

Appendix E-4

City of Fort Collins

Requirements for Utility Plans

Project Name: _____

Project Planner: _____

Design Engineering Firm: _____

Developer: _____

All applications for final development plans **must** include final development plan documents (“Utility Plans”). The standards for these Utility Plans are set forth in Division 3.3 of the City of Fort Collins Land Use Code, these Standards, and as further noted in this appendix.

THIS LIST PROVIDES THE DESIGN ENGINEER INFORMATION TO HELP HIM/HER DETERMINE WHAT THE CITY OF FORT COLLINS EXPECTS TO SEE ON DRAWINGS SUBMITTED FOR REVIEW AND APPROVAL. THIS LIST IS NOT INTENDED TO BE ALL-INCLUSIVE AND SHALL NOT, IN ANY WAY, OVERRIDE OR SUPERCEDE THE STANDARDS SET FORTH IN THE CITY OF FORT COLLINS LAND USE CODE AND/OR THE LARIMER COUNTY URBAN AREA STREET STANDARDS MANUAL. ADDITIONAL INFORMATION MAY BE REQUIRED ON SPECIFIC PLAN DESIGNS AND IS NOT INTENDED TO RELIEVE THE DESIGN ENGINEER OF THEIR OBLIGATION TO UTILIZE GOOD ENGINEERING PRACTICES.

The two “check list” columns to the left of the Utility Plan requirements below are provided for the convenience of both City staff and the Developer’s Engineer. The columns are organized as follows:

- (1) The first column, “Applicant Validation,” is provided as a check list for the applicant to ensure that all required items are addressed within the Utility Plans.
- (2) Upon submittal, City staff will check off the items in the second column to ensure that all the required items are included within the Utility Plans.

PLEASE NOTE: All items with an arrow (▶) are items required prior to public hearing. All items without an arrow will be required during final compliance.

Applicant Validation		Staff Check	
N/A	Included		
			I. Cover Sheet
			A. ► Preamble title of "Utility Plans For..."
			B. ► Legal description below the project name
			C. ► Vicinity map including project location, nearest two Arterial Streets, existing street system, street names for collector and Arterial Streets, City limit lines, north arrow and major public facilities
			D. ► Index to all sheets contained within the Utility Plan placed on right side of sheet.
			E. The current date (month and year) under the legal description
			F. General Construction Notes, and if applicable, CDOT General Construction Notes (see attached Appendix E-2) placed on left side of sheet
			G. ► Project Bench Marks referencing the City of Fort Collins' datum
			H. Reference to the updated or current soils investigation report
			I. Stamp and signature of a licensed Civil Engineer registered in the State of Colorado (on approved final development plan documents) in accordance with State Statutes and Board Rules.
			J. The following statement is annotated on the Cover Sheet: <i>I hereby affirm that these final construction plans were prepared under my direct supervision, in accordance with all applicable City of Fort Collins and State of Colorado standards and statutes, respectively; and that I am fully responsible for the accuracy of all design, revisions, and record conditions that I have noted on these plans.</i>
			K. ► Typical street section(s) provided for each street type being proposed. Sections include appropriate horizontal and vertical dimensions and cross slopes, type of curb and gutter and any deviations from standards. See Figures 7-1F thru 7-13F. (These sections may also be located on the plan/profile sheets or a separate sheet within the utility plan set.)
			L. The names, addresses, phone numbers for the Developer(s), Owner(s), and Consultant Engineer are provided.
			M. Indemnification Statement provided and annotated as follows: <i>These plans have been reviewed by the Local Entity for concept only. The review does not imply responsibility by the reviewing department, the Local Entity Engineer, or the Local Entity for accuracy and correctness of the calculations. Furthermore, the review does not imply that quantities of items on the plans are the final quantities required. The review shall not be construed in any reason as acceptance of financial responsibility by the Local Entity for additional quantities of items shown that may be required during the construction phase.</i>

Applicant Validation		Staff Check
N/A	Included	

II. Grading, Drainage & Erosion Control Plan

			A. ▶ Drainage report submitted
			B. ▶ Existing and proposed contours provided at 2' (min.) intervals and labeled.
			C. ▶ Contours extended a minimum of 50' offsite and tie into existing contours.
			D. Finish grade elevations provided for streets, lot corners, and finish floors/top of foundation of buildings for all lots.
			E. This statement provided: <i>"The top of foundation elevations shown are the minimum elevations required for protection from the 100-year storm.</i>
			F. ▶ Drainage arrows are provided and show positive drainage to streets or to an approved drainage facility.
			G. Phasing of development and construction of all public improvements. All public improvements within each phase stand alone. Phases separated by a thick, ghosted line and identified by either numbers or letters.
			H. Temporary and long term erosion control devices are provided and labeled.
			I. ▶ Revegetation methods and specific notes are provided.
			J. ▶ If the project proposes any construction in a floodplain, please pick up the separate "Preliminary Floodplain Submittal Requirements" available at the Stormwater Utility.

III. Overall Utility Plan Sheet(s)

A. Streets

			1. ▶ R.O.W., property lines and easements with dimensions and labels.
			2. ▶ Cross-pans
			3. ▶ Access ramps
			4. ▶ Curb and gutter
			5. ▶ Sidewalks
			6. ▶ Driveway locations
			7. ▶ Medians, including flowline and lip of gutter
			8. General location of signs(speed, stop, monument, etc.)
			B. Phasing lines of development and construction of all public improvements. All public improvements within each phase stand alone. Phases separated by a thick, ghosted line and identified by either numbers or letters.

Applicant Validation		Staff Check	
<u>N/A</u>	<u>Included</u>		
			C. Water Facilities
			1. ► Mains with sizes
			2. ► Fire hydrant locations
			3. ► Valves
			4. Meter pits and curb stops
			5. ► Manhole locations
			6. ► Show service locations at preliminary, except for single family uses.
			7. Waterline lowerings
			8. Dimensioning of manholes and cleanouts from the centerline of the roadways.
			D. Sanitary Sewer Facilities
			1. ► Mains with sizes
			2. ► Manhole locations and numbering
			3. Length of segments between manholes
			4. Type of pipe
			5. Slopes
			6. Clean-outs
			7. ► Show services at preliminary, except for single family uses.
			E. Storm Sewer Facilities
			1. ► General layout of stormsewers, channels and swales.
			2. ► Manhole locations
			3. ► Junction structures
			4. ► Clean-outs
			5. ► Type of pipe
			6. ► Sizes
			7. ► Slopes
			8. ► Length of segments between manholes
			9. Subdrains (where applicable)
			10. ► Manhole numbering
			F. ► Existing features shown for a minimum of 150' beyond the project limits
			G. ► Proposed utility connections with existing utilities.

Applicant Validation	Staff Check
N/A	Included

IV. Street Plan and Profile Sheets (Horizontal Alignment)

			A. ▶ Largest possible curve radii used on Arterial and Major Arterial roadways. <i>Minimum curve radii used only where necessary.</i> See Table 7-3.
			B. ▶ Minimum tangent lengths at intersections. See Table 7-3.
			C. ▶ Crossing streets intersect at 90° (minor street can vary ±10°).
			D. ▶ Angle of departure of streets at intersections do not exceed 10° for the length of the required tangent.
			E. ▶ Minimum tangent between reverse curves provided. See Table 7-3.
			F. ▶ Broken-back curves are separated by a length equal to 2 times the tangent length. See Table 7-3.
			G. ▶ Compound curves: ratio value of ≤1.5 (Larger radius divided by the smaller radius).
			I. ▶ Minimum centerline arcs for curves with deflection angles 10° or less. See Table 7-5.
			J. Horizontal curves do not begin at the top of a crest curve or the bottom of a sag curve.
			K. ▶ Tapers and transitions: Refer to Chapter 8
			L. ▶ Sight distance triangles and easements: Shown on all plan & profile sheets. Sight distance easements dedicated on the Plat.
			M. ▶ Minimum Local Street widths provided per Table 7-1 and are consistent with the TIS.
			N. ▶ Access ramps and crosswalks provided. Crosswalk lengths are a maximum of 56' in length. See Chapter 16, Pedestrian Facilities Design and Technical Criteria.
			O. ▶ Minimum of one mid-block access ramps provided at all "T" intersections.
			P. ▶ Complete horizontal alignment includes, but is not limited to: centerline of roads, intersecting streets, driveway locations, and storm drainage facilities.
			Q. ▶ Existing and proposed Property and/or ROW lines, easements and/or tracts provided, dimensioned, and labeled clearly.
			R. Existing utilities and structures (shown as phantom line) included:
			1. ▶ Storm sewer and appurtenances
			2. Fence lines and gates
			3. ▶ Water lines and appurtenances
			4. ▶ Ditches and swales

<u>Applicant Validation</u>	<u>Staff Check</u>	
<u>N/A</u>	<u>Included</u>	
		5. ▶ Electric lines and appurtenances
		6. ▶ Curbs and gutters
		7. ▶ Sanitary Sewer lines and appurtenances
		8. ▶ Pavement limits
		9. ▶ Telephone lines and appurtenances
		10. ▶ Bridges and/or culverts
		11. ▶ CATV lines and appurtenances
		12. ▶ Guardrails
		13. Signs
		14. ▶ Gas lines and appurtenances
		S. Station, critical elevation, and dimension of all existing and proposed utility and/or drainage structures provided.
		T. Intersections show construction and lane details for new and existing facilities for a minimum of 150' beyond the limits of construction.
V. Street Plan and Profile Sheets (Vertical Alignment)		
		A. ▶ Maximum grades for streets comply. See Table 7-3 .
		B. ▶ Maximum grades of cul-de-sacs are 3.0%.
		C. Continuance of profile and ground lines for all Local and Collector Streets that dead end (excluding cul-de-sacs) shown for 500' beyond the proposed construction.
		D. Continuance of profile and ground lines for Arterial Streets shown for 1000' beyond the proposed construction.
		E. ▶ Minimum crest and sag curve lengths for street classifications. See Figures 7-17 and 7-18 . Lengths must meet or exceed these minimums.
		F. Crest curves: street centerline, curb and gutter designed with vertical curves. See Table 7-3 .
		G. Sag curves: street centerline and flowline designed with a vertical curve (see exception below). See Figure 7-18 and Table 7-3 .
		H. Sag Curves: For grade changes <1.0%: gutter flowlines at low points are not designed with vertical curves, but must meet the minimum .5% grade into the inlet.
		I. Sag Curves: For grade changes >1.0%: both street centerline and curb and gutter are designed with vertical curves, but a minimum flowline grade of .5% must still be maintained.
		J. ▶ Single point grade breaks do not exceed 0.40%, except at inlets where min .5% grade into the inlet is required.

<u>Applicant Validation</u>		<u>Staff Check</u>	
<u>N/A</u>	<u>Included</u>		
			K. ▶ Series of grade breaks meet the vertical alignment criteria for the design speed of the roadways.
			L. ▶ Minimum centerline and flowline grade for streets is 0.50%.
			M. Minimum flowline grade for cul-de-sacs is 1.0%.
			N. Minimum desirable grade around curb returns is 1.0%. Minimum allowable grade around curb returns is 0.50%.
			O. Curb return profiles (except medians) are provided.
			P. ▶ Centerline profiles through intersections provided.
			Q. Flowline profiles provided on both sides of all streets (Final compliance).
			R. ▶ Centerline profiles provided for all streets (Preliminary).
			S. ▶ Proposed (solid line type) and existing (dashed line type) ground lines provided and labeled.
			T. ▶ All proposed and existing vertical curves and grade breaks are dimensioned (Preliminary)/ stationed and labeled clearly (Final compliance).
			VI. Cross Slopes
			A. Minimum cross slope of new streets is 2.0%.
			B. Minimum cross slope of any reconstruction or overlay is 1.5%.
			C. Maximum allowable cross slope on all new streets is 3.0%.
			D. Maximum allowable cross slope on any reconstruction or overlay of existing roadways is 4.0%.
			E. Street modifications (widening, turn-lane, etc): the widened portion is within the stated limits and is not less than the existing cross slope.
			F. When tying to existing cross slopes: Curb and gutter or centerline shall be designed such that the when the existing pavement is overlaid it results in a straight line cross slope grade that meets standards.
			G. Cul-de-sacs: See Figure 7-19.
			VII. Design Speed
			A. ▶ Roadways are designed according to their proper design speed. See Table 7-3.
			VIII. Curb Return Radii
			A. Curb return radii used in accordance with Table 8-2.
			B. Minimum desirable flowline grade around curb returns is 1%.
			C. Minimum allowable flowline grade around curb returns is 0.50%.

Applicant Validation		Staff Check
N/A	Included	

IX. Medians

- | | | | |
|-------|-------|-------|--|
| _____ | _____ | _____ | A. Provided as stated on Figures 7-1F thru 7-13F. |
| _____ | _____ | _____ | B. ► Width of medians are no less than 4' wide. |
| _____ | _____ | _____ | C. ► Turn Lane and Access: Left-turn lanes (where warranted) designed using criteria contained in Figures 8-2, 8-3 & 8-11. |
| _____ | _____ | _____ | D. ► Landscaped medians include drainage facilities to handle sprinkler runoff and nuisance flows. Refer to Appendix C. |
| _____ | _____ | _____ | E. ► Median(s) are designed with keyed curb or curb with outfall gutters (if gutters are not needed to handle drainage), or medians are designed with curb with inflow gutters (if gutters are needed to handle drainage). |
| _____ | _____ | _____ | F. ► Nose of median(s) located such that vehicle turning movements comply with vehicle tracking templates. |
| _____ | _____ | _____ | G. ► Transition points of medians do not have "angle points". A 100' minimum radius with minimum arc length of 50' is used at transition locations. |
| _____ | _____ | _____ | H. ► Permanent structures within medians are a minimum of 5' from the closest travel lane. |
| _____ | _____ | _____ | I. ► Pedestrian refuge areas are provided in the noses of medians. See Chapter 16, Pedestrian Facilities Design and Technical Criteria. |
| _____ | _____ | _____ | J. Profiles shall be provided for all areas of inflow curb and gutter. Profiles or adequate spot elevations, dimensions and any other information necessary for review and construction shall be provided for all medians. |

X. Cul-de-sacs

- | | | | |
|-------|-------|-------|---|
| _____ | _____ | _____ | A. ► Provided only on Local Streets. See Figures 7-19 & 7-21. |
| _____ | _____ | _____ | B. ► Maximum length of 660' (1320' max.) if fire sprinkler systems are installed in structures. |
| _____ | _____ | _____ | C. ► Minimum radii used. See Figure 7-19. |

XI. Eyebrows

- | | | | |
|-------|-------|-------|---|
| _____ | _____ | _____ | A. ► Provided only on Local Streets. See Figure 7-23. |
| _____ | _____ | _____ | B. ► Spaced in conformance with the requirements in Chapter 9, Access Requirements and Criteria. |

XII. Dead-end Streets

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|-------|-------|-------|--|
| _____ | _____ | _____ | A. ► Temporary dead-end streets provided only on streets that do not have direct access from adjoining property. |
| _____ | _____ | _____ | B. ► Temporary turnarounds with a minimum radius of 50' provided for permitted dead-end streets. See Figure 7-26. |
| _____ | _____ | _____ | C. Temporary access easements dedicated on the Plat. |

Applicant Validation		Staff Check
<u>N/A</u>	<u>Included</u>	

XIII. Driveways

_____	_____	_____
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A. Where curb cuts are provided, concentrated runoff from adjoining properties does not discharge across the sidewalk.

_____	_____	_____
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B. ▶ Spacing of curb cuts conform to spacing requirements. See **Figure 9-1 and Table 7-3**.

_____	_____	_____
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C. Drive approaches slope toward the street.

_____	_____	_____
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D. ▶ Driveways intersect streets at 90° ±10° for a minimum of 25' measured perpendicular to the street from the curb edge or EOA.

_____	_____	_____
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E. ▶ All access/driveway approaches are paved with Portland cement from the street to the ROW.

1. SF Residential Approaches

_____	_____	_____
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a. ▶ Minimum width of driveway(s) is 12' and the maximum width is 24'. See **Standard Drawings 706 and 707**.

_____	_____	_____
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b. ▶ Sidewalks are continuous through driveways. See **Standard Drawing 1601**.

_____	_____	_____
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c. When pedestrian accessible driveways are required in lieu of mid-block access ramps, the slope of the driveway is ≤ 1:12 and spaced at 300' intervals on both sides of the street.

2. High Volume Driveway

_____	_____	_____
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a. ▶* Driveways accessing Arterial Streets or meeting criteria in Section 9.3.2.A shall conform with **Standard Drawing 707**.

_____	_____	_____
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b. ▶* Maximum width is 36'. If wider, a median separates the inbound and outbound traffic.

_____	_____	_____
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3. ▶ Multi-Family Dwelling Unit Driveways
Minimum width of driveway(s) is 24'. Minimum of 28' for driveways serving 12 units or more with maximum width of 36'.

XIV. Grading In The ROW

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A. Maximum slope for all areas within the ROW is 4:1.

_____	_____	_____
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B. Maximum slope outside of the ROW affecting public improvements is 4:1.

_____	_____	_____
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C. Retaining walls provided where slopes exceed 4:1. Retaining walls designed in accordance with **Chapter 11, Structures**.

_____	_____	_____
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D. Minimum slopes in non-roadway areas is 2.0%

<u>Applicant Validation</u>		<u>Staff Check</u>	
<u>N/A</u>	<u>Included</u>		
			H. ► Additional ROW dedicated for right and left turn lanes.
			I. ► Sight distances comply with Figure 7-16 .
			J. ► Street grades approaching intersections shall be between 0.50% (min.) and 4.0% (max) for a distance equal to the tangent length of the street classification. See Table 7-3
			K. ► Profile grades within the intersection do not exceed 3%
			XX. General Requirements
			A. Phased improvements shown clearly.
			B. Phases within the project limits stand alone and do not leave necessary improvements to future projects.
			C. ► Design of State streets meet the requirements presented in the State Highway Access Code Manual .
			D. ► North arrows and the appropriate bar/graphic scale(s) are provided.
			E. ► Existing features adjacent to this development are shown in a ghosted or alternate line weight.
			F. The City's signature block is provided in the lower right corner of each sheet contained within the utility plan set. Each signature block measures 3½" high by 4½" wide.
			G. ► Ditch company approval block is provided.
			H. ► Water and Sanitary District approval block is provided.
			I. County approval block is provided.
			J. CDOT approval block is provided.
			K. ► Title block is provided on each sheet of the utility plan set and includes the project name, sheet name, engineer's name, address, telephone number and fax number, sheet numbering, and revision block.
			L. ► The utility plans correlate with the Site and Landscape Plans
			M. Spot elevations at all intersections provided as shown on Figures 7-27 and 7-28 .
			N. ► Proposed construction within the Property boundary drawn with solid lines and existing features shown with hidden or dashed lines.
			O. Stations and elevations provided at all PC's, driveway intersections and roadway intersections in both plan and profile views.
			P. Flowline curve table provided on each plan and profile sheet that includes radius, angle, arc length, and tangent length.

<u>Applicant Validation</u>		<u>Staff Check</u>	
<u>N/A</u>	<u>Included</u>		
_____	_____	_____	Q. Centerline stationing is the standard and shall be used except at cul-de-sacs, where flowline stationing is used (Station equations provided.), unless approval to use flowline stationing is given.
_____	_____	_____	R. ► Street names provided on all sheets.
_____	_____	_____	T. ► All easements shown in the plan views.
_____	_____	_____	U. ► Match-lines provided in both plan and profile. Page number, station and elevation included.
_____	_____	_____	V. The scale of all sheets are as follows:
_____	_____	_____	1. ► Horizontal - 1" = 20', 30', 40', or 50'
_____	_____	_____	2. ► Vertical - 1" = 5' or 10'
_____	_____	_____	3. ► Overall Plan - 1" = 100'
_____	_____	_____	W. ► All private improvements, including but not limited to, roadways, driveways, utilities, etc. are clearly shown and labeled as such.
_____	_____	_____	X. ► A legend is provided on each sheet identifying the symbols used on that particular sheet.
_____	_____	_____	Y. ► Key map is provided on the plan and profile sheets (for utility plans having 3 or more plan and profile sheets).
_____	_____	_____	XXI. ► Street Cross Sections (Preliminary = typical for each street)
_____	_____	_____	A. Cross sections for Arterial Streets and Collector Streets are provided at 50' intervals. Cross also required where special conditions warrant the need (i.e. widening of an existing street). The interval may be adjusted where site topography is unique.
_____	_____	_____	1. Information Provided on each Cross Section
_____	_____	_____	a. ► Curb & gutter, existing(f) and proposed(*)
_____	_____	_____	b. ► Roadway surface, existing and proposed
_____	_____	_____	c. ► Sidewalk, existing and proposed
_____	_____	_____	d. ► Cross slopes, existing(f) and proposed(*)
_____	_____	_____	e. ► ROW, existing and proposed
_____	_____	_____	f. Side slopes, existing and proposed, 15' beyond the proposed ROW
_____	_____	_____	g. Stations
_____	_____	_____	h. Proposed flowline and centerline elevations
_____	_____	_____	i. Utility crossings
_____	_____	_____	j. ► Dimensions
_____	_____	_____	k. Areas of overlay, milling, pavement removal and/or reconstruction.

Applicant
Validation
N/A Included

Staff
Check

XXII. Plat

- A. ▶** Maintenance Guarantee, Repair Guarantee, Notice of Other Documents notes.
- B. ▶** Planning & Zoning Board/Hearing Officer certification statement (to be signed at final compliance).
- C. ▶** Surveyor certification statement (to be signed at final compliance)
- D. ▶** Statement(s) of land ownership
- E. ▶** Statement(s) of ownership and/or maintenance of all tracts.
- F. ▶** Statement(s) of the dedication of any easements, ROW, tracts, and other public areas.
- G. ▶** Vicinity Map: Project location, nearest 2 Arterial Streets, street names, City limits, major public facilities.
- H.** Curve data complete for all curves.
- I. ▶** 2 ties to aliquot corners.
- J. ▶** All existing and proposed easements and ROW clearly defined.
- K. ▶** Adjoining properties labeled.
- L. ▶** Scale, graphic scale, north arrow, date of preparation, complete title w/ location.
- M. ▶** Boundary legal description closes.
- N. ▶** Lot lines.
- O. ▶** Designation of areas subject to flooding, including floodplain, floodway, and product corridors. (Elevation Datum must be referenced to City of Fort Collins datum.)