



Construction and Excavation Standards



CITY OF LONE TREE

Public Works

February 5, 2019

Construction and Excavation Standards for Work in Public Rights-of-Way

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Construction and Excavation Standards for Work in Public Rights-of-Way

I. Purpose

This document establishes the minimum design and technical criteria for all work in the public right-of-way within the City of Lone Tree (City). All proposed work submitted for approval under Chapter 11 of the City of Lone Tree Municipal Code shall conform to the criteria set forth herein.

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II. Permit Fees

Fee Structure -Public right-of-way permit fees as adopted by Resolution Number 17-29, as amended from time to time.

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RIGHT-OF-WAY USE AND/OR CONSTRUCTION FEES						
Category	Permit Item	Fee \$	Unit	Quantity	Minimum \$	Total \$
Telecom/CATV						
	Wireless/Antenna/WCFs*	\$100.00	EA		\$100.00	
	CATV/Fiber Optics	\$0.30	LF		\$75.00	
Utilities						
	Water, < = 16"	\$0.35	LF		\$75.00	
	Water, > 16"	\$0.45	LF		\$75.00	
	Sanitary Sewer	\$0.45	LF		\$75.00	
	Gas	\$0.30	LF		\$75.00	
	Electric	\$0.30	LF		\$75.00	
	Phone	\$0.30	LF		\$75.00	
	Fire Hydrant	\$50.00	EA		\$75.00	
	Vaults	\$100.00	EA		\$100.00	
	Handhole/Splice Box	\$50.00	EA		\$50.00	
	Pedestal/Cabinet	\$50.00	EA		\$50.00	
	Manhole	\$55.00	EA		\$50.00	
Concrete Structures						
	Sidewalk-Detached/Path	\$0.25	LF		\$75.00	
	Curb & Gutter	\$0.25	LF		\$75.00	
	Sidewalk, Curb & Gutter	\$0.30	LF		\$75.00	
	Sidewalk Chase	\$100.00	EA		\$100.00	
	Cross Pan	\$100.00	EA		\$100.00	
	Curb Cut/Driveway	\$100.00	EA		\$100.00	
	ADA Compliant Curb Ramp	\$75.00	EA		\$75.00	
	Box Culvert (per tube)	\$15.00	LF		\$400.00	
Roads/Streets						
	Pothole/Bore Pit/Jacking/Tunneling	\$75.00	EA		\$75.00	
	Street Cut	\$5.00	SF		\$75.00	
	Pavement Design Review	\$150.00	EA		\$150.00	
	Subgrade Preparation	\$0.20	SY		\$75.00	
	Paving	\$0.15	SY		\$75.00	
	Milling	\$0.07	SY		\$30.00	
	Traffic Signal (or modification to existing*)	\$500.00	EA		\$500.00	
Storm Drainage						
	Storm Sewer	\$0.30	LF		\$75.00	
	Inlet/Outlet	\$100.00	EA		\$100.00	
	Manhole/Vault	\$65.00	EA		\$65.00	
	Detention Pond	\$0.02	SF		\$200.00	
	Trickle Channel	\$0.20	LF		\$75.00	
	Culvert	\$0.30	LF		\$75.00	

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RIGHT-OF-WAY USE AND/OR CONSTRUCTION FEES (continued)						
Category	Permit Item	Fee \$	Unit	Quantity	Minimum \$	Total \$
Erosion/Grading						
	Grading	\$25.00	AC		\$250.00	
	Rip Rap	\$0.25	CY		\$75.00	
	Sediment Stop/Silt Fence	\$0.20	LF		\$75.00	
	Straw Bales	\$0.05	EA		\$75.00	
	Seeding	\$10.00	AC		\$75.00	
	Erosion Control/Other	\$ Varies			\$75.00	
	Erosion Control Blanket	\$0.02	SY		\$75.00	
	Inlet Protection	\$5.00	EA		\$100.00	
	Vehicle Tracking Pad	\$75.00	EA		\$75.00	
	Concrete Washout	\$75.00	EA		\$75.00	
Landscape/Retaining Wall						
	Retaining Wall > 4 ft.	\$0.20	FF		\$60.00	
	Landscaping	\$0.25	SF		\$60.00	
Miscellaneous						
		\$ Varies			TBD	
	License Agreement	\$250.00	EA		\$250.00	
	Traffic Control Only (No ROW Work)	\$65.00	DAY		\$65.00	
	Temporary Access Permit (Requires Separate Access Permit Application)	\$200.00	EA		\$200.00	
	Permanent Access Permit (Requires Separate Access Permit Application)	\$200.00	EA		\$200.00	
Warranty Work/Repair						
	1st 60 Day Permit	No Cost			TBD	
	Subsequent Permits	\$250+each item	EA		\$250.00	
Administration						
	Permit Processing	15% of permit fee	EA		\$25.00	
	Reinspection (>4 visits/OT)	\$85.00	HR		\$35.00	
	Penalty Fee (2X original Fee)	\$ Varies			TBD	

*Including Wireless Communications Facilities (WCFs) attachments

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III. Location of Facilities

A. General

1. The location of all facilities within the public right-of-way shall comply with the details and specifications shown on the construction plans approved by the City.
2. It is City policy to discourage the placement of utility lines and other facilities within landscaped median areas unless there is no other reasonable location for the placement of such lines and facilities. No applicant shall receive a permit for work in a landscaped median within the public right-of-way unless the applicant provides the City with evidence that, prior to commencing construction, it has submitted plans and specifications and a proposed schedule of its work to the special district or other entity which owns and maintains the median landscaping for its review and approval.
3. The utility alignment shall not vary greater than eighteen inches (18") plus $\frac{1}{2}$ of the diameter of the proposed conduit from the approved design horizontal alignment or thirty-six inches (36") plus $\frac{1}{2}$ of the diameter of the proposed conduit from the approved design vertical alignment without prior City approval.
4. If the designed alignment conflicts with other facilities not shown on the approved plans, the permittee shall submit an alignment modification request and the change shall be approved by the City prior to proceeding.
5. All underground cables and wires, excluding electrical, shall be placed within a conduit sleeve, with a locator tracer.
6. All underground installations shall have a minimum of thirty inches (30") of cover below the roadway surface.

B. Above-ground Structures

1. A detailed plan shall be required for all above-ground structures placed in the public right-of-way. The plan shall show dimensions of the cabinet, base, and proposed location.
2. A permittee shall use its best efforts to place new above-ground structures outside the public right-of-way within a private easement on the property being served.
3. All above ground-structures shall be screened with landscaping, with the exception of electrical clearance requirements, as approved by the City. Existing above-ground structures shall be exempt from this requirement.
4. The location of above-ground structures shall not interfere with sight distance requirements for intersecting streets and access drives.

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5. Above-ground structures shall be located to minimize the aesthetic impact to the landscaping within the public right-of-way.

C. Underground Access Structures (Vaults and Hand-Holes)

1. Underground access structures shall be placed in line with the utility alignment. Horizontal adjustments to accommodate underground access structures are discouraged and shall only be permitted when conditions warrant at the City's sole discretion. The placement of each access structure shall require field approval prior to placement.

2. The minimum separation between access structures shall be five hundred feet (500'). An exemption to this provision shall be granted by the City if the following criteria are met:

a) The access structure is required to provide service to a building or a customer within a building;

b) The width of the property frontage does not allow the permittee to meet the minimum separation requirement while still providing service at a reasonable cost;

c) The permittee has no access structure already located within one hundred feet (100') of the boundaries of the property to be served;

d) There needs to be an access structure on either side of a roadway or driveway crossing;

e) Other conduit owned or leased by the permittee is not available for the permittee's use; and

f) Options to provide service to the building from other directions are not reasonably available to the permittee. In no case shall an exemption granted pursuant to this section authorize access structures to be separated by less than two hundred fifty feet (250').

3. Access structures shall be placed a minimum of one hundred fifty feet (150') from any intersection, unless otherwise approved by the City.

4. The maximum size of an access structure and access lid shall be the minimum necessary for the facilities being installed, as determined by the City. In making its determination, the City shall consider any information submitted by the permittee to justify the size of the access structure or access lid.

5. Access lids located in landscaped areas shall be buried in mulch, rock beds, or sod, unless otherwise approved by the City.

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6. Access lids placed in sidewalks shall be flush with the existing surface and capable of being filled with like material.
7. All access lids within travel lanes shall be placed outside of the wheel track as defined in Exhibit "B".
8. Access lids shall be placed at an elevation of +0 inch to -3/8 inch relative to the surrounding pavement surface.

IV. Construction Standards

A. General

1. Testing, in compliance with the City's testing schedule, which is attached hereto as Exhibit "A", shall be performed by an independent testing company acceptable to the City, and results shall be provided to the City within two (2) working days of completion of testing and prior to the next phase of construction. For example, a subgrade test is required prior to asphalt placement.
2. Any damage not documented during the pre-construction inspection shall be repaired by the permittee at the permittee's sole expense.
3. Utility markings shall be limited to the boundaries of the construction area and shall be removed by a method approved by the City within forty-five (45) days of the completion of work, pursuant to Chapter 11 – Division 2 of the City of Lone Tree Code.
4. A permittee shall advise the City at least forty-eight (48) hours in advance of the date work will be started and shall notify the City at least twenty-four (24) hours in advance if this date is changed or cancelled. Inspections required on the permit shall be scheduled by permittee at least twenty-four (24) hours in advance.
5. For blanket maintenance permits, a permittee shall notify the City at least twenty-four (24) hours prior to commencing any maintenance operations under the blanket maintenance permit. The notice shall include the location and duration of the maintenance operations, and the name of the person(s) performing the maintenance operations.
6. Each permittee shall utilize erosion control measures to prevent erosion and degradation of water quality.
7. The City may restrict any work that causes pavement disturbance from November 1 to April 1.
8. Each permittee shall maintain its work site so that:

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a) Trash and construction materials are contained and not blown off the work site.

b) Trash is removed from a work site often enough so that it does not become a health, fire, or safety hazard.

c) Trash dumpsters and storage or construction trailers are not placed in the street or public right-of-way without specific prior approval of the City.

9. Each permittee shall utilize its best efforts to eliminate the tracking of mud or debris upon any street or sidewalk. Streets and sidewalks shall be cleaned of mud and debris at the end of each day. All equipment and trucks tracking mud and debris into a public right-of-way shall be cleaned of mud and debris at the end of each day or as otherwise directed by the City.

10. Backhoe equipment outriggers shall be fitted with rubber pads or other like protective material whenever outriggers are placed on any paved surface. Tracked vehicles that may damage pavement surfaces shall not be permitted on paved surfaces unless specific precautions are taken to protect the surface. The permittee shall be responsible for any damage caused to the pavement by the operation of such equipment. Should the permittee fail to make such repairs to the satisfaction of the City, the City may repair any damage and charge the permittee pursuant to Chapter 11 of the City of Lone Tree Code.

11. As the work progresses, all public rights-of-way and other property shall be cleaned of all rubbish, excess dirt, rock, and other debris, at the sole expense of the permittee.

12. No permittee shall disturb any surface monuments, property marks or survey hubs and points found on the line of work unless prior approval is obtained from the City. Any monument, hub, or point which is disturbed by a permittee shall be replaced by a Colorado Registered Land Surveyor at the permittee's sole expense.

13. Each permittee shall provide employee and construction vehicle parking so that there is no parking in the neighborhood adjacent to the work site. There shall be no unauthorized parking.

14. Each permittee shall provide necessary sanitary facilities for workers, the location of which shall be approved by the City and set forth in the permit.

15. For all installations, a permittee shall locate all parallel dry facilities within forty two inches (42") plus $\frac{1}{2}$ of the diameter of the proposed conduit and all parallel wet facilities within seventy eight inches (78") plus $\frac{1}{2}$ of the diameter of the proposed conduit. The location of parallel facilities shall be field verified by locate potholes, unless the locate potholing causes pavement disturbance in an adjacent travel lane that otherwise would be undisturbed. The location of existing facilities, including lateral crossings, which may affect the proposed facility alignment shall also be field verified by

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locate potholes. Wet facilities include water, sewer, and gas; and all other facilities shall be considered dry facilities.

16. For all installations, the permittee shall provide “as-built” information to the inspector on a daily basis or upon completion of every five hundred feet (500') of work, whichever is less frequent. It shall be the permittee’s responsibility to immediately notify the City of any variance from the approved alignment.

17. All “as-built” information shall be provided by the permittee to the City in a format acceptable to the City, and approved by the City prior to use of the facility.

18. For any work performed in the public right-of-way between 10:00 p.m. and 6:00 a.m., if the required restoration cannot be performed at night, or if performing the required restoration at night will be a nuisance to surrounding residential properties, the City may allow the restoration to be performed during business hours. The City shall consider the impact of the proposed restoration work on users of the public rights-of-way. The timing of all required restoration work shall be set by the City in the permit.

B. Pavement Removal

1. All asphalt pavement cuts shall be in straight lines. Irregular shaped cuts with more than four (4) sides or cuts within existing patches shall not be allowed. All cuts shall be rectangular in shape, and edges shall be parallel or perpendicular to the flow of traffic.

2. In order to provide straight edges, all asphalt pavement cuts shall be cut by saw cutting, rotomilling, or another approved method which assures a straight edge for the required depth of the cut.

3. Asphalt pavement cuts shall be such that no longitudinal joint lies within the wheel track.

4. Concrete pavement shall be removed and replaced from existing panel joints only.

C. Excavation and Backfill

1. Excavation

a) All trench excavation shall be made by open cut to the depth required to construct the facility and provide adequate bracing of trench walls. All excavation, trenching, shoring, and stockpiling of excavated materials shall be in strict compliance with the applicable Occupational Safety and Health Administration (OSHA) rules and regulations. The permittee shall furnish, place, and maintain all supports and shoring required for the sides of the excavation, as to prevent damage to the work or adjoining

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property. If the permittee is not expected to fully complete the work within any excavated area in a reasonable length of time as determined by the City, the City may require the permittee to backfill the excavation and re-excavate when the work can be completed expeditiously.

b) The length of an open trench shall be limited to the amount of pipe or conduit that can be placed and backfilled in a single day. However, in no case shall the length of the open trench exceed three hundred feet (300') unless otherwise approved by the City. No open trench shall be left unprotected overnight.

c) A maximum of two (2) excavations shall be open at any time for access structure installation and conduit splicing, unless otherwise approved by the City.

d) Only material that will be hauled or backfilled within one (1) day shall be stockpiled in the public right-of-way. The City shall approve all proposed construction staging areas.

e) All open excavations shall be properly barricaded to protect vehicles and pedestrians.

f) Current field moisture and density test results (taken within forty-eight (48) hours of the scheduled construction date) for top one foot (1') of subgrade shall be provided to the City prior to placing forms. If any lift of the top one foot (1') of subgrade does not meet moisture or density requirements, then the material shall be scarified, wetted and re-compacted accordingly. If subgrade requires stabilization, the method shall be approved by the City prior to proceeding.

2. Backfilling

a) Controlled Low Strength Material (CLSM)

i. All excavations of less than one hundred cubic yards (100 CY) within the roadway pavement shall be backfilled with controlled low strength material (flowable fill) unless otherwise approved by the City.

ii. Controlled low strength material shall consist of a controlled low strength, selfleveling material composed of various combinations of cement, fly ash, aggregate, water, and chemical admixtures. It shall have a design compressive strength between 50 to 150 psi at twenty-eight (28) days when tested in accordance with ASTM 4832. The mix shall result in a product having a slump in the range of seven inches (7") to ten inches (10") at the time of placement. The permittee shall submit the mix design for approval by the City.

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iii. The maximum layer thickness for CLSM shall be three feet (3'). Additional layers shall not be placed until the backfill has lost sufficient moisture to be walked on without indenting more than two inches (2").

b) Native Backfill

i. In cases where CLSM is not required, backfill of suitable material shall be placed in maximum eight-inch (8") loose lifts. Density and moisture control shall be per Colorado Department of Transportation Standard Specifications for Road and Bridge Construction, current edition, ("CDOT Standard Specifications") Section 2.03.

ii. The permittee shall provide compaction testing for all backfill work per the Minimum Testing Requirements table in Exhibit "A". Each lift not tested in accordance with the testing frequency and lifts required may be rejected by the City.

iii. Excavation and backfill shall be accomplished on the same day in order to minimize impact to the public right-of-way. The City may require the permittee to backfill the excavation and re-excavate when the work can be completed expeditiously.

b) The length of an open trench shall be limited to the amount of pipe or conduit that can be placed and backfilled in a single day. However, in no case shall the length of the open trench exceed three hundred feet (300') unless otherwise approved by the City. No open trench shall be left unprotected overnight.

c) A maximum of two (2) excavations shall be open at any time for access structure installation and conduit splicing, unless otherwise approved by the City.

d) Only material that will be hauled or backfilled within one (1) day shall be stockpiled in the public right-of-way. The City shall approve all proposed construction staging areas.

e) All open excavations shall be properly barricaded to protect vehicles and pedestrians.

f) Current field moisture and density test results (taken within forty-eight (48) hours of the scheduled construction date) for top one foot (1') of subgrade shall be provided to the City prior to placing forms. If any lift of the top one foot (1') of subgrade does not meet moisture or density requirements, then the material shall be scarified, wetted and re-compacted accordingly. If subgrade requires stabilization, the method shall be approved by the City prior to proceeding.

c) Bridging Plates

i. Substantial bridging, properly anchored and capable of carrying the

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legal limit loading, in addition to adequate trench bracing, shall be used to bridge across trenches at street crossings where trench backfill and temporary patches have not been completed during regular working hours. Safe and convenient passage for pedestrians, vehicles, and access to all properties shall be maintained.

ii. The bridging plate shall be secured to the pavement with anchored pins so that it does not slip. The bridging plate shall extend over supporting pavement by a minimum of one foot (1') on all sides. Cold mixed asphalt shall be ramped a minimum of two feet (2') in the travel direction.

iii. The use of bridging plates shall not be allowed from September through April. Use of bridging plates shall only be allowed with the prior approval of the City.

iv. The permittee's design engineer shall certify in writing the suitability of the plates for the specific use by the permittee.

D. Boring

1. To minimize the impact to traffic and the right-of-way infrastructure, the City encourages boring rather than open trenching.
2. Upon completion of the boring, the permittee shall certify that all storm and sanitary sewer service lines to adjacent properties have not been damaged by the boring in a signed affidavit in a form acceptable to the City.
3. If the permittee's boring results in disturbance to other utilities or facilities in the public right-of-way not described on the approved plan the permittee shall immediately contact the owner of the damaged utility or facility so that the owner may make any necessary repairs. The permittee shall provide the City written notice that the owner of the damaged utility or facility has been informed.

Waste material from boring shall be contained within the work site and shall not be allowed to discharge onto private property, the curb and gutter or the roadway.

E. Repairing Streets

1. Asphalt Pavements

a) The minimum patch dimensions shall be two feet (2') beyond each side of the trench or excavation but shall not extend into an adjacent undisturbed lane.

b) The longitudinal edges of the patch shall not fall within the existing wheel tracks as defined in Exhibit "B".

c) Prior to placing the permanent patch, the existing pavement shall be sawcut to a neat straight-line, square to the travel lane.

d) A tack coat shall be applied to all edges of the existing pavement prior to placing the patch.

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e) Asphalt mix shall be CDOT, S mix (3/4 inch) for non-residential streets and SX mix (1/2 inch) for residential streets. Patch back areas greater than one hundred twenty square feet (120 SF) shall require the submittal and approval of a mix design to the City prior to placement.

f) Compaction shall be between 92% and 96% of AASHTO T 209. Average compaction of less than 92% of AASHTO T 209 shall be cause for rejection.

g) Compaction equipment shall be capable of compacting corners and edges of patch.

h) Hot bituminous patches shall be placed in maximum three-inch (3") compacted lifts to a depth of the existing pavement plus two inches (2").

i) Patches shall also have a cross slope section consistent with the design of the existing roadway.

j) A cold mix asphaltic material may only be used as a temporary patch and the cold mix material shall be approved by the City.

k) Whenever permanent patches are not constructed immediately following trench backfilling operations, temporary pavement patches consisting of a minimum of three inches (3") of hot or cold plant mix or steel plates must be utilized to provide the required number of paved travel lanes. Plates may be left for the duration approved by the City. Temporary pavement patches may be left in place for a maximum of five (5) working days following completion of backfilling operations unless otherwise approved by the City.

l) The permittee shall monitor temporary patches on a daily basis and temporary patches exhibiting ruts, humps, or depressions shall be repaired or replaced immediately.

m) A permanent hot patch shall be made within five (5) days after the area is open to traffic, weather permitting.

n) If final patching is not completed within the specified time, no non-emergency permits shall be granted to the permittee until all outstanding work is completed.

o) Upon completion of the permanent patch, the surface shall be thoroughly compacted, smooth, and free from ruts, humps, depressions, or irregularities. When a straightedge ten feet (10') long is laid across the permanent patch parallel to the centerline of the street and in a direction transverse to the centerline, the surface shall not vary more than 3/16 inch from the lower edge of the straight edge. Patches exhibiting deviations greater than 3/16 inch shall be replaced prior to acceptance of the

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patch. If the existing street exceeds the above tolerances, then the patch shall be equal or better than the condition of the surrounding pavement.

2. Restoration of Locate Potholes

a) Locate potholes shall not be located within the wheel track of a travel lane as defined in Exhibit "B.

b) All locate potholes in the pavement section shall be cored with a circular coring saw with a maximum diameter of ten inches (10"). The plug shall be carefully removed without causing damage.

c) Excavations for potholes shall be backfilled with squeegee or controlled low strength material (flowable fill) only. Native material removed shall not be used to backfill the hole.

d) The removed pavement shall be replaced by one of the following methods as directed by the City:

i. The full depth section or the top three inches (3") of pavement of the removed original core shall be replaced and grouted with a high strength, quick set epoxy or mortar, as approved by the City such that the surface is flush with the surrounding pavement; or

ii. The pavement shall be patched with hot mix asphalt of similar aggregate size to the surrounding pavement and compacted in maximum three inch (3") lifts with a "pogo stick" compactor capable of fitting into the core hole such that the surface is flush with the surrounding pavement. At the City's discretion, localized infrared treatment may be required to blend the top mat of the asphalt together.

e) A City inspector shall be on site during the repair of all locate potholes. The City may waive this provision if the contractor demonstrates competent performance of the repair.

f) Where possible, locate potholes shall be located under existing pavement marking and such marking replaced in kind at the completion of the repair to camouflage the pavement disturbance. If the permittee requests, City crews may install the new pavement markings at the sole expense of the permittee.

g) Initial locate potholes may be temporarily repaired, meeting all applicable safety requirements, for no more than thirty (30) days unless additional time is authorized by the City in writing. Initial locate potholes may be reused during construction.

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3. Concrete Flatwork

a) Concrete material and placement shall be CDOT Class B, with 3000 psi compressive strength for sidewalks and 3500 psi for roadways.

b) Weather protection shall be provided in compliance with CDOT Standard Specifications Section 601.

c) Permittee shall schedule a form inspection and obtain approval prior to pouring.

d) Damaged concrete pavement shall be removed and replaced as a full panel section with dowels set into adjacent panels in compliance with CDOT M&S Standards.

e) Damaged flatwork and curb and gutter shall be replaced in full sections from existing contraction joints. Partial section replacement shall not be permitted.

f) Concrete removed adjacent to asphalt pavements shall be sawcut along the abutting edge prior to removal in order to remove without damage to the pavement. The sawcut edge shall be protected and used as a form for the new concrete. The top edge of the replaced concrete section shall be straight and true without warping or irregularity. Damage caused to the edge of the asphalt pavement shall result in the assessment of a restoration for asphalt resurfacing per Section II.

g) Subgrade elevation shall be brought up to +/- 0.1 foot of final grade per plans, with approved materials prior to placing forms.

h) No water shall be placed on concrete surface to assist finishing.

i) Variations of concrete surface shall not exceed 1/8 inch in ten feet (10').

j) Liquid membrane curing compound shall be placed in compliance with CDOT Standard Specifications Section 412 at a rate to completely coat all exposed concrete surfaces.

F. Landscape Areas

1. Excessive, unnecessary disturbance to landscaping and other existing improvements may result in a stop work order until repairs are made to the satisfaction of the City.

2. Landscape restoration shall be completed within two (2) weeks of completion of work at each site, weather permitting.

3. Irrigation shall be maintained throughout construction to ensure that no landscaping is affected during the construction phase.

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4. A permittee shall work with adjacent property owners to coordinate any construction activity that disrupts adjacent property owners' landscaping.
5. Prior to probationary acceptance by the City, the permittee shall provide a letter or an existing agreement from each property owner adjacent to the work site stating that all landscaping has been restored.
6. Any additional landscaping required for screening above-ground structures shall be coordinated with and approved by the adjacent property owner responsible for landscape maintenance.

G. Traffic Control

1. When it is necessary to obstruct roadways or pedestrian ways, the permittee shall submit traffic control plans, in compliance with the Manual of Uniform Traffic Control Devices (MUTCD), showing all work and including the following information:
 - a) Each lane closure scenario, including work zones for locate pothole work.
 - b) Lane configurations and access locations specific to the actual work zone.
 - c) Any upstream intersections within five hundred feet (500') of the work zone, showing all impacted inbound lanes to the intersection.
 - d) Pedestrian route detours showing the nearest crossing intersections at each end of the work zone.
 - e) Proposed hours of operation of each traffic control setup.
2. All traffic control plans shall be prepared under the supervision of a certified Work Site Traffic Control Supervisor. Documentation of certification shall be submitted with the traffic control plan(s).
3. Lane closures shall be permitted only between 8:30 a.m. and 3:30 p.m. on weekdays, 8:00 a.m. to 6:00 p.m. on Saturdays, and 8:00 a.m. to 6:00 p.m. on Sundays, unless otherwise noted on the permit.
4. When conditions warrant, in order to minimize impact to the motoring public, the City may require that the permittee perform work between the hours of 7:00 p.m. and 6:00 a.m. or on weekends.
5. When planning construction phasing and developing traffic control plans, the permittee shall make every effort to minimize the impact to the motoring public and maintain the capacity of the roadway system. The City may require that a traffic control plan be modified to comply with this requirement.

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6. When the traffic control plan requires the modification of any traffic signal timing plans, the permittee shall notify the City's signal maintenance contractor to coordinate the retiming of the signal. All costs associated with such work shall be borne by the permittee.
7. Lane closures within three hundred feet (300') of signalized intersections shall not be allowed on weekdays unless authorized by the City.
8. All signs and devices shall conform to the Manual on Uniform Traffic Control Devices. The devices and signs shall be clean, legible, properly mounted and meet a quality standard rating of "acceptable" per the requirements of American Traffic Safety Services Association (ATSSA) Quality Standard for Work Zone Traffic Control Devices (copies available from the City). All signs and devices used for night operation shall meet the retroreflective requirements of CDOT Standard Specifications Section 713.04.
9. For all installations, the City may require that a permittee place Variable Message Boards in advance of the work to notify the travelling public of the upcoming construction impacts. All costs for this work shall be borne by the permittee.
10. If the closure of a street is required for completion of the work, the permittee shall provide all notifications to emergency agencies, government entities, school and bus districts, newspapers, adjacent businesses and homeowner's associations in a format approved by the City.
11. No permittee shall block access to any private property, fire hydrant, fire station, utility structure, or any other emergency response equipment unless the permittee provides the City with written approval from the affected agency and/or property owner.
12. When necessary for public safety and when required by the City, the permittee shall employ flag persons to control traffic around or through the work site.
13. The permittee shall be responsible for maintaining all work area signing and barricading required throughout the duration of work. During non-work hours, all signs that are not appropriate shall be removed, covered or turned around so that they do not face traffic.
14. Any deficiencies noted by the City shall be corrected immediately by the permittee. If the permittee is not available or cannot be found, the City may make the required corrections and charge the cost thereof to the permittee pursuant to Chapter 11 of the City of Lone Tree Municipal Code.
15. The proposed phasing of construction and length of the active work zone shall be submitted by the permittee to the City for review and approval. Permittees shall make every effort to minimize the impact to the use of the public right-of-way and adjacent

Construction and Excavation Standards for Work in Public Rights-of-Way

properties. The City may require that the permittee modify the proposed construction phasing in order to minimize the impact during construction.

16. Unless authorized in the right-of-way permit, no vehicles larger than one (1) ton pickups with 10,000 pound gross vehicle weight shall be allowed on sidewalks. Permittees shall be responsible for all damage to sidewalks unless such damage was pre-existing and documented with a pre-construction inspection. Pedestrian access shall be maintained throughout the period of work.

17. Per Chapter 11 of the City of Lone Tree Code, the following traffic control requirements shall apply to blanket maintenance permits:

a) If the maintenance operations cause sidewalk or travel lane closures on streets not classified as principal arterial streets in the City of Lone Tree Transportation Plan, and the maintenance operations are located more than three hundred feet (300') from any non-residential intersection, the permittee shall provide traffic control plans that cover each typical work zone scenario to the City for approval. The traffic control plans shall be approved prior to issuance of the blanket maintenance permit. On roadways that have two or more lanes in each direction, only one lane per direction may be closed at any time.

b) If the maintenance operations cause sidewalk or travel lane closures on principal arterial streets as defined in the City of Lone Tree Transportation Plan and/or are located within three hundred feet (300') from a non-residential intersection, the permittee shall provide site specific traffic control plans to the City for approval. The traffic control plans shall be approved prior to issuance of the blanket maintenance permit. Hours of work shall be restricted to nights and/or weekends, unless otherwise approved by the City.

EXHIBIT A

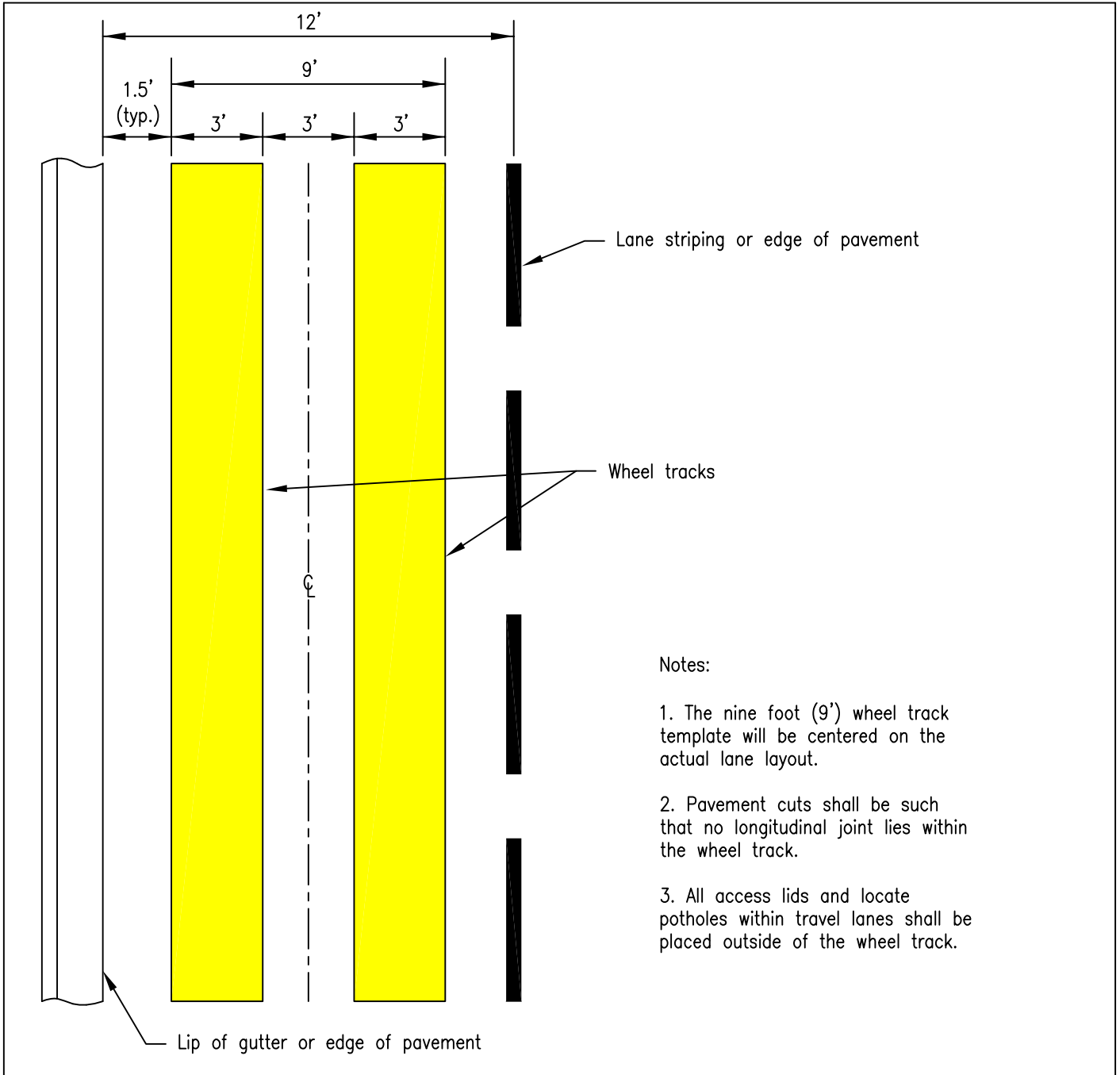
ALL TESTING TO BE PERFORMED PER CURRENT CDOT STANDARDS

ITEM	TYPE OF TEST	MINIMUM FREQUENCY
All excavation backfill	Moisture/Density (Compaction Test)	1 test per 150 l.f. per vertical foot of fill and within 2 ft. of all structures; minimum 2 tests per lift
Inlets/Structures Concrete testing	Rebar Inspection Air and Slump Cylinders	Visual/Documentation 1st three loads, every fifth load thereafter 1 set of four per 100 c.y. or fraction thereof
Soil testing	Moisture/Density (Compaction Test)	1 test per vertical foot, min. 2 tests per lift
Sidewalk, Curb & Gutter Soil testing	Moisture/Density (Compaction Test)	1 test per 150 l.f. per two vertical feet of fill
Concrete testing	Proofroll Air and Slump Cylinders	Minimum of 2 tests per lift All subgrade 1 per day min. – machine placed 2 per day min. – hand placed plus 1 per 500 s.y. 1 set of four per 100 c.y. or fraction thereof
Roadway Subgrade testing	Moisture/Density (Compaction Test) Proofroll	1 test per 300 lane feet, min. 2 tests per lift All subgrade
Base Course testing	Moisture/Density (Compaction Test) Gradation/Atterberg limits Proofroll	1 test per 300 lane feet, min. 2 tests per lift 1 test per 500 tons All base course
Concrete testing – full time	Air and Slump Slump Cylinders	First 3 loads, if pass, 1 test per 100 c.y. Every load 1 set of four per 100 c.y. or fraction thereof
Asphalt testing – full time	Density Extraction/Graduation, Marshall	1 test per 300 lane feet, min. 2 tests per lift 1 test per 500 tons



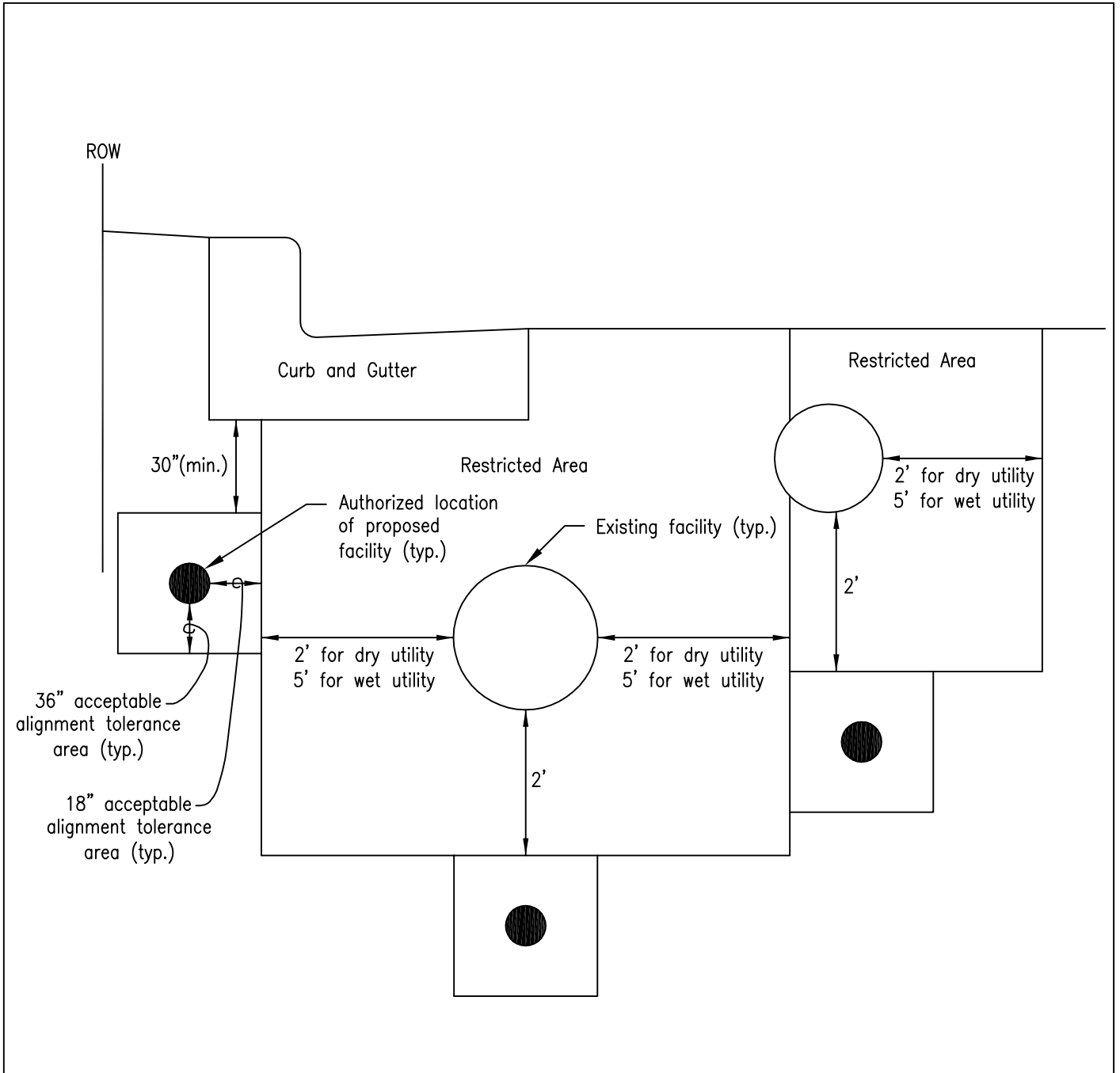
City of Lone Tree
Minimum Testing Requirements

EXHIBIT B



City of Lone Tree
Wheel Track Diagram

EXHIBIT C



City of Lone Tree
Utility Boundary Area
Cross Section