Revised 07/01/2025

TxDOT Houston District Permits
Drainage / Hydraulics Checklist

Please visit the following link for the latest Houston District Hydraulics Section Drainage Criteria:
https://www.txdot.gov/about/districts/houston-district/contractor-information.html#drainage

Instructions: This checklist must be completed and submitted for **ALL access driveway, street tie-in, turn lanes, commercial, or drainage-only permit applications**. Fill the boxes to confirm all applicable items are checked and included by "Yes", "No", or "N/A" if not applicable.

For questions contact HOU_HYD_Permits@txdot.gov

	Applicant	TxDOT Reviewer
Pre-design Verifications		
Is there any diversion or re-routing of natural flow pattern in proposed conditions (reference Drainage Design Guidelines and Diverted Drainage Area Guidelines for applicable criteria)?		
Is the subject site crossed by state or federal jurisdictional waters? If so, have all necessary permits been secured?		
Is the subject site receiving drainage from TxDOT right-of-way (ROW)? If so, consult with Houston 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.		
Is there any encroachment to TxDOT ROW?		
If answer is "yes" to the above item, and ROW donation is required to compensate for the lost drainage system capacity and volume; have you consulted TxDOT for ROW donation?		
If site drainage/outfall is not connected to TxDOT ROW, approval from entity receiving the drainage or documentation stating that permit is under review is provided.		
Is the site larger than 10 acres, offsite contributing drainage area is greater than 5 acres, or has complexities (reference Drainage Design Guidelines)?		
If the answer is "yes" to the previous item, was the TxDOT Houston District Hydraulics Section consulted prior to submitting plans?		
Drainage report is submitted prior to plan submittal and conceptual review is completed for applicable project sizes.		

	Applicant	TxDOT Reviewer
TxDOT As-Built drawings for Drainage Area and Hydraulic Computations to verify allowable discharge with site location and applicable parameters identified. (Please e-mail your request to: Hou_PlanRequest@txdot.gov).		
General Construction Plan Requirements		
All civil design sheets are signed, sealed, and dated by a licensed P.E. in the State of Texas.		
Project Location Map.		
Graphical scale and north arrow (required on all applicable civil plan sheets).		
Symbols and legend on applicable plan sheets.		
Benchmark with elevation and datum reference on applicable plan sheets.		
Survey Maps		
Boundary survey signed, sealed, and dated by a Registered Professional Land Surveyor (RPLS) in the state of Texas.		
Topographic survey map with effective FEMA Flood Insurance Rate Map (FIRM) information signed, sealed, and dated by a RPLS or P.E. in the state of Texas.		
FEMA FIRM Map with site location specified.		
Site Plan - Total development acreage and type of development.		
Amount of the TxDOT frontage either from survey map or scaled from as-built.		
Existing Drainage Conditions Plan.		
Subject property and adjacent property with topo elevations and flow arrows.		
Existing drainage structures identified, drainage areas, and drainage calculations.		
Proposed Grading Plan.		
Proposed Drainage Conditions Plan.		
Proposed drainage tie-in outfall profile (details/cross section and elevations) provided.		
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 (WSEL), and groundwater table elevation (if a pump is used).		
Storm Water Pollution Prevention Plan (SWPPP).		

	Applicant	TxDOT Reviewer
If pump is used, the following note must be included on the SWPPP sheets: "The permanent main pump shall not discharge to TxDOT at any time if the water being pumped exceeds the turbidity levels that are considered pollutant in accordance with Texas Commission on Environmental Quality (TCEQ) guidelines."		
Applicable TxDOT standard details and construction notes.		
If there are no proposed construction activities on the site, the following note must be included on the civil design sheets including cover page: "No construction activities onsite for this permit. Any future site development requires TxDOT review and approval."		
Driveway Culverts		
Nearest upstream and downstream driveway culverts (size and # of barrels) are identified.		
Culvert capacity calculations if applicable.		
Ditch bank full capacity if applicable.		
Culvert details (e.g. size, # of barrels, length, material, slope, and flowline elevations, etc.).		
Profile view of proposed driveway culvert provided.		
Safety End Treatment (SET) with size, slope, coordinates, standard name, and quantity specified.		
TxDOT SET standard details.		
Hydrology		
All projects must use NOAA ATLAS 14 rainfall data for site peak flows and required detention volume calculations.		
Existing 100-yr storm events peak flow (Q-e) which currently drains to TxDOT ROW.		
Existing off-site drainage area map and runoff calculations (Q-os).		
TxDOT allowable discharge (Q-a) which is the maximum discharge allowed through the primary restrictor in the 100-yr storm event.		
Developed 100-yr storm events runoff (Q-d).		
Proposed 100-yr site discharge (Q-p) which shall not exceed both 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, path of shallow flow, path of channel/pipe 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-value) etc.) NOTE: reference the Drainage Design Guidelines for C-values.		

	Applicant	TxDOT Reviewer
Hydraulics		
Restrictor/outfall pipe calculations (e.g., orifice, culvert, weir, combination, etc.).		
Required detention volume calculations (using Malcom's Small Watershed Method for medium development site).		
Proposed detention volumetric calculations		
Proposed detention storage/stage table and supporting calculations for the 100-yr storm event.		
Internal drainage system hydraulics calculations (inlet and storm sewer/ditches) for the 100-yr.		
On-site 100-yr sheet flow analysis (100-yr hydraulic grade line (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.		
Tailwater (TW) elevation(s) used in hydraulic calculations.		
Open channel hydraulic calculations if applicable.		
Grading Plan		
Building finished floor elevation (FFE).		
Proposed driveway elevations at the high point and where it ties into the existing roadway.		
Proposed top of 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 100-yr design WSEL, and groundwater table elevation (if a pump is used).		
Detention pond static WSEL if a wet pond is proposed.		
Ditch re-grading if applicable.		
Design sheet flow arrows.		
Drainage Plan		
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: 12-ft minimum buffer zone between the detention pond maintenance berm outer edge and the TxDOT ROW line is required).		

	Applicant	TxDOT Reviewer
Existing and proposed drainage junction box/manhole/inlets showing type, size, top, and flowline elevations.		
Profile at the proposed tie-in to TxDOT ROW with existing utilities identified (drawn to scale).		
Extreme event sheet flow arrows.		
Restrictor pipe location and detail (NOTE: Restrictor shall be inside private property).		
All pertaining hydraulic calculations.		
Reference to approved drainage report (title, report date, engineering firm, date accepted by TxDOT) if applicable.		
Pump Detention		
Please refer to the Pump Discharge Criteria and consult with the TxDOT Houston District Hydraulics Section prior to detailed drainage system design.		
General criteria for projects with pump discharge to TxDOT:		
Maximum pumped discharge will not exceed 20% of the allowable gravity discharge, refer to Pump Discharge Criteria.		
Maximum pumped volume not to exceed 75% detention volume.		
A return line to circulate any discharge exceeding the allowable pump discharge back to the pond (located upstream of the restrictor).		
Automatic shut-down device to turn off all pumps when TxDOT drainage system capacity is exceeded (located downstream of the restrictor).		
Reference to geotechnical report to demonstrate no groundwater discharges to TxDOT ROW.		
Pump manufacturer information and performance curve.		
Pump rising and falling cycle elevations table.		
NOTE:		
During construction, care must be taken to minimize the discharge of sediments such as silt, soil, and sand to the TxDOT ROW. 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 ROW. During construction, site dewatering operations shall not be pumped or allowed to drain directly to the TxDOT ROW without the use of sediment controls.		

	Applicant	TxDOT Reviewer
Turn Lanes		
Storm Sewer System		
Any inlet relocation required? If so, relocated inlet must be equivalent to existing inlet and use TxDOT Standards.		
Inlet capacity and ponding calculations.		
Roadside Ditch System		
Existing roadside ditch full bank capacity and volume.		
Ditch profile (both existing and proposed grades shown).		
Existing and proposed typical section of the ditch (side slopes, bottom width, depth). The proposed ditch must be designed following the TxDOT roadway design standards.		
Proposed roadside ditch full bank capacity and volume.		