CITY OF TULSA
DEVELOPMENT SERVICES

Infrastructure Development Process Plans Review Checklist

City of Tulsa, Oklahoma

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"Our focus is to help you complete the Permitting Process as quickly and easily as possible without compromising the City Ordinances."

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INFRASTRUCTURE DEVELOPMENT PROCESS MANUAL
City of Tulsa

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IDP# _____ **IDP Name** _____

General Items

Item #	Complies Y	N	N/A	
				Are Permits Required for any of the following?
1.				Corps of Engineers (Section 404)
2.				Levee Authority
3.				Railroad Crossing
4.				Oklahoma Department of Transportation
5.				Oklahoma Turnpike Authority
6.				Oklahoma Water Resources Board
7.				ODEQ Permit for Construction - Engineering Report Form for Water Line Construction
8.				ODEQ Permit for Construction - Engineering Report Form for Sanitary Sewer Construction
9.				NPDES - SP3 required for all projects disturbing one (1) acre or more. (NOI Form also required) If receiving water is listed as impaired, additional protection measures are described and status is noted in plans.
				General Information Required
10.				Was the site previously platted?
11.				Is the site required to be platted for this proposed development?
12.				Have all TAC recommendations/requirements been adequately addressed?
13.				Have all Pre-Development Meeting recommendations/requirements been adequately addressed?
14.				Are any retaining walls with a height of 4’ or higher from the bottom of the foundation required for the project? Walls should be shown in plan and profile. Walls greater than 4’ will require a separate permit for construction. Separate permit plans must be signed and sealed by structural engineer registered in the State of Oklahoma.
15.				Are there any outstanding variance requests?
				General Plan Requirements
16.				Standard plan sheet to be 22” X 34” (ANSI D).
17.				Plans are to be readable for full and half size text. (All lettering a minimum of 0.10” in height on full size plans.)
18.				New Construction to be shown in bold font.
19.				Sheets are to be numbered according to IDP numbering system.
20.				Drawings at a Common Engineer’s Scale.
21.				North Arrow (Top of page or to the right) on every plan sheet.
22.				Appropriate current Title Block on each sheet. See IDP Manual.
23.				Call OKIE logo with phone number on every plan sheet.
24.				Two permanent/temporary Benchmarks (description, location) required using State Plane Coordinates NAD83 and USGS elevations using NAVD 88. Benchmarks must be referenced back to ADS datum. Benchmark information must be included on all plan sheets.

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General Items

Item #	Complies Y	N	N/A	
				General Plan Requirements (cont'd…)
25.				Existing and proposed Right-of-Way to be shown with dimension lines and bearings and distances. Reference book and page or plat number.
26.				Existing and proposed easements to be included with bearings and distances. Reference book and page or plat number.
27.				Is FEMA A-Zone or Regulatory Floodplain on the property? If so, then limits of the Floodplain to be shown on each plan sheet.
28.				Erosion control measures and details (for non-City Standards) to be included on the plans.
29.				Standard note for traffic control & street closures to be provided as necessary. "Traffic access on all streets shall be maintained at all times. Contractor must maintain proper construction signage and traffic control in accordance with the manual on uniform traffic control devices."
30.				Reference City of Tulsa blasting ordinance if rock excavation is expected.
31.				Restoration notes to be provided.
32.				Restoration plan to be included.
				The following Information to be included on the Cover Sheet
33.				IDP Project Number
34.				Site Plan that clearly and quickly conveys the location of the project and the work to be completed through the IDP permit. Each element of IDP work listed in IDP description needs to be clearly labeled in this plan view.
35.				Legal Description - Verbatim and on Site Plan
36.				Atlas Page(s) No.
37.				List of Sheets. Sheet numbering to comply with IDP Manual.
38.				Itemized IDP Description as per IDP Manual.
39.				Engineers Name, Address, Phone Number, Email & Contact Person
40.				Owner's Name, Address, Phone Number, Email & Contact Person
41.				Engineer Seal, Signature and Date
42.				Engineer's statement should include the following: 1. By my signature on these construction documents, I hereby certify that I am familiar with the adopted ordinances and regulations of the City of Tulsa governing the work in the IDP Description; that these plans have been prepared under my direct supervision; the above and foregoing plans comply with all governing ordinances and the adopted standards of the City of Tulsa to the best of my knowledge and belief. 2. Entire project is (is not) within corporate limits of City of Tulsa. 3. This project complies with all Oklahoma Department of Environmental Quality (ODEQ) requirements.
43.				List of all City of Tulsa Standards used (include STD No. and Verbatim Title) in numerical order of STD No.

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General Items

Item #	Complies Y	N	N/A	
				Cover Sheet (cont'd…)
44.				List of all ODOT Standards used.
45.				Add the following notes near the COT standards list: - CONTRACTOR SHALL PROVIDE AND MAINTAIN CONSTRUCTION AS-BUILTS PER COT SPEC 334. - SAMPLING AND TESTING SHALL BE PER COT SPEC 335.
46.				Location Map (show subdivision within the Section and Major Streets)
47.				Location (address, legal, subdivision)
48.				Legend
49.				Table of Impervious Area (existing, proposed, increase/decrease)
50.				List of all Utility Franchise Contacts and Applicable City Contacts
51.				This note: "All construction to be in strict accordance with current City of Tulsa Standards and Specifications".
52.				This Note: Rights-of-Way Construction Permit: Before blocking any lane of TRAFFIC, any SIDEWALK or any PARKING METER or before cutting any STREET, SIDEWALK or ALLEY you must first apply for and be granted a Rights-of-Way Construction Permit. Permit applications can be picked up on the 4th floor of City Hall (175 E 2nd St, Tulsa, OK). Application packets can be submitted to the Streets and Stormwater Department on the 4th floor of City Hall or they can be electronically submitted at ROWPermits@cityoftulsa.org.
53.				This Note: Traffic Note: Traffic access on all streets shall be maintained at all times. Contractor must maintain proper construction signage and traffic control in accordance with the manual on uniform traffic control devices.
54.				A table listing all Separate Instrument Easements required for the project. Table should include the easement type, the owner of the property where the easement exists, the sheet number where the metes and bounds for the proposed easement are found in the plans and a column for the recording information for the easement.
55.				Jurisdictional determination of federal interest and subsequent agreements as needed. Determination is recommended for potential wetlands inclusion of any site with flood plain. Required if federal structures such as levee on site.
				Easement by Separate Instrument
56.				Call out separate instrument easements.
57.				Show metes and bounds in IDP plans – must match documents submitted for separate instrument easement application.
58.				Complete separate instrument application.
59.				Offsite separate instrument must be filed, and document number provided on plans prior to plan approval.

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IDP# _____ **IDP Name** _____

General Items

Item #	Complies Y	N	N/A	
				Easement by Separate Instrument (cont'd…)
60.				Easements shall be sized based on: - Utility specific requirements - Maintenance and access requirements - As specified by City Engineer on a case by case basis.
				Record Drawings
61.				Record Drawing Note: - Record Drawings reflect the As-Built Drawings (per COT Spec 334) supplied by and prepared by the Contractor on (date).

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IDP#_____ **IDP Name** _____

Stormwater Review

Item #	Complies Y	N	N/A	
				Stormwater Runoff System
				HAVE ALL GENERAL AND COVER SHEET ITEMS BEEN ADDRESSED?
62.				All drainage facilities/improvements to be designed in accordance with the current adopted Storm Water Management Criteria Manual.
63.				Site grading to be checked for the following: - Water will not back up into any buildings - Emergency overflow path - Drainage from street will not flow to site at entrances - Overland drainage easement requirements
64.				Only City approved pipe materials to be used for all public storm sewer systems.
65.				Standard cast iron grate and Curb inlets (Standard 755) have a minimum size Design 2. Design 6 or larger requires approval.
66.				Maximum angle of deflection at storm structures: - 15”-30” – 90º - 36”-48” – 60º - 54” and up – 45º
67.				All public storm sewers are to be backfilled with State ODOT Type A aggregate or flowable fill per COT Standard 751.
68.				Times of Concentration to be determined in accordance with the current adopted Storm Water Management Criteria Manual.
69.				Drainage areas boundaries to be clearly labeled with flow paths along time of concentration path for all onsite and offsite areas for both existing and proposed conditions.
70.				Public stormwater systems to be placed in ROW or proper easements as required per IDP manual.
71.				Profiles to be shown for all public storm sewers systems and ditches and include: - pipe size, type, slope and length - top of rim/top of grate for all structures - invert elevations for all pipes and structures - Q100, V100, HGL/EGL/WSE100 on all pipes and ditches - Inlet/manhole type and name – callout needs to match plan and detail callouts.
72.				Provide minimum flow velocity for clearing sediment 2-Yr event as per Section 1205.2.4 of SWMCM. - Storm sewer – 2.5 fps - Culvert – 3.0 fps

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Stormwater Review

Item #	Complies Y	N	N/A	
				Stormwater Runoff System (cont'd…)
73.				Maximum velocities for all public storm sewers systems and ditches shall be limited to: - Storm sewer – 20 fps - Culvert – 20 fps - Concrete lined channel – 18 fps - Grass lined channel – 5 fps Check Froude less than 0.8 for turbulent reaches
74.				All utility crossings to be shown on the Storm Sewer Profiles. Separation dimensions shall be shown.
75.				All storm sewers identified, on the plans and profiles, as public or private. A general note stating "ALL STORM SEWERS ARE PUBLIC UNLESS OTHERWISE NOTED" may be shown on each plan and profile sheet.
76.				HGL at or below finished grade and EGL no more than 1' above grade (pressure flow)
77.				Vertical and horizontal separations between storm sewers and water lines to be maintained per ODEQ water requirements. - Outside faces of storm pipes to be at least 6" clear of inside of walls of storm structures. - Outside faces of storm lines to maintain at least 1' separation from outside face of adjacent storm pipes, measured at the inside face of manholes or junction boxes.
78.				Manholes/junction boxes to be located in accordance with the current adopted Stormwater Management Criteria Manual.
79.				Table of State Plane coordinates to be included for all proposed storm structures.
80.				All curb inlets to be placed outside of curb returns.
81.				Inlets to be located near property lines to avoid complication during driveway construction.
82.				Grading plans to include on-site/off-site contours to establish limits of drainage basins.
83.				City of Tulsa Erosion Control details to be referenced. Details for non-City Standard Erosion control measures to be included on the plans.
84.				Details for all non-standard storm structures to be included in plans.
85.				Standard drainage summary chart(s) to be used and checked for the following: - Runoff coefficients in accordance with the current adopted Storm Water Management Criteria Manual - Appropriate clogging factors used - Flow depth in street to be 0.38 feet or less - Overland reaches 150 feet or less

See Pipe Design and Inlet Design Charts on next page.

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Item #	Complies Y	N	N/A	Stormwater Review
				Stormwater Runoff System - Charts

Pipe Design															
Label*	Public or Private	Start Node	Invert Start (ft-datum)	Stop Node	Invert Stop (ft-datum)	Length (ft)	Slope (%)	Conduit Type	Size (in)	Q_{100} (cfs)	$Q_{capacity}$ (cfs)	HGL-In (ft-datum)	HGL-Out (ft-datum)	V_{Max} (ft/s)	V_2 (ft/s)**
EG-12	*Public*	1		2											
EG-23	*Public*	2		3											
EG-34	*Public*	3		4											
EG-1A2	*Private*	1A		2											

*Labeling of pipes and nodes should be consistent and comprehensible, but there is not prescribed nomenclature.
**This is a minimum 2.5 ft/s velocity for self-clearing condition, evaluated at half-full flow or 2yr frequency storm

Inlet Design (Rational)																										
Label	Public or Private	Drainage Basin	Drainage Area (Acre)	Impervious Area (%)	Composite Runoff Coefficient C (#)	Sheet Flow Length (ft)	Slope (%)	Velocity (ft/s)	Shallow Concentrated Flow Length (ft)	Slope (%)	Velocity (ft/s)	Channel Flow Length (ft)*	Slope (%)*	Velocity (ft/s)*	T_C Total (min)	$Intensity_{100}$ (in/hr)	Area Q_{100} (cfs)	Bypass (cfs)	$\sum Q_{100}$ (cfs)	Bypasses To Structure	% Slope or Sump at Inlet	Inlet D_{100} (ft)	Inlet Capcity (cfs)	Clogging Factor (#)	Inlet Design
1	*Public*	1																								
1A	*Private*	2																								
2	*Public*	3																								
3	*Public*	1A																								

*If there is no intervening channel, those columns can be removed.

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Stormwater Review

Item #	Complies Y	N	N/A	
				Detention Facilities Plan
86.				How are Detention requirement being met? 1. Hydrology demonstrates no increase in peak discharge, therefore detention not required. Action: Include note on cover sheet of IDP plans stating this is the case. Go to Item #107. 2. Fee-in-Lieu of Detention has been approved. Action: Include statement on coversheet noting that Development Services Manager has approved Fee-in-Lieu of Detention and the date of the approval. Go to Item #107. 3. Detention required and provided. Action: Continue checklist below.
87.				The Detention facilities to be placed in a Reserve Area and/or Detention Easement.
88.				The detention facility to be designed in accordance with the current adopted Storm Water Management Criteria Manual using HEC-HMS-SCS method.
89.				The appropriate freeboard provided.
90.				A concrete trickle channel having a minimum slope of 0.5% to be provided in grassed detention facilities.
91.				The bottom of a grass lined pond to have a minimum slope to the trickle channel of 2%.
92.				The side slopes to be no steeper than 4:1 (3:1 with approval).
93.				All-weather access to be provided to the pond/facility in accordance with the current adopted Storm Water Management Criteria Manual.
94.				The top width of earthen dike(s) to be in accordance with the current adopted Storm Water Management Criteria Manual (SWMCM) with an all-weather surface providing access to the outlet structure (along top berm). – See Table 3-1 in the SWMCM Minimum width is checked at freeboard required elevation. A smaller flat top still needed for access and ease of grading.
95.				Cross sections (adequate number) to be provided with representative dimensions and proposed elevations for flow lines and top of berm, wall, etc.
96.				Permanent Bermuda Solid Slab Sod is required vegetation for the bottom and embankment side slopes of detention pond.
97.				Details of the Outlet Structure and Emergency Overflow Spillway to be included in the plan set by referencing City of Tulsa Standards or providing special details.
98.				Computational details to be included for all non-standard structures.
99.				Outlet structure pipe to have proper erosion control.
100.				Plan view to be provided with representative dimensions, trickle channel locations, side slopes, and structure locations.

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Stormwater Review

Item #	Complies Y	N	N/A	
				Detention Facilities Plan (cont'd…)
101.				Procedures for development of time of concentration, lag time and curve numbers to be per current adopted Storm Water Management Criteria Manual.
102.				Existing (Pre-developed) and proposed (Post-developed) drainage maps to be provided on plans.
103.				Existing (Pre-developed) and proposed (Post-developed) HEC-HMS models to be prepared and provided in Detention/Drainage Report.
104.				Perform analysis for 24-hr durations 2-Yr, 5-Yr, 10-Yr, 50-Yr and 100-Yr storm events, utilizing a balanced rainfall to demonstrate detention facility attenuates increased flows to at or below existing flow. Include analysis for 500-Yr event for ponds with an embankment.
105.				All drainage areas to be accounted for in both existing and proposed drainage areas.
106.				Storm Sewer discharging into detention pond(s) to begin EGL/HGL calculation at 100-Yr water surface elevation.
107.				The detention "Summary Charts" to be shown on the plans, including: - Stage/storage/discharge - Pre-Development vs. Post-Development runoff at design points

See Detention Pond Operation and Summary Runoff Comparison Charts on next page.

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Stormwater Review

Item #	Complies Y	N	N/A	
				Detention Facilities Plan - Charts

Detention Pond Operation				
Storm Frequency (yr)	Developed Inflow (cfs)	Peak Stage (ft-*datum*)	Storage (ac-ft)	Developed Outflow (cfs)
	Pond Identification			
2				
5				
10				
50				
100				
500**				
100 yr Freeboard (ft) =				
*500 yr Freeboard (ft) = ** *				

**Duplicate result columns for each designed pond.*

***500-Yr Frequency event results are not required for excavated ponds.*

Summary Runoff Comparison									
Storm Frequency (yr)	Existing Peak Discharge (cfs)			Proposed Peak Discharge (cfs)			Δ Peak Discharge (cfs)		
	POA1	POA2	POA3	POA1	POA2	POA3	POA1	POA2	POA3
2									
5									
10									
50									
100									
500*									

**Present 500-Yr frequency event results only in design includes a detention facility with an embankment side.*

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Stormwater Review

Item #	Complies Y	N	N/A	
				Floodplain
108.				All Backwater Analysis Required to use HEC-RAS.
109.				All new or modified floodplain areas (FEMA and/or COT Regulatory) through a development must be placed in a Reserve Area or the appropriate easement.
110.				Have new proposed discharges been prepared for floodplain analysis? (If No, skip this section) (a). Drainage boundary map to be prepared. _____ (b). Flow paths to be delineated on drainage maps. _____ (c). Hyetograph and hydrograph routing compliant with City criteria. _____ (d). Hydrologic Report, presenting all data to be prepared. _____
				FEMA Regulatory Flood Plain Development - (Items #111 - 113)
				Note: All FEMA Floodplains Subject to COT Floodplain Criteria.
111.				Is the property in the FEMA floodplain? (a). Is work being proposed in the floodplain? _____ (b). When completed will a LOMR be required? (Review Letter of Map Revision requirements at https://www.fema.gov/flood-maps/change-your-flood-zone/lomr-clomr) _____ (c). Grading other than a LOMR-F will require a CLOMR. _____
112.				Is the project proposing to modify the floodplain? (If No, skip this section) (a). Floodplain worksheet showing all cross section locations to be prepared. _____ (b). Existing/Duplicate Effective, Modified/Corrected Effective and Proposed Effective Models to be prepared. _____ (c). Will FEMA discharges be used in models or updated? _____ (d). Required Hydraulic Analysis Report to be prepared. _____ (e). Applicable Existing/Duplicate Effective, Modified/Corrected Effective and Proposed Effective mapping to be prepared. _____ (f). Obtain community acknowledgment from City FPA. _____
113.				Is the project proposing to modify the floodway (FW)? (If No, skip this section) (a). Floodplain worksheet showing all cross section locations to be prepared? _____ (b). Existing/Duplicate Effective FW, Modified/Corrected Effective FW and Proposed Effective FW Models to be prepared. _____ (c). FEMA discharges to be used in models? _____ (d). Required Hydraulic Analysis Report to be prepared? _____ (e). Applicable existing and proposed mapping to be prepared? _____

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Stormwater Review

Item #	Complies Y	N	N/A	
				COT Regulatory Floodplain Development - (Items #114 - 117)
114.				Does the project propose to modify the City of Tulsa Regulatory Floodplain? (If No, skip this section) (a). A T-CLOMR must be approved prior to IDP approval. (b). Until the T-LOMR is approved the property will be shown in the floodplain.
115.				Summary of T-CLOMR (a). Completed T-CLOMR application form (b). Written narrative of proposed flood plain changes (c). Grading plan of proposed flood plain changes (d). Appropriate hydrologic and hydraulic models (e). Drainage report (f). Annotated Regulatory Flood Plain Map reflecting proposed flood plain changes vs. existing Regulatory flood plain
116.				Summary of T-LOMR (a). Completed T-LOMR application form (b). Finalized versions of all T-CLOMR approved items (c). A complete set of As-Built IDP plans (d). Certified topographic map(s) with all flood plain boundaries delineated for existing, corrected and proposed flood plains (e). Annotated Regulatory Flood Plain Map reflecting as-built changes to flood plain vs. existing Regulatory flood plain (f). Revised flood profiles (g). Associated plat and legal description of property, showing proposed flood plain easement(s) (h). GIS shape files for proposed regulatory flood plain
117.				Have new proposed discharges been prepared for floodplain analysis? (If No, skip this section) (a). Drainage boundary map to be prepared. _____ (b). Flow paths to be delineated on drainage maps. _____ (c). Snyder Coefficients used for analysis. _____ (d). Routing of hydrographs has to be used from node to node. _____ (e). 24-hour duration storm has to be used. _____ (f). Balanced rainfall to be used in analysis. _____ (g). Hydrologic Report, presenting all data to be prepared. _____

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Waterline Review

Item #	Complies Y	N	N/A	
				Water Main Extension
				HAVE ALL GENERAL AND COVER SHEET ITEMS BEEN ADDRESSED?
118.				Provide a table / list of total quantities to be installed by Contractor.
119.				Note to be included: "Testing; chlorinating and flushing notes performed in accordance with General Specifications, Section 109.3"
120.				Note to be included: "Testing and Chlorination to be performed by City of Tulsa"
121.				Note to be included: "No Water Service Connections will be allowed under IDP scope of work."
122.				Note to be included: "WATER OPERATIONS SHALL OPERATE ALL VALVES ON TRANSMISSION MAINS (16" AND LARGER). CONTRACTOR SHALL OPERATE ALL VALVES ON DISTRIBUTION MAINS (SMALLER THAN 16") WITH THE COORDINATION OF FIELD ENGINEERING AND WATER OPERATIONS AND IN THE PRESENCE OF A FIELD ENGINEERING INSPECTOR. A. ATTEMPTS WILL BE MADE WITH ASSISTANCE FROM THE CONTRACTOR TO NOTIFY ALL AFFECTED CUSTOMERS 48 HOURS IN ADVANCE, PARTICULARLY IF COMMERCIAL OR INDUSTRIAL CUSTOMERS ARE INVOLVED. PRIOR TO SHUTDOWN, FIELD ENGINEERING WILL NOTIFY WATER OPERATIONS, AT 918-596-9488, GIVING AN ESTIMATED DOWNTIME. WATER OPERATIONS WILL NOTIFY THE FIRE DEPARTMENT OF ALL FIRE HYDRANTS OUT OF SERVICE AND WHEN THEY ARE BACK IN SERVICE, BY STREET ADDRESS OR INTERSECTION. B. WHERE COMMERCIAL, INDUSTRIAL, OR CRITICAL CUSTOMERS ARE AFFECTED, AND FOR ALL LINES 16 INCH AND LARGER IN SIZE, FIELD ENGINEERING WILL REQUEST WATER OPERATIONS TO SHUT DOWN THE MAIN. THERE WILL BE A MINIMUM OF 48 HOURS NOTICE TO WATER OPERATIONS."

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Waterline Review

Item #	Complies Y	N	N/A	
				Design Criteria
123.				The most current Design Standards Manual for Water Distribution Systems to be used.
124.				Water and Sanitary Sewer separation (per ODEQ and COT Req.) Title 252.626 Public Water Supply Construction Standards: - 2' Vertical separation outside to outside of pipes - 10' Horizontal separation outside to outside of pipes - Pipe joints must be equidistant from water pipe crossing - Unable to meet separation, met special condition (pressure pipe) requirement ODEQ 252.626.19-2.H.3
125.				Water and storm sewer separation (per ODEQ and COT Req.) - 2' Vertical separation outside to outside of pipes - 5' Horizontal separation outside to outside of pipes - Unable to meet separation, met special condition (pressure pipe) requirement ODEQ 252.626.19-2.H.3
126.				Water separation from other buried utilities (per ODEQ and COT Req.) (Raw WL, petroleum lines, natural gas lines and other buried utility lines): - 2' Vertical separation outside to outside of pipes - 5' Horizontal separation outside to outside of pipes - Unable to meet separation, met special condition (pressure pipe) requirement ODEQ 252.626.19-2.H.3
				Construction Plan and Profile Sheets
127.				The Design Engineer shall provide current flow data (taken at a fire hydrant) in a table on the plans. (Static pressure; residual pressure; time of day taken; outside temperature and fire hydrant gallons per minute of existing hydrants near the development site.)
128.				Show existing utilities and features in the profile sheet with stations and flow line or top of pipe elevations.
129.				Waterline standard locations are 8 feet from property line (Right-of-Way): - If 8 feet cannot be met, provide for the following: 5 feet is minimum clearance from water line to property line/right-of-way - 3 feet minimum clearance from waterline to back of curb
130.				Entire trench under all paved driving surfaces to be backfilled with aggregate base and compacted to 95% modified proctor density.
131.				Existing utilities and features to be shown on plan.
132.				Waterlines to be located on the east and south side of the street and around cul-de-sac.

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Waterline Review

Item #	Complies Y	N	N/A	
				Construction Plan and Profile Sheets (cont'd…)
133.				Pipe Sizing for Distribution Mains: The prescribed minimum requirement: - 12-inch mains in major streets - 8-inch mains in collector streets - 6-inch mains in local streets It is Developer's responsibility to determine actual flow requirements.
134.				Every effort must be made to avoid creating new dead-end waterlines. Every effort should be made to tie up existing dead-end waterlines.
135.				Pipe type, size and length to be shown. Distribution mains 6-inch through 12-inches in diameter may be ductile iron pipe (DIP), polyvinyl chloride (PVC) or high-density polyethylene (HDPE) in accordance with COT Standard Specifications and Standard Details.
136.				Minimum pipe size is 6". In all cases, consideration must be given to the average domestic demand simultaneous to any fire-flow event.
137.				Vertical scale 1"=10' / 1"=5'
138.				Horizontal scale shall be from 1"=20' to 1"=50', (600' maximum distance per sheet).
139.				Fire hydrant shall be spaced to meet ODEQ 252:626-19-3.(B) and International Fire Code requirements: ODEQ – 500'/400' - Single Family Residential - Max Spacing 500 (feet) - Townhouses and Apartments - Max Spacing 300 (feet) - Commercial / Industrial (including shopping centers) - Max Spacing 300 (feet)
140.				For proposed new connections onto existing mains the first valve in all directions on existing water lines shall be located and noted on plans.
141.				Valves shall be added as necessary to allow for isolating portions of waterlines. Recommend spacing of 400' for flexibility. ODEQ 252:626-19-3.(C) requirements must be met.
142.				Valve, fire hydrant, fitting, air release valve or other appurtenance to be shown with station number, northing and easting and size.
143.				Plan to include sufficient survey detail to construct proposed water line, including existing utilities, walls, etc. for connections on both sides of the street.
144.				All fittings shown as restrained with limits of stationing must be shown on the profile.
145.				Minimum cover from top of pipe over the waterline is 36" with the following exceptions: - 4' is required below pavement, ditches and creek crossing - 4' is required in arterial street ROW - 4' for distribution mains 12 to 16-inches in diameter

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Waterline Review

Item #	Complies Y	N	N/A	
				Construction Plan and Profile Sheets (cont'd…)
146.				Maximum waterline depth to be 8'-0" unless variance request is approved by COT Water Design Section. - Waterline segments crossing below 8' require valves for isolation during repairs.
147.				Ductile Iron Pipe to be used for the following: - Channel or creek crossing (restrained joints required) (HDPE with approval) - All paved areas - Along arterial streets Right-of-Way even if unpaved - Water service line piping from main tap to downside of meter vault on 3" and larger.
148.				Under Water Crossings (channel/creek) ODEQ regulations Section 252:626-19-2(9)(B) to be used: - Provide valves at both ends of water crossings so that the section can be isolated for testing or repair. The valves must be easily accessible and not subject to flooding. The valve closest to the supply source must be in a manhole. - Make permanent taps on each side of the valve within the manhole to allow insertion of a small meter for testing to determine leakage and for sampling purposes. - Provide restrained joints and fittings a minimum of 20 feet into each bank of crossing. - Bank stabilization (Riprap per COT Standard Spec 214) - Design the pipe for river crossings and have flexible watertight joints.
149.				Taps on waterlines larger than 12" must have variance request approval.
150.				Independent valves required on fire hydrant lines 12" or larger and on water main lines along arterial roadways.
151.				Meter vault locations with reference to appropriate COT standard detail sheet: - New/replacement residential meters located within Right-of-Way and 2' off property line. - Separate meter box for residential service pressure reducing valve (PRV) shall be located on private property.
152.				All dead ends require variance request approval and a fire hydrant or blow off assembly.
153.				Pipe must be level where valves, fire hydrants and/or conduits are to be installed.

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Waterline Review

Item #	Complies Y	N	N/A	
				Construction Plan and Profile Sheets (cont'd…)
154.				Standard Details to be used. The following circumstances require special details: - Air/vacuum/release valves for water lines 16" or larger - Air/vacuum/release valves for elevation changes of 15' or more - Specials (Booster Pump Station, Water Towers, River Crossings, Storage Tanks) - All structures not covered by Standard Details
155.				The following items are required to be in the Right-of-Way or proper easement: - Public Water Main Line - Public Domestic Meter & Vault - Public Irrigation Meter & Can - Public Fire Suppression Meter Can/Vault - Public Fire Hydrant Water Mains 12" diameter or less not installed in the public right-of-way will require a minimum easement width of twenty (20) feet.
156.				Minimum Easement / Clearance for Appurtenances: Appurtenances — Clearance Air Relief — 3 feet on all sides Fire Hydrant — 3 feet clear from outside of hydrant Meters 2 inches and smaller — 3 feet on all sides Meters 3 inches and larger — 3 feet on all sides of meter vault Miscellaneous — 6 feet on all sides
				Fire Line Systems (Items #157 - 159)
157.				Include this note for all Private Fire Lines: "A fire line is a private pipe system connected directly to the City water system. All maintenance of the private fire line is the responsibility of the property owner and begins from the building structure up to the public right-of-way, utility easement or water easement. A fire line, by the nature of its function and use, is susceptible to backflow. Consequently, it is subject to the requirements for backflow prevention. A fire line shall be utilized for fire protection only and shall serve only a single property. Typically, a fire line is a connection for on-site private hydrants or an interior fire sprinkler system for a new or existing building. Permitting review and approval interest is limited only to that portion to be constructed in the ROW or water easement."

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Waterline Review

Item #	Complies Y	N	N/A	
				Fire Line Systems (Items #15 - 159) (cont'd…)
158.				Acceptable Pipe Materials: All fire line installations shall conform to the applicable COT Standard Specifications and Standard Details. A fire line sized 4-inch and larger shall be constructed of ductile iron pipe (DIP) from the public main to detector check/control valve vault. All fire line inside the vault needs to be DIP.
159.				Properly sized conduit with 3/8" steel wall thickness installed level, ROW to ROW (Ultimate per Major Street and Highway Plan). - Under reinforced concrete box structures extend conduit 5' beyond edges.

Waterline Conduit Sizing (inches)								
Carrier Pipe Size	6	8	12	16	24	30	36	42
Conduit Size	18	20	24	30	42	48	54	60

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	
				Sanitary Sewer Extension
				HAVE ALL GENERAL AND COVER SHEET ITEMS BEEN ADDRESSED?
				Construction Notes/Schedule of Quantities/Miscellaneous
160.				Note to be included: "Contractor will be required to vacuum test all manholes according to current City of Tulsa Standards and Specifications. Existing manholes shall be vacuum tested prior to any modifications and after work is complete."
161.				Note to be included: "Contractor shall submit professional engineered trench excavation plan for all excavations in excess of 20 feet."
162.				When abandoning mainlines or manholes, add note: "If any active existing service lines are cut off by removal of sanitary sewer line and manhole, then they must be reconnected to the main for service at the Developer's expense."
163.				When abandoning main lines or manholes, add note: "Sewers and manholes to be abandoned shall be securely blocked at any points of intake or discharge with a bulkhead or preformed plug and shall be completely filled with clean sand, cellular concrete or flowable fill."
164.				When abandoning main lines or manholes, add note: "Frames and covers from any structures scheduled for abandonment shall be returned to the City Sewer and Operations Maintenance at 9319 E. 42nd Street North Inventory Yard between 7:30 am and 3:00 pm Monday thru Friday. At a minimum, all structures shall be completely removed to a point three (3) feet below the final grade or the depth noted on the drawings. Sand or flowable fill shall be used to fill the structure."
165.				When tying into existing manhole, add note: "The Developer shall make any needed modifications to existing manhole in order to comply with current City of Tulsa Standards or maintenance requirements. The Developer shall be responsible for cost associated with internal inspection, rehab plan preparation and construction."
166.				Note to be included: "Water and sanitary sewer separation (outside to outside of pipes) to be minimum two (2) feet vertical & ten (10) feet horizontal per ODEQ regulations. When Water and Sewer separation cannot be maintained, the sanitary sewer shall be designed and constructed equal to water pipe. Sanitary sewer must be installed and Tested for Pressure and Leakage in accordance with COT Standard specification Part 203 and ODEQ Standard 252:626-19-2(e)".
167.				Note to be included: Service Tees shall be constructed as part of IDP. Service connections to buildings shall be done separately as a sewer tap permit.
168.				Note to be included: Backflow preventer must be installed if building site is below the upstream/downstream manhole rim+ 1'.
169.				Schedule of Quantities to be provided. Current COT Standard Specifications to be referenced for the quantities.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	
				Construction Notes/Schedule of Quantities/Misc. (cont'd…)
170.				Oklahoma Department of Environmental Quality Engineering Report Form to be provided for all new public sewer main construction. Rerouted lines do not require ODEQ report. Treatment facility serving a site can be found on the COT sanitary sewer Atlas map. The suffix following maintenance zone number indicates the facility. - BC = Bird Creek - HC = Haikey Creek - N = Northside - S = Southside Facility #s for ODEQ Sanitary Sewer report Item 2 are as follows: - Southside S-20402 - Northside S-21309 - Haikey Creek S-20434 - Lower Bird Creek S-21327 Report form can be found at: https://www.deq.ok.gov/wp-content/uploads/water-division/SanitarySewerWater_interactive4web-3.pdf
171.				ODEQ Form 583-B to be provided. For Form 583-B, Item C3, phone # and email for Director of Development Services are as follows: - (918) 596-1865 - MSkates@cityoftulsa.org Form can be found at: https://www.deq.ok.gov/wp-content/uploads/water-division/Permit2Construct580BForm_interactive4web-5.pdf
172.				Pothole all high-pressure gas pipelines at all crossings. Coordinate with the Gas Line Owner.
173.				Plan note: Contractor shall pothole all utility crossings. Contractor is responsible for coordinating with utility owners.
174.				Check all utility crossings to avoid conflicts during construction.
175.				Safety considerations at schools, playgrounds, etc. shall be included.
				Plan and Profile Sheets
176.				Manhole numbering: - Existing manhole numbers from Atlas Page must be included. - Existing MHs connections to use Capital Letters. - Proposed MHs to begin with #1 at the lowest end.
177.				Table of State Plane Coordinates for both the existing and proposed manhole locations (MH #, X, Y, Z) to be included.
178.				Manholes must be drawn to scale on plan.
179.				Manhole spacing to be no greater than 500 feet. Longer spacing may be allowed on sewers 12" I.D. and greater per ODEQ specifications.
180.				Manholes with less than 4.0' depth from top of rim to top of pipe shall require a special structure (5' I.D. Flat Top MH).

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	Plan and Profile Sheets (cont'd…)
				Plan and Profile Sheets (cont'd…)
181.				For manholes located in FEMA and/or City of Tulsa regulatory 100-year floodplain, provide standard 5' diameter manhole elevated 1' foot above grade and add note: The manhole lid should be 3200 Series Composite Utility Access Cover with Quarter Turn Paddle locks manufactured by EAST JORDAN per City standards for manholes in floodplain.
182.				Internal diameter of proposed manholes to be appropriate for the pipe size (8"-12" pipe: 4ft ID; 15"-21" pipe: 5ft ID; 22"-36" pipe: 6ft ID). Manholes do not require steps. 5' and larger diameter manholes must be epoxy lined.
183.				Concrete manholes, associated with mains 15" ID and larger, to be designed with interior epoxy coating or fiberglass with no coating.
184.				All manholes must have 30" lids and covers and no steps.
185.				Drops over 2' must be external drops. For inside drops 2' or less from invert hydraulic (beaver) slide to be called out.
186.				Grade adjustment for manholes to be done per City of Tulsa Sanitary Sewer Rehab Specifications, Section 418.
187.				Heavy wall SDR26 PVC is the minimum gravity sewer pipe requirement and the engineering consultant shall submit design deflection calculations for earth (dead) loading and live loading (H-20 traffic loads for example) for all depths greater than 16 feet. Add bedding details to drawings unique to that depth and geotechnical information.
188.				Sewers to project a minimum of 15.0 feet into the property to be served and must terminate in a manhole. Lamp-holes are not allowed unless approved by SOM.
189.				Profile to be shown with rising grade from left to right.
190.				Pipe length, type, I.D. and slope to be identified on profile.
191.				Service tees to be shown in the profile with station measured from downstream manhole, size and direction facing.
192.				Contour lines (minimum 2-foot contours) to be shown on plan view (existing [dashed] and proposed [solid]).
193.				Flow Direction Arrows to be shown in plan for all sewer lines.
194.				Limits of pavement removal and replacement to be shown on plan view.
195.				Special backfill requirements to be shown in profile.
196.				Existing utilities and features to be shown on both the Plan & Profile. Stationing of features must be included in the profile view.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	Plan and Profile Sheets (cont'd…)
197.				Drainage Basin Map, clearly defining all areas tributary to the subject property and the proposed sewer main to be included. Basins and subbasins to be analyzed as needed to confirm capacity, including where pipe sizes change, where pipe slopes change and where sewer lines converge. Plans shall include the Sanitary Sewer Design Table provided below.
198.				Does the Ordinance Flow Equation, **based on Title 11C Chapter 6, Section 600(G),** ($Q_m=A^{0.8169}$ x 0.01467) show sufficient capacity to serve the entire upstream drainage basin? Include calculations, show entire drainage basin and subbasins as necessary in plans.
199.				If described in the Wastewater Compendium (Comp Study), (latest addition) is capacity provided to serve other basins? Are stub-outs provided per the study?
200.				Type A aggregate backfill compacted to 95% Standard Proctor Density to be shown in profile and provided for the entire trench under the following: - Paved driving surfaces (streets, parking lots, driveways, etc.) - Full ROW width of arterial streets - Commercial and residential driveways
201.				For channel or creek crossings: - Riprap the channel over the cut - If less than four (4) feet of cover, then steel conduit to be placed 10' beyond the upper toe of each bank. *See conduit chart below for conduit size.
202.				For riprap add note: Riprap design and installation shall comply with the more stringent of the following: 1. ODOT Standard Specifications adopted by the City of Tulsa 2. Current City of Tulsa Stormwater Management Criteria Manual

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	Plan and Profile Sheets (cont'd…)
203.				Aerial Crossings are discouraged and require approval by the Engineering Director and SOM. If an aerial crossing is unavoidable, the following is required: - Design calculations, both static and dynamic structural design, (including impact stability during flooding) prepared by a PE experienced in sewer/structural design. - Restrained joint non-metallic sewer pipe (bell harness megalugs on SDR26 PVC or Fused DR17 HDPE). - Geotech report showing the strata and depth the deep foundations are penetrating or bearing on. - Type of deep foundations in center and type of deep or shallow footing into banks (H piles, concrete piers, drilled shafts, spread footings, etc.). - Maximum spacing of foundations. - Pile cap design showing strap and anchor bolt material and sizes. - Pipe to be encased in steel conduit. - Must conform to ODEQ regulation 252:656-5-4 (d).
204.				Sanitary sewer to be encased in steel conduit when within the ROW of arterial streets. Conduit shall extend from ROW to ROW unless a manhole occurs in the ROW. Where manhole(s) occur in the ROW, separation/clearance from manhole to conduit shall be determined on a case-by-case basis. *See conduit chart below for conduit size.
205.				Water and sanitary sewer separation (outside to outside of pipes) to be minimum two (2) feet vertical & 10' horizontal per ODEQ regulations. When it is impossible to obtain above clearances the sanitary sewer shall be designed and constructed equal to water pipe per ODEQ Regulations.
206.				When proposed gravity lines are in proximity of existing force mains, vertical and horizontal clearances must be evaluated in consultation with COT Operations and Maintenance staff. New utilities shall not disturb bedding of existing force mains. Additional measures such as structural slabs may be required to protect force mains
207.				Service line 8" or larger must connect to manhole at the invert level either through direct entrance or through a drop. Flow calculation to justify size must be provided.
208.				Service connections to be at less than 16' depth.
209.				Depth of the sewer main must be sufficient to serve all intended properties. Finished Floor elevations to be provided.
210.				Service connections can only be provided on mains 12" ID and smaller. Connections to mains larger than 12" ID allowed only with SOM approval.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	Plan and Profile Sheets (cont'd…)
211.				Locations where backflow prevention must be installed to be provided in a backflow preventer table in the format shown below. *See Backflow Preventer Table example below
212.				Minimum distance from outer diameter of manhole to any permanent structure to be ten (10') feet.
213.				Offset dimensions of sewer line from property line to be shown. Sewer line to be located: - 12.5' from property line within a 17.5' perimeter easement. - seven (7) feet south or west of the property line within back to back 11 foot easements. - for side lot easements, pipe to be centered within 15' easement.
214.				Access proposed sanitary sewer assets shall be considered in design. Easements shall be sized to ensure adequate maintenance access.
215.				Design must provide sufficient pipeline slope considering minimum velocity of 2.0 FPS for pipe smaller than 15"; minimum 3.5 FPS for pipes 15" or larger. (Max. slope 8%) *See Sanitary Sewer Pipe Size vs. Minimum Slope Requirements chart below
216.				Restoration details of retaining walls, improved channels, and other special structures to be provided.
217.				Contact Sewer Operations and Maintenance for condition report where connections are being proposed to existing public manholes and public mains.
218.				Adjusting (raising or lowering) of existing public manhole lid requires an IDP. If it is a brick manhole then further evaluation is required to determine its condition. Complete manhole replacement may be required in case of an adverse report.
219.				Redevelopment involving the demolition of existing residential or commercial structures shall include a complete rehabilitation of all existing sewer facilities servicing the redevelopment. Add note on plan: The Developer shall be responsible for the cost associated with internal inspection, rehab plan preparation, and construction.
220.				If applicable, include proper reference to Rehabilitation Specifications. (Chapter 400)
221.				For all rehabilitation methods that reduce cross sectional area, flow capacity calculations to be included to confirm sufficient capacity exists.
222.				Private sanitary sewer service lines, 8 inch I.D. and larger, shall be required to be designed according to City of Tulsa, Public Mainline Standards and shall be reviewed by Development Services as an IDP project. The service line must be clearly labeled "Private Service Line" on the plans.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	Detail Sheet(s)
223.				Existing and proposed MHs to be shown to scale, including manhole diameter, pipe O.D., minimum radius of invert (per Standard 366), location of manhole lid, and deflection angles.
224.				Minimum of 1’ clear space to be maintained outside to outside of adjacent pipes in a manhole.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	
				Charts

Sanitary Sewer Pipe Size versus Minimum Slope Requirements									
Pipe Size (inches)	8	10	12	14	15	16	18	21	24
Min. % Slope*	0.40	0.29	0.22	0.17	.44	.41	.35	.28	.235
*8"-14" pipes are designed to velocity of 2 fps. 15" and up are designed to 3.5 fps									

Conduit Sizing (inches) Wall Thickness Minimum 3/8"														
Carrier Pipe Size	6	8	10	12	14	15	16	18	20	24	30	36	42	48
Conduit Size	20	20	24	24	30	30	30	36	36	42	48	54	62	68

Backflow Preventer Table				
Lot/Block#	Pad FFE	U/S TR	D/S TR	Backflow Preventer Required?

Sanitary Sewer Design Table

Drainage Area #	SSMH #	Area (acres)	Ordinance flow (MGD)		Receiving Pipe Size (in)	Capacity at minimum design slope (Mannings) (MGD)	Ordinance Flow minus capacity (MGD)

Note: Drainage Area Map should clearly show these analysis points (SSMHs) and areas

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Transportation Review

Item #	Complies Y	N	N/A	
				Transportation
				HAVE ALL GENERAL AND COVER SHEET ITEMS BEEN ADDRESSED?
				General Information
225.				New driveway and curb cut locations are required to go through the Change of Access Process.
226.				Private improvements in or over the ROW require a License Agreement with the City.
227.				Are sidewalks required for this project? (via plat, zoning code, ordinance…)
228.				Modification of a public roadway median must go through the Change of Access Process.
229.				Provide ROW for right-turn lane where the intersection includes Primary and Secondary Arterial streets intersecting. Total distance from the centerline of the street intersection will be 388’ and the total ROW dedication when two Secondary Arterial Streets are the subject intersection will be 8’ while the ROW dedication when a Primary Arterial Street is intersection with a Secondary Arterial street is 10’. At these intersections, a 25’ corner clip will also be warranted.
				Paving Plan
230.				We have been directed by the Director of Streets and Stormwater that all concrete streets inside the IDL are to be replaced with full panels as part of their restoration. And all newly constructed concrete streets Citywide (streets with a PCI greater than 75) need to have their restoration done with full panels as well.
231.				Street layout, locations, and geometrics, including collector streets, must conform to Major Street and Highway Plan, existing or proposed plat, PUD, etc.
232.				Street names to be provided on each street segment on plan sheets.
233.				Ave., Pl., St., and Ct., often get confused. Verify street names and provide key map.
234.				Provide note on plan “ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED.” Private Streets to be labeled “Private”.
235.				All “Limits of No Access” to be shown on the plan.
236.				Existing and Proposed Right-of-Way lines to be shown with dimension lines, bearings and distances. Reference Plat or Book and Page number.
237.				Existing median locations and openings on adjacent streets to be shown.
238.				Paving width in proposed street to be called out from gutter line to gutter line.
239.				Asphalt street pavement sections to conform to Standard No. 726 Type 4. Alternative asphalt pavement sections can be considered and require a Geotechnical Report for review.
240.				Type of pavement on existing streets to be called out on plans. (AC, APC, PCC)

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Transportation Review

Item #	Complies Y	N	N/A	Paving Plan (cont'd…)
241.				Existing and proposed curb and gutter, driveways, sidewalks, and ramps to be clearly identified and dimensioned and referenced to appropriate City of Tulsa Standard detail.
242.				Transitions from curbed to uncurbed sections to be properly detailed, including section showing compacted subgrade and base material extending 2 ft. beyond edge of uncurbed pavement.
243.				Radii at returns to conform to Subdivision Regulations. (25' for residential streets, 30' at intersections with arterials, 40' for industrial districts)
244.				Cul-de-sac radius to conform to Subdivision Regulations.
245.				All curb geometry to be provided.
246.				Sidewalks and ramps to be shown and labeled as to whether their construction is included in the IDP contract or will be by individual lot builders.
247.				Sidewalk to be placed minimum 2' from back of curb or 18" from property line.
248.				If any part of public sidewalk is on private property, it must be placed in a sidewalk easement.
249.				Sidewalks, curb cuts and ramps to be compliant with Public Rights-of-Way Accessibility Guidelines (PROWAG) and Americans with Disabilities Act Accessibility Guidelines (ADAAG)
250.				Curb Ramps shall be directionally oriented to the curb ramp across the street, unless otherwise approved in writing by City of Tulsa.
251.				If there is an obstruction in the sidewalk, minimum of 4 feet to be available on at least one side.
252.				Call out type of accessible ramp for each ramp. Landing area and ramp dimensions, spot grades, slopes and orientation to be provided. Tactile dome location and orientation shall be shown on the plans and per PROWAG and ADAAG.
253.				ADA ramps shall be Type "A" ramps (COT STD 790). The use of Type "B", "C" and "D" ramps due to limiting conditions may be allowed. Plans shall include satisfactory justification for use of anything other than Type "A" ramps.
254.				Concrete bus pads to be located behind curb and connected to sidewalk at Bus Stop locations. If there is only a sign or bench at the location, concrete pad to be 10'X10' minimum. Facility to be compliant with PROWAG.
255.				Ties of new to existing pavement to be clearly explained in a construction detail. (At minimum, include note: "Full Depth Saw Cut" and "Match Existing")
256.				All storm water curb inlets to be shown on paving plans. Aprons around curb inlets shall be per City Standard 764.

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Transportation Review

Item #	Complies Y	N	N/A	
				Paving Plan (cont'd…)
257.				Driveways shall meet City Standards (commercial driveways width to be between 24'- 36' with radius of returns minimum 15'). Off-tracking should be considered when determining driveway radii.
258.				Pavement type and thickness for driveways to conform to COT Driveway Standards.
259.				On projects with public asphalt paving, the following note to be included: Failure to reach density of 92% to 97% per lot will result in a rejection of work.
260.				Driveway spacing and geometry to conform to Access Management Standard Detail. Changes in access shall be approved by Traffic Engineering. Driveway and intersection spacing in relation to adjacent driveways and intersections not covered by the Access Management Standard Detail shall be approved by Traffic Engineering.
261.				Gated entry at a private street or parking lot to have adequate queuing storage for two vehicles (50') waiting for access.
262.				Turn around to be provided prior to gates on private streets.
263.				If existing public pavement is concrete or asphalt overlay over concrete proposed driveway to be shown as concrete.
264.				Sidewalk slope including across driveways to be 1.7%.
265.				Maximum grade of driveway entrance in Right-of-Way to be 8%.
				Street Profiles
266.				Design speed to be used: 25 mph for residential and collector streets.
267.				Stationing to be clearly shown on paving plan sheets.
268.				All match lines shall have stations shown.
269.				Profiles to be shown directly below plan view.
270.				Horizontal scale 1'=20' (no smaller); Vertical scale 1"=5' (no smaller).
271.				Each profile to be captioned with the correct street name.
272.				All street intersections to be shown with stationing equations and proper street name labels.
273.				Profiles to extend at least 100 ft. beyond ends of paving construction to show tie-in to existing or future pavement or ground topography.
274.				Proposed top of pavement profile at centerline to be clearly labeled on each profile. Gutter flowlines that deviate from the typical cross slope to be shown and labeled.
275.				Elevations to be shown at all 50 ft. stationing increments and at called out features.
276.				Vertical curves to provide elevations at PC, PI, PT, high and low point.
277.				All grades must conform to the minimum 0.75% and maximum 8%.
278.				Vertical curves to be sufficiently distanced (min. 50 ft.) from an arterial street curb line.
279.				Vertical curves to be symmetrical, no asymmetrical curves to be used.
280.				4% maximum grade of intersecting residential streets to be maintained.

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Transportation Review

Item #	Complies Y	N	N/A	
				Street Profiles (cont'd…)
281.				Requirements for maximum grade and distance of residential street from arterial street to be maintained (max. 2% for a min. 100 ft. from arterial curb line).
282.				Vertical curve data to be provided to show conformance with design standards.
283.				All vertical curves to conform to City of Tulsa requirements for design standards according to the current edition of the AASHTO Guide (minimum k-value, design speed 25 mph) for Design of Pavement Structures.
284.				All utilities to be shown in plan and profile with cautionary notes included as applicable.
				Site Access Plan
285.				Include a Site Access Plan that includes the following: a. Existing ingress/egress locations for the subject site b. Proposed ingress/egress locations for the subject site c. Closest ingress/egress locations for all adjacent properties, including across public streets. d. Public and Private streets Each item listed above needs to be clearly labeled with dimensions for analysis for compliance with COT STDs 711A and 711B.
				Intersection Details
286.				Intersection details to be provided for all intersections, transitions to existing and other area that do not conform to typical horizontal or vertical street layout. Intersection details shall extend 150' beyond center line.
287.				All intersection details to be captioned with their correct street names.
288.				Reference stationing to be provided in all details for locating curb returns, street centerlines, medians, islands, and other constructed features.
289.				Top of pavement (TP) spot elevations to be provided at center lines, curb and gutter returns, access ramps and inlets to verify positive drainage in all directions**.**
290.				Positive drainage to be provided, including the minimum 0.75% along the curb line of the full arc length of each curb return and "eyebrow" intersection.
291.				At intersections, the design philosophy shall be "tabletop" design. The crown from side streets into arterials shall transition to meet through gutter line. Smooth transitions with vertical curves. No grade breaks.
292.				Arrows to be provided showing direction of drainage flow.
293.				Storm water curb inlets must be shown on the intersection details.
294.				Special paving features and transitions to be properly labeled and referenced to a corresponding construction detail.

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Transportation Review

Item #	Complies Y	N	N/A	
				Traffic Signals, Pavement Markings, Traffic Signs, Street Lighting
295.				Curb ramp construction shall comply with the current Americans with Disabilities Act standards (ADA).
296.				Traffic access on all streets shall be maintained at all times. Contractor must maintain proper construction signage and traffic control in accordance with the manual on uniform traffic control devices.
297.				Traffic control shall conform to the manual on uniform traffic control devices (MUTCD). Current edition. It is the contractor's responsibility to ensure proper traffic control is in place for each phase of construction. The contractor is also responsible for properly maintaining traffic control devices throughout the duration of the work. The contractor is responsible for providing traffic control plans to the City and Department of Transportation as required.
298.				Are there any pedestrian and/or vehicular signals and/or traffic signal equipment being added or affected by this project? If No, go to #304.
299.				If the project is located within 500 feet of a traffic signal, or within 200 feet of any other active traffic control or warning device that is supplied with electrical service or solar power, the equipment shall be shown on the plans. Add notes that any traffic equipment, (loops, conduits, wires, controller cabinet, traffic signals, school zone flashers, RRFB's etc.) shall be replaced with new equipment if damaged or being relocated.
300.				If a railroad is located with 200ft of the project, extra care shall be taken not to damage any existing railroad equipment, railroad pre-emption, or quiet zone equipment. If any is damaged or needs to be relocated, it shall be replaced with new equipment that meets the requirements of the railroad and the City of Tulsa. Please be aware that railroad equipment, railroad pre-emption, and railroad quiet zones can be very expensive.
301.				Include traffic signal sheets (signal plan, phasing and sequencing, and wiring diagram)
302.				Cover sheet shall list the correct COT standards and specifications for traffic signals.
303.				Include traffic signal notes on plans.
304.				Are there any pavement markings being added, removed, or affected by this project? If No, go to #310.
305.				Pavement markings and signs shall be shown on the same sheets.
306.				Include the colors, line widths, and dimensions on the plans
307.				Include pavement marking notes on the plans, (pavement markings shall be extruded thermoplastic).

City of Tulsa
Infrastructure Development Process
Plans Review Checklist

IDP#_____ **IDP Name** _____

Transportation Review

Item #	Complies Y	N	N/A	
				Traffic (cont'd…)
308.				Pavement markings to be shown where necessary (e.g., gore areas, at traffic circles, major transitions, turn lanes), with material and application specifications.
309.				Consider if signage and/or pavement markings specific to school will be required.
310.				Are there any signs being removed, added or affected by this project? If No, go to #317.
311.				Pavement markings and signs shall be shown on the same sheets.
312.				COT standards and specifications shall be listed on cover sheet for traffic signs.
313.				Include sign notes on plans.
314.				Include a sign summary in the plans
315.				Include street marker signs for new streets in the sign summary.
316.				Private street signs should be replaced with black street signs and not red per MUTCD.
317.				Are any streetlights or highway lights being added, removed or affected by this project? If No, go to #321.
318.				Include COT standards and specifications for lighting on the cover sheet.
319.				Include plan notes for street lighting in plans.
320.				Existing lights that are taken down for the project to be replaced pole for pole.
321.				Relocated or new driveways need to be approved by the City Traffic Engineer.
322.				The contractor shall be responsible for the replacement of all existing traffic signs and markings removed or damaged as part of this project. All signs and poles provided shall be new and undamaged and shall meet the requirements of COT specification #608 traffic signs. All traffic material removed shall be handled per COT specifications #625 removal of traffic items.