

Civil Construction Plans (CCP) Checklist

Project Name: MRG, LP Oil and Gas CE Pad

The two "check list" columns to the left of the plan requirements below are provided for the convenience of both staff and the Design Engineer. The Design Engineer should indicate if the items are included in the plans or if they are not applicable for the specific project. The Stamp and signature of the Design Engineer is required on the final CCP in accordance with current State Statutes and Board Rules and not required for the plans set submitted for review.

I. Cover (& Notes) Sheet(s)

Applicant Validation		Requirements
Included	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	A. Preamble title of "Civil Construction Plans" followed by the legal name of the addition or subdivision. The marketing name and the address may be used on the plans, but must be subordinate to the subdivision name.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	B. The Signature review block for the City of Loveland
<input checked="" type="checkbox"/>	<input type="checkbox"/>	C. Signature review blocks from other applicable entities: Ditch company, C.D.O.T., County, Water Districts, etc...
<input checked="" type="checkbox"/>	<input type="checkbox"/>	D. Index to all sheets in the plan set. The sheets shall be sequentially numbered beginning with "1". Copies of the landscape plans shall be part of the CCP set.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	E. The character type and position of benchmark (including elevation) must reference the "City of Loveland 1995 Level Net Survey".
<input checked="" type="checkbox"/>	<input type="checkbox"/>	F. Vicinity map, scale and north arrow. The vicinity map must be updated to show all approved projects in the area. 1" = _____.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	G. General Construction Notes, Street Construction Notes (Appendix I-B), Storm Drainage Notes, Waterline Note (Appendix E-1), and Specific Notes related to Water/Wastewater (per Water/Wastewater Standards Appendix B).

II. Grading, Drainage & Sediment/Erosion Control Plan(s)

Applicant Validation		Requirements
Included	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	A. A Grading, Drainage and Sediment/Erosion Control Report done in accordance with the City of Loveland Storm Drainage Criteria Manual. A final drainage report must be accepted by the Stormwater Engineering Division.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	B. Existing and proposed contours in a minimum of two foot intervals. <ol style="list-style-type: none"> 1. Show contours extending a minimum of 50' off-site, and tying into existing contours. 2. Finish grade spot elevations for streets, lot corners, building corners, and finish floor elevation or alternately top of foundation elevation of buildings shown for all lots.

<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. This statement on the final grading plan: "The top of foundation elevations shown are the minimum elevations required for protection from the 100 year storm. The lowest opening elevations shown are at least one foot above the 100 year storm elevation of adjacent streets, channels, ditches, swales, or other drainage facilities. Minimum finished floor elevations above 100-year water surface in streets, channels, ditches, swales, or other drainage facilities, as illustrated by a final grading plan are to be shown."
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. This statement (if adjacent to or immediately downstream of an irrigation ditch or lake or pond or reservoir) on the final grading plan: "A minimum 3-foot separation between the residential home foundation bearing elevation and the peak seasonal groundwater level is required for all new residential home construction. Refer to the geotechnical investigation report titled "xxx". An asterisk (*) is to be placed adjacent to the statement and on each residential lot impacted by high groundwater levels. As an alternative to adding this note, you may design and construct a separate private gravity groundwater underdrain system within the street right-of-way with connections to each home foundation drain. See "Groundwater Underdrain System Plan & Profile" below for requirements.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	E. Plans to have positive drainage to streets (showing drainage arrows across lots) or to an approved discharge facility.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	F. All drainage improvements are to be designed to include all necessary improvement details on the detail sheet, including structural details for concrete hydraulic structures and retaining walls.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	G. Cross-check front lot elevations with plan & profile sheets for continuity. Also check for elevations and datum match where streets will meet an adjoining subdivision, especially when the adjoining street is designed but not built.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	H. Show phase lines. If phasing is proposed after the construction plans are signed, the consultant must revise the plans to show the phase lines.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	I. Grading Criteria: <ol style="list-style-type: none"> 1. Minimum of 2.0% profile grade on grass and a maximum side slope of 4:1. If special circumstances warrant a steeper cross slope, it will be evaluated on a case-by-case basis. 2. Minimum grade away from building foundations and window wells is 5% for first 5 to 10 feet. 3. Finished grades at building foundations are a minimum of 6 inches below the top of foundation elevation. 4. If three or more rear lots combine their drainage waters in a common rear lot line swale, a concrete trickle channel shall be provided within the common rear lot line swale and extend to the nearest public street. 5. Drainage outlets and ending pans typically should have some type of erosion protection indicated. Example: If rip-rap is to be used, details should include size of rock D-50 and dimensions of placement, length, width, depth.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	J. Inlets, fire hydrants and utility poles are not to be constructed where they would conflict with handicap ramps, or be a hazard to traffic. Maintain a 3' minimum clearance from flowline.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	K. Include phasing of drainage infrastructure and temporary erosion control, if phasing is desired.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	L. All applicable design related items (not permitting paperwork) items from the Sediment/Erosion Control Development Submittal checklist.

III . Street Plan & Profiles

<i>Applicant Validation</i>		<i>Requirements</i>
<i>Included</i>	<i>N/A</i>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. Minimum street widths are per Table 7-2 and 7-4 (unless project is a PUD or a waiver or variance is approved).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Profile grades: <ol style="list-style-type: none"> 1. See Table 7-4 for maximum grades. Minimum grade allowed is 0.5%. 2. Street grades within 100' of an approaching intersection shall be a maximum grade of 4%. 3. Maximum grade through the intersection is 3%. <ol style="list-style-type: none"> a. 10' min. length for each segment prior to a grade break. 2% max. algebraic difference between segments for Collectors and Arterials. 4% max. grade break on local streets. This is to provide a smooth ride through the intersection. b. Provide flowline grades for intersections with cross-pans. Check the grades for correctness. Make sure they drain. c. Provide the percent grade for all curb returns at intersections.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Vertical curve is required when the algebraic difference in grades is >1.0% except flowline grades in sumps. <ol style="list-style-type: none"> 1. Check actual grades and length for accuracy and correctness.

		<p>2. All K-values shall be noted on the profile view; minimum K-values shall be in accordance with design speed. Minimum K=45 for crest vertical curve unless circumstances warrant less than 45 ($K=L/Alg$. Difference in grades).</p> <p>3. All proposed streets to match with existing streets and adjacent topography/projects. Show the existing streets profile and topography grade and where the proposed will match it. Existing street and topography grades are to be shown for an adequate distance beyond the proposed improvements to facilitate a smooth transition.</p> <p>4. Check stationing of plan and profile for errors in design and/or discrepancies between the two. Keep the street names the same. (Don't change names of streets at intersections.)</p>																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. Tapers: When shifting an entire directional stream of traffic the taper length (L) = WS for design speeds of >45mph; and $L=WS^2/60$ for design speeds of <40mph; and for turning bay tapers $L=WS/3$. (L=length of transitional taper section in feet, W=width of lateral lane shift in feet, S=design speed in m.p.h.)																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	E. Access ramps shall be constructed at all corners of street intersections, including one ramp opposite from corners of tee intersections. It is recommended by the Handicap Advisory Committee that access ramps be installed midblock when blocks exceed 600 feet in length street.																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	F. Inlets/catch basins, fire hydrants, utility poles and electric appurtenances are not to be constructed where they would conflict with handicap ramps.																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	G. Provide 2" P.V.C. schedule 40, 36" deep with pull boxes at and between intersections that will be signalized now or in the future. Includes 90° sweeps. Pull boxes shall be provided at deflection points or at least every 500'.																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	H. Show all raised medians and include all details for construction. Show interior median treatment and design. (i.e., trees, sprinklers, pavement, rock, splash pan, etc.). Trees shall not block signing. For detail see LCUASS Standard drawings.																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>I. Gutter cross pans are not to be designed to cross arterial or major collector streets. Gutter pans widths are as follows:</p> <table border="1" data-bbox="586 806 1101 1037"> <thead> <tr> <th>Width</th> <th>Intersection Type</th> </tr> </thead> <tbody> <tr> <td>6'</td> <td>Local-Local</td> </tr> <tr> <td>8'</td> <td>Local-Collector</td> </tr> <tr> <td>8'</td> <td>Collector-Collector</td> </tr> <tr> <td>10'</td> <td>Local-Arterial</td> </tr> <tr> <td>10'</td> <td>Arterial-Collector</td> </tr> <tr> <td>12'</td> <td>midblock on local street</td> </tr> <tr> <td>30'</td> <td>midblock on collector street</td> </tr> </tbody> </table>	Width	Intersection Type	6'	Local-Local	8'	Local-Collector	8'	Collector-Collector	10'	Local-Arterial	10'	Arterial-Collector	12'	midblock on local street	30'	midblock on collector street
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<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>J. Gutter pans or concrete edge protection may be constructed in place of curb and gutter within industrial zoned areas.</p> <p>1. Minimum 4' compacted fill to be placed between back edge of concrete edge protection or gutter and top of slope of roadside ditch.</p>																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>K. Minimum curb radii at intersections will be as follows (measured to flowline):</p> <table border="1" data-bbox="509 1199 1003 1339"> <thead> <tr> <th></th> <th>Local</th> <th>Collector</th> <th>Arterial</th> </tr> </thead> <tbody> <tr> <th>Local</th> <td>15'</td> <td>20'</td> <td>30'</td> </tr> <tr> <th>Collector</th> <td>20'</td> <td>25'</td> <td>30'</td> </tr> <tr> <th>Arterial</th> <td>30'</td> <td>30'</td> <td>35'</td> </tr> </tbody> </table> <p>Note: As per state highway regulations, a minimum of a 50' flowline radius is required when an arterial street intersects a state highway, unless otherwise approved through traffic engineering.</p>		Local	Collector	Arterial	Local	15'	20'	30'	Collector	20'	25'	30'	Arterial	30'	30'	35'
	Local	Collector	Arterial															
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<input type="checkbox"/>	<input checked="" type="checkbox"/>	L. Verify written easements are received for any required easements not dedicated on the final plat. Check the easements for accuracy and check that all roadway improvement (i.e., curb and gutter, walk, etc.) are located within dedicated public R.O.W. or pedestrian easements when applicable.																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>M. Identify the numeric phasing designation and the physical limits of each construction phase.</p> <p>1. Type III barricades with "End of Road" sign, and any related pre-warning signs at all dead-ends of roads and sidewalks. For detail se LCUASS Standard drawings.</p> <p>2. Secondary access provided for dead ends of length $\geq 400'$ shall be all weather surface, 20' wide, 6" minimum thickness of Class 5 or 6 ABC or recycled HBP.</p> <p>3. 50' outside radius all weather turn around at dead-end roadways longer than 150'.</p>																
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>N. Roadway Geometrics</p> <p>1. Cross-pans</p> <p>2. Centerline radius data.</p> <p>3. Design Speed/Posted Speed</p> <p>4. Street intersections at right angles, max. skew = 10°</p> <p>5. F_L to F_L dimensions.</p> <p>6. R.O.W. dimensions and curve data.</p> <p>7. Curb return radius data.</p>																

		8. Profile grades, in percent. 9. Vertical curve data (including K-values, length, etc.). 10. Curb and gutter radius data. 11. Centerline profile and F _L profile on both sides of roadways as required (i.e., curves, intersections, etc.). 12. Label 100' stations and show 50' stations.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	O. Document on the plans that there is sufficient sight distance for all movements at intersections, and on crest vertical curves on arterial streets.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	P. Existing utilities and structures.

IV. Street Cross-sections

Applicant Validation		Requirements																					
Included	N/A																						
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. Surveyed cross-sections in 50' intervals are required on all arterial streets. Cross-sections will also be required on other streets and driveways if special conditions warrant it (i.e., widening of existing streets). The interval frequency may be adjusted where warranted due to unique site topography. The use of aerial photography is not acceptable.																					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Check cross slopes for a minimum of 1.5% and a maximum of 4%.																					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Check cuts and fills on all proposed streets. Check catch points vs. R.O.W. line. Too much of either may result in slopes which overrun the R.O.W. In this case, a construction easement will be required.																					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. Information to be shown on each cross section: <ol style="list-style-type: none"> 1. Curb and gutter, existing and proposed. 2. Roadway surface, existing and proposed. 3. Sidewalk, existing and proposed. 4. Pavement, base and subgrade thickness, existing and proposed. 5. Cross grades, existing and proposed. 6. R.O.W., existing and proposed. 7. Easements, existing and proposed. 8. Sideslopes, existing and proposed. 																					
		E. Pavement sections are to be designed using a Soil Investigation Report as a basis for design, or by using the City's default values as found in these Standards. <ol style="list-style-type: none"> 1. This design will include: <ol style="list-style-type: none"> a. Methods of stabilizing the subgrade. The most common method is to scarify to a minimum depth of six inches and re-compact to a uniform minimum of 95% relative density as determined by AASHTO T-99. b. Thickness of the aggregate base course. Compacted to 95% in accordance with T-180. c. Thickness of asphalt pavement. 2. "Default pavement design" may be chosen vs. a full pavement design based on a soils report. The default pavement design is based on the following coefficients. <ol style="list-style-type: none"> a. Aggregate Base Course (A.B.C.) strength coef. = 0.11 per inch, unless R Value tests are submitted which show R values > 78. b. Pavement Grading "C" & "G" Hot Bituminous pavement strength coefficient = 0.44 per inch. c. The minimum sums of the coefficients for the default pavement design are listed below: <table border="1" data-bbox="548 1663 1073 1866" style="margin-left: 40px;"> <thead> <tr> <th>Street Clarification</th> <th>WSN</th> <th>(full depth HBP)</th> </tr> </thead> <tbody> <tr> <td>Local</td> <td>2.22</td> <td>5.5"</td> </tr> <tr> <td>Minor Collector</td> <td>2.97</td> <td>7.0"</td> </tr> <tr> <td>Major Collector</td> <td>3.48</td> <td>8"</td> </tr> <tr> <td>2-lane Arterial</td> <td>4.08</td> <td>9.5"</td> </tr> <tr> <td>4-lane Arterial</td> <td>4.51</td> <td>10.5"</td> </tr> <tr> <td>6-lane Arterial</td> <td>4.77</td> <td>11"</td> </tr> </tbody> </table> d. Show the min/max lift thickness for Grading "SX" HBP = 1.5" and 2.5" respectively. 	Street Clarification	WSN	(full depth HBP)	Local	2.22	5.5"	Minor Collector	2.97	7.0"	Major Collector	3.48	8"	2-lane Arterial	4.08	9.5"	4-lane Arterial	4.51	10.5"	6-lane Arterial	4.77	11"
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		<p>e. Show the min/max lift thickness for Grading “S” HBP =2” and 3” respectively.</p> <p>f. Show the min/max lift thickness for Grading “SG” HBP =3” and 5” respectively.</p> <p>g. Minimum allowable pavement thickness shall be as shown in Table 10-1.</p> <p>3. The report shall recommend methods of stabilizing the subgrade when groundwater is within 3’ of the pavement section. Details of the methods of construction of the roads, in high ground water areas, shall be shown and described in the appropriate typical cross-section.</p>
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V. Striping Plan

Applicant Validation		Requirements-
Included	N/A	NOTE: SIGNING & STRIPING PLANS ARE REQUIRED on all streets classified minor collector and greater. Major Collector and Arterial street signing and striping plans shall have a minimum scale of 1”=30’ and shall be per M.U.T.C.D. and the City Standards.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. Bike lanes w/symbols and dimensions (7’ min. adjacent to curb and gutter, 5’ min. adjacent to travel lanes w/o curb and gutter.).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Travel lanes w/dimensions for all tapers, angle points, turning bays, medians, symbols, etc.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Location of all existing and proposed signs (i.e., no parking/bike lane, stop, speed, warning, etc.).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. R.O.W., easements. (All traffic control devices must be located within right-of-way or easements.)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	E. All street improvements (i.e., curb and gutter, walk, asphalt, etc.) w/dimensions.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	F. Layout data/geometrics to all angle points, end points, symbol locations, and sign locations.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	G. Add note to signing and striping sheet: “The layout of all signing and striping using 3-M temporary tape at a minimum of 50’ spacing shall be approved by the City Street Inspector prior to the installation.”
<input type="checkbox"/>	<input checked="" type="checkbox"/>	H. Preformed thermo-plastic for arrows, cross walks, bike symbols, etc.

VI . Utility Plan

Applicant Validation		Requirements
Included	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>A. Streets</p> <ol style="list-style-type: none"> 1. R.O.W. and easements. 2. Cross-Pans. 3. Curb and gutter (lines depicting lip and flowline). 4. Walk (attached or detached). 5. Medians, (line depicting both flowlines), if an outfall gutter then show lip and flowline. 6. Signs (speed, stop, warning) general location. 7. Other roadway signs or devices associated with phasing or dead end streets.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Include Phasing of development and construction of all Public Improvements. All public improvements within each phase shall stand alone. Phase lines shall be shown by heavy dark lines; all phases shall be identified by number or letter.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Electric: Provide 3” P.V.C. schedule 40, 36” deep with pull boxes at intersections that will be signalized now or in the future.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. Water: Show existing and proposed Water Distribution System including valves, hydrants, bends, airvacs, blowoffs, lowerings, crossings, meter pits/vaults, and sizes of all mains and services. See Water/Wastewater Development Standards for further requirements.

<input type="checkbox"/>	<input checked="" type="checkbox"/>	E. Wastewater: Show existing and proposed Wastewater System including MHs, C.O.s, services, subdrains (where applicable), crossings, and sizes of all mains and services. See Water/Wastewater Development Standards for further requirements.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	F. Storm Drain System 1. MH, junction structures. 2. Inlets. 3. Storm sewer pipes. 4. Detention Pond Outlet Structures. 5. Waterways.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	G. Groundwater Underdrain System (if warranted) 1. Cleanouts. 2. Connections/services to each residential home foundation drain. 3. Outlet.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	H. Site Lighting: Show all private light poles.

VII . Water Plan and/or Profile

Applicant Validation		Requirements
Included	N/A	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. General 1. Show and dimension R.O.W. and Easements. 2. Existing and proposed surface improvements: curb and gutter, cross-pans, walks, medians, inlets, and other structures. 3. Existing and proposed wastewater and storm drain structures. 4. Existing and proposed dry utilities, e.g. gas, electric, telephone, other. 5. Label named irrigation ditches. 6. Easements shown around water meters and fire hydrant laterals. 7. Show phase/construction lines.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Horizontal 1. Mains located on the north and east sides of public streets, 7 feet from the flowline. 2. Wastewater and storm drain 10 feet or more from the edge of the water mains. Areas of substandard separation to be clearly identified and dimensioned, with reference to the appropriate details. 3. All dry utilities, curb and gutter, and other structures are at least 6 feet from edge of water mains. 4. Provide stationing for all public water mains along centerline. Label station of all appurtenances. 5. Label size and type of all bends, tees, crosses, valves, and hydrants. 6. Label tee connection to existing mains as wet-tap or cut-in. 7. Label pipe size, material, and lengths, including hydrant leads. 8. Curved alignments meet minimum radius requirements and labeled with PC, PT, radius, delta, length, joint deflection and the pipe segment length. 9. Dead-end mains, 250 feet or less, with blow-off or hydrant. 10. Valves placed at each leg of crosses and tees, and at every 600 feet or less. 11. Fire hydrants located and spaced according to LFRA requirements. 12. Mains and related appurtenances with horizontal dimensional ties to existing permanent features and/or to a baseline, centerline, R.O.W., or Easement. Coordinates shall not be allowed. 13. No shrubs within 5 feet, no trees within 10 feet, and no berms greater than 2 feet high or slopes greater than 4:1. 14. Location markers when outside pavement. 15. Access roads if required.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Services 1. Label the length, type, and size of service between the tap and the water meter/vault. 2. Label the tap and if the tap is a Wet Tap or Cut in Tee.

		<ol style="list-style-type: none"> 3. Label the horizontal distances from existing valves to proposed taps. 4. Show all meter pits and vaults and label the size. 5. Provide 10 feet of separation between water and wastewater services. 6. Label all fire service valves to have locking lids. 7. Stations provided for residential subdivisions.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>D. Profile</p> <ol style="list-style-type: none"> 1. Required for all 12 inch and larger mains and all lowerings and ditch crossings. 2. Provide the vertical and horizontal grid with scale. 3. Existing and proposed ground, shown and labeled. 4. Water main labeled with the diameter, material, slope, and lengths between all appurtenances. 5. Deflections and bends shown with stations and pipe grades. 6. Profiles show stationing, pipe grade at bends, deflections, valves, and utility crossings. Clearance to other utilities dimensioned and steel casing shown with reference to appropriate details. 7. Existing and proposed utility crossings, labeled with clearance dimensions.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>E. Cathodic Protection</p> <ol style="list-style-type: none"> 1. Required for DIP and steel casings. Provide stationing and horizontal dimensions. 2. Provide anode design and CP Test station location.

VIII . Wastewater Plan and/or Profile

<i>Applicant Validation</i>		<i>Requirements</i>
<i>Included</i>	<i>N/A</i>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>A. General</p> <ol style="list-style-type: none"> 1. Show and dimension R.O.W. and Easements. 2. Existing and proposed surface improvements, curb and gutter, cross-pans, walks, medians, inlets, and other structures. 3. Existing and proposed water and storm drain mains. 4. Existing and proposed dry utilities, e.g. gas, electric, telephone, other. 5. Label named irrigation ditches. 6. Show phase/construction lines.
<input type="checkbox"/>	<input type="checkbox"/>	<p>B. Horizontal</p> <ol style="list-style-type: none"> 1. Mains located at centerline of road or 6 feet west or south of flowline. 2. Edge to edge separation to water main 10 feet or greater or called out when less than 10 feet and references to appropriate details. 3. All storm drain, underdrain, dry utilities, and curb and gutter at least 6 feet from edge of wastewater mains. 4. Mains and related appurtenances with horizontal dimensional ties to existing permanent features and/or to a baseline, centerline, R.O.W., or Easement. Coordinates are not a substitute. 5. Provide stationing for all public wastewater mains along centerline. Label station of all appurtenances. 6. No shrubs within 5 feet, no trees within 10 feet, and no berms greater than 2 feet high or slopes greater than 4:1 7. Runs between manholes are straight not curved. 8. Label length between manholes. 9. Access provided to every manhole.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>C. Manholes</p> <ol style="list-style-type: none"> 1. Label manholes with unique number and horizontal station. 2. Label rim and invert elevations 3. Label any water-tight features, as applicable. 4. Accessible via all-weather access or hard surface improvements. 5. Location identification markers when outside pavement.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>D. Services</p>

		<ol style="list-style-type: none"> 1. Label size, slope and material type. 2. Minimum 10 feet of separation between water and wastewater services. 3. For any wet taps provide the linear distance between the nearest MH to the tap. 4. Stations provided for residential subdivisions
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>E. Profile</p> <ol style="list-style-type: none"> 1. Vertical and horizontal grid with scale shown. 2. Existing and proposed ground shown and labeled. 3. Existing manhole rim and invert elevations. 4. Proposed manholes shown and labeled with station, rim, and invert elevations. 5. 0.10 foot minimum drop through straight manholes, 0.20 foot minimum drop through manhole invert deflections greater than 30 degrees and laterals. 6. Proposed mains labeled with diameter, material, slope, and length between manholes. 7. Groundwater barriers are shown upstream of manholes, maximum spacing of 400 feet. 8. Existing and proposed utility crossings, identified with station and clearance dimensions. 9. Casing pipes labeled with length, size, type, wall thickness and CP design.

IX . Storm Sewer Plan and Profile

<i>Applicant Validation</i>		<i>Requirements</i>
<i>Included</i>	<i>N/A</i>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. Make sure water tight joints are used on all storm drainage pipes and specify/spec thereto on the sheet(s).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Include Phasing of construction and development if phasing is desired.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Provide a profile for each storm sewer and culvert being proposed.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. The profiles must include and label the hydraulic grade lines of the storm event that the storm sewer is being designed for.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>E. All storm sewer improvements are required to be fully designed and shown in the Plans, including the following items:</p> <ol style="list-style-type: none"> 1. Curb inlets and outlets (to have grates for sidewalks). 2. Irrigation lines and diversion boxes. 3. Drainage structures (inlets and outlets). 4. Bridges, box culverts. 5. Drainage pans. 6. Retaining wall structures.

X . Groundwater Underdrain System Plan and Profile (if warranted)

<i>Applicant Validation</i>		<i>Requirements</i>
<i>Included</i>	<i>N/A</i>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. Designed as a separate utility line located within the street right-of-way or located within a rear lot line utility easement, in accordance with the Larimer County Urban Area Street Standards (Loveland Portion).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	B. Show and label cleanouts and connections/services to each residential home foundation drain.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. The underdrain system is a gravity system tied into each residential home foundation drain.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. Label each profile pipe as "Private".

<input type="checkbox"/>	<input checked="" type="checkbox"/>	E. Private underdrain systems also require a formal written agreement with the city and approval by the Loveland City Council at a Public Hearing.
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XI . Detail Sheet(s)

<i>Applicant Validation</i>		<i>Requirements</i>
<i>Included</i>	<i>N/A</i>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	A. All standardized improvements shall be depicted by the appropriate City Standard Detail Drawings (Water/Wastewater, Storm Drainage, Underdrain) or LCUASS standard details (current version).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	B. Standard Details <ol style="list-style-type: none"> 1. Access ramp. 2. Gutter pan. 3. Curb and gutter (vertical or driveover). 4. Sidewalk (detached or attached). 5. Elevated sidewalk crossings at driveway (detached walk only). 6. Monolithic curb and gutter/walk (driveover or vertical). 7. Commercial drive approach (flared or radius). 8. Residential drive approach (flared or radius). 9. Curb chase. 10. Crown transition. 11. Industrial edge protection.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C. Signage (include MUTCD designations): <ol style="list-style-type: none"> 1. 4" diameter cutout/PVC sleeve in concrete. 2. Sign post and stub. 3. Street name sign and block numbers. 4. Type III barricade with closure sign (road or sidewalk). 5. No parking sign spacing. 6. Speed limits. 7. With school zones: Routing plans for X-walks, stop signs, school flashers, etc. 8. No signs in sidewalks.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D. Striping <ol style="list-style-type: none"> 1. Arrow, only, arrow. 2. Diamond, bike, arrow. 3. Intersection detail (crosswalk, stop bar). 4. Crosswalk. (Denver Style).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	E. Non-Standard Details – Speed hump, traffic circles, cleanouts, hydraulic structure(s) structural reinforcing, retaining wall structural reinforcing, etc.

XII . Landscape Plan

<i>Applicant Validation</i>		<i>Requirements</i>
<i>Included</i>	<i>N/A</i>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A. Show all public median treatments (i.e., plants, groundcover, subdrains, etc.) and identify maintenance responsibilities.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	B. Show all proposed landscaping within the R.O.W. and access easements. Identify plant species and either caliper size for deciduous trees, height for coniferous trees, or gallon size for shrubs, in accordance with the Unified Development Code.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	C. Show, label and denote size of all existing vegetation and identify what landscaping is to be preserved and what is to be relocated or removed.

		D. A tree survey is required for all development proposing impacts to a significant tree, as defined in the Unified Development Code. Impacts include proposed removal or relocation of the tree, and development, grading, filling or infrastructure activities located within the drip line or root area of a significant tree. The tree survey shall be performed by a certified arborist, registered landscape architect, or registered land surveyor. The tree survey shall address the location, species, size, and condition of all significant trees. For more information, contact the Planning Division.
		E. The following tree protection notes shall be placed on the landscape plan for all properties with existing trees and vegetation that will be preserved: <ol style="list-style-type: none"> 1. No cut or fill with greater than a four-inch depth shall occur within the dripline or root area of any preserved tree without evaluation by a qualified arborist or forester and City approval of the cut or fill. 2. No cutting or filling, nor storage of building materials or debris, nor disposal of wastes, shall take place within the larger of the dripline or critical root zone of any protected tree. 3. No impervious paving shall be placed within the critical root zone of any protected tree. 4. The larger of the dripline or critical root zone of all protected trees shall be barricaded prior to grading activities, and shall remain in place during construction to prevent damage to the trees and their roots by construction equipment.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	F. Annotate intersection sight distance triangles and horizontal curve stopping sight distance triangles on all proposed streets. Private easements may be needed which restrict installation of certain landscape material.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	G. Show all proposed and existing underground and above surface utilities including power lines and transformers, water, wastewater, groundwater underdrains, storm drainage facilities, including laterals, services, meter pits/vaults, hydrants, blowoffs, airvacs, etc. Maintain minimum clearance distance of 10' to any tree and 5' to any shrub to public utility.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	H. Any site proposing native grass or other grass seeding in disturbed areas of the site, shall provide a temporary irrigation system. A description of the system shall be placed on the landscape plan.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	I. Label the location, size and type of water meter that will be used to irrigate the proposed landscaping.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	J. If choosing the Hydrozone Option for a dedicated irrigation meter the following plans need to be included in the set for review (see specific requirements) <ol style="list-style-type: none"> 1. Hydrozone Plan 2. Irrigation Plan