and for the installation of all improvements and/or work covered by these Standards. It is the intent of these Standards to cover complete work. Where minor accessories or tools are clearly necessary for satisfactory operation and/or maintenance of the equipment, or to safely and/or properly complete the work, but are not specifically mentioned herein, they are deemed to be included in these Standards.
5. A list of commonly used materials for specific applications is provided; see City of Ann Arbor Material Requirements (Appendix A). Materials provided on the list are deemed acceptable; materials not listed are subject to approval by the PSAA.

### **B. Detailed Specifications**

1. For a particular Public Improvement project, the City reserves the right to prepare Detailed Specifications and Special Details as it deems to be in the City’s best interest.
2. Such Detailed Specifications and Special Details shall be utilized where it is necessary to modify or supplement these Standards based on conditions unique to the project.
3. In such cases, the Detailed Specifications and/or Special Details shall supplement and/or supersede these Standards.

### C. Variations and Revisions to Standards

#### 1. Minor and Technical Variations and Revisions

- a) The PSAA may permit variations to these Standards where unusual conditions or circumstances warrant.
- b) The PSAA will from time to time issue general revisions to these Standards that relate to technical aspects of the design and construction of covered improvements or acceptable methods of work.

### D. Adoption of Standards and Specifications by Reference

1. Within any particular Article of these Standards, the latest edition of standards and specifications of established organizations such as the MDOT, the AWWA, ASTM, etc. shall be adopted herein by reference.
2. Within any particular Article of these Standards, the latest edition of city adopted plans and policies that guide the City's overall efforts such as the Transportation Plan, the A<sup>2</sup>ZERO plan, etc. shall be adopted herein by reference.
3. Work specified in these Standards shall conform to the [Public Services Rules and Regulations](#).
4. Where work is performed in the City of Ann Arbor Downtown Development Authority (DDA) boundary see also Appendix D: Street Design Manual.

## II. Definitions

### A. Terms and Meanings

1. AASHTO - American Association of State Highway and Transportation Officials.
2. ADA - Americans with Disabilities Act.
3. ADT - Average Daily Traffic
4. ALTA survey - Specialized survey of a property that adheres to the standards of the American Land Title Association and the National Society of Professional Surveyors.
5. ANSI - American National Standards Institute.
6. ASTM - American Society for Testing and Materials.

7. AWWA - American Water Works Association.
8. B&B – Ball and Burlap root ball for tree planting
9. Building Department - The City of Ann Arbor Construction and Building Department within Planning and Development Services.
10. Building Official - The City of Ann Arbor's Building Official or designee.
11. CIP - Compacted in Place.
12. City - The City of Ann Arbor, Michigan, a Michigan municipal corporation, whose address is 301 East Huron Street, P.O. Box 8647, Ann Arbor, Michigan 48107-8647; when a specific Service Area or Unit name is used, it shall refer to that Service Area or Unit of the City of Ann Arbor.
13. City Administrator - The City of Ann Arbor's City Administrator or designee.
14. City Attorney - The City of Ann Arbor's City Attorney or designee.
15. City Code - The City of Ann Arbor's Code of Ordinances.
16. City Engineer - The City of Ann Arbor's City Engineer or designee.
17. City Project - A project bid and/or managed by, or on behalf of, the City.
18. Contractor - Any individual, partnership, or corporation furnishing, constructing, or installing any improvement covered by these Standards.
19. CVLP - Civil Construction Plan review.
20. DDA - The Ann Arbor Downtown Development Authority.
21. Detailed Specifications - Modifications to these Standards developed by the City for a particular Public Improvement project.
22. Developer - The individual, partnership, corporation, group or entity (other than the City) causing the construction of any improvement covered by these Standards.
23. Easement - An easement granted by an Owner to the City by using an approved City easement document or by platting as required by the State of Michigan Land Division Act (Act 288 of 1967 as amended) or other applicable law.
24. Edge-of-metal - Edge of pavement at the joint between HMA and concrete curb and gutter.



25. EGLE - The Michigan Department of Environment, Great Lakes, and Energy. Formerly known as MDEQ, The Michigan Department of Environmental Quality.
26. Engineer - The person or persons responsible for the design and preparation of Plans and/or for construction engineering.
27. Engineering Unit - The City of Ann Arbor's Engineering Unit of its Public Services Area.
28. Fire Marshal - The City of Ann Arbor's Fire Marshal or designee.
29. Footing drain - This term shall be as defined in [City Code, Title II \(Utilities and Services\), Chapter 28 \(Sewage and Sewage Disposal\), Section 2:41.2c. \(Definitions\)](#).
30. Franchise Utilities - Utilities not owned by the City, including but not limited to privately owned natural gas and electric distribution systems, and telephone, communication, cable, and conduit systems, and all appurtenances thereto.
31. HMA – Hot-Mix Asphalt
32. IEEE - Institute of Electrical and Electronics Engineers.
33. IFC – International Fire Code
34. Inspector - An assigned City of Ann Arbor representative performing inspection related to these Standards.
35. ITE - Institute of Transportation Engineers
36. Land Development Coordinator - The City of Ann Arbor's Land Development Coordinator or designee.
37. Lawn Extension - The area between the back of curb or edge of gravel shoulder on an uncurbed public street, and either the public sidewalk, public shared use path, or property line.
38. Manhole - The industry term for a small covered opening that allows a person of any gender to enter, typically allowing access to underground utilities.
39. MDNR - The Michigan Department of Natural Resources.
40. MDOT - The Michigan Department of Transportation.
41. MIOSHA - Michigan Occupational Safety and Health Administration.

42. MMUTCD - Michigan Manual of Uniform Traffic Control Devices.
43. MNREPA - Michigan Natural Resources and Environmental Protection Act.
44. NACTO - National Association of City Transportation Officials.
45. NFPA – National Fire Protection Association
46. NCPI - The National Clay Pipe Institute.
47. NEC – National Electric Code.
48. NEMA - National Association of Electrical Manufacturers.
49. NSF - National Science Foundation.
50. OSHA - Occupational Safety and Health Administration.
51. Owner - The titleholder of a parcel of real property.
52. Parks and Recreation Manager - The City of Ann Arbor's Parks and Recreation Manager or designee.
53. Pedestrian and Bicyclist Maintenance Plans - Plans or drawings for the safe maintenance of pedestrian and bicycle access during construction.
54. Planning Commission - The City of Ann Arbor Planning Commission.
55. Plans - Plans or drawings for the construction of any improvement covered by these Standards.
56. Private Development Project - A project funded by a Developer or Owner other than the City.
57. Private Sector Engineer - The person or persons responsible for the design and preparation of Plans and/or for construction engineering on behalf of a Developer or Owner other than the City.
58. Private Storm Sewer or Lead - A storm sewer or lead carrying only stormwater runoff from a parcel (or parcels) of real, private, non-City, property. A private storm sewer or lead terminates at its connection to the public storm sewer.
59. PROWAG – Public Right-of-Way Accessibility Guidelines. Minimum scoping and technical requirements for the accessibility of pedestrian facilities located within the right-of-way.

60. Public Improvement - An improvement that, when completed and accepted by the City, shall be owned and maintained by the City. Such improvements include but are not limited to public utilities, public streets, public sidewalks, public safety paths, public bike lanes, public streetlights, and public parks.
61. PSAA - Public Services Area Administrator. This is the City of Ann Arbor's Public Services Area Administrator or designee.
62. Public Storm Sewer - A storm sewer carrying stormwater runoff from a public right-of-way or from other City-owned land.
63. Public Utilities - City owned, operated, and maintained utilities and their appurtenances including but not limited to systems for sanitary sewer, water, stormwater, communication conduit and cable, streetlights, and traffic control.
64. Public Works Unit - The City of Ann Arbor's Public Works Unit of its Public Services Area.
65. Sanitary Service Lead - A private sanitary sewer pipe serving only an individual building. A building shall be as defined by [City Code, Title II \(Utilities and Services\), Chapter 28 \(Sewage and Sewage Disposal\), Section 2:41.2a \(Definitions\)](#). A sanitary service lead terminates at its connection to the wye or tee that has been connected to a public sanitary sewer.
66. Site - All contiguous land under the same ownership.
67. Standards - These, the City of Ann Arbor Public Services Area Design Standards and Construction Specifications.
68. Ten States Standards - The recommended standards for water and wastewater facilities as prepared by the Wastewater Committee of the Great Lakes-Upper Mississippi River Board (GLUMRB) of State and Provincial Health and Environmental Managers.
69. Transportation Manager - The City of Ann Arbor's Transportation Manager or designee.
70. UL - Underwriter's Laboratory.
71. Urban Forestry and Natural Resources Planning Coordinator - The City of Ann Arbor's Urban Forestry and Natural Resources Planning Coordinator or designee.
72. USDA – United States Department of Agriculture

73. USGS – United States Geological Survey
74. Water Main, Water Service Line, and Water Service Stub - These terms shall be as defined in [City Code, Title II \(Utilities and Services\), Chapter 27 \(Water Service\), Section 2.21. \(Definitions\)](#).
75. WATS – Washtenaw Area Transportation Study
76. WCWRC - The Washtenaw County Water Resources Commission.
77. WCRC - The Washtenaw County Road Commission.

### **III. Content of Plans and Detailed Specifications**

#### **A. General Plan Requirements**

1. Preparation by Professional Engineer
  - a) Plans and Detailed Specifications for all Public Improvements shall be prepared by a Professional Engineer licensed in Michigan. The City reserves the right to require that Plans for private improvements in public rights-of-way or on City-owned lands shall also meet this requirement.
  - b) Each sheet of the Plans, including the cover sheet, shall bear the name and company logo of the firm and of the Professional Engineer who supervised the work. The cover sheet shall be signed and sealed by the Engineer responsible for the Plans and Detailed Specification preparation. It shall be understood that the signed and sealed cover sheet is applied to all plan sheets, details, special details, specifications, special specifications, and any other information prepared in support of the signed and sealed plan set. If a subconsultant assisted in preparation of Plans, that subconsultant must also include their firm name and logo on the plan sheets for which they are responsible as well as the signature and seal of the subconsultant’s Professional Engineer.
2. Preparation by Professional Land Surveyor
  - a) Plan sheets which include a required minimum standard ALTA survey shall be prepared by a Professional Surveyor licensed in Michigan; a survey shall not be prepared more than 6 months prior to submittal. Such sheet(s) shall be signed and sealed by the Professional Surveyor and contain the name and company logo of the firm by whom said Professional Surveyor is employed.

3. Verification of Existing Utilities

- a) It shall be the Engineer's responsibility to field verify locations of existing utilities prior to Plan submittal.

4. Plan Sheet Size, Scale, Orientation, and Required Note

- a) All drawings for City Projects shall be 22"x 34" and use the current City title block. Plans for Private Development Projects shall be 24" x 36".
- b) Plan scales shall be 1" = 40' (horizontal) and 1" = 4' (vertical) scale or 1" = 20' (horizontal) and 1" = 2' (vertical). Other scales may be used only if approved by the PSAA or if directed by the PSAA for specific areas requiring detailed analysis to verify compliance with published standards such as the ADA/PROWAG.
- c) Each Plan sheet shall be oriented such that the north arrow points towards the top of the page, unless impracticable. The order of preference for north orientation: 1. pointing toward the top, 2. pointing to the left, or 3. pointing to the right. It is never acceptable to direct north toward the bottom of the sheet.
- d) Plan sheets should be set up to avoid breaking at important design features such as intersections, or curves starting or ending at the beginning or end of a sheet.
- e) Sheets on curves should be angled to produce a balanced sheet; the tangent sections shall be near the center of the plan sheet.
- f) For City Projects, the following note shall be included on the cover sheet, or the first sheet of Plans: "The construction covered by these plans shall conform to the City of Ann Arbor Public Services Area Design Standards and Construction Specifications ("Standards"). The omission of any standard detail does not relieve the Contractor of their obligation to construct items in complete accordance with those Standards."

- g) For Private Development Projects that include Public Improvements, the following note shall be included on the cover sheet or the first sheet of Plans: "The construction of any public improvement shown on these plans that is subject to the City of Ann Arbor Public Services Area Design Standards and Construction Specifications ("Standards") shall conform to those Standards. The omission of any standard detail does not relieve the Contractor of their obligation to construct items in complete accordance with those Standards."

5. Location Sketch

- a) All Plans must include a location sketch(s) that show the project's location on an overall map of the City as well as an enlarged detail of the project site.
- b) If the Plans consists of more than two sheets, a cover sheet with an index of drawings must also be provided.

6. Stationing

- a) Stationing shall be shown in both plan and profile views.
- b) Where practicable, stationing shall be from left to right.
- c) Plan and profile stationing shall begin and end with a station multiple of 100 feet (e.g., station 3+00 or 6+00) and shall match in plan and profile. Cross sections shall be shown as if the observer is looking up station and shall read "up station."
- d) Each utility and the roadway shall have its own separate stationing along its respective centerline or the centerline of the right-of-way as directed by the PSAA. All stationing shall begin at 0+00, unless otherwise directed by the PSAA. Stationing of laterals or other auxiliary lines shall also be stationed beginning at 0+00 and shall be tied to the stationing of the utility from which it originates. This stationing shall be clearly detailed on the Plans. For sanitary and storm sewers, station 0+00 shall begin at the downstream connection to the existing main.

7. Elevations and Benchmarks

- a) All elevations shown on the Plans shall be referenced to NAVD 88 datum.
- b) Benchmark locations and elevations for the work shall be indicated on the Plans. A minimum of two benchmarks are required.

8. Existing Conditions

- a) Street names, lot/parcel lines, right-of-way lines, street addresses, and lot/parcel numbers shall be shown on all plan sheets.
- b) For special assessment projects, parcel addresses, tax identification numbers, and owners' names and addresses shall also be shown.
- c) The location of all existing structures, natural and other features, and site conditions within the influence area of the work and within the public right-of-way including but not limited to all existing utilities, trees, landscaping, drainage swales, topography, bike lanes, pavement markings, street signs, and all other relevant features shall be accurately depicted on the plan view.

B. Public Utility Plans

1. General Requirements for all Utility Plans

- a) If an individual proposed Public Utility requires two or more drawings, then an overall utility plan with a 1" = 100' scale, or other approved scale, shall also be provided in the Plans.
- b) Profile sheets for sanitary sewer and water mains shall be shown separately on individual sheets; storm sewer, road vertical alignment, edge drain, and curb and gutter may be grouped together on sheets.
- c) Plan and profile views shall be required for all Public Utilities. All private service leads connecting to a Public Utility shall be profiled as directed by the PSAA. The City reserves the right to require additional profile views.
- d) The plan and profile are to be on the same sheet and shall be vertically oriented. The plan view shall be placed over the profile with the stationing aligned.
- e) The profiles of the existing and proposed grades shall be clearly and distinctly shown and labeled on all profile drawings.
- f) All existing and proposed utility crossings, including leads, shall be shown, stationing and labeled in the profile view. The label shall include the type of utility crossed.

- g) The location of, and construction details for, all connections to existing Public Utilities shall be clearly indicated on the Plan sheets as well as all necessary street restoration or similar details associated with such connections.
  - h) All rim elevations shall be shown and labeled for both proposed and existing utilities, including valve boxes and manhole covers. All finished grade elevations of proposed fire hydrants shall be shown and labeled in the plan and profile.
  - i) Trench details, special bedding details, directional boring details, special construction methods, and other additional detailed information where deemed necessary by the PSAA, shall be shown in the profile view where applicable. Where using casing pipe jacked-in-place, starting and ending stations for casing pipe shall be shown and labeled in the plan and profile views.
  - j) All existing and proposed utility easements, including proposed locations, size, and purpose, shall be shown on the appropriate Plan sheets. Existing utility easements shall be labeled with the Liber and Page numbers of the recorded easement. Proposed easements shall be so indicated.
2. Additional plan information specific to sanitary sewer, water main, and storm sewer plans shall meet the applicable requirement set forth in Article 2 (Sanitary), Section I.A.4. (Plan Information Required), Article 3 (Water), Section I.A.3. (Plan Information Required), and Article 4 (Stormwater), Section I.A.3. (Plan Information Required) of these Standards.

#### C. Franchise Utility Plans

- 1. Plans for Franchise Utilities constructed in public rights-of-way shall conform to [Private Utilities in the Public Right-of-Way](#) guidelines as set forth on the City's Engineering website.

#### D. Road Plans

- 1. General Requirements for Roadway Plans
  - a) Profile of the existing and proposed centerline of roadway shall be provided. In locations where the pavement crown line is not aligned with the center of the right-of-way, or meanders within the public right-of-way, the profile shall be represented along the pavement crown line (also referred to as the pavement control line) or as directed by the PSAA.



- b) Profile of the pavement crown shall label the longitudinal grades and station and elevations of all high and low points, and grade breaks.
- c) Profiles where vertical curves are required for grade changes shall station and label the elevations of the Point of Vertical Curve (PVC), Point of Vertical Intersection (PVI), and Point of Vertical Tangency (PVT). In addition, the grades approaching the PVC ( $g_1$ ) and departing the PVT ( $g_2$ ), the length of curve from PVC to PVT ( $L$ ), and the rate of vertical curvature ( $K$ ) shall be labeled.
- d) Pavement crown elevations along vertical curves shall be indicated at 25-foot intervals in the profile.
- e) Curve data for roadway horizontal curves shall be provided in plan view; including, Point of Curve (PC), Point of Tangent Intersection (PI), Point of Tangent (PT), curve radius ( $R$ ), central angle of curve ( $\Delta$ ), and long chord bearing and distance.
- f) Where new or replacement curbs are shown, existing and proposed Top-of-Curb (TOC) elevations shall be provided at 25-foot intervals and tied into the whole stations associated with the pavement control line. In addition, such grades shall be provided at the PVC, PVT, grade breaks, and correspond to appropriate geometry of all horizontal curves in plan view as well as any other unique locations, as required by the PSAA, in order to be able to construct the roadway without detailed computations or computer software.
- g) Profile of the TOC shall be provided and show the station and elevations of all high and low points, grade breaks.
- h) The horizontal location of the centerline of each existing or proposed cross-street and/or driveway within the construction limits shall be delineated in the plan and profile view.
- i) Typical cross sections shall be provided showing the associated street alignment and stations where each section will apply. All integral parts of the roadway and the roadbed shall be shown and dimensioned, including but not limited to: pavement width, paving materials and depth for each pavement layer, base and subbase materials and depth, curb and gutter type and dimension, sidewalks, underdrains, and right-of-way width.

j) For asphalt streets, the typical cross sections shall include a HMA application table. The application table must include the HMA mix, the rate of application, thickness of course, wear index, the performance grade (PG), HMA course, and location remarks. Typical concrete pavement cross sections should indicate the location and type of longitudinal joints and load transfer devices. Location and spacing of joints and design of load transfer devices shall be in accordance with current MDOT Standard Details/Plans, Series R-39 through R-43.

2. Intersection, Eyebrow, and Cul-de-Sac Details

a) Individual plan details including all spot elevations needed to determine compliance with these Standards and ensure constructability shall be provided for all intersections, eyebrows, and cul-de-sacs. Elevations shall be provided at both the pavement crown and corresponding point along the edge of pavement and/or curb and gutter. Computed longitudinal and transverse grades shall also be provided for segments between these points.

b) Preferred detail scale shall be 1"=10'. Maximum detail scale shall be 1"=20'.

c) Detailed grade elevations and jointing shall be indicated as well as Point of Curve (PC), Point of Tangent (PT), and curve radii for all intersection curbing.

#### **IV. Review and Approval of Plans for Private Developments**

A. Public Improvements Plan Review Procedure

1. Required Submittal of Plans

a) Following City Council or City Planning Commission final approval of the Site Plan or Final Preliminary Plat for a site, Plans for all required Public Improvements shall be submitted to the PSAA for review and approval prior to construction.

b) One paper set of detailed proposed construction plans, including all calculations and related data, shall be submitted for initial review. Applications for CVLP shall be made in [the City's online permitting system](#).

## 2. Payment of Fees

- a) The applicable plan review fees will be calculated once the application process is completed. Payment is due upon receipt of an invoice via [the City's online permitting system](#). Payment shall be made via check, e-check, or cash and remitted to Engineering. Reviews will not begin until payment is received.

## 3. Review Process

- a) The PSAA will review the plans and provide written plan review comments. Red-line markups will be uploaded to the CVLP project file in [the City's online permitting system](#) when necessary.
- b) The Private Sector Engineer shall revise Plans in accordance with the review comments and resubmit them for further review. This process shall continue until such time as the Plans are approvable. Should the number of plan reviews exceed three (3), additional fees will be charged to the project. Further reviews will not occur until the additional fees are paid.
- c) After final approval of the Plans, sets of sealed and signed Plans (number to be directed by the City) shall be submitted to the PSAA.
- d) Where Plans include proposed public water and/or sanitary sewer improvements which require EGLE permits, applications for such permits shall be prepared by the Private Sector Engineer. The PSAA will submit the permit application(s) and Plans to EGLE for issuance of a permit.

## B. Required Permits

### 1. Permits

- a) All necessary permits other than those listed in Section IV.A.3.d (Review Process) of this Article are the responsibility of the Private Sector Engineer, Contractor, and/or Developer.
- b) A Civil Construction permit is required to be obtained prior to start of construction. Application for this permit is made through [the City's online permitting system](#) through the Civil Construction Plan Project.

### C. Solid Waste Review

1. Solid waste bin enclosures and access paths for solid waste collection equipment shall be indicated on Plans and shall comply with Article 12 (Standard Details), SD-SW-1 through SD-SW-6B of these Standards.
2. For sites that cannot accommodate a standard dumpster enclosure, the dumpsters may be rolled out of a building or alternate enclosure by the property owner to a proposed collection location to be approved by the PSAA.
3. A collection narrative for recycling and trash collection shall be provided on the site plan.
4. For sites adjacent to a public alley, solid waste trucks are permitted to access the property through the alley if swept path clearance requirements in accordance with Article 12 (Standard Details), SD-SW-4 (Swept Path Requirements for Front Load Solid Waste Vehicle) of these Standards can be provided.
5. Solid waste collection locations must be located within the boundaries of the property unless an alternative location is approved by the PSAA.

## V. Survey Review of Final Plats (Subdivisions) and Master Deed Exhibit B (Condominiums)

### A. Review Procedure

1. Submittal
  - a) A copy of the proposed Final Plat for subdivisions and of the proposed Exhibit B for condominium projects shall be submitted in AutoCAD format to the City Surveyor for technical review.
  - b) All easements, rights-of-way, parks, open spaces, or similar items required in accordance with the Site's approved final preliminary plat (for subdivisions) or final site plan (for condominiums) shall be indicated on the plat or condominium Master Deed Exhibit B.
  - c) All easements, rights-of-way, parks, open spaces, or similar items shall be clearly indicated as either public or private.

- d) The submittal shall include survey closure calculations for the overall plat or condominium boundary and for individual lot or unit boundaries.
2. Technical Review
- a) Plans shall be reviewed for consistency with Site's approved final preliminary plat (for subdivisions) or final site plan (for condominiums).
  - b) All survey calculations will be reviewed for proper technical closure.

## **VI. Easements and Rights-of-Way for Public Improvements**

### **A. General**

1. All required easements and rights-of-way for Public Improvements (including all associated consents and subordinations) must be executed by the Developer, Owner, or other signer with appropriate authority and approved by the City prior to issuance of any Certificate of Occupancy for any building, unit, or lot in a Private Development or approved phase thereof.
2. Easements for Public Improvements shall not be located in areas of unusual topographic conditions or sensitive environmental areas, as defined by the PSAA.
3. Easements for Public Improvements shall, to the extent practicable, be located in areas that contain only pavement or non-landscaped open space such as turf grass. The City will not be responsible for maintenance of improvements in easements and will not repair or restore improvements in the easement that are damaged by the City's permitted activities under the easement, except that the City will restore standard pavement and turf grass if damaged by the City.
4. If a Private Development Project wishes to convey an easement to the City that contains structures or other improvements, (1) the City must first consent in writing, and may withhold its consent if the structure or improvement will substantially interfere with the City's easement rights or if there is a feasible alternative, and (2) the Owner must execute an easement indemnifying the City from all responsibility for the structure or improvement in a form approved by the City Attorney.

5. Access easements may be required by the City where Public Improvements are not directly accessible from a public right-of-way, for example a public utility that runs across the rear of a parcel. To the extent practicable, access easements should be over areas paved for vehicular travel or non-landscaped open space such as turf grass. The City will not be responsible for maintenance or restoration of improvements, including paving or landscaping, in access easements.
6. The City may require easements to be surveyed to a standard determined by the City, depending on the characteristics of the property or proposed development.
7. Easements must be conveyed to the City without any cloud on the title of the subject property and with all consents and subordinations determined necessary by the City.
8. Specific easement and right-of-way widths shall be as set forth in these Standards in appropriate Articles.

B. Public Utility Easements

1. All Public Utilities shall be located in either public rights-of-way or easements granted to the City as described herein. Every effort shall be made to place Public Utilities in public rights-of-way. Such utilities which cannot be placed in public rights-of-way shall be located in public utility easements.
2. Shared Location
  - a) Multiple Public Utilities may be constructed in a single utility easement, provided that a 1:1 trench slope from the bottom of the deeper utility does not undermine any shallower utility and that all other requirements of these Standards with regard to utility separation are met.
  - b) A public right-of-way may be used in whole or in part to satisfy easement requirements for Public Utilities.
3. Prohibited or Restricted Improvements and Activities
  - a) The following are prohibited in public utility easements:
    - (1) Permanent structures or other objects with a foundation or footing
    - (2) Solid waste enclosures
    - (3) Private detention and retention ponds

(4) Retaining walls

b) The following are restricted in public utility easements and require approval by the PSAA:

(1) Rain gardens, bioswales, and bioretention

(2) Fence

(3) Any other improvement, object, structure, not approved by the PSAA

(4) Grade changes

(5) Burying, obstructing, impairing, or otherwise making inaccessible any manhole, standpipe, valve, grate, drain, vent, or other surface element of the Public Utilities Systems

C. Easement and Right-of-Way Document Approval Process

1. Submittal of Documents

a) Legal descriptions for all required Public Utility easements and rights-of-way shall be submitted to the PSAA for review and acceptance based on the final approved Plans.

b) A copy of a current commitment for title insurance for the subject Site and the name of the Owner's designated contact person must accompany the legal descriptions.

2. Review by City

a) The PSAA will review the legal descriptions for technical correctness and survey closure as well as for conformance to these Standards and to the approved Plans.

b) A copy of the accepted legal descriptions will then be forwarded by the Public Services Area to the City Attorney along with the commitment for title insurance.

c) The City Attorney will draft the required easement documents (and necessary consents or subordinations for mortgage, lien, and other interest-holders) using the approved descriptions and City standard forms and convey them to the Owner for execution.

- d) The Owner, Developer, or other authorized signer shall then execute the documents and return them to the City for final review. The Owner or Developer shall be responsible for obtaining signed consents or subordinations required by the City Attorney.
- e) The City Attorney shall then submit the easement to City Council for acceptance.
- f) Once approved, the easement will be recorded by the City Attorney.

## **VII. Franchise Utilities Locations, Easements, and Plan Review**

### **A. Location**

- 1. Where practical, telephone, electric, gas, cable television lines, and other Franchise Utilities shall be located within private easements for public utilities outside of public rights-of-way.
- 2. Where Franchise Utilities must be located within public rights-of-way, the following guidelines shall apply:
  - a) Streetlight foundations and associated conduits and direct-bury cables shall be located a minimum of 18 inches behind back-of-curb.
  - b) All other Franchise Utilities shall be located a minimum of 3 feet behind back-of-curb.
  - c) Preferred location for proposed conduit shall be under the public sidewalk. Efforts shall be made to minimize the number of sidewalk slabs to be removed and replaced to accommodate boring operation.

### **B. Depth**

- 1. Minimum depth for Franchise Utilities shall be 3 feet from finished surface.
- 2. Where Franchise Utilities must be located under trees, they must be installed by directional drilling, and minimum depth of bore and location of bore pits shall conform to Article 12 (Standard Details), SD-L-4 (Tree Tunneling) of these Standards.



C. Separation Distance

1. Minimum horizontal separation distance from other utilities shall be 5 feet unless otherwise approved by the PSAA.
2. Minimum vertical separation distance from other utilities shall be 1 foot.

D. City Review Required

1. Plans for Franchise Utilities proposed within City rights-of-way or Public Utility easements must be reviewed and approved by the PSAA prior to their construction as set forth in Section III.C. (Franchise Utility Plans) of this Article.
2. In addition, all required permits pursuant to Section VIII (Permits) of this Article must be obtained by the Franchise Utility prior to the commencement of any construction activities.

## VIII. Permits

A. General

1. Required Prior to Construction

- a) All applicable permits must be obtained prior to the commencement of construction activities related to improvements covered by these Standards.
- b) All applicable fees, bonds, certificates of insurance, or any other financial guarantees required pursuant to issuance of such permits must also be posted prior to commencement of construction.

2. Permit Applications

- a) Permit applications shall be submitted via [the City's online permitting system](#). Contact [Customer Service](#) for more information as needed.

3. Display of Permits and Verification of Outside Permits

- a) Copies of all City-issued permits are to be located at the construction site at all times and made available for inspection by City personnel when requested.
- b) Copies of all permits obtained from outside agencies are to be submitted to the City prior to construction to verify their approval.

B. Permits Required (as Applicable)

1. Code-Required Permits

- a) A *Wetland and Watercourse Use Permit* as required by [City Code, Chapter 55 \(Unified Development Code\), Section 5.29.4 \(Wetlands Use Permit\)](#).
- b) A *Grading/Soil Erosion & Sedimentation Control Permit* as required per [City Code, Chapter 55 \(Unified Development Code\), Section 5.29.3C \(Grading Permit: Grading Permit Application\)](#).

2. Right-of-Way Permit

- a) A permit shall be required per [City Code, Title IV \(Streets and Sidewalks\), Chapter 47 \(Streets\)](#) for any street excavation that occurs within a City right-of-way.
- b) In addition to requirements of City Code as set forth above, such permits shall be subject to conditions set forth in Section VIII.B.2.f. of this Article.
- c) Activities for which a Right-of-Way Permit is required include but are not limited to repair, replacement, or new construction of the following:
  - (1) Public Utilities and utility service leads;
  - (2) Road construction including street cuts performed in accordance with Section XIX (Street Cuts) of this Article;
  - (3) Sidewalk and/or shared use paths;
  - (4) Drive approaches;
  - (5) Streetlights; and
  - (6) Franchise Utilities.
- d) The permit applicant must have on file with the City an approved, current certificate of liability insurance that meets the latest City requirements as established by [City Code, Title IV \(Streets and Sidewalks\), Chapter 47 \(Streets\), Section 4.3\(3\)](#).

- e) An Annual Right-of-way Permit may be issued to Franchise Utility companies or other entities for routine maintenance activities. This Annual Permit only allows maintenance of existing permitted facilities within the City's public right-of-way. This permit does not allow excavation (including cutting pavement, disturbing existing grade, etc.) or installation of new or replacement facilities.
  
- f) The PSAA may attach to the issuance of a Right-of-Way Permit additional conditions as may be reasonably necessary to prevent damage to public or private property, to prevent the operation from being conducted in a manner hazardous to life or property, or in a manner likely to create a nuisance. Such conditions may include, but shall not be limited to:
  - (1) Limitations on the period of the year or the time of the day in which the work may be performed;
  - (2) Restrictions as to the size and type of equipment to be used for the work commensurate with the work to be done;
  - (3) Designation of routes upon which materials or equipment may be transported;
  - (4) The place and manner of disposal of excavated materials;
  - (5) Requirements as to the laying of dust control materials, the cleaning of streets, the prevention of noise, and other results offensive or injurious to the neighborhood, the general public, or any portion thereof;
  - (6) Regulations as to the use of streets in the course of the work; and
  - (7) Requirements to bore street crossings on arterial, minor arterial, and urban collector streets outside of the earlier stated time restrictions.
  
- g) In no case shall any opening or trench made by a permittee be considered in the charge or care of the City, or any of its officers or employees. No officer or employee is authorized in any way to take or assume any jurisdiction over any such opening, except in the exercise of police power when it is necessary to protect life and property.

3. Other City Permits for Work in Rights-of-Way
- a) Permits shall be required in accordance with [City Code, Title IV \(Streets and Sidewalks\), Chapter 47 \(Streets\), Section 4.21 \(Right-of-way occupancy during construction\)](#).
  - b) A *Traffic Control Permit* is required if any traffic on a City street will be obstructed or restricted as a result of the proposed construction activity or a special event.
  - c) A *Barricade Permit* is required for occupancy of the right-of-way during construction by equipment, dumpsters, scaffolding, barricading, or materials.
  - d) *Temporary Permission to Reserve Parking Lane for Work-Related Purposes* is required where occupation of existing parking lanes in front of the work area is necessary to perform construction activities.
  - e) A *Meter Bag Parking Agreement* shall also be required if the area occupied pursuant to another permit impacts use of parking meters.
    - (1) When properly installed in a timely manner meter bags in conjunction with existing No-Parking signs will enable the Contractor to have use of the curb lane(s) of streets that normally have metered on-street parking.
    - (2) Requests for Meter Bag Agreements must be made to the DDA's parking operator at least 24 hours prior to the desired enforcement date.
    - (3) The cost of meter bags where required shall be the sole responsibility of the Contractor.
    - (4) The City will be unable to enforce the desired "No-Parking Zone" should the Contractor fail to install the meter bags in a proper and timely manner.
    - (5) The Contractor shall have the sole responsibility for all meter bag rental, placement, and maintenance requirements.
    - (6) Delays due to on-street parking shall not be cause for any extra payments or extensions of contract time by the City to the Contractor on City Projects.
  - f) A *Street Tree Permit* is required prior to removal of any street trees.

4. City-Issued Public Utility Related Permits
  - a) Plumbing - Water/Sewer/Storm (PWSS) Permit:
    - (1) A permit is required for the construction, repair, or replacement of any water, sanitary, or storm service lead.
    - (2) A permit is required for the construction of all private storm sewers.
    - (3) The applicant must be a licensed plumbing contractor or sewer installer registered with the Planning and Development Services Unit.
    - (4) A separate permit must be obtained for each address to be connected.
  - b) *Requests for a Sewer Tap and/or Water Service* are required for any utility service lead connection to a City water or sewer main involving the Public Works Unit. The applicant must obtain a Right-of-Way Permit, a Plumbing-Water, Sewer, Storm (PWSS) Permit, and pay associated fees to [Customer Service](#) prior to making these applications.
  - c) A *Water Meter Permit* is required prior to the installation of any water meter by the City. This permit will not be issued until the sanitary sewer service lead for the subject building has been approved by the Building Department.
  - d) A *Mechanical Permit* is required for the installation of a fire service lead.
5. Other Outside Agency Permits (as applicable)
  - a) For construction activity taking place in a right-of-way under the jurisdiction of MDOT or the WCRC, permits from the governing agency must also be obtained.
  - b) An *EGLE Part 41 Wastewater Construction Permit* is required for the construction of any public sanitary sewer. The Public Services Area will apply for the permit upon approval of the sanitary sewer construction plans as set forth in Section IV.A.3.d) (Public Improvements Plan Review Procedure) of this Article.
  - c) An *EGLE Act 399 Water Supply Systems Permit* is required for the construction of any public water mains. The Public Services Area will apply for the permit upon approval of the water main construction plans as set forth in Section IV.A.3.d) (Public Improvements Plan Review Procedure) of this Article.

- d) An *EGLE/US Army Corps of Engineers Joint Permit* is required for work in or on Inland Lakes and Streams, Wetlands, Floodplains, Dams, and High Risk Erosion Areas.
  - e) A *WCWRC Drain Use Permit* is required for construction activities in a County Drain or other facility controlled by the Washtenaw County Water Resources Commission.
  - f) A *Permit of Temporary Entry* is required for work in a railroad right-of-way.
6. Other Permits
- a) The list above is not intended to be exhaustive. All other permits required by City Code, these Standards, non-City agency, or other applicable law shall also be obtained prior to commencement of any construction activities.

## **IX. Pre-Construction Meeting**

- A. Projects Requiring Pre-construction Meeting
  - 1. For any project which includes the construction of Public Improvements, a pre-construction meeting shall be held at least one week prior to commencement of the work.
  - 2. A pre-construction meeting may also be required for projects which include connection to Public Improvements, or which involve significant work in public rights-of-way.
- B. Project Schedule
  - 1. Provision of Schedule by Contractor

- a) At or before the pre-construction meeting, the Contractor shall submit a proposed work schedule to the PSAA for review and acceptance, as required by contract with the City of Ann Arbor. It shall be in the form of a critical path schedule and shall include but not be limited to milestone dates as established in the contract or as directed by the City, dates on which no work will be allowed (e.g., Holidays, University of Michigan Football Game Days etc.), all major and/or controlling operations of work, planned durations of each controlling operation, expected number of days each week to be worked, and any other assumptions needed to prepare the schedule. The PSAA may also require other additional information if it is deemed necessary to the review and acceptance of the proposed schedule.
  - b) Following the pre-construction meeting, the Contractor shall revise the project schedule as needed based on PSAA comments and meeting discussion and re-submit to the PSAA for approval. This process shall continue until such time as the proposed schedule is accepted by the PSAA.
2. Approval Required
    - a) Construction activities shall not commence until the Contractor's schedule has been accepted by the PSAA.

## **X. Materials Certification**

### **A. Provision of Materials List and Required Approval**

#### **1. Materials List Approval Process**

- a) The Contractor shall provide to the PSAA lists of proposed materials to be incorporated into the work as well as names of suppliers and an approved Material Certification.
- b) Materials must be reviewed and approved by the PSAA prior to commencement of construction activities.

### **B. Materials to Be Certified**

1. The following materials shall be certified by the manufacturer as having been tested for compliance with these Standards:
  - a) Water main pipe and appurtenances;

- b) Sanitary sewer pipe and appurtenances;
- c) Storm sewer pipe and appurtenances;
- d) Corrugated metal pipe;
- e) Wrapped underdrain pipe;
- f) Precast concrete products;
- g) Cements, concrete admixtures, and curing materials;
- h) Bituminous materials;
- i) Steel and fabricated metal;
- j) Timber for retaining walls;
- k) Modular concrete blocks, geotextile grid, geotextile filter fabric, position dowels, and all related materials for retaining walls or retaining wall systems;
- l) Geotextile filter fabric for roadway or underground utility construction;
- m) Geotextile stabilization and separator fabric;
- n) Geogrid for soil stabilization or other similar uses;
- o) Dense-graded aggregates;
- p) Granular materials; and
- q) Any other materials as required by the contract or PSAA.

C. Basis for Acceptance or Rejection of Materials

1. The PSAA shall accept or reject materials on the basis of standard test results and as specifically set forth in these or other applicable Standards.
2. The PSAA's findings with respect to a proposed material's suitability for its intended use and its substantial conformance to these Standards shall be final.



## **XI. Shop Drawings**

### **A. Provision of Drawings and Required Acceptance**

#### **1. Shop Drawing Acceptance Process**

- a) The Contractor shall supplement the approved Plans with detailed drawings and data covering any feature to be constructed for which shop drawings are required, e.g., pre-cast, segmental retaining walls, detailed steel reinforcing layouts, special materials, and/or method of construction.
- b) The Contractor shall submit to the PSAA detailed plans, calculations, and descriptions of the proposed facilities to be fabricated in accordance with the [Michigan Department of Transportation Standard Specifications for Construction](#), Section 104.02 (Plans and Working Drawings), and as outlined herein.
- c) For each submittal or resubmittal, the Contractor shall allow at least 14 calendar days from the date of the submittal to receive the PSAA's acceptance or request for revisions. The PSAA's comments shall be incorporated into the submitted plans, calculations, and descriptions. The PSAA's acceptance is required before beginning the work. The review of resubmittals may take less than 14 calendar days depending upon the magnitude of revisions requested. On City Projects, required revisions will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Contractor shall include time for this entire review process in their critical path schedule.
- d) This information must be submitted to the PSAA for acceptance with such promptness as to cause no delay in the work.
- e) Fabrication shall not be started until the working submittals have been accepted by the PSAA.
- f) Acceptance by the PSAA shall not relieve the Contractor of their responsibility for negligence, design, errors in drawings, coordination of the work with sub-contractors, techniques of fabrication or construction processes, or details of the work.

## **XII. Mix Designs**

### **A. Initial Review Process**

1. The Contractor shall prepare and furnish mix designs for all Portland Cement concrete and/or hot-mix asphalt mixes to the PSAA for review and approval.
2. A minimum of 5 working days is required for the review of the mix design.

### **B. Use of State-Approved Materials**

1. Materials for Portland Cement concrete and bituminous mixtures shall conform to the applicable MDOT Specifications including fine and coarse aggregates, HMA binder, Recycled Asphalt Pavement (RAP), and Portland Cements as detailed in Article 5 (Streets), Section II (Materials Standards) of these Standards.

### **C. Changes to Design after Initial Approval**

1. A minimum of 5 working days notification to the PSAA is required for any changes that are requested by the Supplier or Contractor to materials for mix design, to allow testing and review of the modified mix design.
2. Based on observed performance of accepted Portland Cement or HMA mix designs, the PSAA may request revisions to the accepted mix designs to bring the material's production into conformance with the project specifications. If revisions are requested by the PSAA, they shall be provided in such a manner as to minimally delay the critical path schedule.

## **XIII. Elevations, Lines, and Grade**

### **A. Private Development Projects with Public Improvements**

#### **1. Horizontal and Vertical Control System**

- a) Project coordinates shall be based on the Michigan State Plane Coordinate system.
- b) Private Sector Engineer shall submit to the City an [Ann Arbor Geodetic Reference System \(AAGRS\) Worksheet](#) prior to commencement of construction.

#### **2. Vertical Benchmark Required**

- a) The Private Sector Engineer shall locate two vertical control points on or adjacent to the site.
  - b) These vertical control points ("benchmarks") shall be located such that they will not be disturbed by the project's construction.
  - c) The elevation for these control points shall be established by the Private Sector Engineer, referenced to NAVD 88 datum.
  - d) The accuracy of the vertical control points shall be established within the tolerances required by the City. Any work found not to be in conformance with these standards shall be redone by the Private Sector Engineer.
3. Establishment and Protection of Control Lines and Grades
- a) The contractor shall establish control lines and grades as needed to properly construct the work in accordance with approved Plans.
  - b) The Contractor shall carefully preserve the general control lines and grades.
  - c) The City reserves the right to request additional construction staking or providing of additional survey points as needed to layout and determine the precise location, both horizontally and vertically, of all items detailed on the approved Plans.
  - d) If any portion of this construction staking is damaged, buried, or in any other way becomes unusable, the Contractor's construction activities shall be halted until the Private Sector Engineer re-establishes the staking.
4. Cut Sheets
- a) Cut sheets for all proposed Public Utilities and other Public Improvements (curb and gutter, drive approaches, sidewalk, etc.) to be inspected by the City must be submitted and approved by the PSAA prior to the commencement of construction of the utility. The initial set of cut sheets shall be submitted and approved at least two full working days prior to commencement.
  - b) A minimum of 1 full working day is required for the review and approval of subsequently submitted cut sheets.
  - c) Construction will be allowed only for that portion for which cut sheets have been approved.

- d) Cut sheets shall indicate the following information as applicable:
  - (1) The on-site vertical benchmarks and their elevation;
  - (2) Invert elevations of sanitary and stormwater pipes;
  - (3) Top-of-main elevation for water mains;
  - (4) Hub elevations;
  - (5) Centerline of road;
  - (6) Top of curb;
  - (7) Radius point of return curb for drive approaches;
  - (8) Cut or fill to the object being constructed;
  - (9) Offset distance length (maximum 25 feet allowed);
  - (10) All utility crossings;
  - (11) Back of sidewalk;
  - (12) Top-of-casting elevations for all structures noting that for curb inlets elevation shall be at the front of the casting at the edge-of-metal;
  - (13) Hydrant finish grade elevations; and
  - (14) Sanitary sewer leads to be inspected by the City including lead length and invert elevations at both the tee/wye and end point.

5. Utility Staking

- a) Staking for utilities shall be every 50 feet except as noted in b) following.
- b) Water main to be laid in a horizontal curve shall be staked every 25 feet or less if required by the PSAA in order to maintain proper alignment of the proposed pipe.
- c) Every manhole, sewer tee, and water main fitting and appurtenance shall be staked and included on the cut sheet.
- d) A minimum of two offset stakes as well as a centerline stake shall be used for all manholes, fire hydrants, and gate valves.

- e) For storm sewer structures to be located in the curb line, staking shall be placed establishing the back-of-curb line for a minimum of five feet on each side of the storm sewer structure.
  - f) Curb staking in accordance with e) above is in addition to, and is to be placed at the same time as, the centerline stake and two offset stakes for the structure itself.
  - g) Sanitary sewer leads are to be staked with dual offset stakes at the termination point of the lead.
  - h) Copper water services shall be staked with the location of the curb stop box using either straddle or double offset stakes, marked with finished grade.
  - i) Ductile iron water services shall be staked as detailed above for water main and shall be included on the cut sheet.
6. Paving, Curb and Gutter, Sidewalk and Safety Path, and Drive Approach Staking
- a) Staking for curb and gutter shall be every 25 feet, with horizontal and vertical curves staked every 12.5 feet.
  - b) All low points, high points, grade breaks, PVCs, PVTs, PCs and PTs shall be staked.
  - c) The maximum allowed offset will be 5 feet.
  - d) For sidewalk, safety path, and/or drive approach work, staking shall be provided by the Private Sector Engineer, to the satisfaction of the PSAA, that establishes the right-of-way line and all property corners for the limit of the work. The beginning and ending points of drive openings shall be able to be determined without calculation. This requirement applies to the elevation of the proposed curb and gutter as well.
7. Establishment of Control Lines and Grades
- a) Construction lines and grades shall be transferred and set by the Contractor from the control lines and grades provided by the PSAA.

- b) The Contractor shall furnish necessary instruments and competent personnel for performing such work and shall be responsible for the accuracy of the transferred lines and grades. The Contractor's personnel shall assist and work cooperatively with the City in establishing interim grade check points for verifying roadway cross-section elements such as subgrade elevation, sand sub-base elevations, and aggregate base course elevations.
- c) The PSAA may check the work at intervals as they deem necessary and the Contractor shall correct errors, if any, at the Contractor's own expense.

B. City Public Improvement Projects

- 1. The vertical benchmark in accordance with Section XIII.A.2 (Vertical Benchmark Required) of this Article shall be established by the City.
- 2. Control lines and grades in accordance with Section XIII.A.7 (Establishment of Control Lines and Grades) of this Article shall be established by the City.
- 3. The Contractor shall provide notice to the PSAA as soon as possible after having observed or having reason to believe that there may be defects in staking.
- 4. The Contractor is solely responsible for any damage that their operation may cause to construction staking or existing survey monuments provided by the City. The PSAA reserves the right to charge the Contractor for all costs associated with the re-establishment of construction staking once it has been provided.

#### **XIV. Property Markers, Monuments, and Benchmarks**

A. Protection of Survey Markers

- 1. Requirements
  - a) The Contractor shall take all necessary precautions not to disturb, damage, move or destroy any property irons, monuments, benchmarks, or stakes marking the boundaries of property along or near the work.
  - b) If disturbance is likely or is unavoidable, the Contractor shall notify the PSAA with such promptness that all property markers, monuments, and benchmarks may be properly witnessed and/or protected for later replacement by a professional surveyor licensed in the State of Michigan.

2. Penalty or Right to Charge

- a) The Contractor is solely responsible for any damage that their operation may cause to existing survey monuments.
- b) If survey monuments have been damaged by the Contractor prior to their being witnessed by the City, Contractor shall be responsible for all costs included in re-establishing these points. It is particularly noted that in the case of survey Section Corners, USGS Control Points, and similar points, the costs associated with re-establishing these points can be substantial and requires specialized equipment and personnel for which the Contractor will be billed the entire cost.

## **XV. Inspections, Daily Reports, and Materials Delivery Tickets**

A. Responsibility for Inspection

1. Public Services Area

- a) The Public Service Area will inspect the following types of construction:
  - (1) Public water mains;
  - (2) Water services 4-inch diameter or greater to within 5 feet of the building.  
Note: Domestic water service connections are installed from the main to the curb box or shut-off exclusively by the Public Works Unit of the Public Services Area where such connections are 2-inch diameter or smaller;
  - (3) Public sanitary sewers;
  - (4) Sanitary sewer service leads being constructed in conjunction with installation of new public sanitary sewer main on a Private Development Project to 15 feet past the right-of-way line or within 5 feet of the building if the sewer is located in an easement;
  - (5) Sanitary sewer service leads being constructed in conjunction with installation of new public sanitary sewer main on a City capital project to within 5 feet of the right-of-way line, or as indicated on the Plans;
  - (6) Public storm sewers;
  - (7) Public roads;

- (8) Backfilling and restoration within City rights-of-way or public access easements for construction;
  - (9) Streetlight construction within City rights-of-way or public access easements;
  - (10) Installation of new sidewalks, bike paths, and drive approaches within City rights-of-way or public access easements;
  - (11) Reconstruction or replacement of existing sidewalks, bike paths, and drive approaches within City rights-of-way or public access easements;
  - (12) All work pursuant to a Grading/Soil Erosion & Sedimentation Control Permit issued pursuant to [City Code, Chapter 55 \(Unified Development Code\), Section 5.29.3C \(Grading Permit: Grading Permit Application\)](#); and
  - (13) Any other construction work in a public right-of-way occurring pursuant to a City issued Right-of-Way Permit.
- b) Inspection performed by the Public Services area shall be subject to the following:
- (1) Inspection pursuant to Section XV.A. (Responsibility for Inspection), Subsections 1.a)(10)-(12) (Public Services Area) of this Article shall include inspection of the subgrade, forms, and sand subbase for concrete sidewalks, shared-use paths, and drive approaches; and of the subgrade, sand subbase, and aggregate base for asphalt shared-use paths and drive approaches.
  - (2) No work shall be performed without notifying the PSAA.
  - (3) The Contractor shall provide the PSAA a minimum of 3 working days' notice prior to the start of construction in order to allow for the scheduling of inspection personnel.
  - (4) If work is to take place on any Saturday, the PSAA shall be notified no later than 9 a.m. on the preceding Thursday to allow scheduling of inspection personnel.
  - (5) Once construction begins, it is the Contractor's responsibility to schedule continuing inspection services for further work with the PSAA on a daily basis.



- (6) If work on the site ceases for more than two consecutive work days for reasons other than adverse weather, three working days' notice is required prior to restarting the work.
- (7) For Private Development Projects, if the Contractor schedules an inspection but does not arrive on the site at the scheduled time without prior notification to the PSAA, the Contractor will be charged for four hours of Civil Engineering Specialist time per the City's current Private Development Construction Engineering, As-Building, and Inspection Fees schedule for each occurrence.

## 2. Planning and Development Services Area

- a) Planning and Development Services Area will inspect the following:
  - (1) Water service leads from the curb stop box or service gate valve to the building;
  - (2) Connection of sanitary sewer service leads to existing service lead stubs, having been previously inspected by the Public Services Area;
  - (3) Sanitary sewer service leads from the existing sewer main tap to the building; and
  - (4) Private storm sewers.

## B. Right to Bill

### 1. Inspection Charges

- a) The applicant shall be billed for all necessary expenses of the Inspector.

## C. Inspector's Daily Reports and Quantity Verifications

1. Inspector's Daily Reports (IDRs) will be completed by the City's Inspector in accordance with the latest City guidelines for IDR Content for City and Private Development Projects.
2. For City Projects, the City's Inspector shall review and agree upon construction quantities daily with the Contractor, to the greatest extent possible.
3. All measurements and agreements reported on the City of Ann Arbor IDR are final, and subject only to verification for mathematical accuracy.

## D. Materials Delivery Tickets

### 1. Required Submittals by Contractor

- a) Daily delivery tickets, Material Certifications, and/or Bills of Lading shall be furnished by the Contractor to the City Inspector for materials delivered to the site including but not limited to:
  - (1) Asphalt delivery tickets;
  - (2) Concrete delivery tickets;
  - (3) Aggregate Delivery tickets;
  - (4) Landscape materials, fertilizer, and seeding tickets; and
  - (5) Any other materials delivered to site for which payment will be requested, i.e. temporary construction signs, plastic drums, and barricades; reinforcing and/or structural steel; and miscellaneous materials and accoutrements needed to properly complete the work.

## XVI. Materials Testing

### A. Responsibility for Testing

#### 1. City Projects

- a) Required testing as described in Section XVI.B. (Required Testing for Public Improvements) of this Article shall be performed by the City and/or its designated testing consultant.
- b) Contractor may, at their discretion and sole expense, run duplicate tests. If such tests are conducted, the results will be considered informational only. The Engineer shall determine the applicability of independent test results and shall render a decision as to the proper interpretation of any or all test results. The Engineer's decision regarding test results shall be considered final.

#### 2. Private Development Projects

- a) The Contractor is responsible for, and shall pay all fees associated with, all required testing as described in Section XVI.B. (Required Testing for Public Improvements) of this Article for any Public Improvements.

- b) Tests shall be performed by a testing firm acceptable to the City.
- c) All test reports shall be promptly submitted to the City for review and approval. PSAA may place a hold on initial acceptance of the utilities if testing documentation has not been received.

B. Required Testing for Public Improvements

1. Cohesive Soils, Granular Materials, and Dense-Graded Aggregate

- a) Sieve and proctor analyses shall be performed on all granular material and dense-graded aggregates at the supply pit prior to their introduction to the site. The maximum dry density of all soils will be measured against the AASHTO T 180 (Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop) modified proctor value (with the Large Aggregate Correction Factor included).
- b) Proctor analysis performed in accordance with the requirements of the AASHTO T 180 will be performed on cohesive soils used in the construction of improvements where their use is either required by the project specifications or desired by the Contractor. Cohesive soils to be incorporated into any project shall be free of frost-textured materials, organic matter, or other deleterious materials, and shall meet the approval of the PSAA.
- c) The results of these analyses shall be forwarded to the PSAA prior to the commencement of construction activities.
- d) The measured in-place dry density of granular and aggregate materials shall be checked at locations determined appropriate by the PSAA. There will be no limit to the number or location(s) of the tests to be taken. A nuclear densometer will be used to obtain the in-place density readings
- e) Additional sieve and/or proctor analyses in accordance with AASHTO T 180 will be required when, in the opinion of the PSAA, the character of the material differs from that previously tested and approved.

## 2. Bituminous Materials

- a) Samples shall be taken from the hauling unit at the asphalt plant to determine conformance of the approved HMA mix design to the applicable MDOT or other standard as set forth in these Standards. The PSAA shall establish the number and timing of samples to be taken on a daily basis for each material being placed.
- b) The measured in-place density of bituminous materials will be based upon the Theoretical Maximum Density (TMD or Gmm) value of the material as computed on the material's mix design. There will be no limit to the number or location(s) of the tests to be taken. All density values will be measured against the target TMD and/or Gmm value. A nuclear densometer will be used to obtain the density readings.
- c) Bituminous materials may be rejected for use on a project when, in the opinion of the PSAA, the character of the material obviously differs from that previously tested and/or utilized on the project and approved.
- d) All bituminous materials placed within public rights-of-way shall be evaluated against the volumetric properties contained on the approved mix design. Price reductions and/or removal and replacement of the bituminous materials may be required depending upon the nature and severity of the material's failure(s).
- e) For projects funded in whole or in part through MDOT, with Federal funds, the City shall administer all testing and acceptance of materials incorporated into the project based upon published Federal/MDOT Standards and Specifications and the contract documents for the project.

## 3. Concrete

- a) Temperature, slump, and air content of the plastic concrete shall be tested.
- b) Concrete cylinders and flexural strength beams shall be cast for the required acceptance strength testing and open-to-traffic strength as required by the project specifications. Any requested early-strength specimens shall be provided.

- c) Steel reinforcing bars shall be tested. The submittal of material certifications from MDOT-approved suppliers, may be approved by the PSAA, in lieu of testing. However, the PSAA reserves the right to perform physical testing at any time during the course of the work in order to ensure all materials meet the requirements of the project specifications.
  - d) Concrete materials may be rejected for use in the project when, in the opinion of the PSAA, the character of the material obviously differs from that previously tested and/or utilized on the project and approved.
4. Backfill and/or Material Density Testing
- a) The City reserves the right to test the density of any materials placed at any location and time it deems necessary in order to ensure compliance with these standards. The performance of the required density testing shall not be considered grounds for a project delay on City Projects should the test results not meet the specification requirements.

## **XVII. Working Conditions and Good Will**

### **A. General Working Conditions**

#### **1. Allowable Hours of Work**

- a) Hours of work for construction, repair, remodeling, demolition, drilling or excavation work shall be as stated in [City Code, Title IX \(Police Regulations\), Chapter 119 \(Noise Control\), Article I \(Non-Vehicular Noise\), Sec. 9.363\(5\)](#) which presently permits work on Monday through Saturday between the hours of 7:00 a.m. and 8:00 p.m.
- b) Such work will not be permitted at other times unless authorized by the Community Services Area Administrator.
- c) Contractors shall work ONLY when there is adequate daylight to properly see all elements of the work being performed except when approved by the PSAA.
- d) Hours of work on State trunklines are subject to the MDOT-issued permit for said work.

2. Working in the Rain
  - a) The Contractor shall not work in the rain unless authorized in writing by the PSAA.
  - b) The Contractor on a City Project shall not be compensated for unused materials or downtime caused as a result of rain.
  - c) The Contractor is solely responsible for repairing all damage to the work and to the site, including road infrastructure, road subgrades, and any adjacent properties, which are caused as a result of working in the rain.
3. Dust and Noise Control
  - a) The Contractor shall provide, operate, and maintain adequate (in the opinion of the PSAA) means of noise and dust control during the course of construction 24 hours per day.
4. Good Will
  - a) The Contractor shall at all times maintain the best possible relations among the City, other public authorities and entities, other Contractors, and the public.
  - b) The Contractor shall at all times conduct their work such that disturbance to the surrounding community will be minimized.

## **XVIII. Work in Right-of-way: General**

### **A. Permits**

1. Permits and Inspection Required
  - a) Prior to undertaking any work in a public right-of-way, the Contractor must obtain all required permits in accordance with Section VIII (Permits) of this Article and all work shall be inspected in accordance with Section XV (Inspections, Daily Reports, and Materials Delivery Tickets) of this Article.
  - b) The PSAA may grant permission to make an emergency street cut or excavation before a permit is issued, if public safety requires immediate action.

B. Responsibility for Utility Location

1. Contractor Responsibility

- a) It shall be the Contractor's sole responsibility to locate or have located all existing utilities prior to commencement of construction activities. This shall be performed in accordance with Public Act 174 of 2013, Miss Dig Underground Facility Damage Prevention And Safety Act, MCL 460.721 – MCL 460.733 as amended.

C. Excavation and Trenching

1. Contractor Responsibility

- a) Refer to Section VIII.B.2.g) of this Article.

2. Excavation and Trenching Limitations and Traffic Maintenance

- a) At no time shall more than 200 feet of trench be opened and incompletely backfilled during working hours.
- b) At the end of each work day, no more than 10 feet of trench may be left open. All remaining trenches and excavations shall have their entire perimeter properly protected with PSAA-approved fencing materials. All protective measures shall be effective.
- c) The remainder of the area of trenching operation shall be available for safe vehicular and pedestrian traffic at all times.

D. Protection of Existing Signage

1. Submittal of Sign Protection Plan

- a) Prior to construction, the Contractor shall submit a plan detailing the temporary covering of conflicting traffic and/or parking signs to the PSAA for review and approval. Only signs so approved shall be covered.

2. Damage to Signs

- a) Existing City-owned signs damaged by the Contractor during the course of construction will be repaired by the City at the Contractor's expense.

E. Temporary No Parking Signs

1. Areas of Unmetered Parking

- a) Certain areas of proposed construction may allow for unmetered on-street parking. In order to perform construction in these areas, the Contractor shall arrange for the placement of No Parking signs and other traffic control devices as necessary with the City Engineering Unit. The placement of the needed No Parking signs and other related control devices for non-City projects shall be placed as directed by the PSAA at the Contractor's expense. For City Projects, the Contractor will be compensated for this work in accordance with the terms of the contract.
- b) Where such No Parking signs have been installed, the Contractor is solely responsible for delays encountered due to vehicles parked on the street. Enforcement of No-Parking Zones can only be performed by the City and only if No Parking signs had been properly placed at least 48 hours prior to the desired enforcement date.

F. Parking Violations

1. Contractor Parking Violations

- a) Parking violation citations issued to the Contractor, subcontractors, and material suppliers, including their employees, shall be enforced under the appropriate section(s) of the City Code.

G. Idling Violations

1. Contractor Idling Violations

- a) Idling violation citations issued to the Contractor, subcontractors, and material suppliers, including their employees, shall be enforced under [Chapter 72 of City Code](#).



## XIX. Street Cuts

### A. Open-Cut Excavation Restrictions

#### 1. Time Restrictions

- a) Partial or complete transverse or longitudinal street cuts of recently paved or resurfaced streets shall be prohibited. Utility main or service lead construction shall be bored or directionally drilled in accordance with these Standards, in lieu of open-cut construction based on the time restrictions per Table A of this Article.
- b) The PSAA may waive the time restrictions per Table A of this Article, if maintaining public safety requires immediate action or if other just cause is shown to exist.

<b>Table A</b>	
<b>Street Cut Time Restrictions By Treatment Type</b>	
<b>Treatment Type</b>	<b>Time Restriction</b>
Reconstruction	10 Years
Resurfacing (new HMA placement greater than 2")	7 Years
Capital Preventive Maintenance (pavement treatments less than or equal to 2" thick)	3 Years

### B. Restoration Requirements for Street Cuts

#### 1. Compliance with Standards and City Code

- a) All street cuts shall be performed by the permittee in accordance with these Standards and [City Code, Title IV \(Streets and Sidewalks\), Chapter 47 \(Streets\)](#).

#### 2. Cut and Removal

- a) Whenever a part of a pavement slab, square, or section of pavement, curb, gutter, sidewalk, or driveway is broken or damaged by the person making any excavation or opening in or under any street, alley, or within any public right-of-way, the entire pavement slab, square, or section shall be removed to the score, groove or saw-cut line and be replaced or reconstructed.

- b) Where the line of cut would be less than 2 feet from an existing expansion or plane-of-weakness joint, the concrete shall be removed to that joint.
3. Daily Covering of Openings
- a) A steel plate, pegged in place, or an approved bituminous patching mixture, shall be placed on all openings within the roadway surface at the close of each working day. An exception may be granted by the PSAA for complete reconstruction of a street where traffic is not being maintained on the section of roadway on which work is occurring.
4. Contribution to Resurfacing in Lieu of Patching
- a) If the total area of the proposed patch (or anticipated damaged pavement area) exceeds 25% of the total pavement surfacing in any block, the PSAA may require a negotiated contribution from the permittee for the resurfacing of such street, in lieu of requiring permanent patching.
  - b) Such negotiations shall be carried on and contributions agreed upon prior to issuance of a Right-of-Way Permit. Cases in which such negotiations are appropriate may include, but are not limited to, anticipation of paving surfaces adjacent to the street opening being damaged where trenches are made parallel to the street, where a number of cross trenches are laid in close proximity to one another, or where the equipment used to perform the construction may cause such damage as to render the street unreparable via the use of patching.
5. Temporary Pavement Restoration
- a) All openings or trenches across traffic lanes, where it becomes necessary to remove any existing surfacing or pavement, shall be backfilled to within 12 inches of the surface in a manner that complies with these Standards or that otherwise restores the materials removed from the trench.
  - b) The remaining portion of the trench shall be filled with compacted MDOT 22A or 21AA aggregate base course material and a minimum of 3 inches of bituminous cold-patch material, or as directed by PSAA, until such time as permanent pavement restoration can be made. The bituminous cold-patch material shall be compacted to the point where further settlement or shoving of the material will not occur. The temporary restoration surface shall be flush to the existing pavement.

- c) Each party making street openings shall routinely check their temporary pavement. The temporary pavement shall be properly maintained in a safe condition (e.g., ADA-compliant vertical deflection, absence of trip hazards, etc.) at all times by the permittee until permanent pavement is placed.
- d) All temporary patches made between November 15 and April 15 shall be checked at least every 14 days and repairs made as needed.

6. Permanent Pavement Restoration

- a) The final pavement surface shall be placed within 14 days of the completion of construction within the right-of-way, as specified herein. HMA mixtures for road patches shall be the equivalent mix as the adjacent roadway.
- b) Permanent restoration of all street cuts made in the off-season (November 15 to April 15) shall be completed before June 15 of the following construction season.

C. Corrections and Violations

1. Right of City to Deny Permits

- a) Any permittee found in violation of these requirements may be denied additional permits until all openings produced by said permittee have been properly repaired.

2. Corrections

- a) The permittee is responsible to correct any defect in a permanent or temporary pavement restoration area which occurs within the period of time beginning with the start of the construction activity and ending three years after the date of completion of the permanent restoration.
- b) Corrections must be completed within the time specified in the notification from the City.
- c) The City may correct such defect(s) if it is determined to be causing damage to the surrounding infrastructure, creating a public hazard, or if the permittee fails to respond in accordance with the time requirement specified herein. Any expense incurred by the City in correcting such defect shall be paid by the permittee and the permittee shall receive no additional permits until such payment is received in full by the City.

## XX. Traffic and Pedestrian Control and Access

### A. Maintenance of Traffic

#### 1. General Contractor Responsibilities

- a) The Contractor shall maintain local vehicular, bicycle, and pedestrian traffic and access to all real properties, private drives, transit stops, sidewalks, etc., throughout the project at all times unless otherwise noted on the Plans and arranged and approved in writing by the PSAA.
- b) The operation and maintenance of traffic control devices per the approved Plans, and personnel to control and direct traffic movement to residences along a street, are the responsibility of the Contractor.
- c) The Contractor shall maintain two-way traffic on major streets, access for local traffic on streets, and keep intersections open to traffic at all times, unless specifically authorized otherwise in writing by the PSAA.

### B. Compliance with Agency Standards

#### 1. MDOT, MMUTCD and ADA/PROWAG

- a) Traffic control devices and maintenance schemes shall be in accordance with Sections 104, 812, and 922 of the [Michigan Department of Transportation Standard Specifications for Construction](#) (hereafter MDOT Specifications) and the ADA/PROWAG, and be placed and operated in accordance with Part VI of the MMUTCD.

### C. Road Closures

#### 1. Road Closure Requirements

- a) While total road closure may be necessary during certain construction operations, this shall be minimized to the greatest extent practicable. The PSAA shall approve any total road closure before Contractor begins any work that requires same. The contractor shall provide notification to the PSAA a full 7 calendar days in advance of a planned full road closure. The duration and timing of any such closures shall only be as authorized by the PSAA.

- b) The Contractor shall obtain a Traffic Control Permit in accordance with Section VIII (Permits) of this Article, a minimum of 3 business days in advance of any street closing or restriction of traffic. Certain roadway closures may require additional notification due to the complexity of the closure, duration, importance to the community, or necessary notification and/or coordination with other City departments or outside agencies.
- c) Upon issuance of a Traffic Control Permit, the Contractor shall notify each property in writing, at a minimum on the block(s) on which the work is occurring, or within 1,000 feet of where the work is occurring, whichever is less. At the discretion of the PSAA, the Contractor may be required to notify additional properties, depending on the impacts of the work and extents of any detours. The Contractor shall distribute such notices a minimum of 2, and no more than 7, working days prior to the commencement of the work. For City Projects, time for these notifications shall be considered to be included in the Contractor's critical path schedule. A copy of this notice shall be supplied by the City to the PSAA, City Solid Waste, Police and Fire Units, Ann Arbor Area Transit Authority (AAATA), Ann Arbor Public Schools, and U.S. Postal Service, a minimum of 5 working days prior to the closure.

D. Sidewalk and Bike Facility Maintenance During Construction

1. Barricades and Signs Required

- a) Pedestrian and bicycle traffic shall be maintained in accordance with ADA/PROWAG requirements and all applicable City Codes and standards while performing all roadway work, underground utility installation, and sidewalk and driveway repair. To accomplish this work, advance warning signs, pedestrian channelizing and lighted Type III barricades, and any and all other required traffic maintenance devices shall be placed by the Contractor, in accordance with their approved Pedestrian and Bicyclist Maintenance Plans, and as directed and approved by the PSAA. Where needed, "Share the Road" signage shall be provided on pavement for bike lanes impacted by construction activities.

## **XXI. Handling Excavated and Backfill Materials on Construction Sites**

### **A. Intent of Section**

1. The intent of this Section is to ensure that material stored on-site does not impede traffic flows, drainage, or sight distances and that pedestrian and vehicular traffic maintenance is not negatively impacted.

### **B. Excavation During Construction**

1. It is the sole responsibility of the Contractor to coordinate and control the amount of material on-site at any one time and to assure compliance with Section XXI (Handling Excavated and Backfill Materials on Construction Sites) A.1. of this Article.
2. All excavated material that has not been certified for use as backfill material shall be removed from the site immediately.
3. Excavation may be suspended by the PSAA if sufficient equipment for immediate removal of excavated material is not available.
4. Material to be used for backfilling purposes may be stored on-site as allowed by the PSAA, provided all terms of these Standards are met.
5. It may be required that backfill material be moved on the site during a workday or removed from the site at the end of each workday in order to comply with these Standards.

## **XXII. Material Delivery and Storage**

### **A. Required Notification to City**

#### **1. Materials Delivery Notice Requirements**

- a) The Contractor shall provide the PSAA a minimum of 3 full working days' notice (for the initial delivery of materials to a jobsite) and 1 full working day notice (for subsequent material deliveries) prior to delivery to a jobsite of any materials required for the work to be inspected by Public Services. The Contractor shall also provide notification when the material(s) have arrived at the jobsite.

- b) Notice for material delivery will not be acknowledged unless notice to proceed has been granted (for City Projects) and all necessary permits for construction have been approved and all fees have been paid. Any materials delivered without proper inspection and approval are subject to rejection and removal from the jobsite until such time as the necessary approvals have been granted.

B. Materials Storage

- 1. Storage practice and location shall be subject to City inspection and approval.
- 2. The Contractor may store materials on the Site for future incorporation into the work entirely at the Contractor's own risk until the work is accepted in its entirety by the City.
- 3. Building materials for Private Development Projects shall be stored on the Site and shall not be stored in the public right-of-way unless a barricade permit is obtained by the Contractor.
- 4. Burning or burying on the site of any materials is NOT permitted.
- 5. On-site handling and storage of flammable liquids and all other chemicals shall comply with all safety regulations and codes pertaining thereto. Hazardous materials shall not be stored on-site without the express written consent of the PSAA.

### **XXIII. Temporary Facilities**

A. Water Facilities

- 1. Use of City Water and Hydrants
  - a) Water will be provided by City personnel at the Contractor's expense from City hydrants when necessary and where available, and only with approval of the PSAA.
  - b) Contractor shall complete a [Hydrant Meter Application](#), pay the applicable deposit, and comply with stipulations set forth in the application. The City will then install the hydrant meter and backflow preventer.

- c) The Contractor shall not operate hydrants or valves unless authorized by the PSAA. Unauthorized use of a fire hydrant is a violation of [City Code, Title II \(Utilities and Services\), Chapter 27 \(Water Service\), Section 2:30 \(Hydrant use and valve operation\)](#). Violators will be subject to citation by City personnel. The City may request the Contractor's assistance in operating valves and fire hydrants during the prosecution of the work. The Contractor shall cooperate in all reasonable requests made by the City in this regard.

B. Toilet Facilities

1. Contractor Responsibility

- a) The Contractor shall provide temporary chemical toilet facilities for the use of City and its own employees.
- b) The Contractor shall properly remove from and dispose of all wastes from chemical toilets off the City's property.
- c) All costs for disposal of wastes, and for maintenance of chemical toilets, shall be at the Contractor's own expense.
- d) All chemical toilet facilities, and disposal of wastes, shall be satisfactory in every respect to the City's representative and all governing bodies having jurisdiction.

C. Light and Power

1. Contractor Responsibility

- a) The Contractor shall provide their own temporary light and power.

D. Temporary Office

1. Contractor Responsibility

- a) The Contractor may establish and maintain, at the Contractor's own expense, office headquarters at the site of the work. The Contractor must make all arrangements for such space.
- b) Prior to erection or placement of any temporary buildings or facilities, the Contractor shall submit plans of these buildings or facilities to the PSAA for general approval of materials and appearance. Approval of temporary buildings or facilities may be required from the Building Official.



- c) The Contractor must arrange, and pay for if necessary, suitable parking for their employees, sub-contractors, and others who may utilize the facility when establishing temporary office facilities.

E. Removal of Temporary Facilities

1. Contractor Responsibility

- a) The Contractor shall remove each temporary facilities provided by it at the termination of their usefulness or the termination of the work, or when requested by the PSAA.
- b) The Contractor shall leave the site and all of its elements in a condition that is equal to, or better than, the conditions that existed prior to the establishment of temporary office facilities.

**XXIV. Protection of Property and Safety**

A. Safety

1. Contractor Responsibility

- a) During the progress of the work, the Contractor shall continuously maintain adequate facilities for the protection and safety of all persons involved in the work and its inspection. The Contractor's operations shall not damage or harm any real or personal property during the performance of the work.

2. Barricades and Warning Signs

- a) The Contractor shall provide all barricades, warning signs, warning lights, etc., as detailed on the Plans, and/or as required by the MMUTCD or the appropriate MDOT Specifications in compliance with all requirements of the City and of all authorities having jurisdiction.

B. Damages by Contractor

1. Contractor Responsibility

- a) All damages or interruptions which occur to property, structures, or facilities as a result of acts or omissions by the Contractor, their subcontractor, or supplier shall be remedied by the Contractor at the Contractor's own expense.

- b) Premium wages (if any) required to remedy any such damages or interruptions in the shortest possible time and to the complete satisfaction of the PSAA shall also be at the Contractor's expense.
- c) Each item on private property outside the easement limits removed or damaged by the Contractor shall be restored to a condition that is equal to or better than its original condition.
- d) All such work to restore the existing conditions to the satisfaction of the property owner or City is the sole responsibility of the Contractor.

## **XXV. Protection of Trees**

### **A. Required Tree Protection**

#### **1. Compliance with Plans**

- a) Existing trees within the area of the work that are indicated on the Plans to be saved shall be protected in accordance with Article 12 (Standard Details), SD-L-3 (Tree Protection) of these Standards.

### **B. Damage to City-Owned Trees**

#### **1. Contractor Responsibility**

- a) Damage to City-owned trees by the Contractor's operation, or the operation of the Contractor's subcontractor or supplier, shall be repaired under the direction of the Urban Forestry and Natural Resources Planning Coordinator by an approved forestry contractor retained by the Contractor.
- b) Alternatively, at the discretion of the Urban Forestry and Natural Resources Planning Coordinator, such required repairs may be performed by the City with all associated costs being charged directly to the Contractor. Payment of these charges is the Contractor's sole responsibility. On City Projects, in cases of non-payment by the Contractor for said repairs, the City may elect to withhold sufficient funds from the Contractor to cover its cost of repairing any damage created by the Contractor.

- c) Any City-owned tree deemed by the Urban Forestry and Natural Resources Planning Coordinator to be damaged beyond repair shall be removed with all associated costs being charged directly to the Contractor. A canopy loss fee determined by the City shall be paid by the Contractor for the loss of canopy.

C. Work Requirements around City-Owned Trees

1. Contractor shall not store or place equipment and/or materials inside the critical root zone of any City-owned tree.
2. Contractor is responsible for properly pruning trees to prevent damage. If branches greater than 2 inches in diameter require pruning, Contractor must contact the City Forestry Department for consultation and evaluation.
3. No roots of City-owned trees greater than 2 inches in diameter are to be cut. If roots are encountered greater than 2 inches in diameter that need to be cut, Contractor must contact the City Forestry Department for inspection and consultation.
4. The contractor shall take care not to cause undue damage to the existing tree, including the roots greater than 1½ inches. Excavation shall be done using hand tools, hydro excavation, or other method as approved by the engineer, as directed by the PSAA
5. Roots requiring pruning shall be pruned cleanly with a saw and not pulled or torn by large equipment.

## **XXVI. Casing Pipe**

A. Required Size

1. The inside diameter of the casing pipe shall be at least 4 inches greater than the largest outside diameter of the carrier pipe joints.

B. Casing Pipe Materials

1. All casing pipe shall be steel.
2. Pipe complying with the following minimum requirements shall be utilized unless more stringent requirements are established by a railroad or other governing entity.
3. Minimum nominal casing diameter and pipe thickness shall be per Table B of this article.

<b>Table B</b>	
<b>Casing Pipe Diameter and Wall Thickness</b>	
<b>Nominal Casing Pipe Diameter</b>	<b>Minimum Wall Thickness</b>
Less than 12"	0.188"
12" and 14"	0.250"
16"	0.281"
18"	0.312"
20" and 22"	0.344"
24"	0.375"
26"	0.406"
28"	0.438"
30"	0.469"
32"	0.500"
34" and 36"	0.532"
38"	0.562"
40"	0.594"
42"	0.625"
44" and 46"	0.657"
48"	0.688"
Greater than 48"	As directed by Pub. Serv. Area Admin.

4. Pipe shall be non-spiral welded pipe and have a minimum yield strength of 35,000 psi.
5. All joints shall be made leak-proof using full penetration, continuous welds. Welds shall be ground smooth outside and inside (except inside 22 inch diameter and less) to prevent conflict with the soil or carrier pipe placement.
6. Pipe shall meet the requirements of ASTM A53 (Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless), Type E or S, Grade B or ASTM A139 (Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over)), Grade B.
7. Spacers and casings shall conform to Article 12 (Standard Details), SD-W-6 (Typical Pipe Casing Detail) of these Standards, unless otherwise approved by PSAA.

## **XXVII. Blasting**

### **A. Approval Required**

1. Blasting for excavation will be permitted only after securing the written approval of the PSAA and only when proper precautions are in place and functional for the protection of persons and property.
2. The hours of blasting will be fixed by the PSAA.

### **B. Damages**

1. All damage caused by blasting shall be repaired by the Contractor at the Contractor's sole expense.

### **C. Conformance to Codes and Standards**

1. The Contractor's methods and procedure in blasting shall conform to all applicable laws, including State, County and City.

## **XXVIII. Soil Erosion Control**

### **A. Compliance**

#### **1. Contractor Responsibility**

- a) The Contractor shall install and maintain soil erosion and sedimentation control measures as required by applicable laws and these Standards, and as indicated on the Plans.

## **XXIX. Drainage Maintenance**

### **A. Correction of Drainage Problems**

#### **1. Contractor Responsibility**

- a) All drainage problems resulting from the Contractor's operations shall be corrected by the Contractor at the Contractor's expense within the time frame specified by the PSAA and the Contractor.

## XXX. Truck Routes

### A. Compliance with City Code

#### 1. Designated Truck Routes

- a) Truck traffic within the City must travel on designated truck routes as set forth in [City Code, Title X \(Traffic\), Chapter 126 \(Traffic\), Article VIII \(Miscellaneous Rules\), Sections 10.102 \(Truck routes\)](#).
- b) A [Truck Routes](#) map contained on the City's [City Maps](#) web page under the Transportation heading depicts routes designated as such by traffic control orders issued pursuant to City Code as referenced in Section XXX.A.1.a) (Designated Truck Routes) of this Article.

#### 2. Weight Restrictions and Frost Laws

- a) Weight restrictions may be set by the City in accordance with [City Code, Title X \(Traffic\), Chapter 126 \(Traffic\), Article VIII \(Miscellaneous Rules\), Sections 10.102 \(Truck routes\) and 10.99 \(Weight restrictions\)](#).
- b) All such weight restrictions shall be enforced by the City Police Services Unit, as authorized by [City Code, Title X \(Traffic\), Chapter 126 \(Traffic\), Article VIII \(Miscellaneous Rules\), Sections 10.102 \(Truck routes\)](#) and Section 257.726b of the Michigan Vehicle Code.
- c) Weight restrictions shall be in accordance with load limits established by Michigan Vehicle Code, Section 257.722, except when seasonal weight restrictions ("frost laws") are in effect.
- d) Seasonal weight restrictions are typically put into effect by the City when so imposed by the WCRC. These restrictions are generally placed on streets during the months of February, March, and April.
- e) Seasonal weight restrictions may, however, be placed on City streets during any month the City determines they are necessary to protect the streets from unnecessary damage.
- f) When seasonal weight restrictions are in effect, load limits are reduced by 35% on City-controlled streets.
- g) Requests for load limit waivers must be made in writing to the PSAA.