City of Grapevine, Texas

CONSTRUCTION PLAN REVIEW CHECKLIST FOR PRIVATE DEVELOPMENT

Updated June 7, 2018

Public Works Department – Engineering Division
200 South Main Street
Grapevine, Texas 76051
Tele: 817.410.3136 – Fax: 817.410.3003

ADDITION NAME: _____

ENGINEER CONTACT/PHONE #: _____

CITY USE ONLY:

Date Submitted to City: _____

Reviewed By: _____

Date Review Completed: _____

PART I GENERAL

ENGR CITY A. GENERAL

____	____	1.	Plans submitted on 22” x 34” sheets.
____	____	2.	One (1) plan set and one (1) CD in PDF.
____	____	3.	Add Project Job No. D_____ identified on right border of Cover Sheet when rolled up.
____	____	4.	North arrow and scale of drawing shown on each sheet.
____	____	5.	Only benchmark(s) tied to a CITY GPS Benchmark datum are to be shown on each sheet.
____	____	6.	Title blocks shown on each sheet excluding cover sheet.
____	____		a. Title block completely filled out.
____	____		b. Title agrees with filed Final Plat.
____	____	7.	Engineer's seal, signature, and date on each sheet after all City comments have been addressed.
____	____	8.	Copy of filed Final Plat with signatures shall follow the coversheet.
____	_____	9.	Copy of the City approved Site Plan shall follow the Final Plat.
____	____	10.	Easements shown on filed Final Plat correspond with locations of proposed utility lines. An Amended Final Plat will be required prior to construction if easement locations change.
____	____	11.	Erosion Control Plan submitted.

____ ____ 12. Lot Grading Plan submitted. No grading on adjacent property without owner's permission.
____ ____ 13. All lettering shall be 0.1" minimum size.
____ ____ 14. Barricading Plan shown on plans.
____ ____ 15. Proposed street light locations shall be shown. A contract between T.U. Electric and the owner shall be signed prior to final acceptance of the project.
____ ____ 16. Are offsite easements required?
____ ____ 17. Add General Note to Plans: "The Contractor shall be responsible for obtaining a two (2) year, 25% Maintenance Bond on all water, sanitary sewer, storm drainage, pavement and excavation/fill within Right of Way or easements."
____ ____ 18. Add General Note to Plans: "The City of Grapevine's Inspector overtime policy allows the Contractor to work from 7 a.m. to 7 p.m., Monday through Saturday. No work is allowed on Sundays. Saturday work requires a four (4) hour minimum charge. Overtime charges of $45 per hour shall be paid by the Contractor to the City for work outside the normal work week (i.e. 8 a.m. to 5 p.m., Monday thru Friday)."
____ ____ 19. Are TxDOT permits required? (Driveway, Drainage, etc.)

ENGR CITY B. COVER SHEET

____ ____ 1. Location map of project.
____ ____ 2. Index to drawings.
____ ____ 3. Name, address, telephone number and email address of the Developer.
____ ____ 4. Name, address, telephone number and email address of the Engineer.
____ ____ 5. Project name (same as Final Plat) identified on right border of cover sheet.
____ ____ 6. Add Project Job No. D_____ identified on right border of cover sheet when rolled up.

PART II WATER SYSTEM IMPROVEMENTS

CITY

CITY USE ONLY: Proposed water system meets the requirements of the Water Distribution System Master Plan and the 10-Year Water and Sewer Plan.

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ENGR CITY A. GENERAL

____ ____ 1. General notes for water system construction (No water jetting allowed).

ENGR	CITY		
____	____	2.	All water lines within easements are inspected by Public Works. Private lines (outside of easements, beyond meters, not just within 5' of the building) are not inspected by Public Works. These lines shall be designed in accordance with the requirements of the City of Grapevine Building Department.

ENGR CITY B. PLAN VIEW

____	____	1.	Size, type, and pressure class of all proposed water mains identified.
____	____	2.	Location and size of all existing on-site water mains shown.
____	____	3.	Location and size of all existing off-site water mains within 200' of property shown.
____	____	4.	12" water lines required in industrial areas. Variations will be based on 1,500 GPM availability during peak demand periods with a minimum residual pressure of 30 psi.
____	____	5.	Profile and grades required for water mains 12" or greater.
____	____	6.	Conflicts with existing or proposed utilities shown.
____	____	7.	When crossing other utilities or storm drains, state whether water line goes over or under.
____	____	8.	Names and phone numbers of utility company contacts having utilities in the area.
____	____	9.	Standard construction detail of service line locations.
____	____	10.	Location of existing and proposed sanitary sewer lines.
____	____	11.	Location of existing and proposed storm drainage lines and inlets.
____	____	12.	Location of existing and proposed pavement and R-O-W.
____	____	13.	Profiles of proposed water lines crossing channel/ditch sections.
____	____	14.	All lot and block numbers shown.
____	____	15.	Location, width, and type of easements.
____	____	16.	Water mains stubbed out to undeveloped adjacent property according to the Master Water Distribution Plan and/or City direction.
____	____	17.	Proposed water main dimensioned to R-O-W.
____	____	18.	Proposed water main located with the centerline 3.5' from back-of-curbs on the north side of east-west streets and on the east side of north-south street. Variations require City staff approval.
____	____	19.	Gate valves generally located outside paved streets 5' from back of curb return to the intersecting street (generally located at street intersections, except for fire hydrant leads). Unless approved by City, valves shall be located at northeast quadrant of street intersections.
____	____	20.	Extensions from existing mains start with a gate valve. Gate valve also provided at the end of lines where future extensions are to take place.
____	____	21.	Gate valves shall not be located in sidewalks or barrier-free ramps.
____	____	22.	Proposed water services dimensioned to lot corners if services are not in standard locations (Centerline of lot).
____	____	23.	Legend, identify existing & proposed lines.
____	____	24.	Water system has a two (2) way feed.
____	____	25.	Assure that water main can be "valved down" without putting more than one fire hydrant out of service.

____ ____ 26. Fire Hydrants shown:
Residential: 500' along the main.
(500' maximum hose laying length)
Non Residential: 300' along the main.
(500' maximum hose laying length)

____ ____ 27. All fire hydrants have a clear 36" operating radius for the top nut.

____ ____ 28. Fire hydrants shall be located 2'-0" behind the pavement edge and shall not be located in the sidewalk.

____ ____ 29. Water lines shall be concrete encased when located between two residential lots.

____ ____ 30. Thrust blocking specified and in accordance with City standards (all bends, tees, crosses, plugs, fire hydrants, etc.).

____ ____ 31. Water meters shall be placed on the property lines whenever possible. Public Works needs to authorize any variations.

____ ____ 32. All water meters 2" or larger shall have a bypass installed.

____ ____ 33. All water services larger than 1" shall have a gate valve installed adjacent to the main. Water services 1" and smaller can use a corporation stop.

ENGR CITY C. DETAILS

____ ____ 1. Water system standard construction details meet all City requirements.

____ ____ 2. Show standard trench backfill details and state compaction requirements.

PART III SANITARY SEWER SYSTEM IMPROVEMENTS

CITY

CITY USE ONLY: Proposed sanitary sewer system meets the requirements of the Wastewater Collection System Master Plan and the 10-Year Water and Sewer Plan.

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ENGR CITY A. GENERAL

____ ____ 1. General notes for sanitary sewer system construction (No water jetting allowed).

____ ____ 2. Names and phone numbers of utility company contacts having utilities in the area.

____ ____ 3. Table of lot numbers, line numbers, and sanitary sewer main station numbers for sanitary sewer service connections.

____ ____ 4. All sanitary sewer lines within easements are inspected by Public Works. Private sewer lines (outside of easements, not just within 5' of the building) are not inspected by Public Works. These lines shall be designed in accordance with the requirements of the City of Grapevine Building Department.

ENGR CITY B. PLAN VIEW

____ ____ 1. Location and size of all existing on-site sanitary sewer lines shown.
____ ____ 2. Location and size of all existing off-site sanitary sewer lines within 200' of property shown.
____ ____ 3. Specify at minimum SDR-35 PVC pipe shall be used. SDR-26 pipe required for lines deeper than 20' or within 9' of a water line.
____ ____ 4. 6" minimum lines in residential areas (except apartments). 8" minimum lines in commercial, industrial, and apartment areas.
____ ____ 5. Conflicts with other existing or proposed utilities shown.
____ ____ 6. Lines located in the street halfway between the street centerline and curb on the south side of east-west streets and on the west side of north-south streets.
____ ____ 7. Dimensions from lot lines to service lines if service line is not in standard location (10' downstream of centerline of lot).
____ ____ 8. Residential service lines are SDR-35, 4" minimum. Non-residential service lines are 6" minimum and shall be connected to the main via a manhole.
____ ____ 9. Location of existing and proposed water mains (Dimensioned from ROW).
____ ____ 10. Location of existing and proposed storm drainage lines and inlets.
____ ____ 11. All lot and block numbers shown.
____ ____ 12. Location, width, and type of easements.
____ ____ 13. Sanitary sewer lines stubbed out to undeveloped adjacent property.
____ ____ 14. Proposed sanitary sewer line dimensioned to centerline of street.
____ ____ 15. Centerline stationing shown and related to profile.
____ ____ 16. Manholes and clean-outs stationed.
____ ____ 17. Legend (If applicable).
____ ____ 18. Manholes located at 500' maximum spacing and at all sewer line intersections, grade changes, and alignment changes.
____ ____ 19. Clean-outs located at maximum 250' from a manhole.
____ ____ 20. Call out any drop connections or water tight manhole covers.
____ ____ 21. Show GPS benchmarks on all sheets.

ENGR CITY C. PROFILE VIEW

____ ____ 1. Proposed grades are greater than minimum established and velocity in line does not exceed 10 fps.
____ ____ 2. Elevation of existing and proposed ground at centerline pipe.
____ ____ 3. Rim and flowline elevations at each manhole. Provide flowline elevations for all intersecting pipes.

_____	_____	4.	Flowline elevations at 50-foot intervals (Max).
_____	_____	5.	Fill areas noted.
_____	_____	6.	Length, type, and size of pipe between manholes.
_____	_____	7.	Location and elevation of water mains crossed by sanitary sewer line.
_____	_____	8.	Location and elevation of storm drainage lines crossed by sanitary sewer line.
_____	_____	9.	Locations of concrete encasement and/or concrete caps.
_____	_____	10.	Location and elevation of existing and/or proposed pavement sections crossed.
_____	_____	11.	Vertical scale of drawing.
_____	_____	12.	Vertical and horizontal clearance between utilities meets current TX Department of Health and TX Water Commission requirements.
_____	_____	13.	Show 100-year water surface elevation for ultimate conditions located in flood prone areas.

ENGR CITY D. DETAILS

_____	_____	1.	Standard Construction Detail of service line locations.
_____	_____	2.	Sanitary sewer system standard construction details meet all City requirements.
_____	_____	3.	Show standard trench backfill details and state compaction requirements.
_____	_____	4.	Steps are not allowed in sanitary sewer manholes.
_____	_____	5.	Show diameter of proposed manholes (4-foot minimum). Manhole covers shall have a 24" minimum diameter.
_____	_____	6.	Manholes greater than 4’ diameter require an eccentric cone
_____	_____	7.	Drop manholes require a minimum 5’ diameter; show drop inside of manhole.
_____	_____	8.	Manholes deeper than 10’, serving lines greater than 12”, or containing multiple pipe connections require a minimum 5’ diameter.

PART IV STORM DRAINAGE IMPROVEMENTS

If there is a FEMA or City of Grapevine floodplain located within the limits of the subject property, then the engineer will need to obtain a Floodplain Reclamation packet from the Public Works Department at 200 S. Main Street, Grapevine, Texas.

CITY	
_____	**CITY USE ONLY:** Proposed drainage improvements are in accordance with the Master Drainage Plan.

ENGR CITY A. DRAINAGE AREA MAP

_____	_____	1.	Show existing and proposed storm drainage lines and inlets.
_____	_____	2.	Indicate sub areas for each inlet or set of inlets and off-site area.
_____	_____	3.	Zoning indicated on all off-site drainage areas.

_____ _____ 4. Show points of concentration for each drainage sub area.
_____ _____ 5. Indicate runoff at all inlets, dead-end streets, and alleys or to adjacent subdivisions or undeveloped tracts.
_____ _____ 6. Runoff calculations provided for the 5-year and 100-year storms.
_____ _____ 7. For cumulative runoff, show calculations.
_____ _____ 8. Indicate all crest, sags, and street intersections with flow arrows.
_____ _____ 9. Provide the calculations for inlet time and pipe travel.
_____ _____ 10. Legend.
_____ _____ 11. Hydrology summary table.
_____ _____ 12. Design criteria meets City requirements.
_____ _____ 13. Street and R-O-W capacities tabulated.
_____ _____ 14. On-site and offsite topography must show total drainage area for project.
_____ _____ 15. Show all existing fences.
_____ _____ 16. Show areas of dense tree coverage.
_____ _____ 17. Flow arrows for surface drainage.
_____ _____ 18. Delineation of drainage areas sufficient.
_____ _____ 19. Cross sections of open channels and show limits of grading.
_____ _____ 20. All lot and block numbers shown.
_____ _____ 21. Drainage easements provided for all public drainage (related to plat):
Open, unlined channels – 30’ wider than top of channel
Open, lined channels – 15’ wider than top of channel
Enclosed system – 15’ minimum (depending on size and depth)
_____ _____ 22. Increasing drainage onto downstream property requires a downstream drainage letter from all downstream owners accepting the increased runoff. Detention/retention may be used in lieu of the downstream drainage letter.
_____ _____ 23. Permission to "Grade to Drain" may be required from downstream owners.
_____ _____ 24. Show that existing downstream drainage systems are adequate to contain the Q100 storm. If downstream drainage is not adequate, then developer may be required to improve downstream systems.

ENGR CITY B. STORM SEWER PLAN VIEW

_____ _____ 1. Plan of all storm drainage pipelines and laterals.
_____ _____ 2. Specify at least Class III pipe (Class IV, etc if needed).
_____ _____ 3. Provide inlets where street capacity (i.e. top of curb) is reached.
_____ _____ 4. Indicate property lines along storm drainage lines.
_____ _____ 5. Indicate location, size, and type of easements along proposed storm drainage lines.
_____ _____ 6. Indicate size of inlet, lateral size and flowline, paving station, and top of curb elevation.
_____ _____ 7. Use recessed inlets for thoroughfares. Local streets can use standard inlets.
_____ _____ 8. Indicate the runoff concentrating at all inlets and direction of flow. Show runoff for all stub outs, pipes, and intakes.
_____ _____ 9. Locations and cross sections of positive overflow swales required at low points. (One (1) foot deep & ten (10) foot wide minimum)

____	____	10.	Minimum finished floor elevations where lots are adjacent to floodplain, creeks, and any area subject to flooding. These elevations must match final plat.
____	____	11.	All lot and block numbers shown.
____	____	12.	General notes pertaining to storm drainage improvements.
____	____	13.	Location of existing and proposed R-O-W and pavement.
____	____	14.	Type and size of existing and proposed headwalls.
____	____	15.	Flow arrows for surface drainage.
____	____	16.	Location and size of grouted riprap at outfalls.
____	____	17.	All utility crossings shown.
____	____	18.	90-degree turns in storm drainage system or outfall are discouraged. Junction box or manhole must be provided in all cases.
____	____	19.	Outfalls to ditches are encouraged to be placed in conjunction with driveway culverts. This reduces the number of headwalls in the ditch.
____	____	20.	Location and size of energy dissipaters if required.
____	____	21.	Storm drainage discharge at the flowline of creeks and channels with the last 20-feet at a slope not to exceed one percent, unless otherwise authorized.
____	____	22.	Provide concrete TxDOT headwalls at all outfalls.
____	____	23.	Intercept laterals at 60 degrees with trunk lines, if possible.
____	____	24.	Curb inlets shall be recessed two (2) feet.
____	____	25.	Curb inlets have a minimum throat opening of 10 feet by 6".
____	____	26.	Note provided stating that the Contractor shall install a permanent bench mark monument(s), to be furnished by the City, in inlets per plans as directed by the City. The Owner's surveyor shall establish the bench mark elevation for "As Builts".
____	____	27.	Show manhole or junction box locations at 400-foot spacing for lines 24" or less and as needed on larger lines with a maximum of 800 foot between manholes or junction boxes.
____	____	28.	All earthen channels lined with erosion control blanket such as "Curlex Blanket".
____	____	29.	Underground storm sewers shall be used for all flows up to and including the equivalent capacity of a 72” conduit with an exit velocity of flowing full of 3’ per second. Lined channels may be used for flows exceeding a 72” conduit capacity. For flows exceeding a 96” conduit capacity, unlined channels may be used.
____	____	30.	All unlined channels shall have 15’ vehicle accessible areas on both sides of the channel. Lined channels require 15’ access on one side.
____	____	31.	Side slopes meet minimum requirements: 2:1 for lined channels 3:1 for unlined channels
____	____	32.	8” grouted rip-rap provided at all outfalls. (length specified)

ENGR CITY C. STORM SEWER PROFILES

____	____	1.	Show all hydraulics, velocity head changes, gradients, computations and profile outfall with typical section and computations.
____	____	2.	Show laterals on trunk lines with stations.

_____ _____ 3. Show 100-year water surface elevation at outfall of storm drainage system.
_____ _____ 4. Grades of existing and proposed pavement.
_____ _____ 5. Vertical and horizontal scale of drawing.
_____ _____ 6. Proposed grades of existing and proposed storm sewer lines.
_____ _____ 7. Location and elevation of 100-year H.G.L.

_____ _____ 8. Elevation of existing and proposed ground and pavement over proposed pipelines.
_____ _____ 9. Top and flowline elevations of inlets.
_____ _____ 10. Top and flowline elevations of area drop inlets.
_____ _____ 11. Flowline elevations at 100-foot intervals (Max).
_____ _____ 12. Fill areas compaction noted.
_____ _____ 13. Length, type, slope, and size of pipe between inlets or junction boxes.
_____ _____ 14. Diameter of proposed junction boxes (4-foot min.).
_____ _____ 15. Location and elevation of water mains crossed by storm sewer lines and inlets (Concrete encase if less than 1-foot).
_____ _____ 16. Location and elevation of sanitary sewer crossed by storm sewer lines (Concrete encase if less than 1-foot).
_____ _____ 17. Locations of concrete encasement and/or concrete caps.
_____ _____ 18. Provide lateral profiles for all laterals.
_____ _____ 19. Provide 8" minimum diameter grouted rock rip-rap at all outfall conditions.

ENGR CITY D. DETAILS

_____ _____ 1. Drainage system standard construction details meet all City requirements.
_____ _____ 2. Show standard trench backfill details and state compaction requirements.

PART V PAVING IMPROVEMENTS

CITY

_____

CITY USE ONLY: The street widths and rights-of-way meet the minimum requirements of the Master Thoroughfare Plan.

ENGR CITY A. PLAN VIEW

_____ _____ 1. General Notes for paving.
_____ _____ 2. Centerline stationing shown and related to profile.
_____ _____ 3. All lot and block numbers shown.
_____ _____ 4. All required sidewalks shown (4’ on local and 5’ on thoughfares).
_____ _____ 5. Intersecting streets.
_____ _____ 6. Type and width of pavement.

_____ _____ 7. Type and width of sidewalks.
_____ _____ 8. Spot elevations in ditches.
_____ _____ 9. Curb and gutter shown for all streets.
_____ _____ 10. Dummy joints and expansion joints for the curb and gutter, sidewalks, and street shown.
_____ _____ 11. Washed aggregate driveway approaches, sidewalks or curb and gutter are not allowed.
_____ _____ 12. Pavement headers at dead ends.
_____ _____ 13. Location and size of inlets.
_____ _____ 14. Paving station at the center of each inlet.
_____ _____ 15. Top of curb elevation at each inlet.
_____ _____ 16. Pavement properly dimensioned to R-O-W.
_____ _____ 17. Radii of curves at centerline stations.

_____ _____ 18. Radii of centerline curves meet requirements

	Design Speed	Centerline Radius
Major Thoroughfare, Type A & B	55 MPH	2,000’
Minor Thoroughfare, Type C & D	45 MPH	1,125’
Collector Streets, Type E & F	40 MPH	800’
Residential Streets, Type G	30 MPH	300’

_____ _____ 19. Top of curb elevations at quarter points on cul-de-sacs.
_____ _____ 20. Top of curb elevations at PC's.
_____ _____ 21. Top of curb elevations at PT's.
_____ _____ 22. Drainage clarified by flow arrows and spot elevations.
_____ _____ 23. Barrier free sidewalk ramps at street intersections (three sidewalk ramps are required at tee intersections). Show R.O.W. corner clips.
_____ _____ 24. Traffic control details shown (i.e. stop bars, striping, buttons).
_____ _____ 25. **Proper sight distance shall be provided at all intersections. The required sight distance for each intersection shall be calculated using AASHTO design criteria. Within the limits of the required sight distance triangles, special attention should be paid to the installation of future fencing and/or landscaping.**
_____ _____ 26. Check for any place water might pond. Are inlets located at sag points on vertical curves?
_____ _____ 27. Check ends of project for drainage.
_____ _____ 28. Median modifications on existing thoroughfares.
_____ _____ 29. Show existing driveways and inlets on both sides of street at all proposed median openings.
_____ _____ 30. Dowel bars into existing pavement where required when abutting with new construction .

ENGR CITY B. PROFILE VIEW

_____ _____ 1. Vertical curves meet design criteria. Do vertical curves meet minimum sight distance requirements for design speed?

_____	_____	2.	Profile shown at existing left and right ROW and proposed left and right top of curb.
_____	_____	3.	Fill areas checked for drainage.
_____	_____	4.	Curb PI's for intersecting streets shown.
_____	_____	5.	Minimum street grade is 0.60%.
_____	_____	6.	Maximum street grades are 5%, 7.5% and 10% for thoroughfare streets, collector streets and residential streets, respectively.
_____	_____	7.	Grade changes with an algebraic difference greater than 1% connected with vertical curves.
_____	_____	8.	Intersections designed to avoid abrupt grade changes through the intersection. (Street crowns may be reduced to ½ of normal crown in the intersection to accomplish a smoother grade change.)
_____	_____	9.	Valley gutters are not allowed to extend through intersections. Curb inlets need to be installed upstream from intersections to collect storm drainage.

ENGR CITY C. TYPICAL PAVEMENT SECTION

_____	_____	1.	Typical section.
_____	_____	2.	Pavement cross slopes and crown specified.
_____	_____	3.	Centerline dimensioned to ROW lines and back of curbs.
_____	_____	4.	Detail of pavement reinforcing and subgrade shown.
_____	_____	5.	Location and detail of sidewalks.
_____	_____	6.	Density requirements (95% Standard Proctor within street R.O.W.).
_____	_____	7.	Typical section for left turn lanes.
_____	_____	8.	ROW drains into pavement.
_____	_____	9.	Size and spacing of reinforcing steel shown.
_____	_____	10.	A subgrade note shall be placed on the plans that states: "A Geotechnical Professional Engineer will recommend to the City of Grapevine the stabilization requirements prior to starting street construction".