

Impervious Coverage Code Amendment



City of Dallas

**Zoning Ordinance Advisory Committee
(ZOAC)
May 14, 2024**

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Planning and Urban Design
City of Dallas

Presentation Overview



- Background/History
- Purpose
- Issues/Operational or Business Concerns
- Proposed Recommendations
- Case Studies/Operational Impacts
- Photo Credits
- Next Steps



Background/History



City Plan Commission authorized a public hearing on 7/22/2022 to consider amending Chapters 51 and 51A of the Dallas Development Code to consider developing appropriate standards associated with impermeability, permeability, pervious and impervious surfaces, including but not limited to definitions, paving, surfaces, materials, and applicability

Date	Action
March 22, April 8, May 5, 8, 25; June 13,14, 16, and July 5, 2023	Staff met with internal departments to get input
April 27, 2023	Staff met with Commissioner Hampton for intent of impervious coverage code amendment from the code amendment initiators
May 25, 2023	Staff conducted outreach meetings with industry representatives, Texas Real Estate Commission (TREC) and Dallas Builder's Association (DBA)
June 12, 2023	Staff met with directors of MetroTex Realtors and Apartment Association of Greater Dallas (AAGD) per advice of TREC and DBA representatives
August 1, 2023	Staff presented the Impervious Coverage Code Amendment for residential development at the Zoning Ordinance Advisory Committee (ZOAC)
September 8, 2023	Staff met to discuss design standards for the parking code amendment and decided to include the impervious coverage maximums for nonresidential parking lots with this code amendment
April 1 and 5, 2024	Staff presented updated recommendations to external stakeholders (TREC, DBA, NCTCOG, GDPC, GDRA, HANTX, 24HrDallas)
April 22 and 23, 2024	Staff conducted public listening sessions on both days



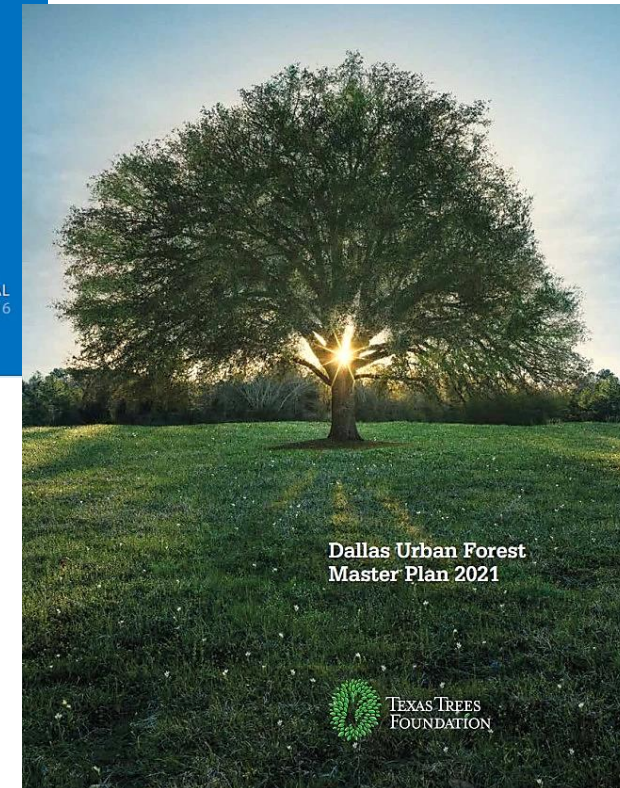
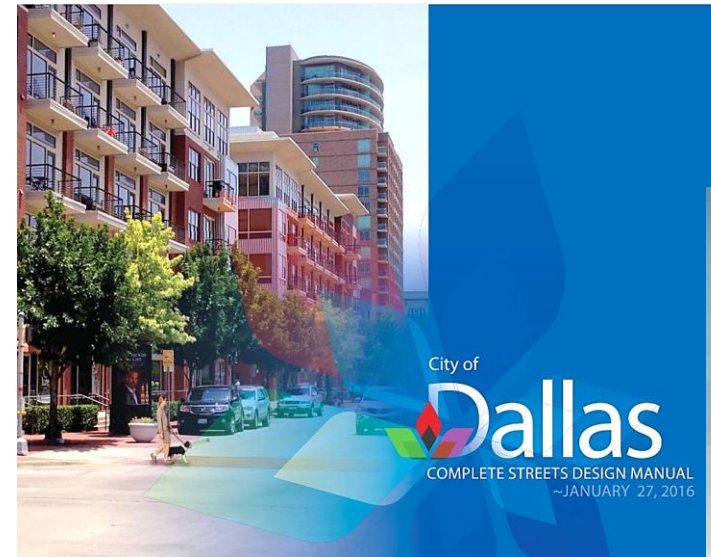
Purpose



The City Plan Commission requested staff to initiate a code amendment to the Dallas Development Code to limit impervious coverage for both residential and nonresidential lots.



Limiting impervious coverage aligns with several citywide plans and policies to reduce flooding and the heat island effect exacerbated by impervious surfaces.



Issues/Operational Concerns



- Resident's documented concerns spurred CPC's decision to initiate a hearing for a possible Code amendment
- Document described concerns regarding stormwater runoff, and the heat island effect
- Other concerns regarding compatibility of existing front yards of residential lots



Photo Credit: Dallas Resident



Issues/Operational Concerns



- Code requirements need to align with CECAP, REP, and other City plans
- Goals to reduce environmental impacts of flooding and the heat island effect exacerbated by stormwater runoff from lack of soil infiltration from impervious surfaces
- Compatibility with existing neighborhoods



Photo Credit: David Nevarez, Transportation Development Services



Issues/Concerns



LIVE Jeff Goodell on 'The Heat Will Kill You First'

Climate change - Climate change refers to long-term shifts in temperatures and...



AP Baghdad, Iraq | July 19, 2023
Share
The Washington Post
July 8, 2023

In recent days, the Earth has reached its highest average temperatures in recorded history and scientists claim it may be warmer than any time in the last 125,000 years

SUBSCRIBE



Dark Pervious

-  140.0 F
-  0.8 in



See photo credits on slide 33

Issues/Concerns



- **Flash Flooding** caused by lack of infiltration of rainwater into the soil onto streets, businesses, and homes
- **Pollutants** from stormwater runoff into fragile rivers and streams
- **Water quality degradation** caused by stormwater runoff
- **Flooding** events of rivers, streams and critical watersheds



- **Destruction** of property, wildlife habitat, and ecosystems



See photo credits on slide 32

Issues/Concerns



- **Scorching heat** absorbed by dark surfaces
- **Higher temperatures** experienced in urban areas from heat trapped in impervious surfaces and lack of shade
- **Health issues** for humans and animals from higher temperatures in urban areas



- **Air Quality** issues with few trees to filter the air we breathe



Dark Pervious

- 140.0 F
- 0.8 in

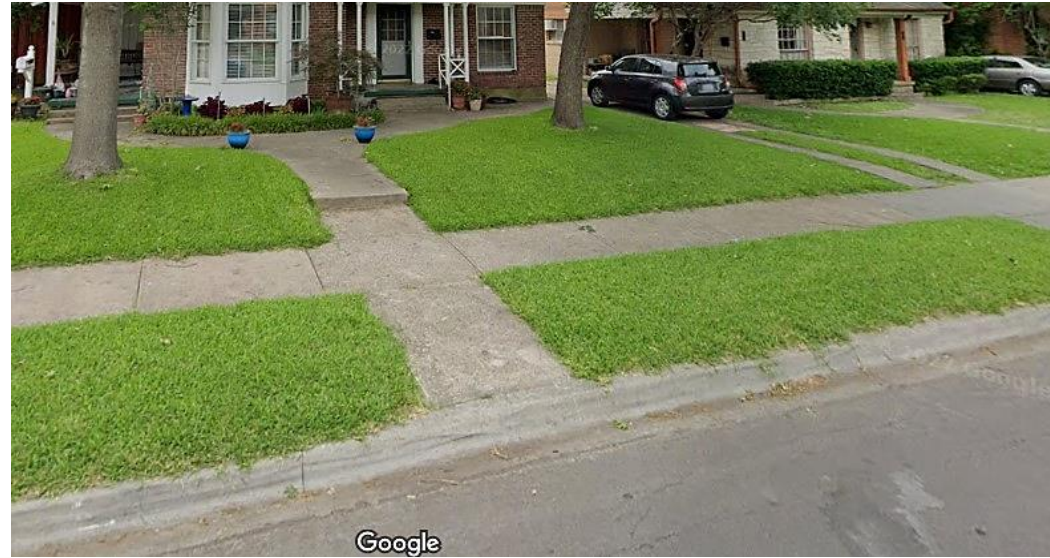


See photo credits on slide 33

Issues/Concerns - Residential



- 4 car driveway for duplex vs single car driveway (top right) and single car, ribbon driveway for single family (bottom right)



See photo credits on slide 33

Proposed Code Amendment



Proposed Definitions:

IMPERVIOUS COVERAGE means a percentage of area that is covered by impervious surface.

IMPERVIOUS SURFACE means a surface that prevents or impedes water from recharging groundwater. This condition can be caused by a structure, paving, pavers, compacted soil or gravel or other feature that forms a barrier between precipitation and the earth's surface.



Proposed Code Amendment

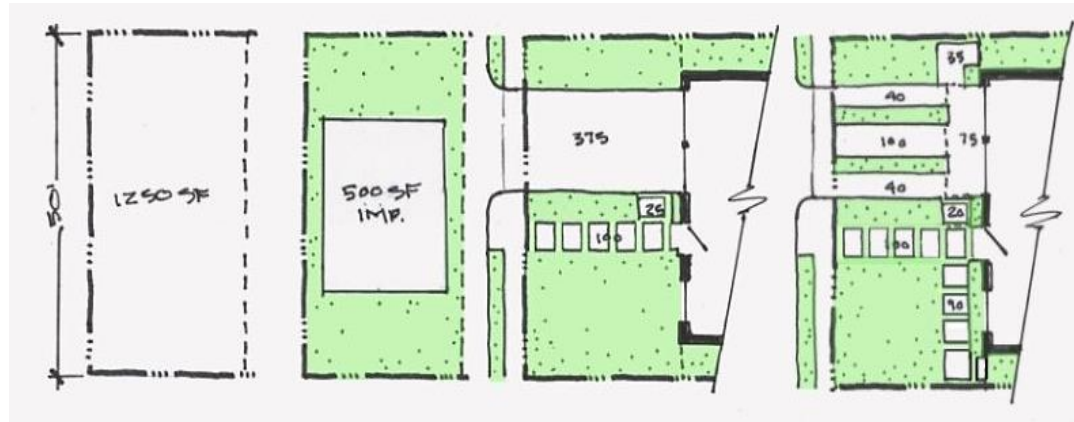


Required maximum impervious coverage percentages for residential and nonresidential uses

Residential Uses

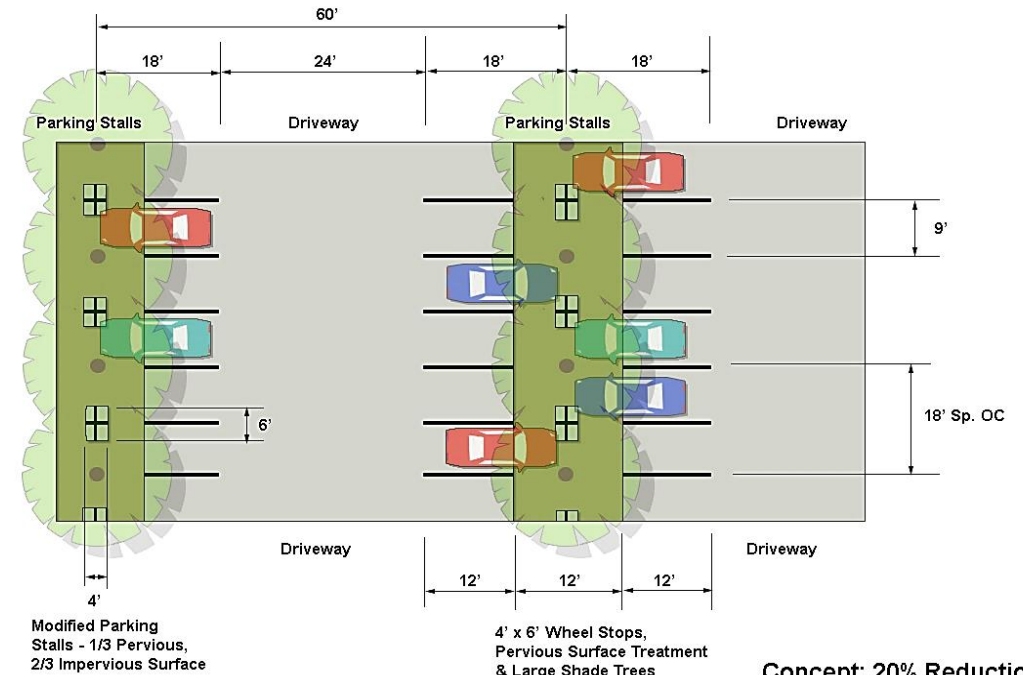
Maximum impervious coverage percentage of required front yard – 40%, except A(A) Agric. – 30%

SF 50' wide lot with 25' required FY



Nonresidential Uses

Maximum impervious coverage percentage of parking areas - 80%, except on parkway streets - 60%



Concept: 20% Reduction of Impervious Surfaces for Existing Parking Lots



Drawings by Don Raines, Planning & Urban Design

Proposed Code Amendment

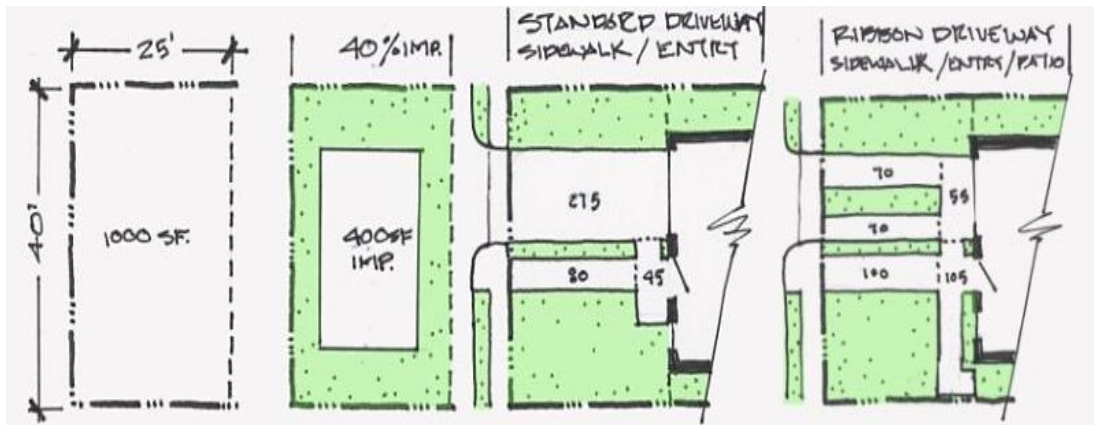


Required maximum impervious coverage percentages for residential and nonresidential uses

Residential Uses

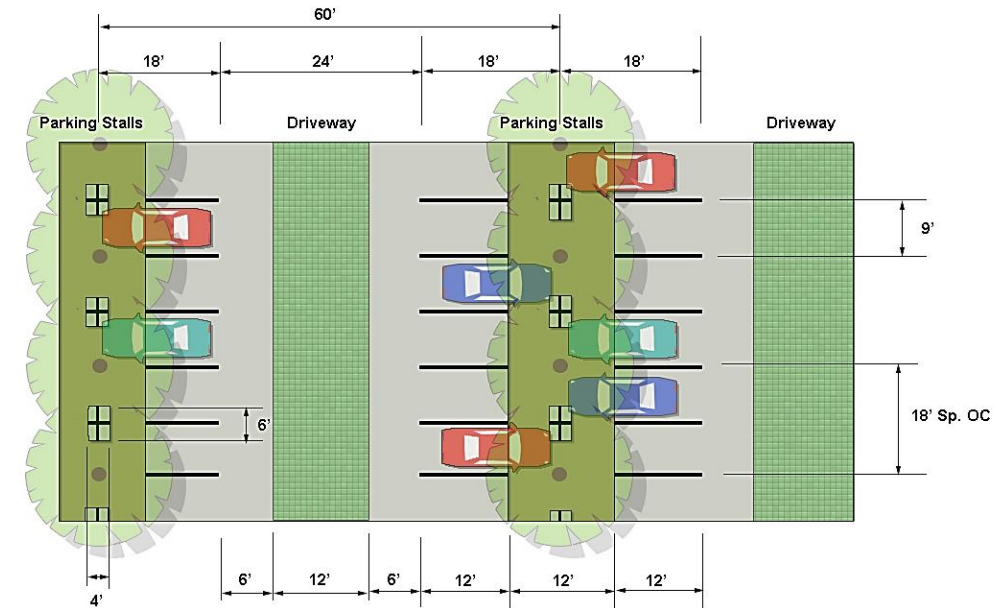
Maximum impervious coverage percentage of required front yard – 40%, except A(A) Agric. – 30%

SF 40' wide lot with 25' required FY



Nonresidential Uses

Maximum impervious coverage percentage of parking areas - 60% on parkway streets



Modified Parking Stalls - 1/3 Pervious, 2/3 Impervious Surface

Modified Driveway 1/2 Pervious with Grass 1/2 Impervious Surface

4' x 6' Wheel Stops, Pervious Surface Treatment & Large Shade Trees

Concept: 40% Reduction of Impervious Surfaces for Existing Parking Lots



Drawings by Don Raines, Planning & Urban Design

Complete Streets Map

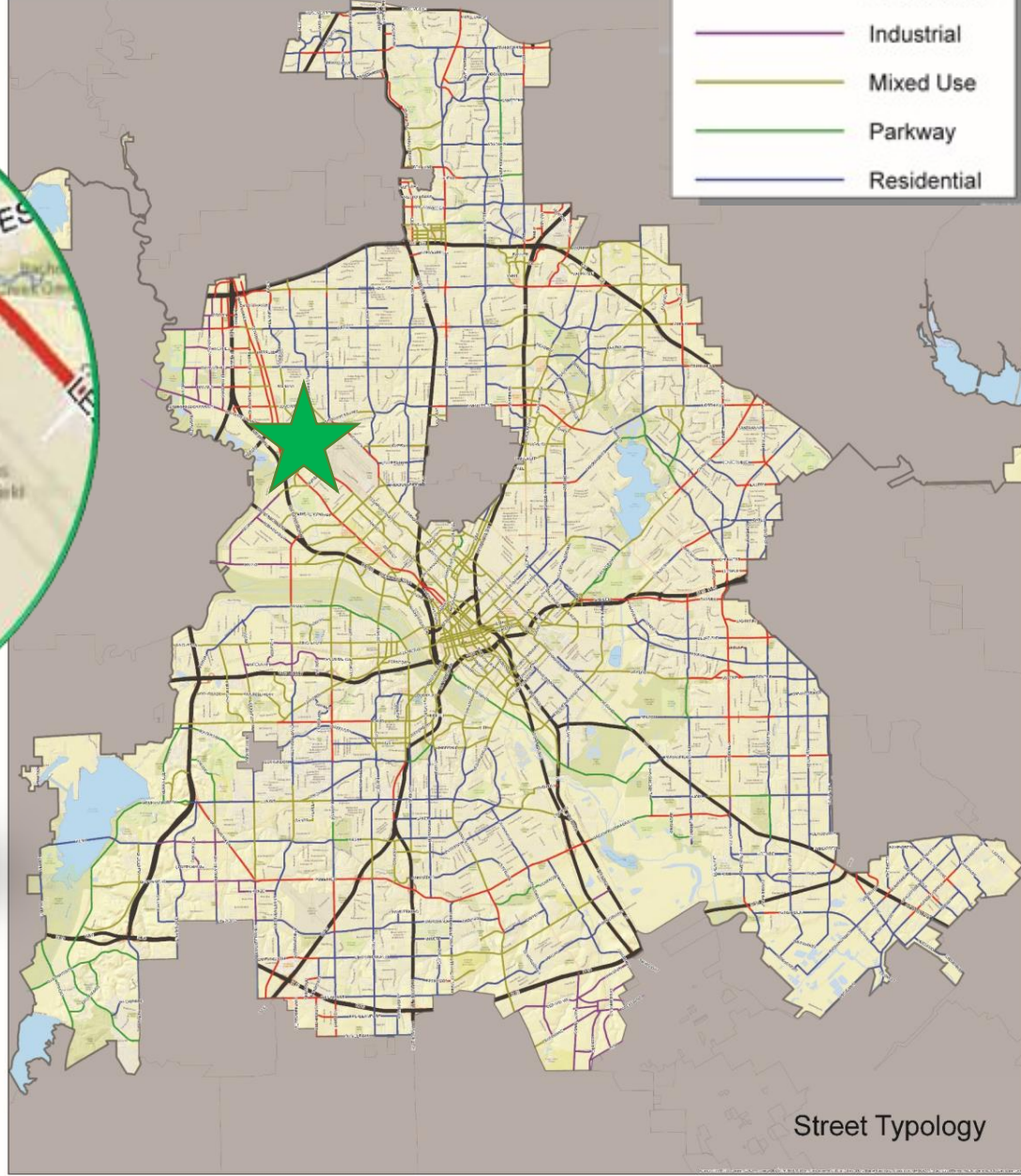


Complete Steets Vision Map

Legend

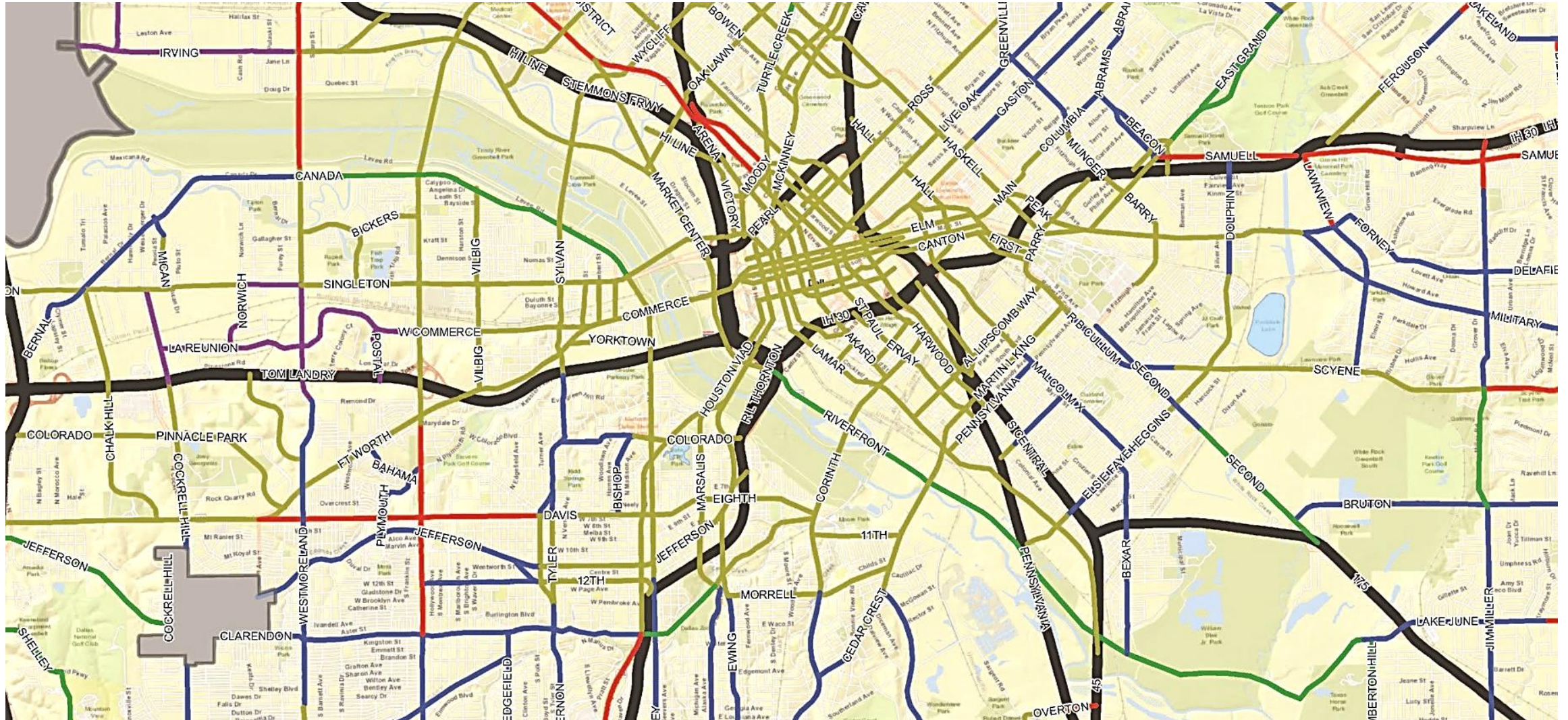
Street Typology

- Commercial
- Industrial
- Mixed Use
- Parkway
- Residential



Street Typology

Complete Streets Map – Trinity River Watershed

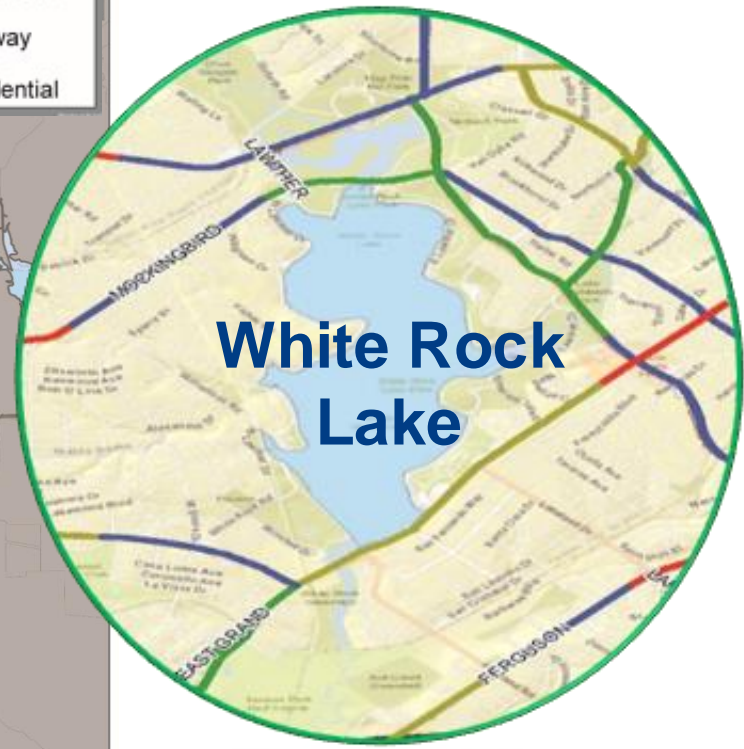
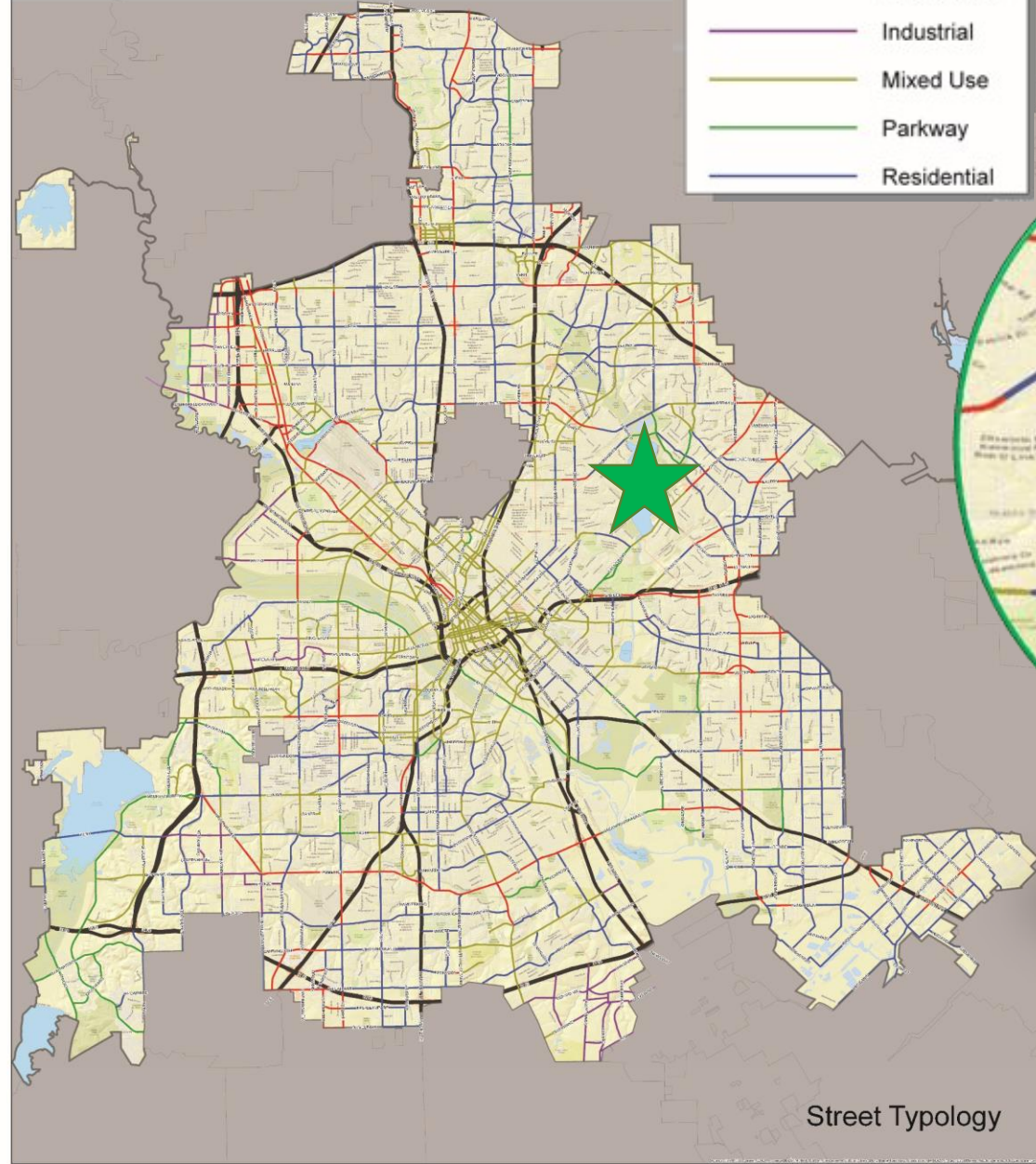


Complete Steets Vision Map

Legend

Street Typology

- Commercial
- Industrial
- Mixed Use
- Parkway
- Residential



Street Typology

Proposed Code Amendment



RESIDENTIAL USES

1. Maximum 5% additional impervious coverage for any of the following (total of 10% maximum possible)¹:



¹ Additional impervious coverage percentage does ~~Not~~ apply to lots abutting parkway streets

Proposed Code Amendment



RESIDENTIAL USES

1. Maximum 5% additional impervious coverage for any of the following (total of 10% maximum possible)¹:



Photos from L to R: Townhomes with brick pavers; SF homes with pervious and impervious paving in the front yard.

Photo credits: Don Raines, Planning & Urban Design



¹ Additional impervious coverage percentage does Not apply to lots abutting parkway streets

Proposed Code Amendment



RESIDENTIAL USES

2. Maximum 10% additional impervious coverage for any of the following greening factors (total of 10% maximum possible)¹:



Photos from L to R: SF home with green infrastructure (rain gardens) in the front yard; SF home with trees in the front yard; SF home with rain garden and pervious pavers in the front yard
Photo on the left courtesy of Don Raines, Planning & Urban Design; Google Maps



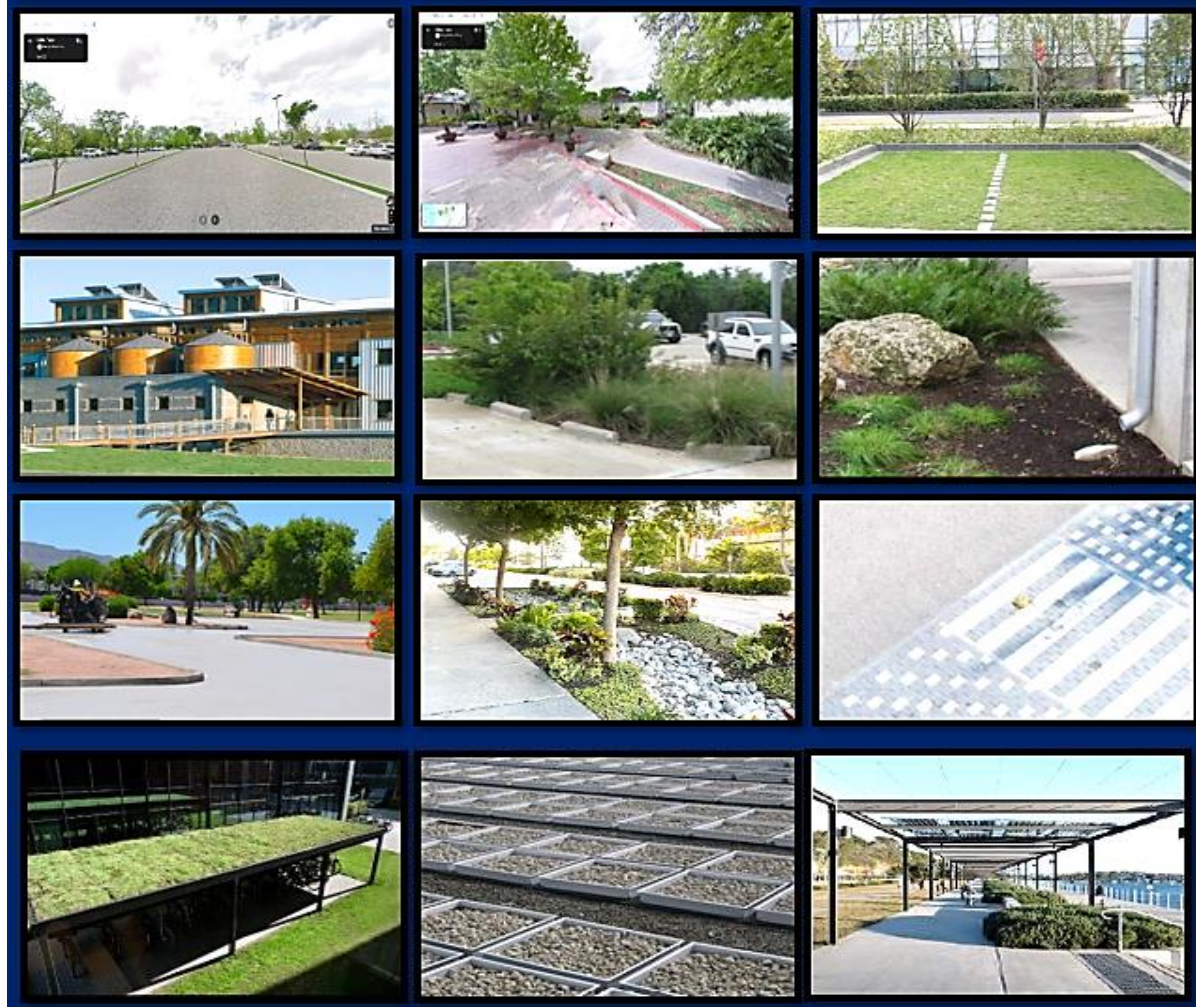
¹ Additional impervious coverage percentage does Not apply to lots abutting parkway streets

Proposed Code Amendment



NONRESIDENTIAL USES

1. Max. 5% additional impervious coverage for any of the following (combined total of 10% max)¹:
 - ❖ Pervious off-street parking areas
 - ❖ Water management to conserve and recycle water (Cisterns, overland flow, disconnected downspouts)
 - ❖ Cool, off-street parking area coatings
 - ❖ Other methods that reduce the stormwater or heat island effect



¹ Additional impervious coverage percentage does Not apply to lots abutting parkway streets



Proposed Code Amendment



NONRESIDENTIAL USES

2. Max. 10% additional impervious coverage for any of the following (total of 10% max)¹:
- ❖ Green infrastructure (Rain gardens, bioswales)
 - ❖ Plantings abutting all off-street surface parking areas
 - ❖ Solar PV trees, solar coatings, solar farms
 - ❖ Within interior of the site, pervious materials



¹ Additional impervious coverage percentage does Not apply to lots abutting parkway streets



Proposed Code Amendment



NONRESIDENTIAL USES

2. Max. 10% additional impervious coverage for any of the following (total of 10% max)¹:

❖ Multiuse, green or open space with occasional use as off-street parking overflow



¹ Additional impervious coverage percentage does Not apply to lots abutting parkway streets

Proposed Code Amendment



Other Amendments

- ❖ Neighborhood Stabilization Overlay (NSO)
 - Adding language to allow a greater or lesser percentage of impervious coverage in NSO's
- ❖ Article X
 - Revising definitions to align with new definitions
 - Clarifying that compacted soil will be considered impervious surface
- ❖ Site Plan Review
 - Revising several terms in DIR section to align with new definitions
- ❖ Urban Corridor Districts (UC)
 - Removing permeable surface area requirement so that new regulations apply



Proposed Code Amendment



How Does This Affect My Property?

Existing Developed Property

No Affect

New Undeveloped Property

Ordinance Applies On Effective Date, If Approved (City Council)

Redevelopment

If Residential, Ordinance Applies When Cumulative Area of Impervious Coverage Is Increased More Than 200 Sq. Ft. In Required FY

If Nonresidential, Ordinance Applies When Cumulative Area of Impervious Coverage Is Increased More Than 2000 Sq. Ft. Within A 24-Month Period

PD, Historic District, Conservation District

No Affect (unless regulations refer to Development Code)



Proposed Code Amendment



ALIGNMENT WITH CITY PLANS AND POLICIES



COMPLETE STREETS DESIGN MANUAL, AS AMENDED

- ✓ *Reduce Impervious Setbacks And Frontage*
- ✓ *Include Environmentally Sustainable Solutions*



CECAP

- ✓ *Goal 5: Dallas Protects Its Water Resources And Its Communities From Flooding And Drought*
- ✓ *Goal 6: Dallas Protects And Enhances Its Ecosystems, Trees, And Green Spaces That In Turn Improve Public Health*
- ✓ *Goal 8: All Dallas Communities Breathe Clean Air*



ForwardDALLAS COMPREHENSIVE PLAN (2006)

- ✓ *Goal 5: Dallas Protects Its Water Resources And Its Communities From Flooding And Drought*

ForwardDALLAS COMPREHENSIVE PLAN 2.0 (DRAFT)

- ✓ *Action Step 5: Update Development Code to reduce the percentage of impervious surface areas, where appropriate*
- ✓ *Action Step 7: Update Development Code to incorporate green infrastructure practices into land use and development, such as rain gardens, green roofs, permeable pavements, bioswales, and vegetated swales, providing incentives*





Results – Cool Pavement in Parking Lots – Phoenix, AZ

EXISTING CONDITIONS
Asphalt Pavement in need of preservation



COOL PAVEMENT
ALBEDO 0.27
SURFACE TEMP 125°F



- BENEFITS**
- Temperature Reduction
 - Carbon Savings

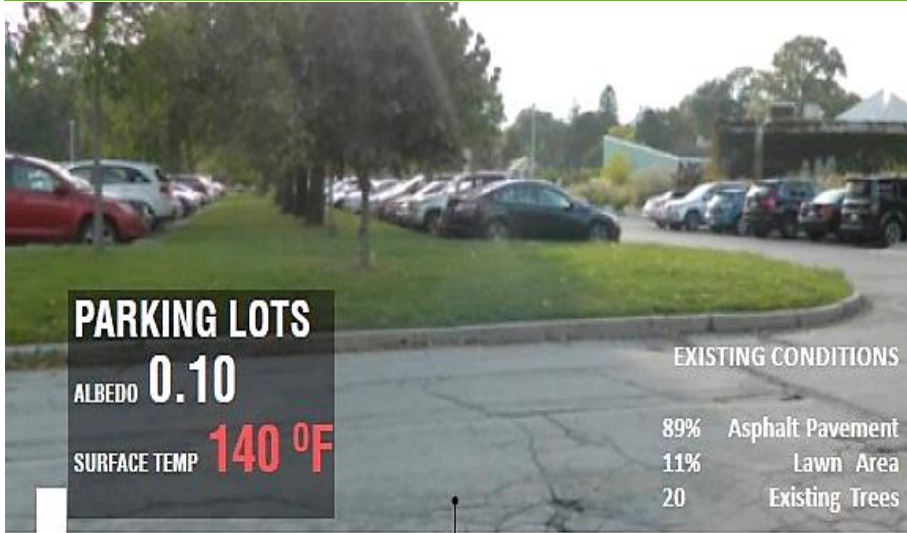
Esteban Park

Schools
Case Study: Robert L. Duffy High School, Phoenix





Results – Pervious Pavers, Bioswale, and PV Canopy in Parking Lots – Toronto, ON, CA



2.60 IN RAINFALL RETENTION CAPACITY



BENEFITS

- Temperature Reduction
- Stormwater Runoff Reduction
- Carbon Savings
- Power Generation

0.05 in
RAINFALL RETENTION CAPACITY

PROPOSED CONDITIONS

24.5%	Permeable Pavement
15%	Native Planting
50%	Reduction in Asphalt
85	Shade Trees
250 m ²	Biofiltration capacity
0.7 km	Tile Drain



RAINFALL RETENTION CAPACITY **3.40 in**

Case Study
16

Case Study
17



Case Studies



Results – PV Panel Roof, Green (vegetative) roof, and Blue roof – London, UK



EXISTING CONDITIONS

Default impervious rooftop



BENEFITS

- Temperature Reduction
- Stormwater Runoff Reduction
- Carbon Savings
- Power Generation

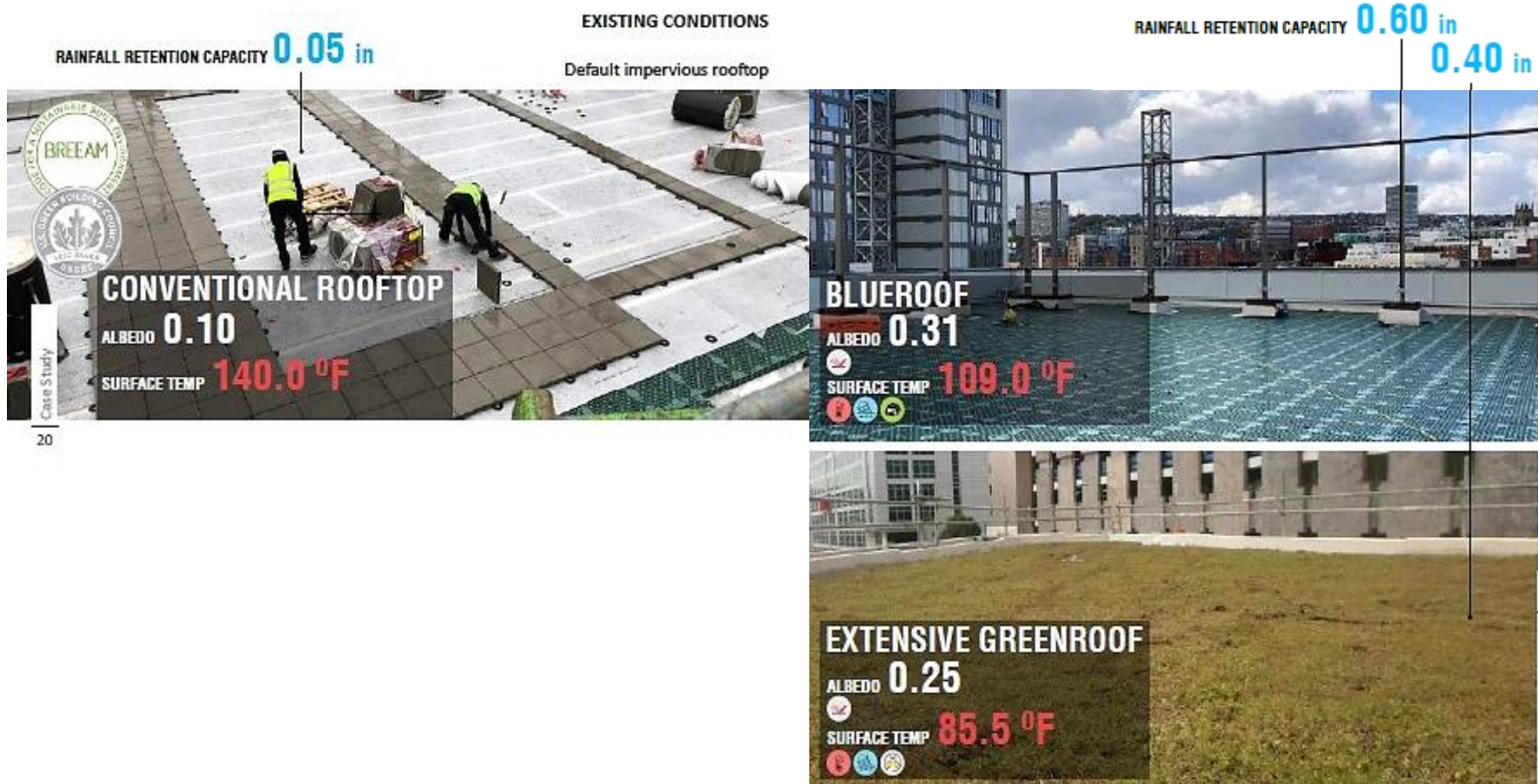
Case Study

Case Study





Results – Blue roof and Green (vegetative) roof – Sheffield, UK



BENEFITS

- Temperature Reduction
- Stormwater Runoff Reduction
- Carbon Savings
- Biodiversity

20

21





Results – Green (vegetative) roof, Cistern, and PV roof – Annapolis, MD



BENEFITS

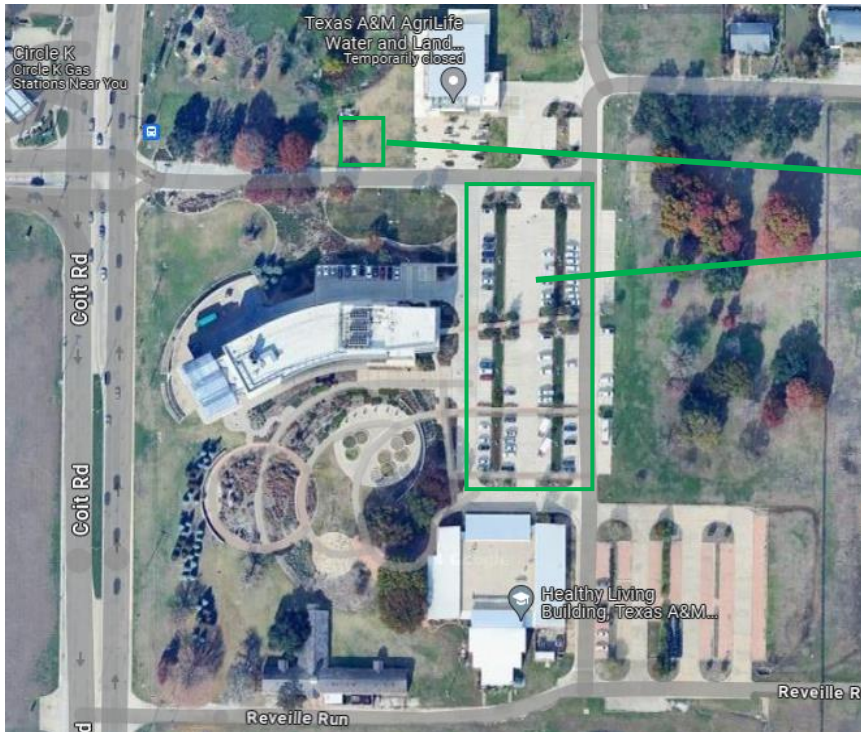
- Temperature Reduction
- Stormwater Runoff Reduction
- Carbon Savings
- Power Generation
- Biodiversity





Results – Clay Soils with Rain Garden/Bioretention Area and Bioretention in Parking Lot

Research Project in Dallas - TAMU



Rain Garden/Bioretention



Rain Garden (Bioretention) reduced runoff volume by 49%

Pollutant	Inflow	Outflow	% Reduction
NO3 (mg)	45,476	13,804	70%
Orthophosphate (mg)	10,351	565	95%
TSS (mg)	3,214,417	307,276	90%
E. coli (cfu)	31,855,184	11,489,962	64%



Photo Credits



Photo Credits

Photo Credits:

Slide #7: (See credits for slide #8 and #9)

Slide #8: Top L - [Executive Summary](#); Top and bottom right - [Smart Surface Guidebook Final 0727.pdf](#)

Slide#9: Top L - <https://www.washingtonpost.com/washington-post-live/2023/07/24/jeff-goodell-heat-will-kill-you-first/>; Top and bottom right: [Smart Surface Guidebook Final 0727.pdf](#)

Slide #10:

Driveway photos courtesy of Sarah May, City of Dallas; Google Maps

Slide#17:

<https://www.bobvila.com/articles/best-rain-barrels/>

Slide #20:

Pea gravel parking photo courtesy of Sarah May, City of Dallas; Google Maps; [Smart Surface Guidebook Final 0727.pdf](#)
[Smart Surface Guidebook Final 0727.pdf](#); [2 1 12 new commercial landscaping handout hollon.pdf \(austintexas.gov\)](#)
[Smart Surface Guidebook Final 0727.pdf](#)

<https://www.velopa.com/project-solution/structura-shelter-with-sedum-roof/#lg=1&slide=1>, [Smart Surface Guidebook Final 0727.pdf](#)

Slide #21:

[Smart Surface Guidebook Final 0727.pdf](#)

Google Maps; Tucson shaded sidewalk courtesy of ZOAC member Rieves

[Smart Surface Guidebook Final 0727.pdf](#)

Audelia and Walnut Hill photo courtesy of David Nevarez, City of Dallas; [Smart Surface Guidebook Final 0727.pdf](#)

Slide #22

[06 GGGChapter3.pdf \(coastalgadnr.org\)](#), [Parking / Overflow \(grassguard.biz\)](#)



Next Steps



- ❖ Forward ZOAC recommendation onto City Plan Commission public hearing, Summer 2024.
- ❖ Forward City Plan Commission recommendation to City Council Committee, if necessary (early Fall).
- ❖ Forward City Council Committee recommendation to City Council, Fall 2024.







Contact and More Information

Project webpage:

<https://dallascityhall.com/departments/pnv/Pages/impervious-coverage-code-amendment.aspx>

Contact us:

- Lori Levy, AICP
lori.levy@dallas.org
- Sarah May, AICP
sarah.may@dallas.org

The screenshot shows a web browser displaying the City of Dallas website. The URL is <https://dallascityhall.com/departments/pnv/Pages/impervious-coverage-code-amendment.aspx>. The page features a dark blue header with navigation links for Mayor, City Council, City Manager, Departments, and Pay. The City of Dallas logo is prominently displayed. Below the header, there is a section for Planning & Urban Design (P+UD) with the tagline "Comprehensive plans, policies, and programs through effective community engagement." The main content area is titled "IMPERVIOUS COVERAGE CODE AMENDMENT" and includes the reference "DCA No. 212-008". The text states: "The City is considering an amendment to the yard, lot, and space requirements of Chapters 51 and 51A of the Dallas Development Code." The page also features a footer with various navigation options like Zoning, Preservation + Design, Plans + Planning, Code Amendments, Advisory, and Maps + Resources.



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