Best Practice Strategies for Flood Prevention in Development Codes: DFW Examples

Built Environment				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Stormwater Management / LID	*Stormwater Management and Green Infrastructure Standards*	Cedar Hill, TX: Stormwater Management Ordinance	Defines private storm drainage systems to include natural and built features.	Applies to all projects that affect stormwater runoff and requires city review. Defines private storm drainage systems more broadly and recognizes natural systems.
		Frisco, TX: Multifamily Development Regulations	Prohibits above-ground stormwater detention within required open spaces.	Applies to multifamily developments and pushes for more effective flood management with on-site infiltration, instead of ponding runoff.
	Parking Lot Bioretention, Green Infrastructure, Native Landscaping, Streetscape GI, and Rainwater Harvesting	Richardson, TX: Rain Harvesting Regulation	Standards for rainwater harvesting systems to ensure safety, proper design, and aesthetic.	Small tanks are exempt from permits but must be registered; larger systems require permits and inspections. Establishes requirements for tank construction, screening, and location.
		Texas Trees Foundation: Southwestern Medical District Streetscape Plan	Highlights context- sensitive street design to manage stormwater.	Standards for landscaping in an urban corridor redesign with emphasis on LID strategies to manage stormwaters.

Funded By: Texas General Land Office, Texas Water Development Board, Texas Department of Transportation, Federal Emergency Management Agency

Built Environment				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Impervious Cover	*Reduced Parking Requirement*	Lewisville, TX: Flexible Parking Requirements	Allows flexibility in parking requirements.	For non-residential projects, more parking allowable if spaces use permeable pavement or include landscaping. Parking minimums can be met through joint-use agreements.
	Parking and Impervious Cover Reductions; Permeable Alleys and Low-Traffic Accessways	Farmers Branch, TX: Sustainable Parking Lot Design	Parking lot design uses innovative stormwater management.	Flexible parking regulations for applying two or more sustainable standards. Each option includes specific requirements for design, materials, and installation to offset parking lot impervious surface coverage.
	Right-of-Way and Parking Reform	Southlake, TX: Permeable Pavement to Offset Impervious Coverage	Incentivizes developers to implement permeable pavement	Developers may receive 50% credit on stormwater utility fees based on dimensions of off-street parking areas using permeable pavement that meets requirements.

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Built Environment				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Conservation Development	*Conservation Zone*	Flower Mound, TX: SMART Growth Conservation Zone Standards	Guides growth to protect natural landscapes, resources and infiltration	Criteria and technical methodologies establishing requirements to ensure development is sustainable and doesn't exceed available infrastructure capabilities.
		Southlake, TX: Rural Conservation Subdivision Zoning	Preserves natural areas by condensing residential lot and home size.	Require and minimum of 20 contiguous acres, limits net density to 1.4 dwelling units per acre, and encourages clustering to reduce infrastructure and land disturbance.
	Yield Plan Options, Density Flexibility and Cluster Subdivision Design	Denton, TX: Cluster Subdivision Yield Plan Options	Regulates land-disturbing activities in environmentally sensitive areas.	Protect sensitive lands in residential districts by clustering development and reserving a minimum of 30% as open space. Cluster subdivisions require planned development zoning, and deed restrictions, conservation easement, or dedicating land to the city.
		Flower Mound, TX: Cluster Subdivision and Open Space Planning Standards	Strategies to preserve natural resources through voluntary conservation.	Prioritizes preservation through voluntary measures and sustainable development practices. It promotes conservation easements, purchase of development rights and conservation-oriented subdivision design to maintain open space.

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Best Practice Strategies for Flood Prevention in Development Codes: State Examples

Built Environment				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Stormwater Management/ Low Impact Development	*Low Impact Development (LID) Requirements, Incentives, and Street/ROW Standards, Impervious Cover Limits*	Georgetown, TX – Impervious Cover	Caps impervious cover in residential subdivisions to minimize stormwater damage.	Limits impervious cover for all residential lots. Encourages the use of permeable surfaces, open space, and stormwater best management practices to protect environmental quality.
		Marble Falls, TX – Low Impact Development	Encourages environmentally friendly site design practices by offering incentives.	Apply to all properties, to use LID techniques to earn credits. The developer is responsible for the initial maintenance during development, and the landowner has long-term stewardship.
		San Antonio, TX – Low Impact Development and Natural Channel Design Protocol (LID/NCDP)	Voluntary guidelines for development that integrate stormwater management with environmental protection.	Allows flexible design to support city environmental policies. Offers incentives for stormwater fee reductions and density bonuses. Must manage at least 60% of sites water-quality volume with LID/NCDP measures to qualify.
	Comprehensive Stormwater Management and Green Infrastructure Standards	Tyler, TX – Low Impact Development Alternative	Promotes LID for rezoning, subdivision, or site plan projects by incentivizing stormwater controls.	Encourages preserving natural drainage by requiring all development projects to submit stormwater management plan and provide drainage easements.

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Built Environment				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Street Design	*Street Design for Flood Resilience*	San Antonio, TX – Pavement Drainage	Sets standards for street design to safely drain stormwater and prevent flooding,	Establishes flexible streets design to safely convey stormwater while remaining usable for access.
		Austin, TX – Street Drainage Types and Flexible Design Criteria	Sets standards for street design while allowing flexible adjustments.	Provides design criteria used for safe street and flexible designs to better fit surroundings, to meet multimodal standards while accommodating context-sensitive streets.
Conservation Development	*Conservation Subdivisions*	Georgetown, TX – Conservation Subdivision Standards	Clusters development to preserve permanent natural space.	Applies to properties using centralized wastewater systems and offers incentives (density bonuses, flexible lot, and street standards, etc.).

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Best Practice Strategies for Flood Prevention in Development Codes: DFW Examples

Open Space and Environmentally Sensitive Areas				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Open Space/ Growth Management	*Landscape Standards for Stormwater and Heat Mitigation*	Cedar Hill, TX: Landscape Standards	The use of landscaping to provide environmental benefits.	Requirements for the preservation and mitigation of trees and other natural features to provide protection from stormwater runoff, heat island effect, lighting glare, and noise.
	Green Space and Open Space Requirements	Fort Worth, TX: Green Space Requirements	Establishes open space requirements for Urban Residential (UR) and Mixed Use (MU-1 and MU-2) zoning districts.	Enhances environmental performance and livability of development through required open space standards. Requires pocket parks and open space to include a minimum of 20% developed area. Integrates vegetated areas that provide shade, infiltration, and aesthetic value.
	Preservation of Natural Feature	Fort Worth, TX: Grading Permit	Restricts development from causing any loss of floodwater storage.	Developments that disturb an acre or more must provide compensatory storage to preserve valley storage. Expanding the regulations citywide to all FEMA floodplains.
		Ponder, TX: Preservation of Natural Features	Development must preserve natural features to greatest extent feasible.	Requires preservation of natural landscape by limiting site clearing only to areas needed for development, leaving native vegetation undisturbed, and provides space for buffers and trees of a certain size.
	Open Space Protection, Incentives, and Funding Mechanisms	Flower Mound, TX: Conservation Development Standards	Conservation developments that cluster homes and preserve open-space areas.	Developers can minimize disturbance and protect existing natural features while incorporating buffers and green corridors. Developments preserving at least 50% of the site as open space earn incentives to promote sustainable growth and protecting habitat and water quality.

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Open Space and Environmentally Sensitive Areas				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Sensitive Resource Protection	*Critical Area Overlay*	Dallas, TX: Neighborhood Forest Overlay	Requires replacement of trees that are removed or seriously injured during development.	Enables neighborhoods to request an overlay district that protects native trees by enforcing urban forest conservation regulations.
	Conservation Buffers, Riparian Setbacks and Sensitive Area Protection	Denton, TX: Environmentally Sensitive Areas Development Standards	Protects sensitive areas when new development is planned.	Protects environmentally sensitive areas by setting standards for management of habitats, floodplains, and other natural resources during development. Developments involving ESAs must follow the city's ESA Criteria Manual and undergo a review.
		Garland, TX: Existing Drainageways	Preserves natural creeks by requiring developments to maintain natural drainage.	Recognizes the ability of natural waterways to convey water and requires developments to minimize disruption to waterway by preserving drainage buffer easements to convey a 100-year flood.
	Subdivision Natural Features	Ponder, TX: Preservation of Natural Features	Development must preserve natural features to greatest extent feasible.	Requires preservation of natural landscape. Limits site clearing, minimizing native vegetation disturbance, and providing space for buffers and trees of a certain size.

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Best Practice Strategies for Flood Prevention in Development Codes: State Examples

Open Space and Environmentally Sensitive Areas				
Category	**Type**	**Sample Codes**	**Description**	**Key Provisions**
Open Space Preservation/ Growth Management	*Conservation Subdivision and Transfer of Development Rights (TDR) Tools*	San Antonio, TX – Conservation Subdivision Standards	Encourage clustering development to preserve natural areas.	Developers must preserve at least 40-50% of a site as permanent conservation area by clustering homes to minimize disturbance.
		Helotes, TX – Cluster Development	Allows smaller lots sizes in exchange for preserving natural areas.	Establishes three categories: multifamily, townhouse, and garden home; with specific requirements including an open space and homeowner association stewardship plans.
Sensitive Resource Protection	*Conservation Buffers, Riparian Setbacks and Sensitive Area Protection*	San Antonio, TX – Watershed / Aquifer Recharge Protection	Protects the Edwards Aquifer by limiting harmful development.	Protects the sensitive area by requiring strict environmental standards. Requires an Aquifer Protection Plan for any development in the aquifer area.
	Subdivision Natural Features	Selma, TX - Preservation of Natural Features	New subdivisions must contribute land or fees for green space.	Requires developers to support the city green space by fee or dedication. The city can require additional land or payments when an area lacks adequate services.

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Best Practice Strategies for Flood Prevention in Development Codes: Sources

Built Environment			
Sample Codes	**Reference**	**Website**	**Category**
Cedar Hill, TX – Stormwater Management Ordinance	Code of Ordinances: Chapter 13, Natural and Environmental Resources: Article V, Stormwater Management Ordinance	https://library.municode.com/tx/cedar_hill/codes/code_of_ordinances?nodeId=PTIICOOR_CH13NAENRE_ARTVSTMAOR	**Stormwater Management/ Low Impact Development**
Frisco, TX – Multifamily Development Regulations	Code of Ordinances, Part 2: Chapter 63, Zoning Ordinance: Section 4, Site Development Requirements: Subsection 4.12, Multifamily Development Standards	https://ecode360.com/45146525?highlight=stormwater&searchId=7867047853876569#45146509	
Georgetown, TX – Impervious Cover	Unified Development Code: Chapter 11, Environmental Protection: Section 11.02, Impervious Cover	https://library.municode.com/tx/georgetown/codes/unified_development_code?nodeId=UNDECO_CH11ENPR_S11.02IMCO	
Marble Falls, TX – Low Impact Development	Code of Ordinances: Appendix B, Development Code: Article 5, Environmental Protection: Division 5.3, Low Impact Development	https://library.municode.com/tx/marble_falls/codes/code_of_ordinances?nodeId=COOR_APXBDECO_ART5ENPR_DIV5.3LOIMDE	
Richardson, TX – Rainwater Harvesting and Rain Barrel Regulation	Code of Ordinances: Chapter 6, Buildings and Building Regulations: Article XII, Rainwater Harvesting Systems	https://library.municode.com/tx/richardson/codes/code_of_ordinances?nodeId=PTIICOOR_CH6BUBURE_ARTXIIRAHASY	

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San Antonio, TX – Low Impact Development and Natural Channel Design Protocol (LID/NCDP)	Unified Development Code: Article 2, Use Patterns: Section 35-210, Low Impact and Development and Natural Channel Design Protocol	https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=ARTIIUSPA_S35-210LOIMDENACHDEPRLINC	**Stormwater Management/ Low Impact Development**
Texas Trees Foundation – Urban Streetscape Master Plan for the Southwestern Medical District	Urban Streetscape Master Plan for the Southwestern Medical District	https://www.texastrees.org/wp-content/uploads/2019/07/SWMD-Final-Project-Book-2016.pdf	
Tyler, TX – Low Impact Development Alternative	Code of Ordinances: Article VII, Environmental Regulations: Division B, Low Impact Development Alternative Standards	https://codelibrary.amlegal.com/codes/tyler/latest/tyler_tx/0-0-0-82507	
Austin, TX – Street Drainage Types and Flexible Design Criteria	Transportation Criteria Manual: Section 2, Street Cross Sections: 2.3, Street Drainage Types and 2.7, Flexible Design Criteria	https://library.municode.com/tx/austin/codes/transportation_criteria_manual?nodeId=TRCRMA_S2STCRSE_2.3.0STDRTY	**Street Design**
San Antonio, TX – Pavement Drainage	Unified Development Code: Appendix H, Stormwater Design Criteria Manual: Chapter 6, Pavement Drainage	https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=APTOWADECRMA_CH6PADR	
Lewisville, TX – Minimum and Maximum Parking Requirements	Unified Development Code: Subpart 3 Design and Development Standards: Article VIII, Off-street Parking Standards: Section VIII. 1.3, Calculating Minimum and Maximum Parking Required	https://library.municode.com/tx/lewisville/codes/unified_development_code?nodeId=SP3DEDEST_ARTVIIIOREPALOST_CHVIII.1OREPAST_SVIII.1.3CAMIMAPARE	**Impervious Cover**
Farmers Branch, TX – Sustainable Parking Lot Design	Code of Ordinances: Chapter 94, Zoning: Article 4, Site Development Standards: Section 4.3 Parking and Loading: Subsection-J Sustainable Parking Lot Design	https://library.municode.com/tx/farmers_branch/codes/code_of_ordinances?nodeId=PTIICOOR_CH94ZO_ART4SIDEST_4.3PALO	

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Southlake, TX – Use of Permeable Pavement to Offset Impervious Coverage	Land Development Code: Zoning, Section 33 Supplementary District Regulations: Subsection 33.22	https://library.municode.com/tx/southlake/codes/development_ordinances?nodeId=Section%2033%20-%20Supplementary%20District%20Regulations	**Impervious Cover**
Denton, TX – Cluster Subdivision Yield Plan Options	Development Code: Subchapter 7, Development Standards: 7.4 Environmentally Sensitive Areas	https://library.municode.com/tx/denton/codes/development_code?nodeId=CITY_DENTONDECO_SUBCHAPTER_7DEST_7.4ENSEARES	**Conservation Development**
Flower Mound, TX – Cluster Subdivision & Open Space Planning Standards	Open Space Plan	https://www.flowermound.gov/DocumentCenter/View/755/60-Open-Space-Plan	
Flower Mound, TX – SMART Growth Conservation Zone Standards	Code of Ordinances: Subpart B, Land Development Regulations: Article II, SMART Growth Program	https://library.municode.com/tx/flower_mound/codes/code_of_ordinances?nodeId=SPBLADERE_CH98ZO_ARTIISMPR	
Georgetown, TX – Conservation Subdivision Standards	Unified Development Code: Chapter 11, Environmental Protection: Section 11.06, Conservation Subdivisions	https://library.municode.com/tx/georgetown/codes/unified_development_code?nodeId=UNDECO_CH11ENPR_S11.06COSU	
Southlake, TX – Rural Conservation Subdivision Zoning	Land Development Code: Zoning, Section 48, RCS Rural Conservation Subdivision Zoning District	https://library.municode.com/tx/southlake/codes/development_ordinances?nodeId=Section%2048%20-%20RCS%20Rural%20Conservation%20Subdivision%20Zoning%20District	

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Best Practice Strategies for Flood Prevention in Development Codes: Sources

Open Space and Environmentally Sensitive Areas			
Sample Codes	**Reference**	**Website**	**Category**
Cedar Hill, TX – Landscape Standards	Code of Ordinances: Chapter 23, Zoning Ordinance: Article 5 Development Standards: Division 5.2 Landscape Requirements	https://library.municode.com/tx/cedar_hill/codes/code_of_ordinances?nodeId=PTIICOOR_CH23ZOOR_ART5DEST_DIV5.2LARE	**Open Space Preservation / Growth Management**
Flower Mound, TX – Conservation Development Standards	Code of Ordinances: Subpart B, Land Development Regulations: Article III, District Regulations: Division 3, Agricultural District, Conservation District, Rural Development: Section 98-277, Conservation Development Option and Standards	https://library.municode.com/tx/flower_mound/codes/code_of_ordinances?nodeId=SPBLADERE_CH98ZO_ARTIIIDIRE_DIV3AAGDICODIRUDE_S98-277CODEOPST	
Fort Worth, TX – Green Space Requirements	Code of Ordinances: Appendix A, Zoning Regulations: Chapter 4, District Regulations: Article 13, Form-Based Districts: Section 4.1302, High Intensity Mixed Use	https://codelibrary.amlegal.com/codes/ftworth/latest/ftworth_tx/0-0-0-36082	
Fort Worth, TX – Grading Permit	City Code: Chapter 12.5, Environmental Protection and Compliance: Article 10, Grading Permit	https://codelibrary.amlegal.com/codes/ftworth/latest/ftworth_tx/0-0-0-16177	
Frisco, TX – Voluntary Buffer Area Zoning Provision	Code of Ordinances: Chapter 63 Zoning Ordinance: Section 4 Site Development Requirements, Subsection 4.11 Voluntary Buffer Areas for Creeks, and Tributaries	https://ecode360.com/45146453	

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Garland, TX – Existing Drainageways	Development Code: Chapter 3, Subdivision Regulations: Article 5, Subdivision Requirements and Standards: Division 8, Stormwater Management and Storm Sewer Requirements: Section 3.86, Existing Drainageways	https://ecode360.com/40083330	
Helotes, TX – Cluster Development	Code of Ordinances: Chapter 98, Zoning: Article III, District Regulations: Section 98.63, Cluster Development	https://library.municode.com/tx/helotes/codes/code_of_ordinances?nodeId=CD_ORD_CH98ZO_ARTIIIDIRE_S98-63CLDE	**Open Space Preservation / Growth Management**
Ponder, TX – Preservation of Natural Features	Subdivision Ordinance: Section 46, Preservation of Trees, and Native Vegetation	https://www.pondertx.com/sites/default/files/fileattachments/planning_amp_zoning/page/2475/subdivision_ordinance_version_2008.pdf	
San Antonio, TX – Conservation Subdivision Standards	Unified Development Code: Article II, Use Patterns: Section 35-203, Conservation Subdivision	https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=ARTIIIUSPA_S35-203COSU	
Dallas, TX – Neighborhood Forest Overlay	Code of Ordinances: Volume III: Chapter 51A Dallas Development Code, Ordinance NO. 19455: Article IV. Zoning Regulations: Division 51A-4.511. Overlay and Conservation District Regulations	https://codelibrary.amlegal.com/codes/dallas/latest/dallas_tx/0-0-0-83877	**Sensitive Resource / Habitat Protection**
Denton, TX – Environmentally Sensitive Areas Development Standards	Development Code: Subchapter 7, Development Standards: 7.4 Environmentally Sensitive Areas	https://library.municode.com/tx/denton/codes/development_code?nodeId=CITY_DENTONDECO_SUBCHAPTER_7DEST_7.4ENSEARES	
Ponder, TX – Preservation of Natural Features	Subdivision Ordinance: Section 46, Preservation of Trees, and Native Vegetation	https://www.pondertx.com/sites/default/files/fileattachments/planning_amp_zoning/page/2475/subdivision_ordinance_version_2008.pdf	

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San Antonio, TX – Watershed/Aquifer Recharge Protection	Code of Ordinances: Chapter 34, Water and Sewers: Article VI. Water Quality Control and Pollution Prevention: Division 6. Aquifer Recharge Zone and Watershed Protection	https://library.municode.com/tx/san_antonio/codes/code_of_ordinances?nodeId=PTIICO_CH34WASE_ARTVIWAQUCOPOPR_DIV6AQREZOWAPR	**Sensitive Resource / Habitat Protection**
Selma, TX - Preservation of Natural Features	Code of Ordinance: Part II, Land Development Regulations: Chapter 78, Subdivisions: Article V Design Standards: Division 7, Public Sites and Open Spaces; Protection of Natural Features	https://library.municode.com/tx/selma/codes/code_of_ordinances?nodeId=PTIILADERE_CH78SU_ARTVDEST_DIV7PUSIOPSPPRNAFE	