

FIBER OPTIC STANDARD OPERATING PROCEDURES

SECTION 1: PURPOSE AND APPROVALS

These Standard Operating Procedures (SOPs) are meant to provide guidance, policies, procedures, and specifications for submitting applications, requesting permits, and installing fiber optic installations within City of Aurora's Rights-of-Way ("ROW"), streets and utility easements as defined below.

Any questions or concerns may be addressed to the following contact in the Land Development Review Services Division of Public Works:

Title: Land Development Review Services ("Telecommunications Project Manager")
Address: City of Aurora
15151 E. Alameda Parkway, Suite 3200
Aurora, Colorado 80012
Phone: 303.739.7300
Email: fiberapplication@auroragov.org

All items outlined in these SOPs shall be presented at the time of submittal. Any items missing or not conforming to these SOPs will be returned to the Applicant for correction. Further processing of the submittal will not be accomplished until missing items are included or corrections are made.

The Director of Public Works, or their designee, hereby establishes these SOPs for granting consent to a Company(ies), as that term is defined hereinbelow, for the installation of any fiber optic installations in the ROW. The Director of Public Works, or their designee, may revise these SOPs as they deem necessary. The City Engineer has administrative authority to regulate and approve applications by Companies for use of the ROW pursuant to Chapter 126 of the Aurora City Code and Section 4.3.14 of the Uniform Development Code.

Colorado statutes grant authority for Companies to locate facilities in the ROW generally, while preserving the police power and local authority of the City to determine the appropriate manner that such facilities are deployed and maintained. C.R.S. 38-5.5-101, et seq.

ROW identified for dry utility use in the ROW may be used by a Company, seven (7) days a week, twenty-four (24) hours a day, only for the installation, maintenance, upgrade, removal, reinstallation, relocation, replacement, use, and operation of its fiber optic installations and not for any other purpose, so long as such use does not interfere with or endanger the City's use of its ROW.

These SOPs do not supersede a Company's existing approved Fiber Optic Master License Agreement (FOMLA) or any other approved written agreement between the City and Company regarding the Company's use of the ROW. If a Company does not have a FOMLA or other written agreement, the City shall grant to Company a non-exclusive FOMLA, subject to the terms, conditions, and other provisions set forth in said FOMLA and all Applicable Laws. The format and content of said FOMLA shall be substantially similar to the model FOMLA as attached hereto as the **Exhibit A**. Further, a FOMLA shall be a limited grant of authority subject in all respects to Applicable Law regarding the ROW, and further subject to all provisions contained in these SOPs.

All Fiber Plan Sets that are over 300 linear feet shall be formally reviewed by the City to ensure compliance with these SOPs. No Fiber Plan Set shall be subdivided to avoid the requirements of these SOPs.

SECTION 2: DEFINITIONS

The following terms, phrases, words, and their derivations shall have the meaning given herein. When not consistent with the context, words used in the present tense include the future, words in the plural include the singular, and words in the singular include the plural. Words not defined shall be given their common and ordinary meaning. The word "shall" is always mandatory and is not merely discretionary.

1. AASHTO. American Association of State Highway and Transportation Officials.
2. Administrative Review. Non-discretionary evaluation of an application by the Director of Public Works. This process is not subject to a public hearing. Procedures for Administrative Review are established herein.
3. Affiliate. Any entity that, directly or indirectly controls, is controlled by, or is under common control with, the Company.
4. Applicable Laws. Any statutes, constitutions, charters, ordinances, resolutions, regulations, the Roadway Design and Construction Specifications, AASHTO Roadside Design Guide, Procedures, rules and regulations promulgated by any director of a department of the City, judicial decisions, rules, tariffs, franchises, administrative orders, certificates, orders, or other requirements of the City or other governmental or judicial authority having the force and effect of law that determines the legal standing of a matter relating to fiber optic facilities and systems.
5. Applicant. Any Company, Contractor or Entity submitting applications, requesting permits, and installing fiber optic installations within ROW, streets and utility easements.
6. ASTM. American Society for Testing and Materials.
7. ATSSA. American Traffic Safety Services Association.
8. CDOT. Colorado Department of Transportation.
9. City of Aurora or City. City of Aurora, Colorado.
10. City Engineer. City Engineer or their designee.
11. City Manager. City Manager or their designee.
12. Director of Public Works. Director of Public Works or their designee.

13. Company/Companies. Any person, firm, agency, representative, agent, company, partnership or other provider, owner, operator, or approved assignee of fiber optic installations.
14. Complete Application. The formal application that is filed after locations have been approved and addressed by the City and contains the following:
 - a. All necessary information contained in Fiber Plan Sets required for the type of installation in accordance with these Procedures, the FOMLA, and the City's Roadway Design and Construction Specifications Manual.
 - b. All information submitted and accepted through the City's online web portal system (i.e., AMANDA/ACCELA).
15. Contractor. Any person, partnership, corporation, or other legal entity who undertakes to construct, install, alter, move, remove, trim, demolish, repair, replace, excavate, or add to any improvements or public improvements that requires work to be undertaken and workers, and/or equipment to be in the ROW in the process of performing such operations. Contractor, as the term is defined herein, should include all types of general contractor and subcontractor and successors or designees of said contractor.
16. Critical Infrastructure. All of the assets, systems and networks, physical and virtual, that are essential to the proper functioning of City's public health or safety, security, or any combination of the above. Critical infrastructure includes, but is not limited to, transportation systems, water supply (e.g., drinking water, wastewater/sewage, drainage, specifically any utility lines over 12" owned or operated by Aurora Water), internet and mobile networks, public health systems (e.g., hospitals, ambulances), electric utilities, police, fire and emergency services systems, fiber optic, traffic signals, and appurtenances thereto.
17. Entity. Any person, corporation, company, agency, government, special district, school district, quasi-governmental agency, contractor, subcontractor, Utility, or other person(s), firm(s) or corporation(s) seeking to perform work within City ROW.
18. Fiber Optic Master License Agreement or Agreement or FOMLA. A document, substantially in the form attached as **Exhibit A**. Company shall be required to enter into a FOMLA and any addendum thereto as needed.
19. Fiber Plan Set (previously known as "Plan Set"). Construction drawings that clearly depict the route requested including installation details in accordance with these SOPs and the City's Applicable Laws.
20. Fire Lane. For purposes of engineering design and construction, a designated way that provides primary or secondary access to a building or facility to be used primarily by emergency vehicles.
21. Holiday. A legal holiday recognized by the City during which City offices are closed.
22. Micro Trenching or Slot-cut Trenching or Shallow Trenching. An installation method whereby cutting thin (1 inch to 4 inches) channels is to a depth of 6 inches to 24 inches.
23. Aurora Municipal Code or Municipal Code. The adopted City of Aurora Municipal Code, as may be amended from time to time.

24. MUTCD. Manual on Uniform Traffic Control Devices, current edition as approved and published by the U.S. Department of Transportation, Federal Highway Administration.
25. Owner. A person with a legal or equitable interest in ownership of real or personal property.
26. Permit. Permit issued by the City in the form approved by the City Manager and that is required by the Municipal Code and the Roadway Manual to use ROW.
27. Permit Holder. Any Entity holding a valid Permit.
28. Person. Any corporation, partnership, proprietorship, individual or organization, governmental organization, or any natural person.
29. Private Street. For purposes of engineering design and construction, every street, roadway, or way not dedicated to public use.
30. Public Property. Any real property owned by the City other than ROW.
31. Public Street. For purposes of engineering design and construction, every street, roadway, or way dedicated for the use by the general public.
32. Rights-of-Way or ROW. The surface, air space above the surface, and the area below any public street, road, highway, freeway, lane, public way, alley, court, sidewalk, boulevard, drive, bridge, tunnel, parkway, or easement now or hereafter owned or held by the City, or dedicated for use by the City, for use by the general public, or for use compatible with the service or operations of Utilities. ROW does not include parks, trails or open space.
33. Rules and Regulations. Conditions, standards, rules, and requirements for the performance of work in the ROW, as amended from time to time by the City Manager and authorized by the Municipal Code.
34. Roadway Design and Construction Specifications or Roadway Manual. Public Works Department's rules and regulations entitled Roadway Design & Construction Specifications, most currently adopted version that is enforced by the City Engineer pursuant to authority granted in section [126-36](#) of the Municipal Code, and promulgated pursuant to section [2-3](#) of the Municipal Code.
35. Street. Any vehicular right-of-way that provides access to more than one lot. Streets do not include driveways within parking lots of single-family attached residential, multiple-family residential, commercial, or industrial sites.
36. Subcontractors. Any person, firm or corporation performing work associated with an active Permit issued to another Contractor or Entity.
37. Utility or Utilities. Infrastructure, equipment, or improvements of any kind or type associated with the delivery, provision, transmission, distribution, operation, function, or monitoring of publicly available services commonly or customarily provided by public or private Entities to customers of the Entities or to the general public such as, but not limited to, water, sanitary sewer, stormwater sewer, electricity, gas, telephone, communication, telecommunication, broadband, cable and pipe or conduit for such services.
38. Utility Easement. Dedicated by plat or other separate instrument to the City, or dedicated for use by the City, use by the general public, or for use compatible with the service or operations of Utilities.

39. Work. Any activity undertaken by a Permit holder within the ROW.
40. Work Days or Working Days. All days of a week that City offices are open for business.

SECTION 3: HOW TO APPLY

3.1 Contact Telecommunications Project Manager

Verify fully executed FOMLA, proof of insurance showing City of Aurora and Letter of Authority is completed with first Fiber Plan Set with the Telecommunications Project Manager. If no FOMLA is on file, Applicant shall execute FOMLA first.

Pre-construction potholing permits can be obtained at the permit counter. **A potholing permit does not authorize disturbance beyond potholes. No additional construction work is authorized with a pothole permit.**

No statements on Fiber Plan Set can modify or adjudicated against the FOMLA or addendum.

Fiber Plan Sets .pdf shall be flattened (i.e. layers flattened).

Apply by e-mail through the Public Works Department's Permit Center – Fiber Plan Set, Traffic Control, Fiber Application Permit for location review.

Company or Applicant shall submit complete Application via e-mail and Telecommunications Project Manager will generate invoice and email to Company within one (1) Work Day.

3.2 Location Review

Company sends Fiber Plan Set, Traffic Control, Fiber Application Permit for Location Review to [Telecommunications Project Manager/Portal](#).

The site review commences once the invoice is paid in full.

Within one (1) full Working Day of receiving the Completed Application for location review, Telecommunications Project Manager/Portal reviewer shall review the proposed fiber site to verify it is located within ROW and City limits and conforms with other requirements. All additional requirements are listed in the link on City's web page.

3.3 Complete Application Submittal

The City Agent will e-mail all comments, additional requirements, or location denials.

Company will be notified via e-mail once this Subsection 3.3 has been completed.

3.4 Fiber Plan Set Review Process

Fiber Plan Sets shall contain technical information as detailed in the FOMLA and Section 4, Section 5 and Section 7 herein.

3.5 Fiber Plan Set Review Timelines

If the Fiber Plan Set is not approved by City, then the City Agent or designee will add comments to the Fiber Plan Set before returning it to the Company. The Company shall address all of the City Agent's comments prior to resubmitting the Fiber Plan Set for further review by City.

NOTE: These are approximate timelines which may vary due to Fiber Plan Set quality and number of Fiber Plan Sets under review.

Fiber Plan Set Review Time Frame	Up to 3,000 linear feet	3,001 to 15,000 linear feet	15,001 and above linear feet
1st City review	10 days	15 days	30 days
2nd City review	5 days	7 days	10 days
Final City review and approval*	5 days*	5 days*	5 days*
Total Working Days	20 days	27 days	45 days
Total weeks	4 weeks	5 weeks	8 weeks

* **Two additional days for City signatures.**

Company will be notified via e-mail once Fiber Plan Sets have been approved and this Subsection 3.5 has been completed.

Company shall have current contact information (including email and telephone number). If Applicant's contact information changes you shall notify the City Agent within one (1) Work Day.

3.6 Contractor Requirements

- All Contractors working in the ROW shall be licensed and bonded.
- Contractors and Subcontractors shall have a valid City business license. Any Person who conducts business activities within the City, regardless of the physical location of the business, is required to have a current valid business license.
- Contractors shall have a Permit to perform work in the ROW. A Contractor cannot engage in construction work in the ROW without having first procured the proper permit or license from the Building Division of the Public Works Department, which will be issued in the name of the Company or Applicant and will permit the Company or Applicant to engage in the business of construction in the ROW of the City as authorized by the particular permit or license.
- A Contractor cannot engage in construction work in the ROW without an approved Fiber Plan Set and any addenda thereto.

- Contractors shall identify licensed Subcontractors to obtain any necessary permits.
- Contractors are required to file a certificate of insurance satisfactory to the City's Risk Manager prior to the issuance of any license or permit.
- Public Improvement Permits shall be submitted with any application.
- City Stormwater Quality Permit, (if greater than one (1) acre disturbed or part of larger project), may be required. Inspections are required for work done under each permit and permits shall be renewed annually.
- Hydrant Use Permit may be required.
- Colorado Department of Transportation Permit may be required.
- Denver Water Board Permit may be required.
- Environmental Compliance Permit may be required.
- State of Colorado, CDPHE Stormwater Discharge (phone: 303-692-3517) may be required.
- State of Colorado, CDPHE Dewatering Permit (requires 30-day lead time) may be required.

SECTION 4: ADMINISTRATIVE REVIEW PROCESS

4.1 Review of a fully executed FOMLA by and between Company and City.

4.2 A typewritten legal description with:

- a. Section, Township and Range, and County where Utility will be located, and name of subdivision, if applicable.
- b. Point of Commencement (when applicable), Point of Beginning, & Point of Terminus to an established land corner or to a subdivision plat that is tied to an established land corner, with curves showing radius, delta, arc length and angle to radius point if curve is non-tangent, and area to be included in square feet as set forth in **Exhibit A**.
- c. Recording information for ROW that the Company is proposing to utilize. Estimates or non-verified ROW limits will not be accepted. A copy of said document shall be provided at initial application.
- d. Other information that may, in the City's sole discretion, be modified from time to time to meet the needs of the City.

- 4.3 All installations shall include Fiber Plan Sets detailing proposed improvements including but not limited to:
- a. A design document which depicts improvements including but not limited to property boundaries, setbacks, topography, elevation sketch, and dimensions of improvements.
 - b. Specifications for installation of the fiber, including the location of cables, conduit, point of demarcation, electrical conduit, and cabling.
- 4.4 Where applicable, the Fiber Plan Sets shall meet technical requirements described in Section 5.
- 4.5 Upon completion of the installation of Company's or Contractor's project, Contractor will call to schedule a post construction meeting with the City inspector to review remaining work and punch list items.

SECTION 5: TECHNICAL REQUIREMENTS

5.1 Fiber Plan Set Checklist

This is a list of MOST items that need to be included in submitted Fiber Plan Sets, but all requirements may be found in Section 2.03 of the Roadway Manual. Some Fiber Plan Sets may need to be secured for some Companies based upon their FOMLA. The City reserves the right to request additional information as needed for submitted Fiber Plan Sets:

- Company emails evidence of public notification to the Telecommunications Project Manager prior to approval of an application.
- Fiber Plan Set title sheet shall include:
 1. Site name, City provided address.
 2. Project name.
 3. Project location.
 4. Project vicinity location map.
 5. Detailed graphic of the project with design sheets shown and numbered.
 6. North arrow.
 7. Scale.
 8. Reviewer label.
 9. Name, address and phone number of designer.
 10. Name, address and phone number of Owner.
 11. All street names, street widths, street classifications and street composition material (asphalt, concrete).
- General Notes from the Roadway Manual for the Fiber Plan Set per Section 2.03.6.01 – Section 2.03.6.22 of the Roadway Manual.
- Most current version of the City's Utility Notes.
- Most current version of the City's Erosion and Sediment Control Notes.
- Most current version of CDOT Notes if any part of project encroaches on CDOT's right-of-way.

- Approval block for Aurora Water, Traffic Manager, and City Engineer per Section 2.03.5.02 of the Roadway Design and Construction Specifications Manual. Fiber Plan Sets shall be stamped and signed, upon request for signature sets, by a professional engineer. All applications are required to have a signature set submittal prior to approval. If desired from the applicant, each submittal may be signature set, but only the final approval is required to be.
- Variance Table per Section 2.03.9, within the first three sheets of the Fiber Plan Set. If there are no variances the table shall be provided with the note “no variances”.
- Existing conditions on Fiber Plan Set requirements.
- Legend shall include all icons shown on Fiber Plan Set sheets.
- ADA clearance shown and noted when applicable.
- Fiber Plan Sets .pdf shall be flattened (i.e. layers flattened, no AutoCAD text).
- Contractor is required to submit to City electronically and in a format compatible with the City’s CAD standards of the proposed design at signature set submittal.
- Minimum font size shall be .1 inch.

5.2 Plan and Profile Sheets Checklist

Fiber Plan Set shall show the following existing condition information:

- ROW, utility easements, property lines, and recorded easements or public rights-of-way identified within the bore route.
- Number and size of conduits.
- Bored conduit shall have a minimum cover of thirty (30) inches unless otherwise excepted by the City Engineer.
- Dimension clearance from the proposed conduit and existing utilities both on plan and profile, if within 5 inches or closer.
- Unless installed at the same time, bored conduit shall clear all existing utilities as required by the Roadway Manual, as follows:

Location	Minimum Clearance *	Notes
COA Utilities	24 inches	
Critical Infrastructure	60 inches	Including Source of Supply waters
High Pressure natural gas or liquified petroleum gas (NG/LPG)	24 inches	Or clearance requirement as defined by the owner of line (whichever is greater)
Distribution Gas infrastructure	18 inches	As otherwise identified by 3 rd party owner
Underground electrical lines	18 inches	As otherwise identified by 3 rd party owner
Existing fiber optic	18 inches	As otherwise identified by 3 rd party owner
All other exiting utilities	18 inches	As otherwise identified by 3 rd party owner

**Vertical and horizontal clearance*

- Adjacent commercial/mixed use/multifamily properties shall list approved Fiber Plan Set/[EDN](#) numbers under the ownership information. When areas are developing and include improvements to ROW, approved changes to [ROW](#) can be found in the approved Fiber Plan Sets.
- There shall be plan and profile sheets for the whole project length - the plan should take up the top half of each sheet with the profile below on the lower half of each sheet, and the profile should be aligned with the Fiber Plan Set.
- The minimum scales for all plan and profile sheets are listed below. Larger scales may be required where necessary to clearly show details, otherwise use a standard engineering scale.
- All Fiber Plan Set drawings shall have the proper bar scale legibly shown on the plan sheet, horizontal 1 inch = 50 feet, vertical 1 inch = 5 feet.
- Location and dimension shall show all above-ground items, including curb, gutter, sidewalks, streetlights, pedestals, equipment cabinets, handholes (including handhole sizes), manholes, fences, trees, etc. within ROW.
- See [Section 20.07.2](#) of the [Roadway Manual](#) for criteria regarding fences during construction.
- Color of existing and proposed utilities.
- Comply with Uniform Color Code as defined in AWPAs for existing utilities.
- Show alignment in a contrasting color.
- Specify if conduit is bored, trenching or open cut.
- Provide alignment that meets the following criteria considering that alignment and depth of bores shall be designed to accommodate the many different underground utilities.
- Bore hole alignment shall be parallel for longitudinal alignment and perpendicular for street crossings.
- When auxiliary lanes are integrated in the intersection, avoid bore pits in through-lane geometry.
- Alignment location shall be outside of paved street unless ROW congestion is present within the ROW outside of pavement. ROW congestion is defined as no available path that meets minimum spacing criteria from 30" to 96" below grade as determined by City Engineer.
- Within areas of ROW congestion, sharing ROW conduit may be required, or alternatively, the requested route for installation may be rejected.
- Recognizing that ROW have a finite capacity for containing Utility facilities, whenever the City Engineer determines there is or soon will be ROW congestion in an area where a permit has been requested, and unless otherwise prohibited by Applicable Laws, the City Engineer may require Company to afford to another Entity the right to use the Company's surplus ducts or conduits in common with the Company, pursuant to the terms and conditions of an agreement for use of surplus ducts or conduits entered into by Company and the other Entity. Nothing herein shall require Company to enter into an agreement with such Entity if, in Company's reasonable determination, such an agreement could compromise the integrity of the Company's Utility facilities.

- A bore hole shall not encroach within 12 inches, horizontal or vertical, of another utility facility.
- Show flood zone if applicable.
- Pothole table on each page and a comprehensive table on a separate page.
- Potholes shall be required for all utilities crossings where there is not a positive result from surface geophysical methods for utility imaging (ASCE 38-02).
- Potholes are required for all crossings with City water, sanitary sewer lines and storm lines and Critical Infrastructure.
- Potholing permits do not disturbance beyond potholes. No additional construction work is authorized with a pothole permit.

Utilities that shall be detailed on the plan and profile drawings include:

- Underground Electric Lines.
- Natural Gas Lines.
- Fiber Optic Lines.
- Telephone Lines.
- Cable TV Lines.
- Water Lines.
- Sanitary Sewer Lines.
- Storm Sewer Lines.
- Traffic Signal Underground Conduit Lines.

Third party approval shall be submitted in a separate document supporting all requirements for application review.

- 5.3 The City shall weigh requests by Company to include any of the foregoing in an application considering the City's historic preservation policies, aesthetic considerations, pedestrian, disabled person, and/or bicyclist access to sidewalks, public safety concerns, technical installation conflicts, and compliance with Applicable Law.

SECTION 6: PERMITS, CONSTRUCTION, OPERATION AND MAINTENANCE IN THE ROW

- 6.1 Upon approval of Fiber Plan Sets, a FOMLA addendum may be executed by the City and issued to Company. Company is responsible for obtaining a Public Improvement (PI) and Traffic Control Permit (TCP).
- 6.2 Once Company receives approval for installing fiber optic systems from Planning, Engineering, Real Property Services, and any other required departments and divisions of the City, Company may apply for a Public Improvement permit. Please note that if all documents and information are submitted correctly, it can take 1-5 Working days before a Public Improvement permit will be ready.
- 6.3 Complete a Public Improvement application listing any work that will be in the ROW such as the:
 - Number of street cuts and sizes;
 - Number of potholes;

- Any boring and sidewalk removal (length in lineal footage);
 - List all details above under Scope of Work;
 - Completed notification for work to Resident/Owner; and
 - Please include pictures of existing conditions and proposed restorations.
- 6.4 If no work in the ROW, please list a TCP only.
- 6.5 All TCPs shall include a completed information block with dates and length of time in the ROW and submitted with a PI application.
- 6.6 All Contractors shall have an active ROW Contractor/Supervisor license along with a \$20,000 open ended permit bond and proof of insurance to work in the ROW.
- 6.7 Email your permit request to permitcounter@auroragov.org or bring in personally to the Permit counter.
- 6.8 Once your permit is ready, you will receive an emailed invoice. Once the invoice is paid, you will be able to set a pre-construction meeting with your PI inspector, if required.
- 6.9 Please complete all work in the ROW and TCP in a timely manner.
- 6.10 For installations, construction, operation, and maintenance of fiber optic facilities, the Company shall obtain all generally applicable permits that are required of all occupants of the ROW in accordance with Applicable Law.
- 6.11 The City shall process all permit applications in a non-discriminatory and competitively neutral manner.

SECTION 7: ADDITIONAL REQUIREMENTS

7.1 Water Quality / Storm Water Management

- Erosion Control shall be in place.
- Contractor to address spill control & mitigation plan.
- Keep site clean of refuse, spills and excavated waste material.
- Protect all trees and plants not scheduled for removal.
- Placement and tie down of Sanitary Facilities.
- Update Stormwater Management Plan (SWMP).
- Non-compliance may result in fines and corrective action.
- City of Aurora SWMP, if required. (Note: SWMP shall be renewed annually.)

7.2 Quality Level Requirement for Existing Utilities

- Colorado has adopted Subsurface Utility Engineering (SUE) legislation. [Best Practice Memo](#) identifies that SUE's intent is to design around utilities in the interest of public safety. The City anticipates that most fiber installations within ROW will meet the following criteria, but not all four criteria stated in SUE legislation. The City of Aurora has elected to require the following quality levels as shown in the table below for all Fiber Plan Sets for fiber.
- The project:

1. Has an anticipated excavation footprint that exceeds two feet in depth and that is a contiguous one thousand square feet; or
 2. Involves fiber utility boring.
- SUE is required for all utilities within 20 feet of the proposed alignment in all directions, both parallel and crossing and within ROW shall meet the SUE Quality Level identified in the Table below:

	SUE Quality Level	Notes
COA Utilities	QLB	QLA required by request of City reviewer(s)
Critical Infrastructure	QLA	
High pressure natural gas or liquified petroleum gas (NG/LPG)	QLA	
Distribution gas infrastructure	QLB	
Underground electrical lines	QLB	
Existing conduit	QLC or QLD	
All other exiting utilities	QLC or QLD	

**As defined by Colorado Division of Oil and Public Safety, Department of Labor, Underground Damage Prevention Safety Commission.*

7.3 Alignment

Provide alignment that meets the following criteria considering that alignment and depth of bores shall be designed to accommodate the many different underground utilities:

- Bore hole alignment shall be parallel for longitudinal alignment and perpendicular for street crossings.
- When auxiliary lanes are integrated in the intersection, avoid bore pits in through-lane geometry.
- Alignment location shall be outside of paved street unless ROW congestion is present within the ROW outside of pavement. ROW congestion is defined as no available path that meets minimum spacing criteria from 30 inches to 96 inches below grade as determined by the City Engineer/City reviewer.
- Within areas of ROW congestion, sharing ROW conduit may be required, or alternatively, the requested route for installation may be rejected.

- Recognizing that ROW have a finite capacity for containing fiber optic and other Utility facilities, whenever the City Engineer determines there is or soon will be ROW congestion in an area where a permit has been requested, and unless otherwise prohibited by Applicable Laws, the City Engineer may require Company to afford to another Entity the right to use the Company's surplus ducts or conduits in common with the Company, pursuant to the terms and conditions of an agreement for use of surplus ducts or conduits entered into by Company and the other Entity. Nothing herein shall require Company to enter into an agreement with such Entity if, in Company's reasonable determination, such an agreement could compromise the integrity of the Company's fiber optic facilities.

7.4 Trenching and Directional Boring

- Trenching and directional boring are the only acceptable means of placing fiber optic infrastructure.
- **Micro Trenching is not allowed as a way to install Fiber Optic.**
- If the Contractor is trenching, the trench shall be closed and temporarily resurfaced by the end of the workday per Section 36.08 of the Roadway Manual.
- Trenching may not be used in arterial streets without prior written authorization from the City Engineer.
- Bore hole diameter and the amount of void space remaining around the utility line shall be minimized to prevent surface subsidence.
- For smaller utilities less than seven inches in diameter, bore hole diameter shall not exceed 1.5 times the utility line diameter.
- For larger utility lines seven inches or greater in diameter, and multiple lines using the same bore hole, approval of construction methods and bore diameter by the City Engineer shall be required.
- A bore hole shall not meander more than one foot to either side of the approved proposed alignment.

7.5 Potholes and Coring

- Comply with the Pothole permit requirement, which may be acquired at the Permit Counter.
- Potholes will be backfilled with an approved flow fill or flash fill. Potholes cannot be left open during nonworking hours.
- Open potholes need to be covered with an approved temporary cover when not being used for locates.
- All core locations shall be approved by the inspector.
- 8 inch diameter cores can be used for locates.
- If cores larger than 8 inches are used, the affected area will be removed and replaced at the direction of the public improvement inspector.
- No more than one (1) core per sidewalk stone. If more than one core is required in a single stone, the stone shall be replaced. Core cannot be closer than 6 inches to a joint.
- If a core is to be placed in a stone that is already cracked, the entire stone shall be replaced.
- All subsurface excavations shall be backfilled using a pre-approved flowable fill material.
- Water used for the potholing or coring (drilling) operation shall not be obtained from City fire hydrants without a meter. A meter shall be obtained from the City's Water Shop at 13645 E. Ellsworth Avenue (phone: 303-326-8120) to be used on hydrants. Aurora Water Department personnel at the Water Shop will provide direction on use and proper methods for filling tanks so as not to cause a cross connection that could contaminate the City's water supply.
- All core holes in concrete shall be filled with set 45 high strength grout or approved equal.
- Final restoration of potholes and cores shall be done in accordance with the Roadway Manual.

7.6 Undergrounding of Utilities

Undergrounding of Utilities is required pursuant to the Aurora Municipal Code, Article X, Undergrounding of Utilities, Chapter 126-504, <https://aurora.municipal.codes/Code/126-504>, unless previously agreed upon in an executed agreement with City of Aurora.

7.7 Work Within ROW

- When crossing an arterial street, a profile of existing utilities shall be provided.
- If an existing ramp is disturbed from work, a current-standard accessible ramp shall be built in its place.
- A meter shall be obtained from Aurora Water when accessing water from a City of Aurora hydrant.
- Any utility hit shall be called into [UNCC](https://www.colorado811.org/) (<https://www.colorado811.org/>). After emergency calls have been made the inspector shall be notified.
- All work shall be done in accordance with the Roadway Manual.
- For work within ROW, a TCP shall be submitted and approved. (Note, this may take 48 hours for approval.)

- Access shall always be maintained to private property and commercial sites. (Exception, during excavation.) Inform property owners at least 48 hours in advance.
- Police and Fire Departments shall be notified of closures or restricted access. Also, contact RTD and School Transportation Office if access is restricted.
- Normal work hours are 7:00 a.m. to 3:30 p.m. Monday through Friday. Any work outside these hours will result in overtime charges at the current adopted rate. Weekend or holiday work by permission only. Work on Saturday, Sunday, and holidays will be charged a four-hour minimum.
- Work on arterials is to be performed between the hours of 8:30 a.m. and 3:30 p.m.
- All disturbed areas will be restored to original condition or better than before the work was done.
- Any asphalt or concrete work will be restored according to the Roadway Manual.
- Public improvement inspection's staff will inspect final restorations. (Call 303-739-7420 to schedule this inspection.)

7.8 Parks and Open Space

Contractor shall address the following items regarding Parks and Open Spaces and comply with the most recent edition of the City's adopted [Parks, Recreation & Open Space Dedication and Development Criteria Manual](#):

- Tree Protection – for both existing trees and for curbside landscaping area:
 1. Bored conduit should be installed a minimum of four (4) feet under tree root structure when within ten (10) feet of tree.
 2. Trenched conduit within the Tree Protection zone of trees shall follow the standard details for Tree Protection per the [Parks, Recreation & Open Space Dedication and Development Criteria Manual](#). The Tree Protection notes shall be included on the Fiber Plan Set.
- Hand holes & bore pits shall be placed outside of tree canopy.
- Access Issues.
- Seeding.

7.9 Noise and Dust Control

- Appropriate measures are to be taken for noise, dust, and mud mitigation.

7.10 As Built Plans/Revisions

The Contractor is required to submit to the City electronically, as a CAD file submission or Fiber Plan Set revision, completed “as-built” plans showing exact location and elevation (more commonly known as X, Y, and Z coordinates) on both plan and profile within ninety (90) days of the completion of the construction.

Exhibit B – Example of Point of Commencement, Point of Beginning, Point of Terminus

