



# CITY AND COUNTY OF DENVER

**DEPARTMENT OF PUBLIC WORKS**  
**Development Engineering Services**

Development Engineering Services  
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## Transportation Engineering Plans (TEP) Review Submittal Requirements

<b>Authority:</b>	Revised Municipal Code; Article 49
<b>Purpose:</b>	<p>A set of plans between the developer/owner and the City documenting transportation issues to be addressed and constructed by a proposed project. This document is used by City inspectors to ensure all documented improvements are constructed, per City standards, in the field. A set of Transportation Engineering Plans (TEP) must be approved before a Building Permit will be issued by the City.</p> <p>This document sets forth the minimum standards necessary for the TEP to be submitted to the City and County of Denver's Development Engineering Services (DES). These requirements replace the former Street Development Requirements used by DES for approval of plans. Authority for these standards is found in Article 49 of the Revised Municipal Code (RMC). Disputes regarding the requirements shall be resolved by administrative hearing pursuant to the RMC 56-106.</p>
<b>Document Date:</b>	May 13, 2005, Version 1.6
<b>Permit Types:</b>	<p>Permits may be required from either of the following:</p> <ul style="list-style-type: none"> <li>• Public Works Plan Review Services (PWPRS)</li> <li>• Public Works Permit Operations (PWPO)</li> </ul>
<b>Customer Interface:</b>	<p>PWPRS          201 W. Colfax Avenue, Room 2.H.10, Department 202          Denver, CO 80202  <a href="http://www.denvergov.org/pwprs">www.denvergov.org/pwprs</a></p>
<b>Affiliated Departments &amp; Agencies, and Roles:</b>	<p>Development Engineering Services (DES) <a href="http://www.denvergov.org/DES">www.denvergov.org/DES</a></p> <p>Business Management</p> <ul style="list-style-type: none"> <li>• PWPO, 2000 W. 3<sup>rd</sup> Avenue, Room 107, Denver, CO 80223.  <a href="http://www.denvergov.org/pwpermits">www.denvergov.org/pwpermits</a></li> <li>• PWPRS, 201 W. Colfax Avenue, Room 2.H.10, Department 202, Denver, CO 80202. <a href="http://www.denvergov.org/pwprs">www.denvergov.org/pwprs</a></li> </ul> <p>Construction Engineering, 2000 W. 3<sup>rd</sup> Avenue, Room 107, Denver, CO 80223.  <a href="http://www.denvergov.org/DESConstruction">www.denvergov.org/DESConstruction</a></p> <p>Engineering and Survey, 201 W. Colfax Avenue, Room 2.H.10, Department 202, Denver, CO 80202 <a href="http://www.denvergov.org/DESEngineering">www.denvergov.org/DESEngineering</a> or <a href="http://www.denvergov.org/DESSurvey">www.denvergov.org/DESSurvey</a></p>
<b>TEP Submittal Criteria:</b>	<p>Engineering Division shall require that TEPs be submitted if one or more of the following checklist criteria are met:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Development creates a change of use</li> <li><input type="checkbox"/> New access points proposed</li> <li><input type="checkbox"/> Change in location of curb and gutter, sidewalk, driveways, or curb ramps</li> <li><input type="checkbox"/> Construction of 100 continuous lineal feet or more of curb and gutter or sidewalk, Plan and Profile &amp; Cross Sections are necessary.</li> <li><input type="checkbox"/> Construction on a State Roadway or an arterial street as defined by DES.</li> <li><input type="checkbox"/> New street or pedestrian lighting in the right-of-way.</li> <li><input type="checkbox"/> Construction impacts either pavement markings or traffic signs within the right-of-way, excluding perpendicular utility service connections.</li> <li><input type="checkbox"/> Trip generation, vehicle or pedestrian, increase caused by the project that exceeds limits, as defined by DES at which a traffic study is required.</li> <li><input type="checkbox"/> New intersection control (stop signs, signals, roundabouts, etc) are proposed.</li> </ul>

- Project proposes median construction, acceleration/deceleration lanes, or change in street lane widths.
- TEPs can be required at the discretion of DES.

**Transportation Engineering Plans are to include the following:**

1. Cover Sheet

- Vicinity map
- General and applicable site specific notes
- Project name
- Project location (legal description and address)
- Sheet index
- Plan set date
- Signature block which includes the Transportation Division project number

2. Transportation Site Plan

- Numerical and bar scale
- North arrow
- Legend
- Adjacent property lines
- Distance to the nearest cross street and adjacent street intersections.
- Control line
- Benchmark
- Basis of bearing
- Note the existence of any special districts, landmark designations, or park designations.

Show existing and proposed:

- Curb and gutter
- Street lights
- Pedestrian lights (may need a permit)
- Pedestrian and vehicular signals
- Streetscape
- Easements
- Pedestrian ramps
- Pavement markings

Show the dimensions of existing and proposed:

- Sidewalks
- Right-of-way
- Flowline to flowline
- Right-of-way to flowline
- Driveway throat width
- Building setback from flowline
- Between drive cuts (edge of flare to edge of flare)
- Between drive cuts and PCR of intersection
- Between street lights
- Slope of driveway, including slopes into garages
- Proposed parking dimensions
- Encroachments of anything into the right-of-way covered by an existing or proposed revocable permit.

3. Plan and Profile (*If constructing at least 100 continuous lineal feet of alley or curb, gutter and/or sidewalk; OR if requested*)

- North arrow
- Numerical and bar scale
- Proposed layout
- Existing ground (dashed) at centerline
- Right-of-way lines
- Street names and widths
- Grades, clearly labeled
- Match lines and consecutive sheet number
- Roadway stationing shown in plan view
- Station and elevation of all curb returns; horizontal P.C.'s, P.T.'s, P.C.C's, etc.
- Centerline station of all driveways
- Centerline station of all intersecting roadways

	<ul style="list-style-type: none"> <li><input type="checkbox"/> All existing curbs, gutters, sidewalks, and asphalt adjacent to the proposed design</li> <li><input type="checkbox"/> Station and elevation of all vertical grade breaks</li> <li><input type="checkbox"/> Vertical curves, VPI, VPC, VPT, L, K, high or low point</li> <li><input type="checkbox"/> Proposed utilities</li> <li><input type="checkbox"/> Existing utilities (Shaded back)</li> <li><input type="checkbox"/> Curb return profiles if required.</li> </ul> <p>4. Cross Sections (<i>If constructing at least 100 continuous lineal feet of curb, gutter and/or sidewalk; OR if requested</i>)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Required every 50 feet. For new roadway, cross sections may only be required at tie in areas (at DES's discretion)</li> <li><input type="checkbox"/> Show tie in to property line</li> <li><input type="checkbox"/> Include sidewalk, curb and gutter, and roadway</li> <li><input type="checkbox"/> Cross slopes labeled</li> <li><input type="checkbox"/> Scale</li> </ul> <p>5. Pavement Marking and Signage (<i>On smaller projects, this information can be shown on the Transportation Site Plan</i>)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Existing signage inventory w/ dimensions from PCR</li> <li><input type="checkbox"/> Existing pavement markings w/ dimensions</li> <li><input type="checkbox"/> Lane flow arrows</li> <li><input type="checkbox"/> Lane widths</li> <li><input type="checkbox"/> Flowline to flowline dimension</li> </ul> <p>6. Intersection design (<i>If applicable</i>)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Signal design</li> <li><input type="checkbox"/> Roundabout design</li> <li><input type="checkbox"/> Median design</li> <li><input type="checkbox"/> Intersection grading</li> <li><input type="checkbox"/> Detailed horizontal design</li> </ul> <p>7. Summary and Tabulation of Quantities (<i>ONLY, if requested</i>)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> All pay items listed</li> <li><input type="checkbox"/> Summary of Structure Quantities</li> <li><input type="checkbox"/> Summary of Earthwork Quantities</li> <li><input type="checkbox"/> Base Course and Surfacing Plan</li> <li><input type="checkbox"/> Removals, Resets, and Adjustments</li> <li><input type="checkbox"/> Tabulation of Curb, Gutter and Sidewalk</li> <li><input type="checkbox"/> Tabulation of Fencing and Gates</li> <li><input type="checkbox"/> Tabulation of Guardrails</li> </ul> <p>8. Details</p> <p>9. Lighting Plan</p>
<p><b>Submittal Requirements:</b></p>	<p>All TEPs are to be submitted to PWPRS. Four or Eight sets of plans shall be submitted to DES. The plans will be distributed to the appropriate agencies. Allow a minimum of 3 weeks for review. Please do not call the department unless adequate review time has been given. Upon approval, all sets of plans must be signed and stamped by a Professional Engineer registered in the State of Colorado. All plans must be reviewed and approved prior to construction. Please note the Checklist in the WEB page for assistance with the approval process.</p> <p><b><u>General Requirements:</u></b></p> <ul style="list-style-type: none"> <li>a) 3" Schedule 40 PVC shall be placed behind the back of curb along the entire property frontage. Contact the conduit engineer at Traffic Operations (720 865-4000) prior to installation for approval of proposed conduit location.</li> <li>b) All privately installed and maintained pedestrian lights in the public right-of-way shall require a Type B Permit from PWPRS. These pedestrian lights shall be limited in light output to 6,000 lumens per lamp and 9,000 lumens per pole. Pedestrian lights cannot be located where the City Traffic Engineer determines they will be in conflict with a traffic control device.</li> <li>c) Any land for right-of-way required to be conveyed to or an easement granted to the City must be documented by the developer with a Phase 1 Environmental Study. The results of this study may require additional studies and sampling. Any contamination must be</li> </ul>

	<p>removed by the developer before the land is conveyed or an easement is granted to the City. Contact the Department of Environmental Services for additional information.</p> <p>d) The developer must submit to the City Surveyor for review and approval, a legal description along with a copy of the DES approved site plan for any easements or land to be deeded to the City. This submittal must be done <b>before</b> DES will release any holds on building permits. The Asset Management Office will prepare the deed with the approved legal description and submit the deed to the owner for signature. The land must be conveyed to the City <b>before</b> the Certificate of Occupancy is released.</p> <p>e) Any access change on a State Roadway requires approval through the Colorado Department of Transportation (CDOT). The developer shall complete CDOT form 137 for each proposed new access, access closure or access modification. These forms shall be submitted to the Transportation Plan Review Engineer.</p> <p>f) All projects that have bus stops adjacent to them must provide a concrete pad, which may be located in the right-of-way or on private property. If the bench is located within public right-of-way, a permit shall be obtained from PWPO. If the bench is located on private property, an easement shall be required for the installation of a City of Denver approved metal bus bench (non-advertising). The pad and bench shall be installed and maintained by the adjacent land owner.</p> <p>g) For a proposed curb cut that will encroach within 5' of the property line, the developer shall obtain a letter from the adjacent property owner. This letter shall document consent for the proposed location, with acknowledgement that they will be unable to place a curb cut of their own within ten feet of the proposed curb cut.</p> <p>h) DES may include site-specific requirements not included above after initial review.</p> <p>i) All potholes must be core drilled or sawcut to 2' x 2'.</p> <p>j) Notify Environmental Services two weeks prior to excavation for all radium street construction.</p> <p>k) Current Standards (April 2000) must be used.</p> <p>l) Clearly identify owner name &amp; contact info on all manhole covers. For all manholes in asphalt streets, add a 2" riser ring directly under the cover to facilitate future roto-mill /overlay operations.</p> <p><b><u>Plan and Profile design requirements:</u></b></p> <p>a) Maximum Grade = 7.0% (Steeper grades maybe accepted at the discretion of the City Engineering Department).</p> <p>b) Minimum Grade = 0.7% (Flatter grades maybe accepted at the discretion of the City Engineering Department).</p> <p>c) Minimum Vertical Curve Length=50 feet at 0.8% algebraic grade change.</p> <p>d) Length of Vertical Curve shall be designed to allow adequate sight distances (See AASHTO designation for safe-stopping distance) and good delineation.</p> <p>e) Streets shall intersect at a 90 degree angle and provide 50 foot of tangency (from ROW)</p> <p>f) Cul-de-sacs Shall Not exceed 400 foot in length and shall have a minimum ROW radius of 50 feet and a minimum flowline radius of 43 feet.</p> <p>g) Maximum desirable difference in elevation across street = 0.5'. Elevation difference determined by:</p> <ol style="list-style-type: none"> <li>Width of street</li> <li>Minimum slope from lip to crown = 0.015'/ft</li> <li>Maximum slope from lip to crown on low side of street =0.04'/ft.</li> </ol> <p>h) Crown shift – minimum distance from crown to high side lip = 6 feet</p>
<p><b>Considerations for Submittals:</b></p>	<p><b><u>General Notes</u></b></p> <ol style="list-style-type: none"> <li>All work shall conform to current City and County of Denver Specifications. If the Construction Engineering inspector finds a problem on the approved plans during construction that conflict with a City standard, the inspector may halt construction until the issue is resolved.</li> <li>The developer is responsible for any modifications to existing pavement markings necessitated by this development. Proposed pavement marking must be 3M Company Stamark 5730 or approved equivalent. All markings must be installed according to manufacturer's specifications.</li> <li>By ordinance, for proposed non-residential sites having an off-street parking requirement of 15 spaces or more, a number of off-street bicycle parking spaces shall be provided equal to 5% of the automobile parking space requirement. Each inverted "U" provided will count as two bicycle parking spaces. Document these spaces on the</li> </ol>

Transportation Site-plan.

4. Owner must acquire a MGPEC compliant Quality Control laboratory prior to starting construction and must perform all Quality Control testing within the right-of-way following the MGPEC frequency for testing.
5. Legal descriptions for additional R.O.W. to be deeded to the City must be submitted to PWPRS.
6. A monument record must be filed with the City Surveyor's Office, through PWPRS, on all crosses on curbheads, benchmarks, range points and section corners so they can be replaced after construction. The monument record must be filed with the City Surveyor's Office before the plan and profiles can be approved. This must be done by a Professional Licensed Land Surveyor. These monuments must be replaced by the Developer's Surveyor before new construction can be accepted by the City.
7. All range points, ties, benchmarks, or other City and County of Denver survey control points, which may be encountered during construction, must be preserved.
8. The Contractor shall contact all appropriate utility companies and the City and County of Denver 48 hours prior to the beginning of any construction. Contractor shall be responsible for locating any existing utility (including depths) which may conflict with the proposed construction. The Contractor shall protect all existing utilities from damage. Damaged utilities shall be repaired by the Contractor, at his expense.
9. Improvements made within the public right-of-way shall be performed by a licensed and bonded right-of-way contractor and require inspection by the City prior to a Temporary Certificate of Occupancy (TCO) or Certificate of Occupancy (CO) being issued.
10. Contractor is responsible for obtaining all project permits associated with construction. Improvements made within the public right-of-way totaling more than \$20,000 require a performance bond. Contact Construction Engineering at (303 446-3469) **at least 48 hours** before any construction permit needs.
11. Permittee shall notify the City inspector: 1) two working days before commencing work on R.O.W.; 2) when suspending operations for 5 or more working days; 3) two working days before resuming suspended work; 4) upon completion of work.
12. Contractor shall maintain at least one copy of the approved plans, specifications and standards on the job site at all times.
13. Contractor is responsible for being aware of, notifying, coordinating and scheduling all inspections required for final approvals and project acceptance.
14. All work, including correction work, is subject to notification and inspection requirements.
15. Contractor is responsible for providing and maintaining adequate traffic control throughout the project, including proper traffic control devices and/or personnel as required. A Traffic Control Plan (TCP) is subject to City and County of Denver and/or CDOT approval prior to commencing work on roadway ROW. A copy of approved TCPs must be available on site during work. Traffic control to be in accordance with M.U.T.C.D., Section VI.
16. All work will be properly backfilled prior to the end of workday, no open holes are allowed overnight. All work is to be in accordance with permit requirements and applicable standards.
17. When an existing asphalt street is cut, the street must be restored to a condition equal to or better than its original condition. The existing street condition shall be documented before any cuts are made, patching shall be done in conformance with the project standards. The finished patch shall blend smoothly into the existing surface. All large patches shall be paved with an asphalt lay-down machine.
18. Patch asphalt paving as necessary to join new gutters with the existing pavement. Removal and replacement of asphalt shall be per the latest *Standards and Details for*

*City Engineering.*

19. Construction of any portion of the roadway facility, including the pavement structure, subsurface support, drainage, landscaping elements, and all appurtenant features, shall comply with the provisions of the City standard specifications and standard plans.
20. Where consistent with safety and space considerations, excavated material is to be placed on the uphill side of trenches.
21. Permittee should remove materials and equipment from the roadway R.O.W. at the close of daily operations. The TCP must include protective measures where materials and equipment may be stored on R.O.W, but ensure five feet of pedestrian clearance on sidewalks.
22. No work shall be permitted at night or on Saturdays, Sundays, and Holidays without prior authorizations or unless otherwise specified in this permit. City may restrict work on R.O.W. during adverse weather conditions or during periods of high traffic volume.
23. Permittee shall not spray, cut, or trim trees or other landscaping elements within roadway ROW, unless such work is otherwise specified in this permit or clearly indicated on the approved plans.
24. No cleated or tracked equipment may work in or move over paved surfaces without mats.
25. Material removed from any portion of the roadway prism must be replaced in like kind with equal or better compaction. No segregation of material will be permitted.
26. Prior to final acceptance, all disturbed portions of roadway right of way shall be cleaned up and restored to their original condition, subject to City approval.
27. Seeding, sodding, and planting shall be as specified or otherwise approved by City. Construction, maintenance, and watering requirements shall conform with the City standard specifications. Where landscape restoration must be delayed due to seasonal requirements, such work may be authorized by a separate permit.
28. In the event that an emergency repair to existing facilities is necessary, the Construction Engineering ROW district inspector shall immediately be notified of possible traffic hazards. Emergency procedures shall be coordinated beforehand, where possible, no work will be allowed until notification is received. Emergency telephone notification must be followed up with a letter as soon as possible.
29. Any existing curb, gutter, driveways, and sidewalk that is failing or damaged must be repaired or replaced at the direction of Construction Engineering.
30. Protection and replacement of street improvements are the responsibility of the owner until these improvements are fully completed and accepted by the City and County of Denver.
31. Construction shall commence within one year of approval or resubmittal is required. Construction shall be completed within two years of DES approval or an extension is required.
32. DES approval does not constitute a notice to proceed. The developer is responsible for obtaining appropriate construction permits.
33. Unless streetscape has been approved, the developer shall landscape all right-of-way with sod and trees. No loose material (i.e., rock, bark, gravel, etc.) shall be allowed. Decorative concrete or low growing plant material may be allowed only with the specific approval of DES. Trees shall be pre-approved by the City Forester's Office and shall be a minimum of 20' from property corners at intersections, 25' from street lights and 10' from edge of driveways.
34. Any relocation of utilities such as power poles and fire hydrants that lie within the public right-of-way will be the cost of the developer and shall be coordinated with the appropriate utility or agency.

35. Any proposed light fixtures installed on private property, adjacent to the public right-of-way, shall be oriented in such a manner or limited in lumen output to prevent glare problems and shall not exceed National I.E.S. lighting standards for disability glare.
36. The developer shall pay XCel Energy for the construction and/or relocation of streetlights within the public right-of-way. The streetlights shall be constructed and/or relocated to the current City standards and coordinated through XCel Energy.
37. The owner/operator shall hire an MGPEC-compliant laboratory for all quality control testing of materials in the ROW. The City and County of Denver will only provide quality assurance.
38. 3" Schedule 40 PVC shall be placed behind the back of the curb along the entire property frontage. Contact Chris Lillie at Traffic Operations (720-865-4066) prior to installation for approval of proposed conduit location.

**Site Specific Notes**

1. Coordinate all traffic signal equipment relocations with PW Traffic Engineering Services.
2. Requests for a traffic signal at a full movement intersection must first meet warrant criteria in the Manual on Uniform Traffic Control Devices. Upon meeting these criteria, the signal must still be approved by the City Traffic Engineer.
3. A Sewer Use and Drainage Permit, issued by PWPO, must be obtained for construction involving sanitary or storm sewer facilities.
4. A Permit must be obtained for private improvements constructed within the Public Right of Way (R.O.W.). Contact PWPO and/or DES Construction Engineering ROW district inspector.
5. Where R.O.W. fences need to be removed or cut to facilitate construction, approval must be given by the department before work is done. Existing line must be established by good survey practices, the utility company will supply and install new materials required to restore fence to acceptable condition, new posts and wire will be required including corner posts for gates placed in locations as determined by original survey. Fences will be replaced in kind according to fencing standards of the department.
6. If livestock is present in area of fence removal, a temporary fence (equivalent to the existing) will be required to contain livestock until new fence in place, temporary fence will then be removed.

**Approval Process:**

This section to be may completed at a later date.

**Document**

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**Location:**