

The following document is a guide for the preparation of plan submittals and is intended to aid in consistent plan reviews.
Please note that site-specific conditions may warrant requirements that are not contained within this document.

Engineering Department Siteplan Review Check List

Project: _____
Owner: _____
Engineer: _____

YES	NO	N/A	GENERAL SUBMITTAL REQUIREMENTS	
☐	☐	☐	1	This checklist filled out and submitted with plans
☐	☐	☐	2	Name of Project (w/ Phase # if applicable)
☐	☐	☐	3	PID# of parcel(s) within project boundaries and adjacent to the project.
☐	☐	☐	4	Developer name, address, contact person with E-mail and phone number.
☐	☐	☐	5	Name and address of design professional(s).
☐	☐	☐	6	Sheet size to be 24" x 36".
☐	☐	☐	7	Date of Drawing / Revisions.
☐	☐	☐	8	Clear vicinity sketch (include adjacent streets and North arrow)
☐	☐	☐	9	Legend
☐	☐	☐	10	North Arrow (all applicable sheets).
☐	☐	☐	11	Signature and seal of NC design professionals on every sheet.
☐	☐	☐	12	Lot layout (building layout if multi-family) with dimensions.
☐	☐	☐	13	A plan view is required for all profile drawings (on the same sheet).
☐	☐	☐	14	The plan view is to be at the top and the profile is to be at the bottom of the sheet and shown in the same direction.
☐	☐	☐	15	Plan/Profile scale (no less than 1"=40' HORIZ., 1"=4' VERT).
☐	☐	☐	16	Elevations shall be labeled in 10' intervals on heavy lines (use 1' intermediate grid line intervals).
☐	☐	☐	17	Plan & profile view data must match.
☐	☐	☐	18	Match lines (w/station numbers on each sheet).
☐	☐	☐	19	Include overall utility plan sheet (with summary of w/s lines by size and length, # MH's & F/H's).
☐	☐	☐	20	Include # of meters by size and type (domestic, irrigation, etc.) on overall utility plan sheet.
☐	☐	☐	21	Bench mark location and datum to be described with true elevations (clearly label on overall plan sheet).
☐	☐	☐	22	Show existing grade on all profiles.
☐	☐	☐	23	All dimensions must be legible.
☐	☐	☐	24	All labels shall be horizontal or vertical (bottom of label to bottom or right side of sheet).
☐	☐	☐	25	Show all existing and proposed utility easements with dimensions.
☐	☐	☐	26	Maintain proper horizontal separation between water, sanitary sewer, and other utilities.
☐	☐	☐	27	Other utility crossings shown in profile view with proper vertical separation (dimension separation @ crossings).
☐	☐	☐	28	Evaluate all water and sewer taps for utility crossing conflicts.
☐	☐	☐	29	Evaluate future practical maintenance access to utilities.
☐	☐	☐	30	Show 100 year flood plain data (fringe line, elevation, floodway, and FEMA panel number).
☐	☐	☐	31	Show delineated wetlands.
☐	☐	☐	32	Clearly indicate project phase lines (include gate valve, temporary blow-off, storm water BMP, temporary turn-around as required)
☐	☐	☐	33	Include USPS cluster box location outside GDUE.
☐	☐	☐	34	Include all relevant details.
☐	☐	☐	36	Demo Plan
☐	☐	☐	37	Document is flattened and free of embedded layers or SHX/AutoCAD text

				NEW STREET INFORMATION
YES	NO	N/A		DRIVEWAYS & PARKING LOTS
☐	☐	☐	38	Label type of curbing and proposed surface type.
☐	☐	☐	39	Private roads, drives, streets and alleys designated as private on plans
☐	☐	☐	40	Street layout w/ names and width shown on plans. If street names are pending show as street A, street B, street C, etc.
☐	☐	☐	41	Show typical design detail for private/public roads
☐	☐	☐	42	Ensure any and all sight distance requirements are met (vertical and horizontal).
☐	☐	☐	43	Dedicate minimum sight distance easements at all street intersections.
☐	☐	☐	44	Review stubs on public roads at property lines for future construction easements.
☐	☐	☐	45	Driveways 25' from R/W at intersections
☐	☐	☐	46	Sidewalk location on plan view.
☐	☐	☐	47	Include signage plan (street signs, stop signs, no parking signs, etc)
☐	☐	☐	48	Note on plat: Any public stub streets are provided for extensions to serve future development.
YES	NO	N/A		PUBLIC WATER LINE INFORMATION
☐	☐	☐	49	Public water line located on the North and East sides of new public streets.
☐	☐	☐	50	Public water line designed at minimum depth (36" if < 10" diameter, 42" otherwise)
☐	☐	☐	51	Public water line deeper than 5' requires approval from Two Rivers Utilities on a case-by-case basis
☐	☐	☐	52	Provide plan/profile for all public waterlines regardless of size.
☐	☐	☐	53	Size & type of public water line in both plan and profile views.
☐	☐	☐	54	Evaluate the need for vertical and horizontal bends.
☐	☐	☐	55	Length of public main between fittings on plan view.
☐	☐	☐	56	List all fittings or appurtenances (size and type) on plan view with station number.
☐	☐	☐	57	Depth of public water line at correct depth (shown on profile).
☐	☐	☐	58	Show water meter locations.
☐	☐	☐	59	Dimension and depict public water line in proper location based upon the street section used.
☐	☐	☐	60	Reduction in waterline sizes to utilize reducer (in lieu of T/2 plug).
☐	☐	☐	61	Proper fire hydrant spacing (must be within 400' of all exterior building walls)
☐	☐	☐	62	Correct amount of gate valves @ all public intersections and out of pavement.
☐	☐	☐	63	Evaluate the need for air release valves (10' elevation change).
☐	☐	☐	64	Evaluate the need for pressure reducers at low elevations and high pressure zones.
☐	☐	☐	65	Blowoff needed if no fire hydrant is within 50' of end of line.
☐	☐	☐	66	Evaluate if blowoff is needed at sag on 12" line. Needed on sag for 16"+.
☐	☐	☐	67	Note if restraining or blocking will be utilized at T's and bends. Show lengths if restraining.
☐	☐	☐	68	Public water line crossings to have 12" verticle separation. Approved sealed alternative design other wise.
☐	☐	☐	69	Private fire hydrants to be painted yellow.
☐	☐	☐	70	Show DIP encasement pipe and restraint at bore. Ensure blocking at Tee doesn't encroach.
☐	☐	☐	71	Waterlines to have bends where radiuses are tighter than (PVC 1,200' - DIP<14" 250' - DIP 14"-36" 400' DIP>36 Engineer Reference)
☐	☐	☐	72	Provide water main calcs.
☐	☐	☐	73	GDUE to be provided for any public water lines and meters not within a public R/W.
☐	☐	☐	74	Commercial properties will require backflow preventors outside of the GDUE.
☐	☐	☐	75	Polywrap required if within 10' of metal gas line.

YES	NO	N/A		PUBLIC SEWER LINE INFORMATION
☐	☐	☐	76	Size & type of sewer line in both plan and profile views.
☐	☐	☐	77	Grade of sewer line in profile view (minimum 0.6%, maximum 10.0%).
☐	☐	☐	78	Invert elevations in profile view.
☐	☐	☐	79	Manholes shown by manhole and station numbers in plan and profile views.
☐	☐	☐	80	Length of main between manholes in plan and profile views, (Max 350' unless outfall)
☐	☐	☐	81	Manhole rim elevations in plan and profile view.
☐	☐	☐	82	Minimum drop "across" manhole of 0.2'.
☐	☐	☐	83	Sewer inverts of different diameters shall match crowns.
☐	☐	☐	84	Minimum ground cover of 36" for all types of sewer line other than ductile iron.
☐	☐	☐	85	Minimum ground cover of 30" if Ductile Iron and in roadway.
☐	☐	☐	86	Outside drop manholes required for drops over 2.5'.
☐	☐	☐	87	"Shade" DIP on profiles.
☐	☐	☐	88	Manhole depths greater than 14' require 5' diameter manhole sections (label in plan/profile).
☐	☐	☐	89	Show sanitary sewer tap locations.
☐	☐	☐	90	If piers are required, city standard detail cited.
☐	☐	☐	91	Location of piers by stations
☐	☐	☐	92	Top of footing to be located a minimum of 1' below the invert of the creek (label elevation).
☐	☐	☐	93	"Show" piles in profile view.
☐	☐	☐	94	Flows the 25 year event under the aerial.
☐	☐	☐	95	Show location, size, length, type, and depth of force main.
☐	☐	☐	96	Force Main to be designed at 5' depth and 5' off edge of pavement where applicable.
☐	☐	☐	97	Label all sealed manholes, show vents in profile view with vent elevation (2' above 100 year elevation).
☐	☐	☐	95	All manholes to be 2' above 100 year flood elevation unless sealed.
☐	☐	☐	96	Minimum 30' GDUE required for SS outside of street R/W. Additional may be required for excessive depth.
☐	☐	☐	97	Depths over 20' require DIP. Depths over 14' in street require all DIP (mainline, taps, etc)
☐	☐	☐	98	DIP for sewer in fill sections.
☐	☐	☐	99	Include sanitary sewer pipe sizing calculations for more than 2,500 bedrooms.

YES	NO	N/A		STORM DRAIN AND EROSION CONTROL INFORMATION
☐	☐	☐	100	Show phase II stormwater as required - Coordinate with Gaston County Natural Resources
☐	☐	☐	101	Evaluate downstream of storm outlet to minimize impacts
☐	☐	☐	102	Submit storm calcs
☐	☐	☐	103	Pipe and structure plans to be shown on grading sheets and utility sheets.
☐	☐	☐	104	Show BMP access easement
YES	NO	N/A		FLOOD STUDY INFORMATION
☐	☐	☐	105	Completed FEMA application form MT1/2.
☐	☐	☐	106	Narrative on project and submittal explaining any adjustments, revisions, or omissions to any models.
☐	☐	☐	107	Hydrologic computations along with digital files of computer models.
☐	☐	☐	108	Hydraulic computations along with digital files of Duplicate Effective, Corrected Effective, and Proposed models used.
☐	☐	☐	109	Certified topographic map with floodplain, floodway, and cross-section delineations.
☐	☐	☐	110	Annotated FEMA FIRM and/or FBFM to reflect changes due to project.
☐	☐	☐	111	Engineers "no-rise" certification.
YES	NO	N/A		MINIMUM GRADING DESIGN STANDARDS (see current grading policy)
☐	☐	☐	112	Detailed grading plan utilizing 1' contours.
☐	☐	☐	113	Show building pads (or building envelopes) with proposed pad elevation or FFE.
☐	☐	☐	114	Retaining walls $\leq$ 8 ft in height.
☐	☐	☐	115	Safety rail/fence specified for all retaining walls $\geq$ 30 inches in height.
☐	☐	☐	116	Grading should not create any sheet or concentrated run off onto adjacent properties creating potential hazards.
☐	☐	☐	117	Provide spot elevations at all intersections.

YES	NO	N/A		OTHER ITEMS:
☐	☐	☐	118	Approved Erosion Control Plan and permit.
☐	☐	☐	119	Temporary construction and/or off-site easement deeds submitted.
☐	☐	☐	120	R/W documentations for all off-site street improvements.
☐	☐	☐	121	NCDOT driveway permit and encroachment applications.
☐	☐	☐	122	Private utility encroachments as required. (Duke Power, AT&T, PSNC, Bell South, Colonial, etc.)
☐	☐	☐	123	Submit sealed engineering design tables and calculations. These must match the plans.
☐	☐	☐	124	Wetlands delineation map and associated permit(s).
☐	☐	☐	125	Legible storm drainage area map and associated calculations (24"x36", areas, structure #'s).
	☐	☐	128	Provide documentation from state or county entity of approval for private water and sewer.
☐	☐	☐	129	Include digital copy of the construction documents (with "final" submittal).
YES	NO	N/A		COVER SHEET NOTES:
☐	☐	☐	130	In case of conflict, City of Gastonia specifications and details shall prevail and the City Engineer or their representative shall be the final arbiter of said conflict.
	☐	☐	131	As-Builts and certifications must be submitted and approved by City prior to issuance of COC.
☐	☐	☐	132	All deeds and easements required by the City of Gastonia must be recorded prior to issuance of Certificate of Compliance.
☐	☐	☐	133	Authorization to construct is not valid until pre-construction meeting has been held with City of Gastonia staff.
☐	☐	☐	134	Site Plan approval does not authorize any grading on adjacent properties.
				GENERAL PUBLIC STORM DRAINAGE SYSTEM NOTES
☐	☐	☐	135	MAXIMUM INTERNAL VELOCITY IN RCP SYSTEMS SHALL BE 10 FT./SEC. AND 5FT./SEC. AT OUTLET
☐	☐	☐	136	THE FIELD INSPECTOR, WITH APPROVAL FROM THE CITY ENGINEER, SHALL HAVE THE AUTHORITY TO REQUIRE ADDITIONAL RIP-RAP ALONG DRAINAGE AREAS WHERE WARRANTED BY POSSIBLE EROSION OR WHERE DRAINAGE AREAS CROSS OTHER UTILITIES.
☐	☐	☐	137	THE FIELD INSPECTOR, WITH APPROVAL FROM THE CITY ENGINEER, SHALL HAVE THE AUTHORITY TO REQUIRE EXTENSIONS FROM THE PROPOSED STORM DRAINAGE SYSTEMS WHERE FIELD CONDITIONS SO WARRANT.
☐	☐	☐	138	STORM DRAINAGE SYSTEMS SHALL BE DESIGNED TO TERMINATE SO AS NOT TO REQUIRE TAIL DITCHES WITHIN THE 100 YEAR FLOOD PLAIN AREA. IF EXTENUATING CIRCUMSTANCES EXIST, ANY TAIL DITCHING WITHIN THE 100 YEAR FLOOD PLAIN SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
☐	☐	☐	139	OPEN DRAINAGE SYSTEMS RECEIVING GREATER THAN ONE (1) ACRE OF DRAINAGE AREA SHALL NOT BE ALLOWED TO DISCHARGE OVER THE STREET CURB WITHOUT A STORM DRAINAGE SYSTEM DESIGNED IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. OPEN DRAINAGE SYSTEMS OF GREATER THAN ONE (1) ACRE OF DRAINAGE AREA SHALL BE PIPED WITH STORM DRAINAGE SYSTEMS, IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS, BEHIND THE RIGHT-OF-WAY, OR AS POLICY MAY DICTATE AT THE REAR PROPERTY LINE.
☐	☐	☐	140	THE DEVELOPER'S ENGINEER SHALL BE REQUIRED TO ASSURE IN AREAS BEING DEVELOPED, THAT ADEQUATE DRAINAGE FACILITIES WILL BE INSTALLED, AS PER CITY STANDARDS AND SPECIFICATIONS, AT ALL STREET INTERSECTIONS SO AS TO PREVENT PONDING OF WATER IN THE STREET INTERSECTION CURBS.
☐	☐	☐	141	NOTE: Construction <u>SHALL NOT</u> begin prior to a preliminary construction inspection of the site. Contact the Construction Engineer / Right-of-Way Administrator at (704) 866-6015 at least one (1) working day prior to beginning construction. All construction to conform to a site plan approved by the City Engineer and Planning Director.

YES	NO	N/A		ADD NOTES:
			142	All water and sewer taps to be installed by developer's utility contractor with approval of Two Rivers Utilities / City of Gastonia.
			143	Submit tap application and tap materials to Two Rivers Utilities for review after plans are approved. Tap application and tap materials approval must be obtained before pre-construction meeting is scheduled and/or taps are installed. Tap materials should be submitted separate from water & sewer main construction materials. Do not submit materials sheets for items selected from the Approved Materials Checklist.
				SEWER
☐	☐	☐	144	Contractor to provide video of completed sanitary sewer as required by the COG.
☐	☐	☐	145	Contractor is to provide compaction testing for the installation of all sanitary sewer lines in fill areas.
				WATER
☐	☐	☐	146	10" or smaller diameter water to be placed at 36" depth. Water 12" or greater in diameter to be placed at 42" depth. (typical)
☐	☐	☐	147	Pipe deflection at joints is limited to 1/2 the manufacturer's recommended degree of deflection.
	☐	☐	148	All backflows must be tested by a certified backflow tester upon installation and yearly thereafter. Submit passing test reports to Two Rivers Utilities.
☐	☐	☐	149	All public waterline blocking must be truck-mix.

CityStaff: Move to applicable Master Project if relevant

Reviewed By: _____

Date: _____