City of Tulsa
Infrastructure Development Process
Plan Review Checklist

IDP Number _____ Project Name_____

This checklist is to assist engineers and developers in the process of preparing plans for review by the City of Tulsa. The City requires that an engineer licensed in the State of Oklahoma complete this checklist and sign and seal as indicated below.

I _____, an engineer licensed in the State of Oklahoma, do hereby certify that I have reviewed the plans for the above IDP project, and completed the checklist to ensure that all of the items on the checklist have been addressed with regard to City requirements.

My license expires _____.

(Sign and Seal)

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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)
				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 Predevelopment 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.
				General Plan Requirements
15.				Standard plan sheet to be 22’’X 34” (ANSI D).
16.				Plans are to be readable for full and half size text. (All lettering a minimum of 0.10” in height on full size plans.)
17.				New Construction to be shown in bold font.
18.				Sheets are to be numbered according to IDP numbering system.
19.				Drawings at a Common Engineer’s Scale.
20.				North Arrow (Top of page or to the right) on every plan sheet.
21.				Appropriate current Title Block on each sheet. See IDP Manual.
22.				Call OKIE logo with phone number on every plan sheet.
23.				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.
24.				Existing and proposed Right of Way to be shown with dimension lines and bearings and distances. Reference book and page or plat number.
25.				Existing and proposed easements to be included with bearings and distances. Reference book and page or plat number.

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General Items

Item #	Complies Y	N	N/A	
				General Plan Requirements (contd…)
26.				Is FEMA A-Zone, or Regulatory Floodplain, on the property? If so, then limits of the Floodplain to be shown on each plan sheet.
27.				Erosion control measures and details (for non-City Standards) to be included on the plans.
28.				This note been added to the plans? "All construction to be in strict accordance with current City of Tulsa Standards and Specifications".
29.				Standard note for traffic control & street closures to be provided as necessary. "Traffic access on all streets shall be maintained at all time. 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.				Legal Description - Verbatim and on Site Plan
35.				Atlas Page(s) No.
36.				List of Sheets. Sheet numbering to comply with IDP Manual.
37.				IDP Description. Quantities of IDP items to be included per IDP Manual.
38.				Engineers Name, Address, Phone Number & Contact Person
39.				Owner's Name, Address, Phone Number & Contact Person
40.				Engineer Seal, Signature and Date
41.				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
42.				List of all City of Tulsa Standards used (include STD No. and Verbatim Title)
43.				List of all ODOT Standards used.
44.				Location Map (show Subdivision within the Section and Major Streets)
45.				Location (address, legal, subdivision)
46.				Legend
47.				Table of Impervious Area (existing, proposed, increase/decrease)
48.				List of all Utility Franchise Contacts and Applicable City Contacts

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General Items

Item #	Complies Y	N	N/A	
				Cover Sheet (contd…)
49.				Site Plan, showing and labeling the following: Adjacent subdivisions all adjacent and onsite streets, all existing and proposed Rights of Way and Easements, and all items being constructed by the IDP Project.
				Easement by Separate Instrument
50.				Call out separate instrument easements
51.				Show metes and bounds – must match documents submitted for separate instrument easement application.
52.				Complete separate instrument application
53.				Offsite separate instrument must be filed and document number provided on plans prior to plan approval.

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Stormwater Review

Item #	Complies Y	N	N/A	
				Stormwater Runoff System
				HAVE ALL GENERAL AND COVER SHEET ITEMS BEEN ADDRESSED?
54.				Site grading to be checked for the following: water will not back up into any buildings and that it has an emergency overflow path; and drainage from street will not flow to site at entrances.
55.				Only City approved pipe materials to be used for all public storm sewer systems.
56.				All drainage facilities/improvements to be designed in accordance with the current adopted Storm Water Management Criteria Manual.
57.				Maximum angle of deflection at storm structures: 15"-30" – 90º 36"-48" – 60º 54" and up – 45º
58.				All public storm sewers are to be backfilled with State ODOT Type A aggregate or flowable fill per COT Standard 751.
59.				Times of Concentration to be determined in accordance with the current adopted Storm Water Management Criteria Manual.
60.				Drainage areas boundaries to be clearly labeled with flow paths for all onsite and offsite areas for both for existing and proposed conditions.
61.				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 0.5 feet or less; and no overland reaches greater than 150 feet.
62.				Public stormwater systems to be placed in proper easements as required per IDP manual.
63.				Profiles to be shown for all public storm sewers systems and ditches and include: pipe size and type slope, length, Q100, V100, HGL/EGL and inlet locations.
64.				All utility crossings to be shown on the Storm Sewer Profiles.
65.				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.
66.				Profiles to clearly identify all structures by name and type.
67.				Vertical and horizontal separations between storm sewers and water lines to be been maintained per water requirements.
68.				Outside faces of storm lines to be at least 6" apart measured at the inside face of manholes or junction boxes.
69.				Manholes/junction boxes to be located in accordance with the current adopted Stormwater Management Criteria Manual.

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Stormwater Review

Item #	Complies Y	N	N/A	
				Stormwater Runoff System (contd…)
70.				Table of State Plane coordinates to be included for all proposed storm structures.
71.				All curb inlets to be placed outside of curb returns.
72.				Inlets located near property lines to avoid complication during driveway construction.
73.				On-site/offsite contours to be shown to establish limits of drainage basins.
74.				Erosion control measures and details for non-City Standards to be included on the plans.
				Detention Facilities Plan
75.				Is storm water detention required? If Yes continue checklist below, if No go to Item # 93.
76.				The Detention facilities to be placed in a Reserve Area and/or Detention Easement.
77.				The detention facility to be designed in accordance with the current adopted Storm Water Management Criteria Manual using HEC-HMS-SCS method.
78.				The appropriate freeboard provided.
79.				The standard detention "Summary Charts" to be shown on the plans.
80.				A concrete trickle channel having a minimum slope of 0.5% to be provided in grassed facilities.
81.				The bottom of a grass lined pond to have a minimum slope to the trickle channel of 2%.
82.				The side slopes to be no steeper than 4:1 or 3:1 with prior approval.
83.				An all-weather access to be provided in accordance with the current adopted Storm Water Management Criteria Manual.
84.				The top width of earthen dike(s) to be in accordance with the current adopted Storm Water Management Criteria Manual with an all-weather surface providing access to the outlet structure (along top berm).
85.				Typical Cross sections (minimum of 2) to be provided with representative dimensions and proposed elevations for flow lines and top of berm, wall, etc.
86.				Permanent Bermuda Solid Slab Sod is required vegetation for the bottom and embankment side slopes of detention pond.
87.				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.
88.				Computational details to be included for all non-standard structures.
89.				Outlet structure pipe to have proper erosion control.
90.				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 (contd…)
91.				Procedures for development of time of concentration, lag time and curve numbers to be per current adopted Storm Water Management Criteria Manual.
92.				Existing (Pre-developed) and proposed (Post-developed) drainage maps to be provided on plans.
93.				Existing (Pre-developed) and proposed (Post-developed) HEC-HMS models to be prepared and provided in Detention/Drainage Report
94.				Perform analysis for 24-hr durations 2-Yr, 10-Yr, 5-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.
95.				All drainage areas to be accounted for in both existing and proposed drainage areas.
96.				Storm Sewer discharging into detention pond (s) to begin EGL/HGL calculation at 100-yr water surface elevation.
				Flood Plain
97.				Is the property in the FEMA flood plain? (a). Is work being proposed in the flood plain? _____ (b). Will proposed grading require a CLOMR? _____ (c). When completed will a LOMR be required? _____
98.				Is the property in the City Regulatory flood plain? (a). Is work being proposed in the flood plain? _____ (b). Will proposed grading require a T-LOMR? _____
				FEMA Flood Plain Development – (Item # 95-97) **All Backwater Analysis Required to use HEC-RAS** **Note: All FEMA Flood Plains Subject to COT Flood Plain Criteria.**
99.				Is the project proposing to modify the flood plain? (If no skip this section) (a). Floodplain worksheet showing all cross section locations to be prepared. _____ (b). Existing Effective, Modified Effective and Proposed Effective Models to be prepared. _____ (d). FEMA discharges to be used in models. _____ (e). Required Hydraulic Analysis Report to be prepared. _____ (f) . Applicable Existing Effective, Modified Effective and Proposed Effective mapping to be prepared. ____ g). Required CLOMR/LOMR application(s) to be prepared? _____

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Stormwater Review

Item #	Complies Y	N	N/A	
				Floodplain (contd…)
100.				Is the project proposing to modify the floodway? (If no skip this section) (a). Has floodplain worksheet showing all cross section locations been prepared? _____ (b). Have Existing Effective FW, Modified Effective FW and Proposed Effective FW Models been prepared? _____ (d). Have FEMA discharges been used in models? _____ (e). Has required Hydraulic Analysis Report been prepared? _____ (f) . Have applicable existing and proposed mapping been prepared? _____ (g). Has required CLOMR/LOMR application(s) been prepared? ___
				COT Regulatory Flood Plain Development – (Item# 101 & 103) **All Back Water Analysis Required to use HEC-RAS**
101.				All new or modified flood plain areas through a development must be placed in a Reserve Area or Overland Flow Easement
102.				Is the project proposing to modify the flood plain? (If no skip this section) (a). Flood plain map worksheet showing all cross section locations to be prepared. _____ (b). Existing Effective, Modified Effective and Proposed Effective Models to be prepared. _____ (c). COT discharges to be used in models. ____ (If No see Item#99 below) (e). Compensatory floodplain calculations to be prepared. _____ (e). Required Hydraulic Analysis Report to be prepared. _____ (f). Applicable Existing Effective, Modified Effective and Proposed Effective mapping to be prepared. ____ (g). Required T-LOMR application(s) to be prepared. _____ All new or modified flood plain areas through a development must be placed in a Reserve Area or Overland Flow Easement.
103.				Have new proposed discharges been prepared for flood plain analysis?(If no skip this section) HEC-HMS required for Analysis (a). Drainage boundary map to be prepared. _____ (b). Flow paths to be delineated on drainage maps. _____ (d). Applicable Coefficients been used for analysis. _____ (e). Routing of hydrographs have to be used from node to node._____ (f). 24-hour duration storm has to be used. _____ (g). Balanced rainfall to be used in analysis. _____ (h). 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?
104.				Provide a table / list of total quantities to be installed by contractor
105.				Note to be included: "Testing; chlorinating and flushing notes performed in accordance with General Specifications, Section 109.3"
106.				Note to be included: "Testing and Chlorination to be performed by City of Tulsa"
107.				Note to be included: "No Water Service Connections will be allowed under IDP scope of work."
108.				Note to be included: "City crews only are allowed to operate valves."
				Design Criteria
109.				The most current Design Standards Manual for Water Distribution Systems to be used.
110.				Water and Sanitary Sewer separation (per ODEQ and COT Req.) - 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.
111.				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.
112.				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
				Construction Plan and Profile Sheets
113.				Show existing utilities and features in the profile sheet with stations and flow line or top of pipe elevations.
114.				Waterline standard locations is 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.
115.				Entire trench under all paved driving surfaces to be backfilled with aggregate base.
116.				Existing Utilities and features to be shown on plan.
117.				Existing Utilities and features to be shown in profile with stations and flow line or top of pipe elevations.

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Waterline Review

Item #	Complies Y	N	N/A	
				Construction Plan and Profile Sheets (contd…)
118.				Waterlines to be located on the east and south side of the street. Pipe Sizing for Distribution Mains that states the prescribed minimum requirement of 12-inch mains in major streets, 8-inch mains in collector streets, and 6-inch mains in local streets in case of conflict regarding design minimums.
119.				Proper sized conduit with 3/8" steel wall thickness installed level
120.				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.
121.				Minimum pipe size is 6".
122.				Vertical scale 1" = 10' / 1"= 5'
123.				Horizontal scale shall be from 1"=20' to 1"=50' depending upon COT project requirements, (600' maximum distance per sheet).
124.				Fire hydrant shall be spaced (400' apart) to meet the COT requirements Single Family Residential -Max Spacing 500 (feet). Townhouses and Apartments-Max. Spacing (300). Commercial / Industrial9including shopping centers) Max. Spacing 300 (feet)
125.				First valve in all directions on existing water lines shall be located and noted on plans.
126.				Valves shall be added as necessary to allow for isolating portions of waterlines.
127.				Valve, fire hydrant, fitting, air release valve or other appurtenance to be shown with station number and size.
128.				Plan to include detail on both sides of the street.
129.				All fittings shown as restrained with limits of stationing.
130.				Minimum cover over the waterline is 36" with the following exceptions: 4' is required below pavement, ditches and creek crossing. Three (3) feet for distribution mains smaller than 12-inches in diameter, unless located in an easement or major street, where 4 feet will be the minimum required. Four (4) feet for distribution mains 12 to 16-inches in diameter.
131.				Maximum waterline depth to be 8'-0" unless approved by COT Water Design Section.
132.				Ductile Iron Pipe to be used for the following: - Channel or creek crossing - All paved areas Along arterial streets Right of Way even if unpaved

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Waterline Review

Item #	Complies Y	N	N/A	
				Construction Plan and Profile Sheets (contd…)
133.				Under Water Crossings 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, and - 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 Standards) - Design the pipe for river crossings and have flexible watertight joints.
134.				Taps on waterlines larger than 12” must have approval.
135.				Independent valves required on fire hydrant lines 12” or larger.
136.				Master meter vault locations with reference to 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 between property line meter box.
137.				All dead ends to have a fire hydrant or blow off assembly.
138.				Pipe must be level where valves and fire hydrant are to be installed.
139.				Standard Details to be used except in following circumstances: - 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)
140.				Separate Instrument Easements Public Water Main Line Public Domestic Meter & Vault Public Irrigation Meter & Can Public Fire Suppression Meter Can/Vault Public Fire Hydrant Main Diameter 12” and Less Min. Easement Width 20 (feet)
141.				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

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Waterline Review

Item #	Complies Y	N	N/A	
				Fire Line Systems (Item # 142-144)
142.				The design engineer must provide current fire flow data in a table on the plans. (static pressure; residual pressure and fire hydrant gallons per minute of existing hydrants near the development site.
143.				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 at the detector check/control valve located within the public right-of-way 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 building. Permitting review and approval interest is limited only to that portion to be constructed in the ROW or water easement.
144.				**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 detector check/control valve at the water main to the property line, backflow prevention device or detector check valve.

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
145.				Note to be included: "Contractor will be required to vacuum test all manholes according to City of Tulsa Standards and Specifications".
146.				Note to be included: "Contractor shall submit professional engineered trench excavation plan for all excavations in excess of 20 feet."
147.				Note to be included: "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."
148.				Note to be included: "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."
149.				Add Note: Frames and covers from any structures scheduled for abandonment shall be returned to the City at the specified location. 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.
150.				When tying to existing manhole add note: "The developer shall make any needed modifications to existing manhole in order to comply with existing City of Tulsa Standards or maintenance requirements. The developer shall be responsible for cost associated with internal inspection, rehab plan preparation and construction."
151.				When Water and Sewer separation of 10' cannot be maintained, add note "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)"
152.				Schedule of Quantities to be provided. Latest COT Standard Specifications to be referenced for the quantities.
153.				Oklahoma Department of Environmental Quality Engineer's report to be provided for all new or rerouted public sewer main construction.
154.				Have you Potholed all high-pressure gas pipelines at all crossings? Coordinate with the Gas Line Owner.
155.				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.
156.				Table of State Plane Coordinates for both the existing and proposed manhole locations (MH #, X, Y, Z) to be included.
157.				Manholes must be drawn to scale on plan.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	New Construction Plan and Profile Sheets (contd…)
158.				Manhole spacing to be no greater than 300 feet in residential areas, or 400 feet in open areas. Longer spacing may be allowed on sewers 18" I.D. and greater per ODEQ specifications.
159.				Manholes with less than 4.0' depth shall require a special structure (5' I.D. Flat Top MH).
160.				For MHs located in FEMA and City of Tulsa regulatory100-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.
161.				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).
162.				Manholes, associated with mains 15" ID and larger, to be designed with interior epoxy coating.
163.				For drop manholes, drop to be placed outside the manhole.
164.				Heavy wall SDR26 PVC will now be 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.
165.				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.
166.				Safety considerations at schools, playgrounds, etc. to be added to plans. Manhole lids to be level with ground. Elevated lids to be sealed.
167.				Profile to be shown with rising grade from left to right.
168.				Pipe length, type, I.D. and slope to be identified on profile.
169.				Service tees to be shown in the profile with station measured from downstream manhole, size and direction facing.
170.				Two foot contour lines to be shown on plan view (existing [dashed] and proposed [solid]).
171.				Flow Direction Arrows to be shown for all sewer lines.
172.				Limits of pavement removal and replacement to be shown on plan view.
173.				Special backfill requirements to be shown in profile.
174.				Existing utilities and features to be shown on both the Plan & Profile. Stationing of features must be included in the profile view.
175.				Drainage Basin Map, clearly defining all areas tributary to the subject property, and the proposed sewer main to be included. Adjacent sanitary sewer districts must be identified on the plan.
176.				Does the Ordinance Flow Equation show sufficient capacity to serve the entire upstream drainage basin? Include calculations and show entire drainage basin on the plan.
177.				If described in the Facilities Plan, is capacity provided to serve other basins? Are stub-outs provided per the Facilities Plan?

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	New Construction Plan and Profile Sheets (contd…)
178.				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 - full ROW width of arterial streets - Commercial and residential driveways
179.				For channel or creek crossings: - Rip rap 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 chart for conduit size.
180.				For rip rap add note: Rip rap 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
181.				Conduit to be provided from ROW to ROW of arterial streets. See chart below for size.
182.				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 add note: “Design and construct sanitary sewer equal to water pipe, and pressure test it to assure water tightness of joints adjacent to the water line prior to backfilling.”
183.				Service connections to be at less than 16’ depth.
184.				Depth of the sewer main must be sufficient to serve all intended properties. Finished Floor elevations to be provided.
185.				Service connections can only be provided on mains 12” ID and smaller.15” ID allowed only with Underground Collections approval.
186.				Add note: Service Tees shall be constructed as part of IDP. Service connections to buildings shall be done separately as a sewer tap permit.
187.				Locations where backflow prevention must be installed (if building site is below the upstream/downstream manhole rim+ 1’) to be provided in a backflow preventer table.
188.				Minimum distance from outer diameter of manhole to any permanent structure to be ten (10’) feet.
189.				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 11foot easements - for side lot easements, pipe to be centered within 15’ easement.

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Sanitary Sewer Review

Item #	Complies Y	N	N/A	
190.				**New Construction Plan and Profile Sheets (contd…)**
191.				Design must provide sufficient pipeline slope considering minimum velocity of 2.0 FPS (Max. slope 8%)? See chart below.
192.				Restoration details of retaining walls, improved channels, and other special structures to be provided.
193.				Have existing sewer lines been inspected for condition prior to plan submittal? 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.
194.				If applicable, has proper reference been made to Rehabilitation Specifications?
195.				For all rehabilitation methods that reduce cross sectional area, flow capacity calculations to be included to confirm sufficient capacity exists
196.				Private sanitary sewer service lines, 8 inch I.D and larger, may be required to be designed according to City of Tulsa, Public Mainline Standards and may be reviewed by Development Services as an IDP project. The service line must be clearly labeled “Private Service Line” on the plans.
				Detail Sheet(s)`
197.				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 steps, and deflection angles.
198.				Minimum of 1’ clear space to be maintained outside to outside of adjacent pipes in a manhole.

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	.15	.14	.12	.01	.08

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	18	20	22	26	28	28	32	32	36	42	48	54	62	68

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Transportation Review

Item #	Complies Y	N	N/A	
				Transportation
				HAVE ALL GENERAL AND COVER SHEET ITEMS BEEN ADDRESSED?
				General Information
199.				Is a Change of Access required to be processed through TMAPC?
200.				Are special features being proposed that will require a License Agreement with the City?
201.				Are sidewalks required for this project by Plat?
202.				Is modification of a public roadway median proposed for this project?
				Paving Plan
203.				Street layout including collector street location to conform to the existed or proposed plat or PUD and Major Street and Highway Plan.
204.				Street names to be provided on each street segment on plan sheets.
205.				Ave., Pl., St., and Ct., often get confused. Verify Street names and provide key map.
206.				Provide note on plan "ALL STREETS ARE PUBLIC UNLESS OTHERWISE NOTED". Private Streets in the project to be labeled.
207.				"Limits of No Access" to be shown on the plan.
208.				Existing and Proposed Right of Way lines to be shown with dimension lines, bearings and distances. Reference Plat or Book and Page number.
209.				Existing median locations and openings on adjacent streets to be shown.
210.				Paving width in proposed street to be called out from back of curb to back of curb.
211.				Asphalt street pavement sections to conform to Standard No. 726 Type 4 otherwise Geotechnical Report to be submitted for review.
212.				Type of pavement on existing streets to be called out on plans.
213.				Existing and proposed curb and gutter, driveways, sidewalks, and ramps to be clearly identified and dimensioned and referenced to appropriate construction detail.
214.				Hand formed gutters to be clearly identified with detail provided.
215.				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.
216.				Radii at returns to conform to Subdivision Regulations. (25' for residential streets, 30' at intersections with arterials, 40' for industrial districts)
217.				Cul de sac radius to conform to subdivision regulations.
218.				Curve and line data to be provided for all curves and curb returns.
219.				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.
220.				Sidewalk to be placed minimum 2' from edge of curb and 18" from property line.

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Transportation Review

Item #	Complies Y	N	N/A	
				Paving Plan (contd…)
221.				If any part of public sidewalk is on private property it must be placed in a sidewalk easement.
222.				Sidewalks, curb cuts and ramps to be compliant with Americans With Disabilities Act.
223.				If there is an obstruction in the sidewalk, minimum of four feet to be available on at least one side.
224.				Handicap ramps called out with type of each. Landing area and ramp dimensions, spot grades, slopes and orientation to be provided.
225.				Concrete bus pads to be located behind sidewalk at Bus Stop locations. If there is only a sign or bench at the location concrete pad to be 10'X10'.
226.				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")
227.				All storm water curb inlets be shown on paving plans.
228.				Commercial driveways width to be between 24'– 36'with radius of returns minimum 25' unless otherwise approved.
229.				Pavement type and thickness to conform to COT Standard 701-708.
230.				On projects with public asphalt paving following note to be included: Failure to reach average lot density of 92% to 97% will result in a rejection of work.
231.				Driveway spacing and geometry to meet minimum industry standards in relation to adjacent driveways and intersections.
232.				Gated entry at a private street or parking lot to have adequate queuing storage for two vehicles waiting for access.
233.				If existing public pavement is concrete or asphalt overlay over concrete proposed driveway to be shown as concrete.
234.				Maximum sidewalk slope including across driveways to be 2%.
235.				Maximum grade of driveway entrance in Right of Way to be 8%.
				Street Profiles
236.				Design speed to be used: 25 mph for residential streets and 30 mph for collector streets.
237.				Stationing to be clearly shown on paving plan sheets.
238.				All match lines shall have stations shown.
239.				Profiles to be shown directly below plan view.
240.				Horizontal scale 1'=20' (no smaller); Vertical scale 1"=5' (no smaller).
241.				Each profile to be captioned with the correct street name.
242.				All street intersections to be shown with stationing equations and proper street name labels.
243.				Profiles to extend at least 100 ft. beyond ends of paving construction to show tie-in to existing or future pavement or ground topography.

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Transportation Review

Item #	Complies Y	N	N/A	
				Street profiles (contd…)
244.				Proposed Top of Pavement at Centerline (TP), and right and left grade lines to be clearly labeled on each profile.
245.				Elevations to be shown at all 50 ft. stationing increments and at called out features.
246.				Vertical curves to be minimum 50’ in length for residential streets.
247.				Vertical curves to provide elevations at PC, PI, PT, high and low point.
248.				All grades must conform to the minimum 0.75% and maximum 8%.
249.				Vertical curves to be sufficiently distanced (min. 50 ft.) from an arterial street curb line.
250.				Vertical curves to be symmetrical, no asymmetrical curves to be used.
251.				4% maximum grade of intersecting residential streets to be maintained.
252.				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).
253.				Vertical curve data to be provided to show conformance with design standards.
254.				All vertical curves to conform to City of Tulsa requirements for design standards according to the current edition of the AASHTO Guide for Design of Pavement Structures.
255.				All utilities to be shown in plan and profile with cautionary notes included as applicable.
				Intersection Details
256.				Intersection details to be provided for each location at least 150’ in each direction.
257.				All intersection details to be captioned with their correct street names.
258.				Reference stationing to be provided in all details for locating curb returns, street centerlines, medians, islands, and other constructed features.
259.				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**.**
260.				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.
261.				At intersections, the design philosophy shall be “table top” design. The crown from side streets into arterials shall transition to meet through gutter line. Smooth transitions with vertical curves. No grade breaks.
262.				Arrows to be provided showing direction of drainage flow.
263.				Storm water curb inlets must be shown on the intersection details.
264.				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	Lighting, Striping and Signalization
265.				Pavement striping to be shown where necessary (e.g., gore areas, at traffic circles, major transitions, turn lanes), with material and application specifications.
266.				Is project within 500 feet of an intersection that currently has a traffic signal or within 200 feet of any other active traffic control or warning device that is supplied with electrical service?
267.				Is a vehicular or pedestrian traffic signal proposed on this project?
268.				Traffic signal installation to conform to City of Tulsa standards.
269.				Is street lighting proposed on project?
270.				Existing lights that are taken down for the project to be replaced pole for pole
271.				For signalization, plan set to contain traffic signal design and have a sheet that shows pavement markings relational to traffic signal standards layout and signal head spacing.
272.				Is project within a school area that might affect pavement markings or school signage?
273.				Are street name signs required to identify a new street or streets?
274.				Add note: "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 Specification 625 Removal of Traffic Items."
275.				Private street signs should be replaced with black street signs and not red per MUTCD.
276.				Is traffic control signing required on this project?
277.				Are parking meters located in the area? Are existing parking meters being removed?
278.				Is new on-street parking being proposed or existing on-street parking being modified?
279.				Is there roadway channelization islands proposed for this project?