Revised04/17/2020
For questions, contact (713) 802-5620

TxDOT Houston District Permits
Drainage/ Hydraulic Checklist
& Drainage Summary Table Required for All Projects with Drainage to TxDOT

Please visit the following Link for the latest Houston District Hydraulic Section Drainage Criteria: https://www.txdot.gov/inside-txdot/district/houston/guidelines-and-criteria.html

Instructions: This checklist must be completed and submitted for ALL access driveway, street tie-in, or drainage-only permit applications. Check the applicable boxes, or leave blank if not applicable.

Miscellaneous TxDOT As-Built drawings for Drainage Area and Hydraulic Computations (Please e-mail your request to: Hou_PlanRequest@Txdot.gov)	Applicant	TxDOT Reviewer
Graphical scale and north arrow (required on all civil plan sheets)		
Symbols and legend		
Project location map		
Benchmark with elevation and Datum reference		
Signed and sealed boundary & topographic map with effective Flood Insurance Rate Map (FIRM) information		
Total development acreage and type of development		
Is the subject site crossed by jurisdictional waters? If so, have all necessary permits been secured?		
Is the subject site receiving drainage from TxDOT ROW? If so, consult with hydraulics section prior to final design.		
Is the subject site receiving offsite drainage via a TxDOT cross drainage structure? If so, then the proposed plan must clearly show that prescriptive water rights are maintained, and the drainage conveyance will not be diminished by the proposed development.		
Amount of the TxDOT frontage either from survey map or scaled from as-built plans		
Proposed drainage tie-in (details/cross section and elevations)		
Proposed restrictor detail (NOTE: Restrictor shall be accessible to TxDOT inspectors, otherwise engineering justification is required on the drainage plan)		
Proposed detention areas (ponds/parking/underground vault, etc.) cross sections with 100- yr. Water Surface Elevation (WSE)		
Storm Water Pollution Prevention Plan (SW3P)		
Applicable standard details and construction notes		

Pump Discharge – Please refer to the "Pump Discharge Criteria" and consult with the TxDOT Houston District Hydraulic Section prior to detail drainage system design. General criteria for projects with pump discharge to TxDOT: • Earthen detention ponds minimum side slopes will be 4:1 • Maximum pumped discharge will not exceed 20% of the allowable gravity discharge • A return line to circulate any discharge exceeding the allowable pump discharge back to the pond • Automatic shut-down device to turn off all pumps when TxDOT drainage system capacity is exceeded NOTE: During construction care must be taken to minimize the discharge of sediments such as silt, soil and sand to the TxDOT right of way. In addition to the standard SWPPP practices, a temporary settling basin should be constructed on the private site to receive discharge from pumped dewatering operations to allow sediments to settle prior to draining to the TxDOT right of way. During construction site dewatering operations shall not be pumped or allowed to drain directly to the TxDOT right of way without the use of sediment controls.		

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Hydrology	Applicant	TxDOT Reviewer
NOTE to Land Development Engineers: Beginning March 13, 2020, All New Projects that are Submitted must use NOAA ATLAS 14 Updated Rainfall Data for Site Peak Flows and Required Detention Volume Calculations. Projects already substantially complete using the old e,b,d values will continue to be accepted until close of business March 31, 2020. Please Contact the Houston District Hydraulic Section for Additional Information and Related Questions.		
Any diversion or re-routing of natural flow pattern in proposed condition Existing 10-yr and 100-yr storm events runoff (Q-e) which currently drains to TxDOT right-of- way (ROW)		
Existing off-site drainage area map and runoff calculations (Q-os)		
TxDOT allowable discharge (Q-a) which is the maximum discharge allowed through primary restrictor (NOTE: in lieu of as-built plan: 2-yr design, C=0.65 and area of 150-ft strip fronting the TxDOT ROW may be used for the site's allowable discharge)		
Developed 10-yr and 100-yr storm events runoff (Q-d).		
Proposed site discharge (Q-p) which shall not exceed Q-e and Q-a.		
All pertaining hydrologic parameters and assumptions used in calculations (e.g. flow velocities, time of concentration, path of sheet flow, land cover, type of development, design rainfall depth & losses, IDF factors, % or acreage of existing & proposed impervious cover, storm event & duration, runoff coefficient (C) etc.) NOTE: For dry, grass lined ponds with side slope ≥ 2:1, C = 0.75 shall be used, and C = 0.90 for all other types of detention ponds		
Hydraulics	**Applicant**	**TxDOT Reviewer**
Restrictor/outfall pipe calculations (e.g., Orifice, culvert, Weir, combination, etc.)		
Required Detention Volume Calculations: Acceptable Methods: a) Malcom b) Triangular (NOTE: Please consult with Houston District Hydraulic Section before using other methods)		
Proposed detention volumetric calculations		
Proposed detention storage/stage/discharge table and supporting calculations, for the 10-yr and 100-yr storm events		
Internal drainage system hydraulic calculations		
On-site 100-yr sheet flow analysis. (100-yr HGL may be used for sheet flow analysis) NOTE: A grading plan with sheet flow arrows that clearly shows the path of the flow to the detention pond may be used in lieu of the analysis.		
Off-site 100-yr sheet flow analysis (if applicable)		
Tail water (TW) elevation(s) used in hydraulic calculations		
Open channel hydraulic calculations (if applicable)		

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Restrictor (if applicable)		
Grading Plan	Applicant	TxDOT Reviewer
Building finished floor elevation (FFELEV)		
Proposed driveway elevations at the high point and where it ties into the existing roadway		
Proposed top of grate inlets, top of pavement and curb elevations		
Finished grade elevations on the perimeter (property line) of the site		
Elevations of the proposed detention pond top bottom, flowline, etc.		
Detention pond 10-yr and 100-yr design WSE		
Detention pond static WSE, if a wet pond proposed		
Ditch re-grading		
Design sheet flow arrows		
Drainage Plan	Applicant	TxDOT Reviewer
Drainage Summary Table provided on the plan as required		
Existing and proposed storm sewer layout, pipe sizes, slopes, and material Proposed detention pond layout (NOTE: 10-ft minimum maintenance berm of distance from the detention pond top of bank to the TxDOT right-of-way is required)		
Existing and proposed drainage junction box/manhole/inlets showing type, size, top, and flowline elevations		
Extreme event sheet flow arrows		
Restrictor pipe location and detail (NOTE: Restrictor shall be inside private property)		
All pertaining hydraulic calculations		
Flood plain information		

DRAINAGE SUMMARY TABLE (APLICABLE TO PROJECTS WITH DRAINAGE TO TxDOT)

Please copy and paste the completed table onto the drainage sheet

TxDOT Tracking number (TR#)	
Highway	
TxDOT frontage	FT
TxDOT Area (the strip of site within 150-ft frontage)	AC
Total tract area based on submitted survey map	AC
Proposed disturbed area	AC
Project contributing drainage area to TxDOT	AC
Off-site contributing drainage area (if applicable)	AC
Increased impervious area	AC
10-yr required detention volume	AC-FT
10-yr proposed detention volume	AC-FT
10-yr design W.S.E.	FT
10-yr Pre-developed peak flow	CFS
10-yr Post-developed peak flow (Before de te nti on/restrictor)	CFS
10-yr Proposed discharge to TxDOT R.O.W. (With detention/restrictor)	CFS
100-yr required detention volume	AC-FT
100-yr proposed detention volume	AC-FT
100-yr design W.S.E.	FT
100-yr Pre-developed peak flow	CFS
100-yr Post-developed peak flow (Before de te nti on/restrictor)	CFS
100-yr Proposed discharge to TxDOT R.O.W. (With detention/restrictor)	CFS
TxDOT as-built or calculated allowable discharge	CFS
Primary tie-in/outfall structure size	Inch
Primary restrictor size	Inch
Primary restrictor maximum discharge	CFS
Secondary outfall device size (If applicable)	CFS
Secondary outfall discharge (If applicable)	CFS
Maximum combined pumped discharge (If applicable)	GPM (CFS)
% Pumped discharge volume (If applicable)	AC-FT
Effective gravity discharge elevation (If applicable)	FT
B.F.E. per effective FIRM (If applicable)	FT
Proposed fill below B.F.E. (If applicable)	AC-FT
Proposed cut below B.F.E. (If applicable)	AC-FT