

County Engineering 101

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County Engineering 101

- Duties
- Road
- Bridge
- Traffic
- Dam
- Drainage
- Floodplain
- Subdivision
- ROW
- Emergency

Transportation Code – Your Bible

- Ch. 251 – Gen. County Authority Related to Roads and Bridges
- Ch. 252 – Systems of County Road Administration
- Ch. 253 – County Improvement of Subdivision Roads
- Ch. 254 – Drainage on Public Roads
- Ch. 255 – County Regulation of Sight Distances
- Ch. 256 – Funds and Taxes for County Roads
- Ch. 257 – Road Districts
- Ch. 258 – County Road Map
- Ch. 280 – Miscellaneous Provisions
- Ch. 281 – Acquisition of Public Interest in Private Road
- Ch. 541 – Definitions (Vehicles and Traffic)
- Ch. 621 – General Provisions Relating to Vehicle Size and Weight

Duties of County Engineer

Ch. 252 Transportation Code

- Licensed Professional Engineer experienced in road construction and maintenance
- Meet TxDOT District Engineer Qualifications
- Responsible for efficient and economical construction and maintenance of county roads
- Attend all Court Meetings related to county road matters
- Supervise administration of county road department
- Prepare detailed annual budget
- Prepare estimates and specifications
- Keep inventory
- Perform inspections
- Other Duties as Assigned

Road Engineer

- General County Authority for Roads and Bridges
 - Ch. 251 Transportation Code
 - Authority to Construct and Maintain Roads
 - Classification of County Roads (1st, 2nd, 3rd)
 - Road shall be Obstruction-Free
 - Cattle Guards; Gates on Third Class Roads
 - Road Names and Addressing
 - Abandon, Vacate, and Discontinue Roads
 - Load Limits, Speed Limits, Stop, No-Parking
 - Liability of Operator for Road Damage

Road Engineer

- Pavement Management System
 - Supervisor/Area System
 - Pavement Distress Identification Manual
www.wistrans.org//mrutc/files/Distress-ID-Manual.pdf
 - Load Capacity
 - Geotechnical Investigation
- Pavement Maintenance
 - Drainage, Brush, Herbicide (Annually)
 - Crack Seal (Annually)
 - Chip Seal/Overlay (10-year cycle)
 - Reconstruction

Bridge Engineer

- TxDOT Off- System Bridge Program
 - 2 Year Inspections
 - 80/10/10
- Bridge Maintenance
 - Structural
 - Erosion/Concrete Rip-Rap
 - Spalling (Non-shrink grout) /Cracking
 - Aesthetics
 - Graffiti Control
 - Traffic Control/Signage
 - Load Limits/Single Lane Bridge/Watch for Ice

Traffic Engineer

- Level of Service A-F
 - Traffic Counters
 - Tube, Electronic, Optical
 - Vehicle Classifications
 - ADT, Peak 8-hour Traffic Volume
 - Min., Max, Average, Median, and 85th%-ile Speeds
- Traffic Signs
 - Speed Limits (85th%-ile)
 - Stop Signs and Multi-way Stop Signs
 - Texas Manual on Uniform Traffic Control Devices
<ftp.dot.state.tx.us>

Dam Engineer

- TCEQ Dam Safety Program
 - 5 year inspections
 - Erosion, Leaking, Vegetation
 - Operation and Maintenance Plan
 - Spring and Fall Vegetation Control and Inspections
 - Annual Crack Sealing
 - Erosion Control
 - Emergency Action Plan
 - Flood inundation maps
 - Emergency Protocol
 - Tabletop exercises
- 30 TAC Sec. 299 Dams and Reservoirs

Drainage Engineer

- Lot to Lot Drainage
 - Civil Matter
 - Texas Water Code, Subchapter B
 - Sec. 11.021 - Defines State Water
 - Sec. 11.086 – Overflow Caused by Diversion of Water
- Drainage on Public Roads (Ditches)
 - Ch. 254 Trans. Code
 - Petition for Drainage
 - Court Authority to Provide Drainage (Construct Ditches for Roads)
 - Restrictions on Drainage Authority (Convey to Natural Waterways)
 - Private Ditches and Regulations (Convey to Roadside Ditches)
 - Claims and Damages

Floodplain Manager

- Flood Insurance Rate Maps (FIRM) System
 - Insurance Purposes
- Model Ordinance (Court Order)
 - <https://www.fema.gov/media-library/assets/documents/96224>
- FEMA Firmette
 - <https://msc.fema.gov>
- Estimated Base Flood Elevation (estBFE)
 - <https://webapps.usgs.gov/infrm/estbfe/>
- Main Goal/Purpose
 - Protect People from the River
 - (Not the river from the people)
 - Turn Around, Don't Drown!!!

Subdivision Administrator

- State law
 - Sec. 232.001 Local Government Code (LGC)
- Subdivision Regulations
 - Adopt Sec. 232 LGC
- Standard Specifications
 - Roads
 - Drainage
 - Sidewalks, Driveways, Culverts, Mailboxes

Right of Way

- Driveways, Culverts, Sidewalks and Mailboxes
 - Standards/Permitting/Inspections
 - Google search other Texas Counties
- Utilities
 - TAC Title 43, Part 1, Chapter 21, Subchapter C, Section 21.38
 - Standards/Permitting/Inspections

Emergency Management

- Incident Command System (ICS)
 - Standardized, on-scene, all-threats/hazards incident management concept
 - Permits seamless integration of responders from all jurisdictions
- Emergency Management Plan
 - Public Works Annex
 - Engineering Annex
 - Utilities Annex
- Know the Local Team
 - Judge, Mayor(s)
 - Sheriff, Fire Chief(s), Police Chief(s)
 - Road & Bridge, Street Dept, Utility Dept(s)
 - Contractors
 - Volunteers, Red Cross, Salvation Army
- Logistics
 - Damage Assessments
 - Plans, Specs, Estimates
 - KEEP GOOD RECORDS!!!
 - GPS CAMERAS!!!

County Engineer 101 Summary

- Duties
 - Other duties as assigned
- Hard Skills
 - Licensed Professional Engineer – No Problem!
- Know the Rules
 - Trans. Code, Water Code, TAC, LGC, TMUTCD
- Soft Skills
 - Know your team, Servant Leadership starts with You
 - Find “Yes”, Be gentle if Law says “No”
 - “I don’t have time” – You have to make time
- Sharpen your axe
 - Engage in Organizations like TACERA, Servant Leader