



LOW IMPACT URBAN ENVIRONMENT
URBAN MOAT TO MANAGE STORMWATER RUNOFF



LIGHT IMPRINT URBAN ENVIRONMENT
TRANSIT GREENWAY THAT ALSO FUNCTIONS AS A PARK



SUBURBAN RETAIL WITH LOW IMPACT (LID) STANDARDS HAS GREEN SPACE, BUT COMPROMISES WALKABILITY AND CONNECTIVITY BETWEEN BUSINESSES.



A LIGHT IMPRINT URBAN DESIGN, ALONG WITH BEING GREEN, READILY CONFORMS TO COMMUNITY WALKABILITY AND CONNECTIVITY BETWEEN BUSINESSES.



LOW IMPACT DEVELOPMENT (LID) TOOLS INTENDED FOR SUBURBAN DEVELOPMENT APPLY RAJN GARDENS ON SPRAWLING FRONT LAWNS.



IN WALKABLE COMMUNITIES WITH COMPACT YARDS, A LIGHT IMPRINT COMMUNAL RAJN GARDEN IS APPLIED TO SERVE A GROUP OF HOMES.



LIGHT IMPRINT

HANDBOOK

Integrating sustainability
and community design

dpz
CHARLOTTE

ARCHITECTS AND TOWN PLANNERS

version 1.3

NEW URBAN PRESS

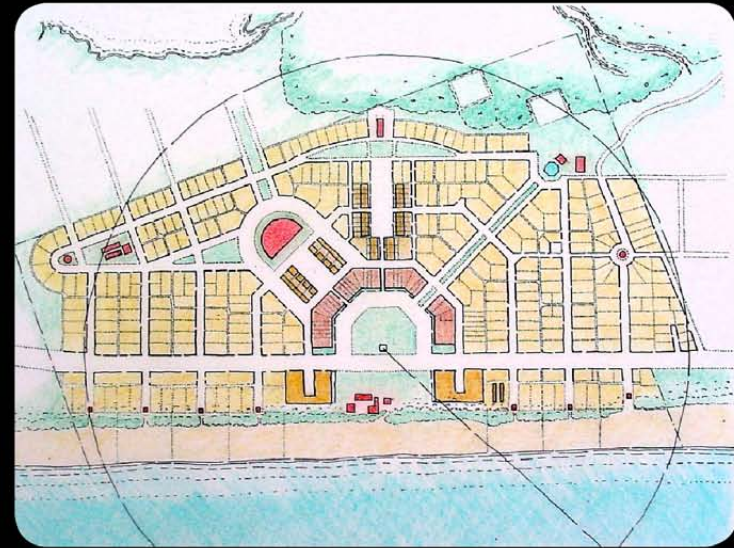
HOW TO USE LIGHT IMPRINT

YOU CAN USE LIGHT IMPRINT...

- » TO DEVELOP A STRATEGY FOR SUSTAINABILITY AND PEDESTRIAN ORIENTED DESIGN IN AN ECONOMIC WAY
- » TO CHANGE THE MINDSET OF YOUR COMMUNITY FROM A AUTO-CENTRIC SUBURBAN MODEL TOWARDS A WALKABLE, COMPACT, CONNECTED, DIVERSE, AND SUSTAINABLE COMMUNITY MODEL
- » TO REDUCE COSTS ASSOCIATED WITH OTHER PLANNING AND ENGINEERING PRACTICES
- » TO PROVIDE AN ORGANIZATIONAL FRAMEWORK TO COMPLEMENT AND EXPAND THE EFFECTIVENESS OF LAND USE POLICY AND ZONING CODES INCLUDING FORM-BASED CODES AND LEADERSHIP IN ENERGY EFFICIENT DESIGN FOR NEIGHBORHOOD DEVELOPMENT (LEED-ND)
- » TO COMPLEMENT OTHER LAND PLANNING APPROACHES AND EXPAND CHOICES, INCLUDING CONVENTIONAL SUBURBAN DEVELOPMENT, LOW IMPACT DEVELOPMENT, AND BEST MANAGEMENT PRACTICES







CONVENTIONAL DESIGN



NEW URBANISM

	LIGHT IMPRINT	LOW IMPACT DEVELOPMENT	GREEN URBANISM	CONVENTIONAL ENGINEERING
WALKABLE	✓			✓
COMPACT	✓			✓
CONNECTED	✓			✓
MIXED-USE	✓			✓
MIXED-INCOME	✓	✓	✓	✓
ECONOMICAL	✓	✓	✓	
SUSTAINABLE	✓	✓	✓	
INTRINSICALLY	✓	✓	✓	

PAVING

WOOD PLANKS

CRUSHED STONE/GRAVEL/SHELL

ASPHALT

STONE/MASONRY PAVING BLOCKS

CHANNELING






NATURAL CREEK

SHALLOW CHANNEL FOOTPATH

GUTTER/CURB

SCULPTED WATERCOURSE

STORAGE






RETENTION POND

LANDSCAPED TREE WELL

POOL/FOUNTAIN

GRATED TREE WELL

FILTRATION






FILTRATION POND

SURFACE LANDSCAPE

BIO-RETENTION SWALE

VEGETATIVE PURIFICATION BED

TRANSECT MATRIX INTRODUCTION



PAVING

	T1	T2	T3	T4	T5	T6
COMPACTED EARTH						
WOOD PLANKS						
STABILIZATION MAT						
CRUSHED STONE/GRAVEL/SHELL						
CAST-IN-PLACE CONCRETE						
IMAGED CELLULAR PLASTIC						
IMAGED CELLULAR CONCRETE						
PERVIOUS ASPHALT						
ASPHALT						
CONCRETE						
PERVIOUS CONCRETE						
STAMPED ASPHALT						
STAMPED CONCRETE						
PEA GRAVEL/WASHES STONE						
STONE/MASONRY PAVING BLOCKS						
WOOD PAVED BLOCKS/DECKING						
ASPHALT PAVED BLOCKS						

CHANNELING

	T1	T2	T3	T4	T5	T6
NATURAL CREEK						
TERRACING						
VEGETATIVE SWALE						
SWAINE DITCH						
STONE/NOB RAP CHANNEL						
VEGETATIVE STONE SWALE						
SKYWAY TRENCH						
SLOPE AVENUE						
FRESH BRAIN						
SHALLOW CHANNEL FOOTPATH/WATER CONVEYOR						
CONCRETE PIPE						
OUTLETCURS						
PLANTED STAMP TRENCH						
SKYWAY TRENCH						
CANAL						
SCULPTED WATERCOURSE						
CONCRETE TROUGH						
ARCHITECTURAL/IRREGULAR SCREW						

STORAGE

	T1	T2	T3	T4	T5	T6
RETENTION POND						
RETENTION BASIN W/ SLOPED BANK						
RETENTION BASIN WITH TRENCH						
RETENTION HOLLOW						
RETENTION POND						
DRY WELL						
FLOODS TANK						
RETENTION POND						
LANDSCAPED TREE WELL						
POOL/FOUNTAIN						
UNDERGROUND VALT/PIPE/CISTERN						
GRAVED TREE WELL						
RIVER BASIN						

FILTRATION

	T1	T2	T3	T4	T5	T6
WETLANDSWAMP						
FILTRATION POND						
SHALLOW MARSH						
NATURAL VEGETATION						
SURFACE LANDSCAPE						
CONSTRUCTED WETLANDS						
NO RETENTION SWALE						
PURIFICATION MESH						
GREEN FRISK						
ROOF GARDEN						
RAIN GARDEN						
VEGETATIVE PURIFICATION BED						
WATERSCAPE						

IMAGE COURTESY: LANDSCAPE ARCHITECTURE

TOOLS	Transect						Cost	Non-urban	Slope	Soil	Climate						
	T1	T2	T3	T4	T5	T6					A	B	BB	BBB	LOW	HIGH	WIND
COMPACTED EARTH																	
WOOD PLANKS																	
STABILIZATION MAT																	
CRUSHED STONE/GRAVEL/SHELL																	
CAST-IN-PLACE CONCRETE																	
IMAGED CELLULAR PLASTIC																	
IMAGED CELLULAR CONCRETE																	
PERVIOUS ASPHALT																	
ASPHALT																	
CONCRETE																	
PERVIOUS CONCRETE																	
STAMPED ASPHALT																	
STAMPED CONCRETE																	
PEA GRAVEL/WASHES STONE																	
STONE/MASONRY PAVING BLOCKS																	
WOOD PAVED BLOCKS/DECKING																	
ASPHALT PAVED BLOCKS																	
NATURAL CREEK																	
TERRACING																	
VEGETATIVE SWALE																	
SWAINE DITCH																	
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VEGETATIVE STONE SWALE																	
SKYWAY TRENCH																	
SLOPE AVENUE																	
FRESH BRAIN																	
SHALLOW CHANNEL FOOTPATH/WATER CONVEYOR																	
CONCRETE PIPE																	
OUTLETCURS																	
PLANTED STAMP TRENCH																	
SKYWAY TRENCH																	
CANAL																	
SCULPTED WATERCOURSE																	
CONCRETE TROUGH																	
ARCHITECTURAL/IRREGULAR SCREW																	
RETENTION BASIN W/ SLOPED BANK																	
RETENTION BASIN W/ TRENCH																	
RETENTION HOLLOW																	
RETENTION POND																	
DRY WELL																	
FLOODS TANK																	
RETENTION POND																	
LANDSCAPED TREE WELL																	
POOL/FOUNTAIN																	
UNDERGROUND VALT/PIPE/CISTERN																	
GRAVED TREE WELL																	
RIVER BASIN																	
WETLANDSWAMP																	
FILTRATION POND																	
SHALLOW MARSH																	
NATURAL VEGETATION																	
SURFACE LANDSCAPE																	
CONSTRUCTED WETLANDS																	
NO RETENTION SWALE																	
PURIFICATION MESH																	
GREEN FRISK																	
ROOF GARDEN																	
RAIN GARDEN																	
VEGETATIVE PURIFICATION BED																	
WATERSCAPE																	

INTRODUCTION CLASSIFICATION MATRIX

LIGHT IMPRINT STORMWATER MATRIX SMARTCODE MODULE

PREPARED BY TOM LOW / DUANY PLATER-ZYBERK & COMPANY

All the water that will ever be is, right now.
National Geographic, 1993

SMARTCODE MODULE

LIGHT IMPRINT STORM DRAINAGE MATRIX

Municipality

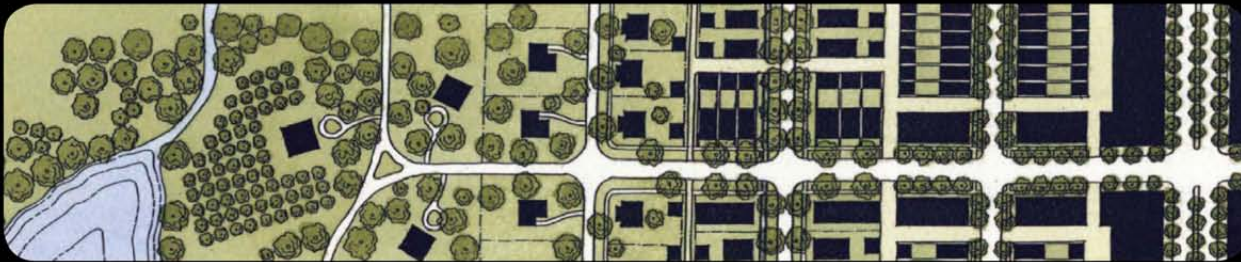
Note: All requirements in this Table are subject to calibration for local context.



SMARTCODE MODULE	1 SUBURBAN	2 URBAN	3 HIGH DENSITY URBAN	4 MEDIUM DENSITY URBAN	5 HIGH DENSITY URBAN	6 HIGH DENSITY URBAN	7 HIGH DENSITY URBAN
1. A.1.1							
1. A.1.2							
1. A.1.3							
1. A.1.4							
1. A.1.5							
1. A.1.6							
1. A.1.7							
1. A.1.8							
1. A.1.9							
1. A.1.10							
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1. A.1.12							
1. A.1.13							
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1. A.1.17							
1. A.1.18							
1. A.1.19							
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1. A.1.27							
1. A.1.28							
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1. A.1.77							
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SmartCode Version 9.2

SC29



INFILL CASE STUDY

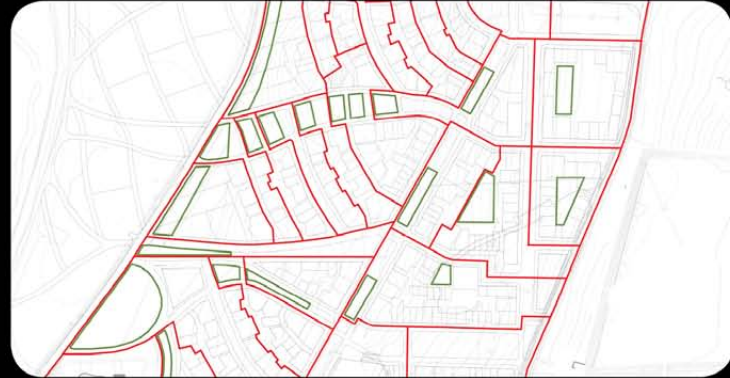
LADYFIELD - DUMFRIES, SCOTLAND

INFILL CASE STUDY

LADYFIELD - DUMFRIES, SCOTLAND



REGULATING PLAN



CATCHMENT AREAS



UNIT TYPE LOT DIAGRAM



LIGHT IMPRINT TOOL CALIBRATION OVERLAY



UNIT TYPE BUILDING PLAN LAYOUT



FINAL ILLUSTRATIVE MASTER PLAN DETAIL

LADYFIELD - DUMFRIES, SCOTLAND CASE STUDIES



CASE STUDIES LADYFIELD - DUMFRIES, SCOTLAND

BIRD'S EYE RENDERING OF MASTER PLAN DETAIL



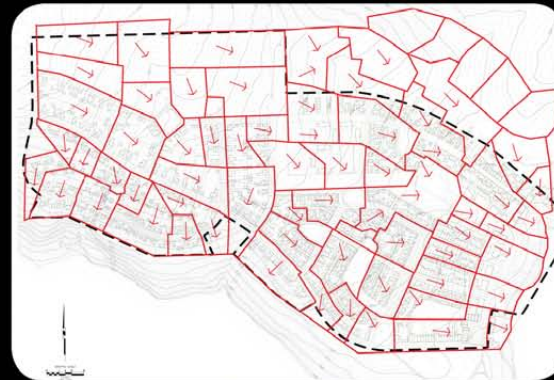
FINAL ILLUSTRATIVE MASTER PLAN



LIGHT IMPRINT OVERLAY



NATURAL DRAINAGE



CATCHMENT AREAS



REGULATING PLAN

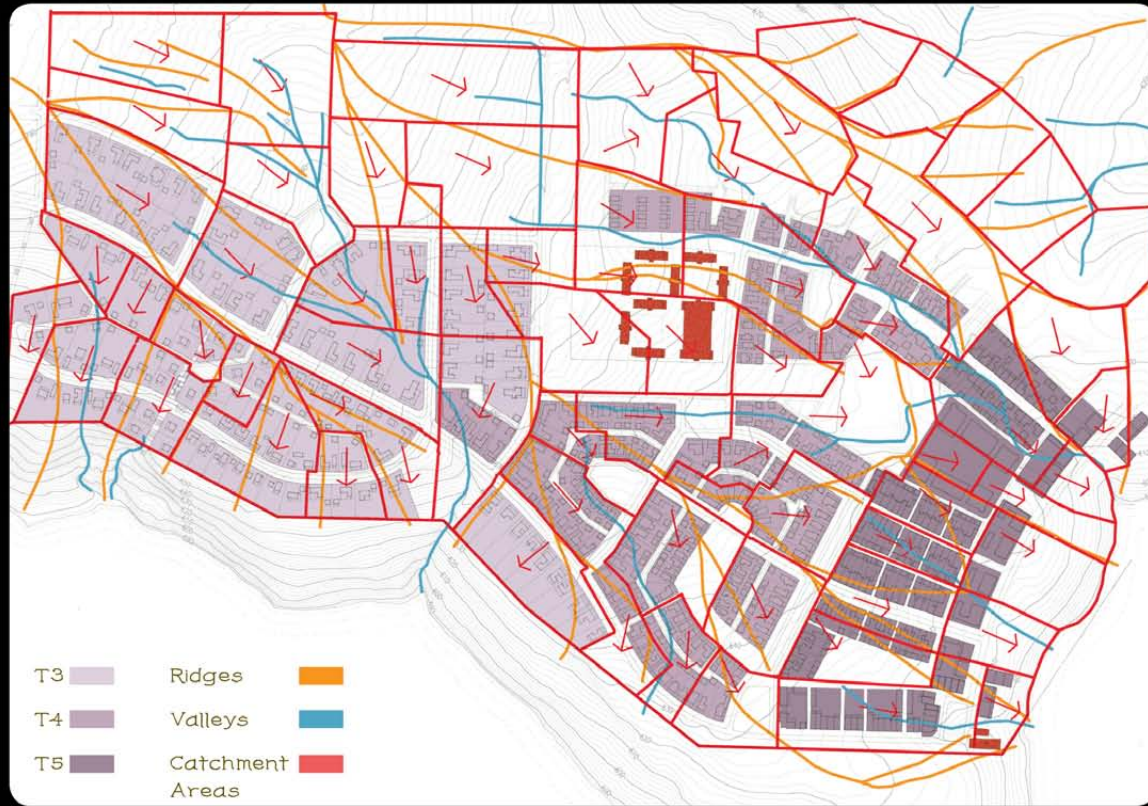
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- T2
- T3
- T4
- T8



REGULATING PLAN WITH DRAINAGE AND CATCHMENT AREAS

WWW.LIGHTIMPRINT.ORG



SITE ANALYSIS WITH THE REGULATING PLAN, DRAINAGE AND CATCHMENT AREAS



ILLUSTRATIVE DETAIL PLAN



CATCHMENT AREAS WITH REGULATING PLAN OVERLAY



LIGHT IMPRINT TOOL CALIBRATION OVERLAY

CARLTON LANDING, OKLAHOMA T5 SAMPLE AREA TABLE		DRAINAGE AREA (ACRES)	1ST INCH RAINFALL VOLUME (CUBIC FEET)	PERCENT TOOL AREA (%)	NUMBER OF TOOLS	CUBIC AREA OF TOOL (H2O*VOLUME=CUBIC FEET)	RAINWATER STORAGE (CUBIC FEET)	RAINWATER RUNOFF (CUBIC FEET)
PRE DEVELOPMENT CONDITION		13.01	47,226.3	100%	1	47,227.3	40,143.2	7,083.1
T5 - A		3.08						
	CRUSHED STONE/GRAVEL/SHELL	0.25	907.5	8.1%	1	1,179.8	272.3	635.2
	ASPHALT	0.45	1,633.5	14.6%	1	1,633.6	0.1	1,633.4
	STONE/MASONRY PAVING BLOCKS	0.78	2,831.4	25.3%	1	3,397.9	566.5	2,264.9
	SHALLOW CHANNEL FOOTPATH	0.70	2,941.0	22.7%	2	3,811.7	2,841.5	-0.5
	GUTTER/CURB	0.25	907.5	8.1%	1	907.6	0.1	907.4
	PLANTING STRIP TRENCH	0.65	2,359.5	21.8%	1	3,539.5	1,180.0	1,178.5
	TOTAL	3.08	11,860.4	100.0%			4,960.5	6,819.9
T5 - B		2.30						
	CRUSHED STONE/GRAVEL/SHELL	0.25	907.5	10.9%	1	3,733.3	2,825.8	-1,986.3
	ASPHALT	0.35	1,270.5	15.2%	1	1,270.7	0.2	1,270.3
	STONE/MASONRY PAVING BLOCKS	0.10	363.0	4.3%	1	435.6	72.6	290.4
	VEGETATIVE SWALE	1.20	4,356.0	52.2%	1	6,098.9	1,742.9	2,613.1
	SURFACE LANDSCAPE	0.40	1,452.0	17.4%	1	2,178.2	726.2	725.8
	TOTAL	2.30	8,348.0	100.0%			5,367.7	2,981.3
T5 - C		4.75						
	CRUSHED STONE/GRAVEL/SHELL	1.10	3,993.0	23.2%	1	4,392.5	389.5	3,593.5
	ASPHALT	0.55	1,996.5	11.6%	1	1,996.6	0.1	1,996.4
	STONE/MASONRY PAVING BLOCKS	0.50	1,815.0	10.5%	1	2,178.1	363.1	1,451.9
	VEGETATIVE SWALE	0.35	1,270.5	7.4%	1	1,778.8	508.3	762.2
	SHALLOW CHANNEL FOOTPATH	0.40	1,452.0	8.4%	4	2,178.1	726.1	725.9
	GUTTER/CURB	0.40	1,452.0	8.4%	1	1,452.1	0.1	1,451.9
	SCULPTED WATERCOURSE	0.20	726.0	4.2%	1	1,370.0	644.0	82.0
	LANDSCAPED TREE WELL	0.10	363.0	2.1%	23	399.3	36.3	326.7
	POOL/FOUNTAIN	0.00	7.3	0.0%	1	12.0	-4.7	2.5
	PAVED BASIN	0.05	181.5	1.1%	1	1,875.0	1693.5	-1,812.0
	SURFACE LANDSCAPE	1.10	3,993.0	23.2%	1	5,889.7	1,996.7	1,996.3
	TOTAL	4.75	17,249.8	100.0%			6,372.8	10,677.3
T5 - D		2.09						
	ASPHALT	0.25	907.5	12.0%	1	907.6	0.1	907.4
	STONE/MASONRY PAVING BLOCKS	0.35	1,270.5	16.7%	1	1,524.8	294.3	1,016.2
	SHALLOW CHANNEL FOOTPATH	0.34	1,234.2	16.3%	1	1,851.5	617.3	616.9
	GUTTER/CURB	0.10	363.0	4.4%	1	363.0	0.0	363.0
	PLANTING STRIP TRENCH	0.15	544.5	7.2%	1	816.8	272.3	272.2
	SURFACE LANDSCAPE	0.90	3,267.0	43.1%	1	4,900.9	1,833.9	1,633.1
	TOTAL	2.09	7,586.7	100.0%			2,778.0	4,808.8
T5 - E		0.79						
	NATURAL CREEK	0.10	363.0	12.7%	1	671.7	306.7	54.3
	MASONRY TROUGH	0.10	363.0	12.7%	1	617.2	294.2	108.8
	POOL/FOUNTAIN	0.18	653.4	22.8%	1	1,111.0	487.6	195.8
	SURFACE LANDSCAPE	0.05	181.5	6.3%	1	272.3	90.8	90.7
	GREEN FINGER	0.36	1,306.8	45.6%	1	2,418.0	1,111.2	185.6
	TOTAL	0.79	2,867.7	100.0%			2,222.6	645.1
POST DEVELOPMENT TOTAL		13.01	47,233.6	100.0%			21,701.2	25,932.3

*2011 DPZ CHARLOTTE - INTERNAL DRAFT JANUARY 11



LIGHT IMPRINT TOOL CALIBRATION RENDERING

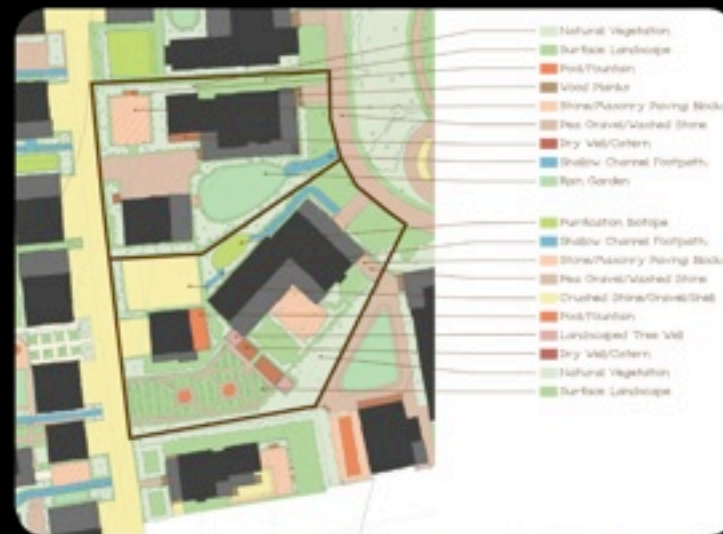
Carlton Landing - Catchment Area Calculations

The table at left shows the calculations of the first inch of rainwater in a storm event for each catchment area, within the T-5, Urban Center. The tools work together, as a treatment train, to provide channelling, storage, and filtration capacity to control the rainwater.

For example, Catchment Area A shows how the amount of rainwater can be captured with six Light Imprint tools: Asphalt, Crushed Stone/Gravel, Gutter/Curb, Planting Strip Trench, Stone/Masonry Paving Blocks, and Shallow Channel Footpath/Rainwater Conveyor. Each tool is analyzed for its surface area, infiltration permeability and storing capabilities, in order to determine the rainwater flowing off the catchment area. The goal for the combined catchment areas is to be able to retain as much rainwater runoff in the post development condition as the volume occurred in the pre-development conditions. The T5 zone is able to retain a portion of the first one-inch of a storm. The collective assembly of the catchment areas, and the rural-to-urban transect of the development, enables the achievement of a pre-development runoff condition overall for the site.



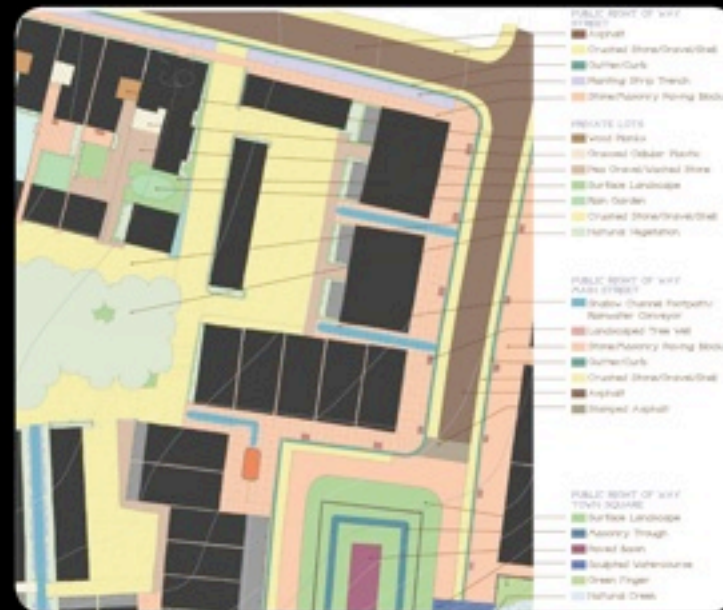
T3 - ANNOTATED SITE PLAN WITH PHYSICAL FEATURES



T3 - ANNOTATED SITE PLAN WITH LIGHT IMPRINT TOOLS



T5 - ANNOTATED SITE PLAN WITH PHYSICAL FEATURES



T5 - ANNOTATED SITE PLAN WITH LIGHT IMPRINT TOOLS



T3 - GREEN STREET - DETAIL



VEGETATIVE STONE SWALE - DRY AND WET



T3 - BIO-RETENTION SWALE - DETAIL



T3 - BIO-RETENTION SWALE - DETAIL



T3 - BIO-RETENTION SWALE OVERFLOW OUTLET



T5 - SCULPTED WATERCOURSE



T4 - BIO-RETENTION SWALE OVERFLOW OUTLET



T4 - PLANTING STRIP TRENCH

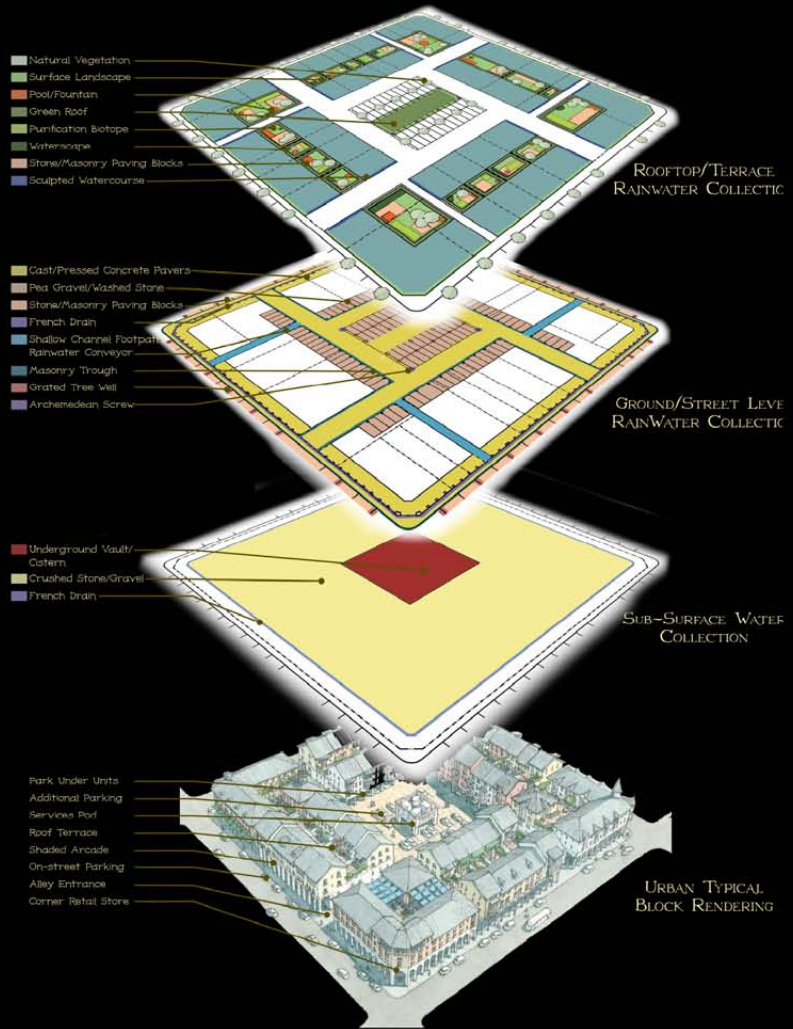


T5 - ARCHADEAN SCREW

Light Imprint Tool Details are designed with the site, climate, topography, and architecture in mind. Each tool is a beautiful civic gesture, as well as a functioning stormwater management tool. Shows are tools that channel, store, and filter rainwater.



T5 - LIGHT IMPRINT TOOL OVERLAY

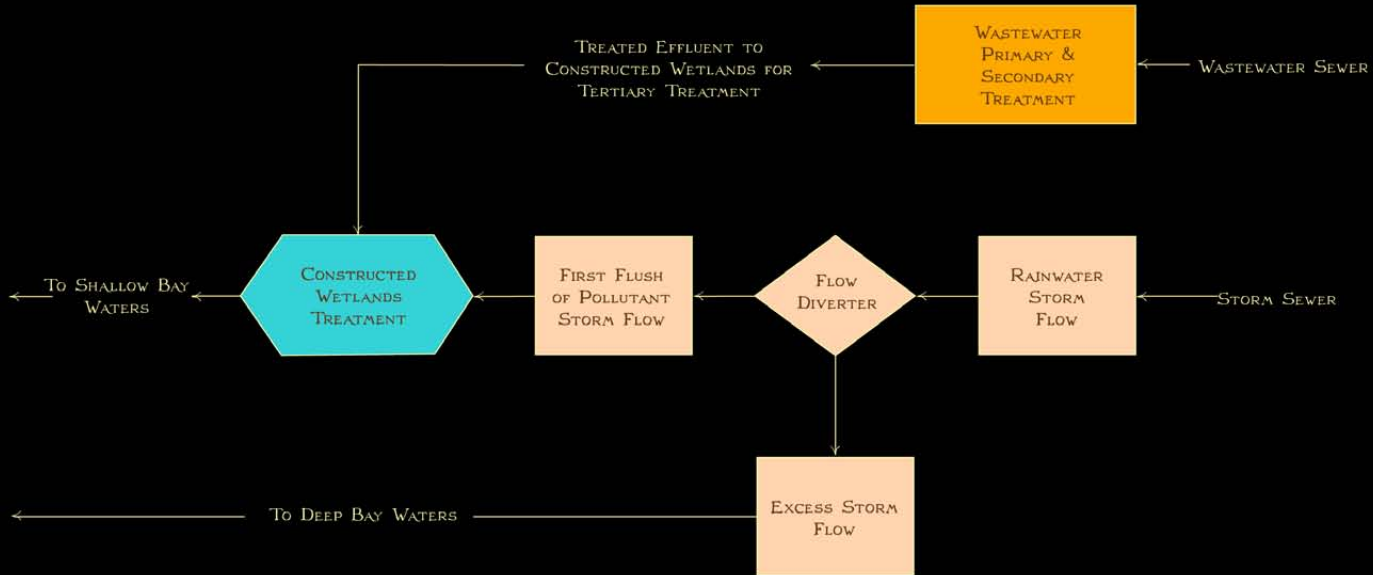
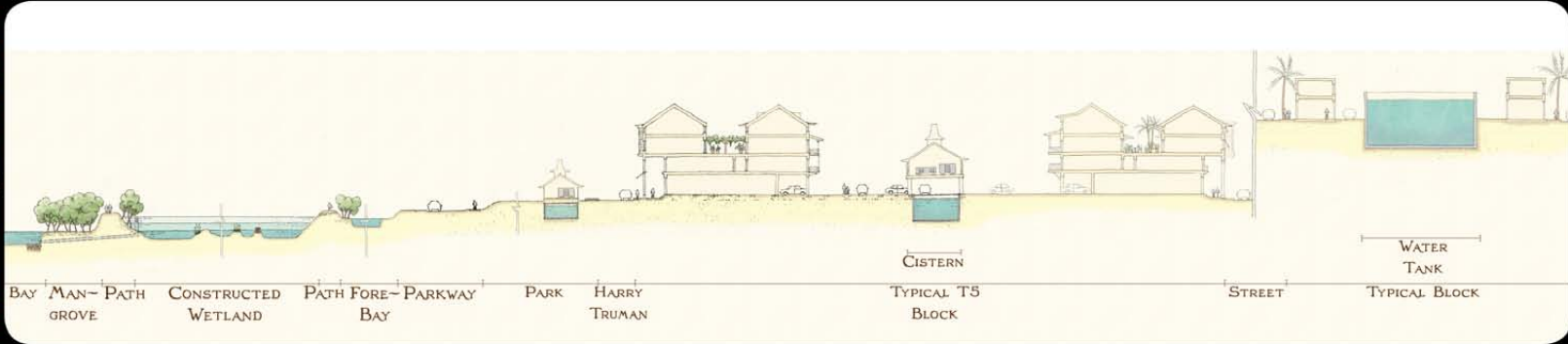


T5 - BLOCK DETAIL - DETAIL

DPZ CHARLOTTE

PORT-AU-PRINCE, HAITI							
T5-BLOCK SAMPLE AREA TABLE							
	DRAINAGE AREA (ACRES)	1ST INCH RAINFALL VOLUME (CUBIC FEET)	PERCENT TOOL AREA (%)	NUMBER OF TOOLS	CUBIC AREA OF TOOL (H ₂ O/D=CUBIC FEET)	RAINWATER COLLECTED (CUBIC FEET)	RAINWATER RUNOFF (CUBIC FEET)
EXISTING DEVELOPMENT CONDITION							
ROOFTOP/TERRACE AREA							
NATURAL VEGETATION	0.20	726.0	6.7%	1	871.3	145.3	580.7
SURFACE LANDSCAPE	0.35	1,270.5	11.7%	1	1,461.2	379.7	890.8
POOL/FOUNTAIN	0.05	181.5	1.7%	1	272.3	-90.8	90.7
GREEN ROOF	1.40	5,062.0	46.7%	1	5,062.5	1,793.6	3,268.4
PURIFICATION BIOTOPE	0.25	907.5	8.3%	1	1,270.6	320.3	587.2
WATERSCAPE	0.15	544.5	5.0%	1	653.5	162.7	381.8
STONE/MASONRY PAVING BLOCKS	0.40	1,452.0	13.3%	1	2,178.1	726.1	725.9
SCULPTED WATERCOURSE	0.20	726.0	6.7%	8	871.3	179.5	546.5
TOTAL	3.00	10,890.0	100.0%			3,616.4	7,092.0
GROUND/STREET AREA							
CAST/PRESSED CONCRETE PAVERS	0.85	3,448.5	31.7%	1	3,966.1	517.6	2,930.9
PEA GRAVEL/WASHED STONE	0.90	3,267.0	30.0%	1	4,900.8	1,633.8	1,633.2
STONE/MASONRY PAVING BLOCKS	0.35	1,270.5	11.7%	1	1,397.7	127.2	1,143.3
FRENCH DRAIN	0.10	363.0	3.3%	1	363.0	22.5	340.5
SHALLOW CHANNEL FOOTPATH/RAINWATER CONVEYOR	0.35	1,270.5	11.7%	1	1,524.7	448.4	822.1
MASONRY TROUGH	0.10	363.0	3.3%	1	435.6	14.4	348.2
GRATED TREE WELL	0.20	726.0	6.7%	32	726.1	101.7	624.3
ARCHIMEDEAN SCREW	.05	181.5	1.7%	1	272.8	36.5	145.2
TOTAL	3.00	10,890.0	100.0%			2,902.3	7,987.7
SUB-SURFACE AREA							
UNDERGROUND VAULT/CISTERN	0.35	1,270.5	11.7%	1	7,623.1	-6,352.6	-7,623.1
CRUSHED STONE/GRAVEL	2.50	8,078.0	83.3%	1	54,450.8	-45,375.8	-54,450.8
FRENCH DRAIN	0.35	544.5	5.0%	1	844.6	22.2	822.3
TOTAL	3.00					-51,706.2	-61,551.7
EXISTING VS. POST CONDITION RUNOFF						467%	-36,273.9

*2011 DPZ CHARLOTTE - INTERNAL DRAFT JANUARY 31





HARRY TRUMAN PARKWAY : THE GREEN BOULEVARD MITIGATES STORMWATER AND CREATED A MULTISE BOULEVARD FOR PEDESTRIANS, CYCLISTS, AND VEHICLES.

DEPARTMENT OF CULTURE PARK : THE PARK AND ITS VAST AREAS OF LANDSCAPING AND OPEN SPACE, ALLOWS FOR RAINWATER STORAGE AND INFILTRATION.

UNITED NATIONS SQUARE : THE SQUARE CONTROLS RAINWATER VIA ITS SURFACE LANDSCAPE, PERMEABLE PAVEMENT AND FOUNTAINS.

WASTEWATER TREATMENT PLANT, TYP : THE WASTEWATER TREATMENT PLANT IS A 50Mx50M UNDERGROUND TANK THAT TREATS WASTE WATER BEFORE IT ENTERS THE BAY.

PRESIDENTIAL HOTEL COMPLEX : THE GROUNDS OF THE HOTEL COMPLEX ARE INTEGRATED INTO THE FOREBAY AREA, PART OF THE RAINWATER TREATMENT SYSTEM.

PORT AU PRINCE BAY, CARIBBEAN SEA : THE EXISTING SHORELINE IS RETAINED AND ENHANCED WITH RAIN AND WASTE WATER FEATURES. THIS SYSTEM WILL IMPROVE AND PROTECT THE HEALTH OF THE BAY.

TOUR-GUIDE BOAT LANDING : THE BOAT LANDING IS ALIGNED ON AXIS WITH THE PRESIDENTIAL PALACE. INTEGRATED INTO THE PARK, IT WILL HELP ACTIVATE IT AND CREATE A MORE SECURE ENVIRONMENT.

PEDESTRIAN PATH, TYP : THE PATHS WILL BE MADE OF PERMEABLE MATERIAL ALLOWING RAINWATER INFILTRATION AND PEDESTRIAN ACCESSIBILITY.

EXISTING DRAINAGE CHANNEL, TYP : THE PLAN RETAINS THE EXISTING DRAINAGE CHANNELS FOR SEVERE STORAGE OVERFLOW.

MANGROVE : THE MANGROVE PROTECTS FROM SEA SURGE, WHILE ALSO ACTING AS A WETLAND STABILIZER.

CONSTRUCTED WETLAND : THE MANMADE FRESHWATER CONSTRUCTED WETLAND SERVES AS A TERTIARY WASTEWATER TREATMENT AND PRIMARY RAINWATER FIRST FLUSH TREATMENT.

FRESHWATER FOREBAY : THE FOREBAY IS A STAGING AREA COLLECTING SEDIMENT AND DEBRIS WASHING FROM THE URBANIZED AREAS.



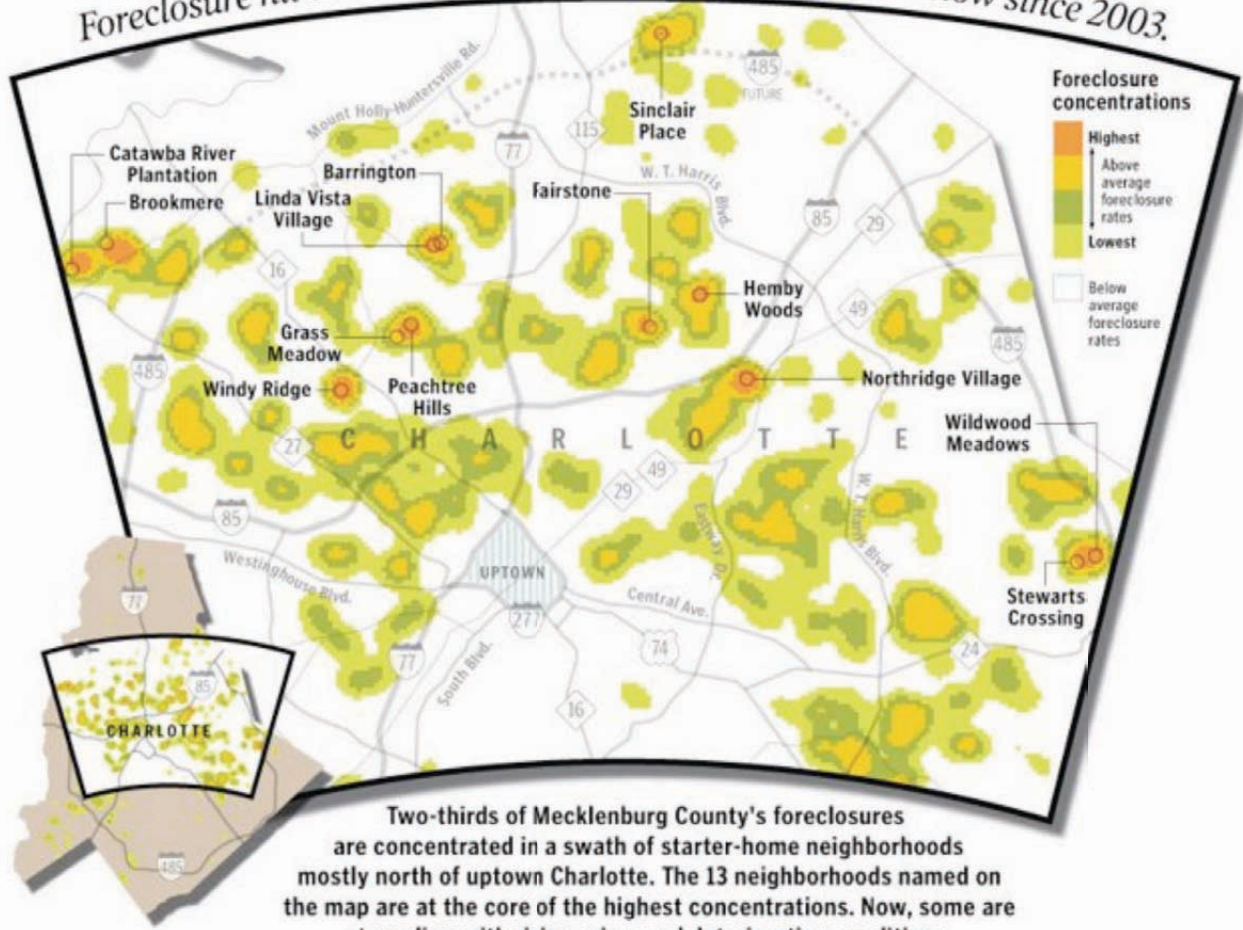
EXISTING SPRAWL INTERCHANGE ALONG THE STREETCAR ROUTE



SPRAWL INTERCHANGE RETROFITTED AS A LIGHT IMPRINT URBAN TOWN CENTER

?? ??

Foreclosure hit about 7,000 homes in the shaded areas below since 2003.



Two-thirds of Mecklenburg County's foreclosures are concentrated in a swath of starter-home neighborhoods mostly north of uptown Charlotte. The 13 neighborhoods named on the map are at the core of the highest concentrations. Now, some are struggling with rising crime and deteriorating conditions.

SOURCE: Observer analysis of Mecklenburg County property records TED MELLNIK- tmellnik@charlotteobserver.com WM PITZER- bpitzer@charlotteobserver.com



Sprawl Repair Manual

provides a step-by-step design, regulatory, and implementation process.

Techniques are derived from planning work and built projects.

SPRAWL TYPES		T1	T2	T3	T4	T5	T6	TECHNIQUES	INCENTIVES/ BENEFITS	COMMUNITY UNITS
S-3 RURAL SUBDIVISIONS		50% min.		10 - 30 %	20 - 40%			<ul style="list-style-type: none"> Cluster at intersections through TDR, modified PDRs, purchase of Conservation Easement Concentrate infrastructure Create a rural Green Introduce Live-Works, farmers market 	<ul style="list-style-type: none"> Deferred taxation; higher Density; permitting By Right Packaged Sewer Service within 1/4 square mile Hamlet growing into a village 	CLD
S-4 SINGLE FAMILY SUBDIVISIONS		No Minimum		10 - 30 %	30 - 60 %		10 - 30 %	<ul style="list-style-type: none"> Introduce new building types and Retail/Office/Lodging/Civic uses Connect Thoroughfares Repair Thoroughfares; add pedestrian and bike Paths Define and make usable Open and Civic Space 	<ul style="list-style-type: none"> Higher Density; additions; Out-buildings; permitting By Right Infrastructure incentives Transit potential Neighborhood/Town Square 	TND
S-5 MULTI FAMILY SUBDIVISIONS		No Minimum		10 - 30 %	30 - 60 %		10 - 30 %	<ul style="list-style-type: none"> Introduce new building types and Retail/Office/Lodging/Civic uses Connect Thoroughfares Rationalize parking; add garages Repair Thoroughfares; add pedestrian and bike Paths Define and make usable Open and Civic Space 	<ul style="list-style-type: none"> Additional development potential; permitting By Right Incentives for infrastructure Incentives for garages Transit potential Community gathering places 	TND
S-6 SHOPPING CENTERS & STRIPS					10 - 30 %		10 - 30 %	<ul style="list-style-type: none"> Introduce new building types and Residential/Office/Lodging/Civic uses Connect Thoroughfares; add Streets in front of stores Rationalize parking; Add garages Define and make usable Open and Civic Space 	<ul style="list-style-type: none"> Additional development potential; permitting By Right; TIFs, CDBG Incentives for infrastructure Incentives for garages Transit potential Community gathering places 	RCD / TND
S-7 BUSINESS PARKS & SUB-CAMPUSES					10 - 30 %		10 - 30 %	<ul style="list-style-type: none"> Introduce new building types and Residential/Office/Lodging/Civic uses Connect Thoroughfares; create urban Blocks Rationalize parking; add garages Define and make usable Open and Civic Space 	<ul style="list-style-type: none"> Additional development potential; permitting By Right; TIFs, CDBG Incentives for infrastructure Incentives for garages Transit potential Community gathering places 	RCD / TND
S-8 MALLS					10 - 30 %		10 - 30 %	<ul style="list-style-type: none"> Introduce new building types and Residential/Office/Lodging/Civic uses Connect Thoroughfares; create urban Blocks Rationalize parking; add garages Define and make usable Open and Civic Space 	<ul style="list-style-type: none"> Additional development potential; permitting By Right; TIFs, CDBG Incentives for infrastructure Incentives for garages Transit potential Community gathering places 	RCD
S-9 EDGE CITIES					10 - 30 %		10 - 30 %	<ul style="list-style-type: none"> Introduce new building types and Residential/Office/Lodging/Civic uses Connect Thoroughfares; create urban Blocks Rationalize parking; add garages Repair Thoroughfares; resolve complicated interchanges and intersections into urban types Define and make useable Open and Civic Space 	<ul style="list-style-type: none"> Additional development potential; permitting By Right; TIFs, CDBG Incentives for infrastructure Incentives for garages Opening additional real estate for development. Transit potential Community gathering places 	RCD

GOAL:

To equip professional planners, designers, developers, regulators, and concerned citizens – with polemical as well as practical strategies drawn from two decades of successful repair projects.

SMARTCODE MODULE

SPRAWL REPAIR

Municipality

Author: Duany Plater-Zyberk & Co. Draft: June 8, 2009

TABLE SR1: Sector/Community Allocation. Table SR1 defines the geography, including both natural and infrastructure elements, determining areas that are or are not suitable for development. Specific Community Units/Walkable Place Types (WPTs) of various intensities are allowable in specific Sectors. This table also allocates the proportions of Transect Zones within each Community Unit/WPT.

RURAL SUBDIVISIONS SINGLE FAMILY SUBDIVISIONS MULTIFAMILY SUBDIVISIONS SHOPPING CENTERS AND STRIPS BUSINESS PARKS AND SUBURBAN CAMPUSES MALLS EDGE CITIES SPRAWL TYPE THOROUGHFARES SPRAWL TYPE OPEN SPACE												
ALREADY DEVELOPED AREAS IN A TRADITIONAL TRANSECT-BASED PATTERN												
PROXIMITY TO MAJOR THOROUGHFARES AND TRANSIT												
PROXIMITY TO THOROUGHFARES												
MEDIUM SLOPES WOODLANDS												
FLOOD PLAIN OPEN SPACE TO BE ACQUIRED CORRIDORS TO BE ACQUIRED BUFFERS TO BE ACQUIRED LEGACY WOODLAND LEGACY FARMLAND LEGACY VIEWSHEDS OLD RESIDUAL OPEN SPACE												
SURFACE WATERBODIES PROTECTED WETLANDS PROTECTED HABITAT RIPARIAN CORRIDORS PURCHASED OPEN SPACE CONSERV. EASEMENTS LAND TRUST TRANSPORT CORRIDORS OLD OPEN SPACE												
RURAL GROWTH BOUNDARY			URBAN GROWTH BOUNDARY									
(PRIMARILY OPEN SPACE)			(PRIMARILY NEW COMMUNITIES)				(SUCCESSIONAL COMMUNITIES)		(SPRAWL TO BE REPAIRED)			
01	02	G1	G2	G3	G4	G5						
PRESERVED OPEN SECTOR	RESERVED OPEN SECTOR	RESTRICTED GROWTH SECTOR	CONTROLLED GROWTH SECTOR	INTENDED GROWTH SECTOR	INFILL GROWTH SECTOR	SPRAWL REPAIR SECTOR						
		CLD	CLD	TND	TND	RCD	TND	RCD	CLD	TND	RCD	
T1	NO MINIMUM	NO MINIMUM	50% MIN	50% MIN	NO MIN	NO MIN					VARIABLE	
T2	NO MINIMUM	NO MINIMUM										
T3			10 - 30%	10 - 30%	10 - 30%	10 - 30%		VARIABLE		VARIABLE	VARIABLE	
T4			20 - 40%	20 - 40%	30 - 60%	30 - 60%	10 - 30%	VARIABLE	VARIABLE	VARIABLE	VARIABLE	
T5				10 - 30%	10 - 30%	10 - 30%		VARIABLE	VARIABLE		VARIABLE	
T6						40 - 80%		VARIABLE			VARIABLE	

DRAFT

From the scale of the region to the building - turning subdivisions into walkable neighborhoods, shopping centers and malls into town centers, and more!



Before



After



Existing Conditions



Option A: Infilling of Parking Lots



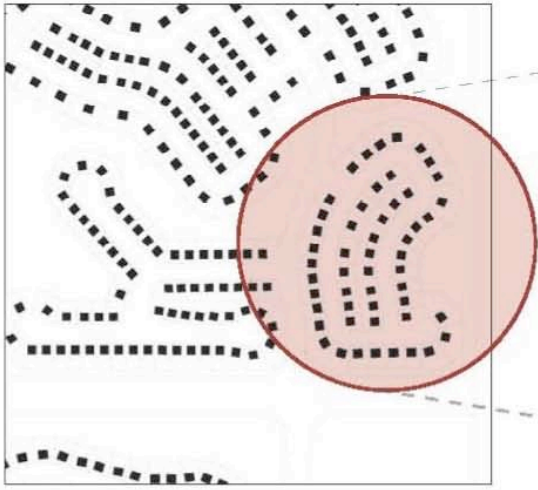
Option B: Creating a Main Street



Option C: Devolution of Mall into Agricultural Village

A New Life for a Dead Mall

- Overabundant retail space is rebalanced with complementary uses



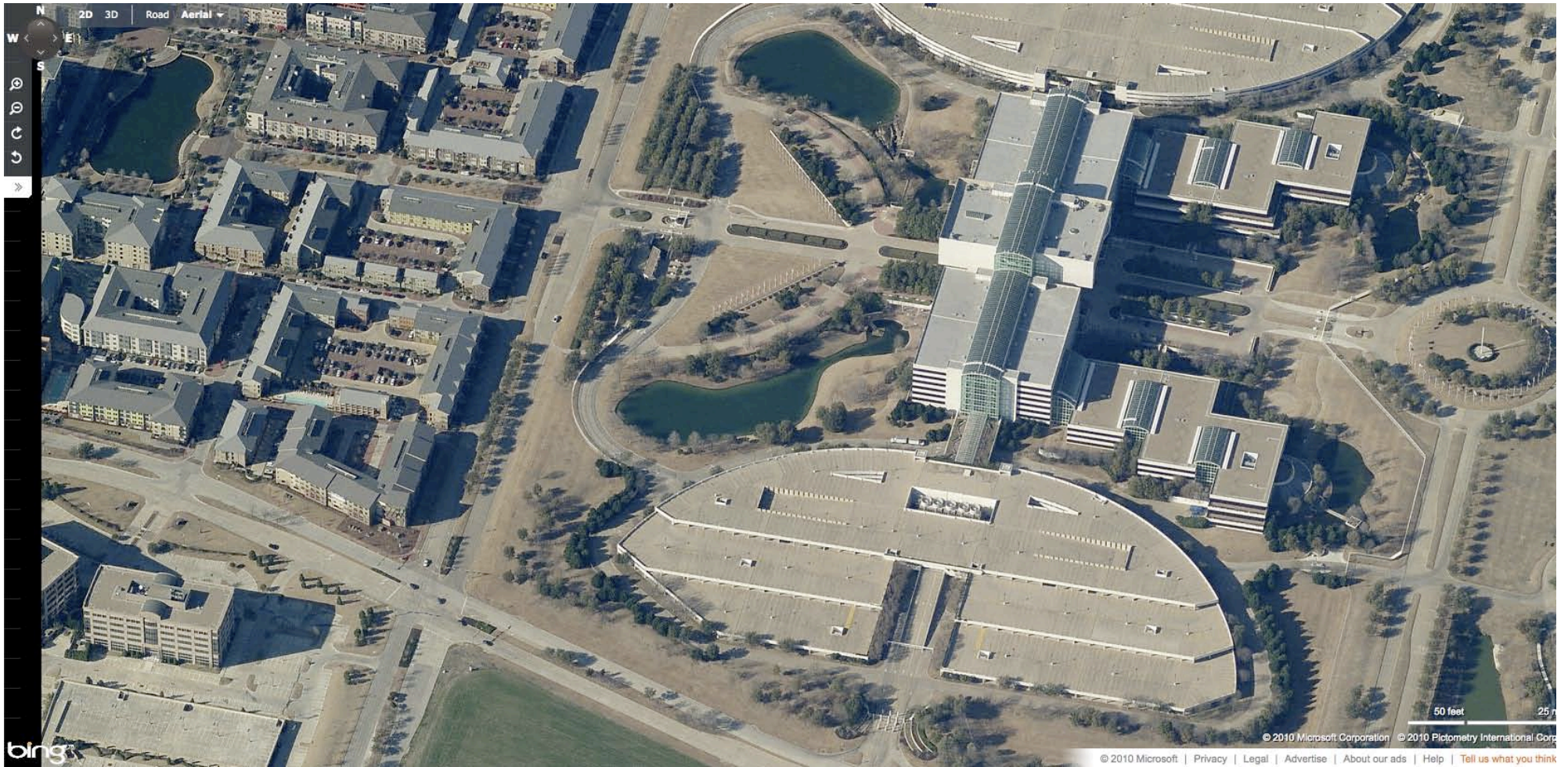
Before



After

From Pod to Place

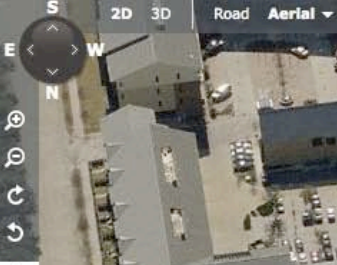
• Re-balance urban structure and land use from existing use to proposed diversity



bing

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What would a form-based sustainable lighting code look like in your community?

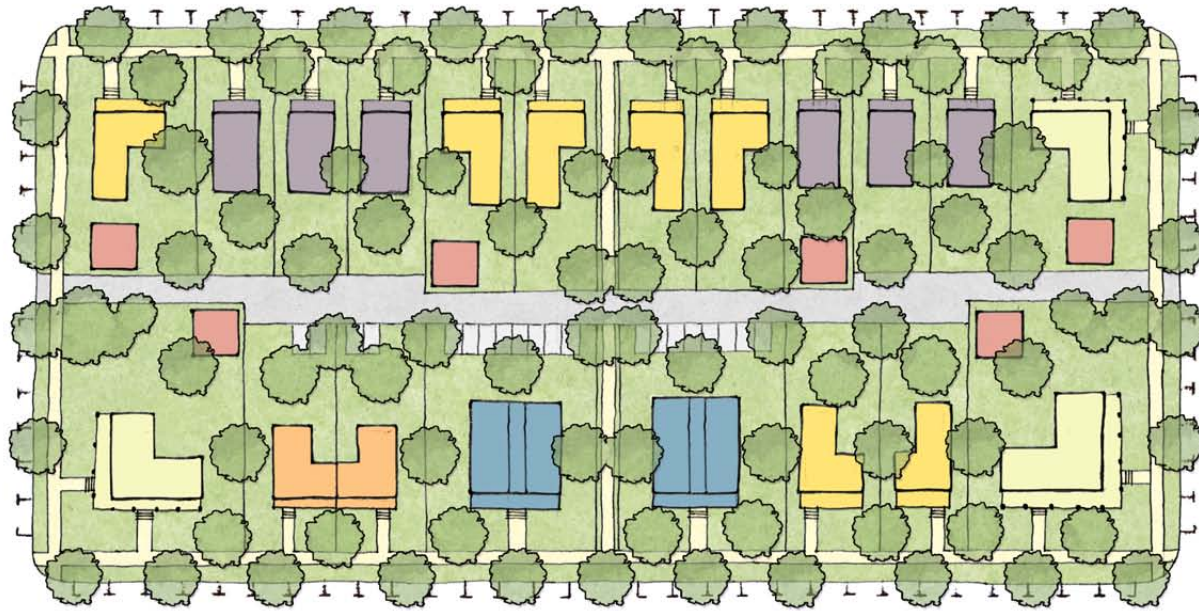
How would you integrate the apparatus of sustainability into your codes (passive house design, wind turbines, green roofs, photovoltaic's, rain barrels etc.)?

How would you integrate the practices of sustainability into your codes (seasonal grasses, front yard gardening, composting etc.)?

What water strategy would make the most sense in your community and what changes to the code would be necessary to achieve it (eg rain water harvesting, grey water use, reuse water, infiltration etc)

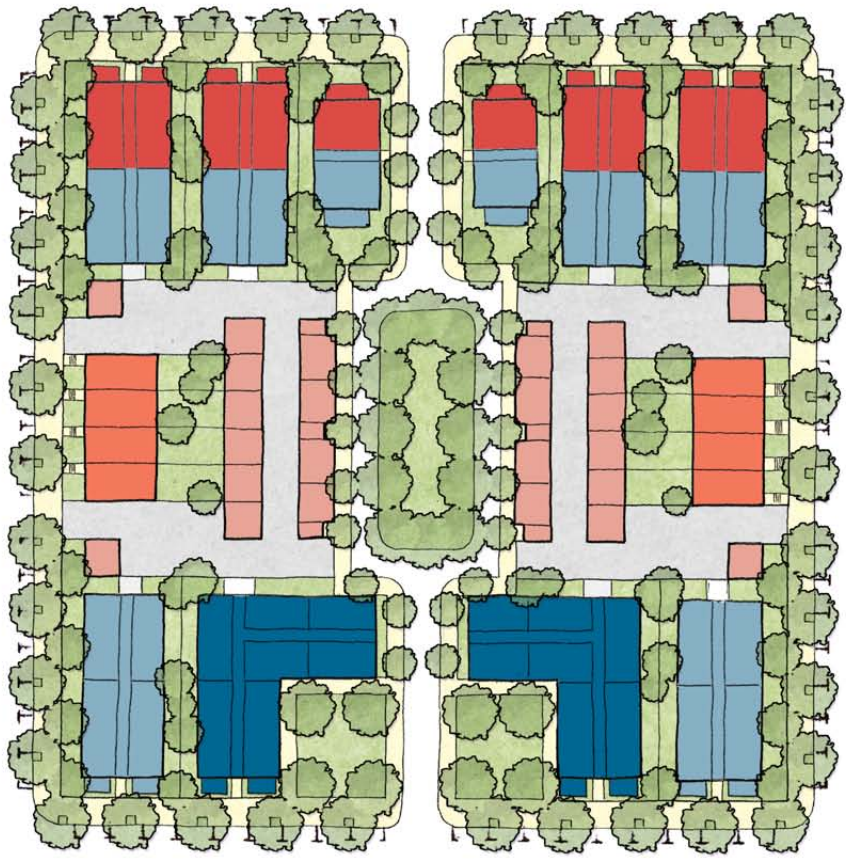
What code changes would be necessary to allow urban agriculture and how would that look in a form-based format?

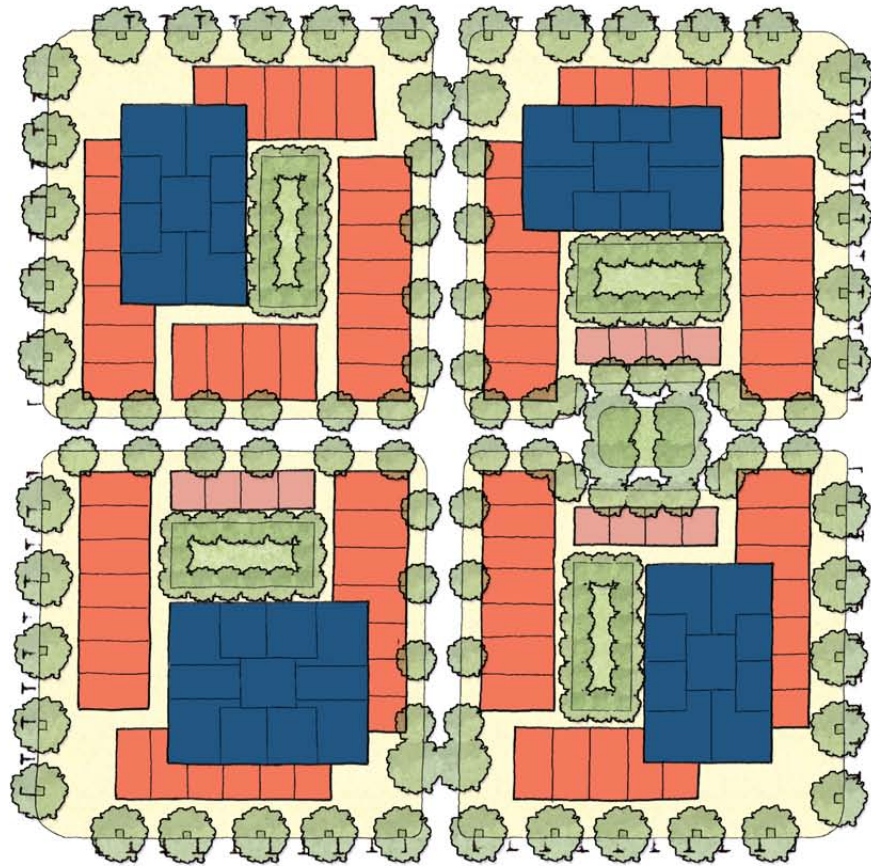


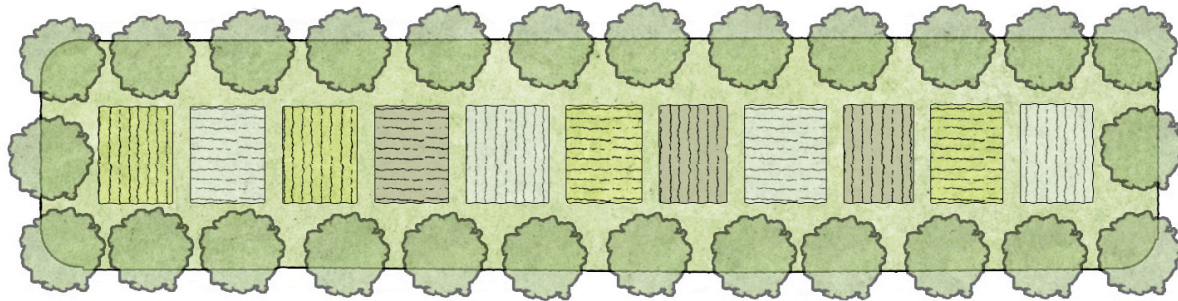
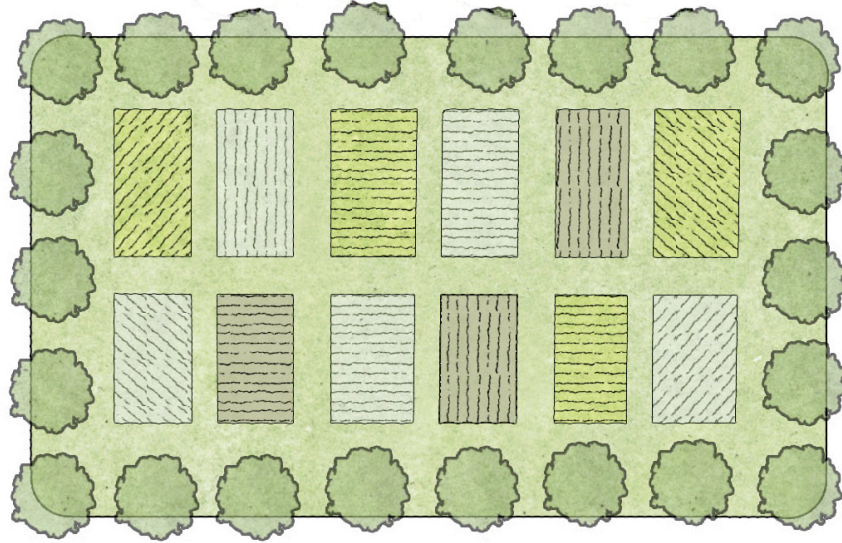
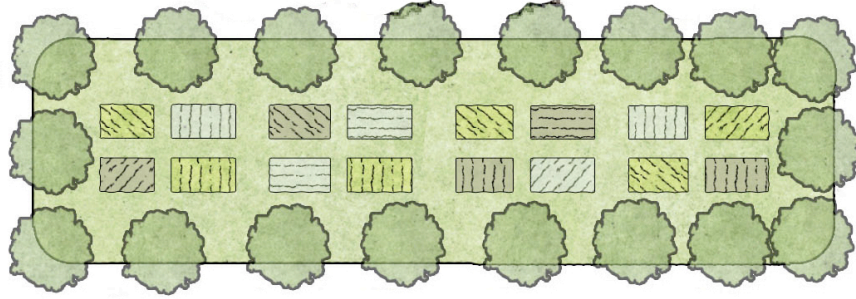


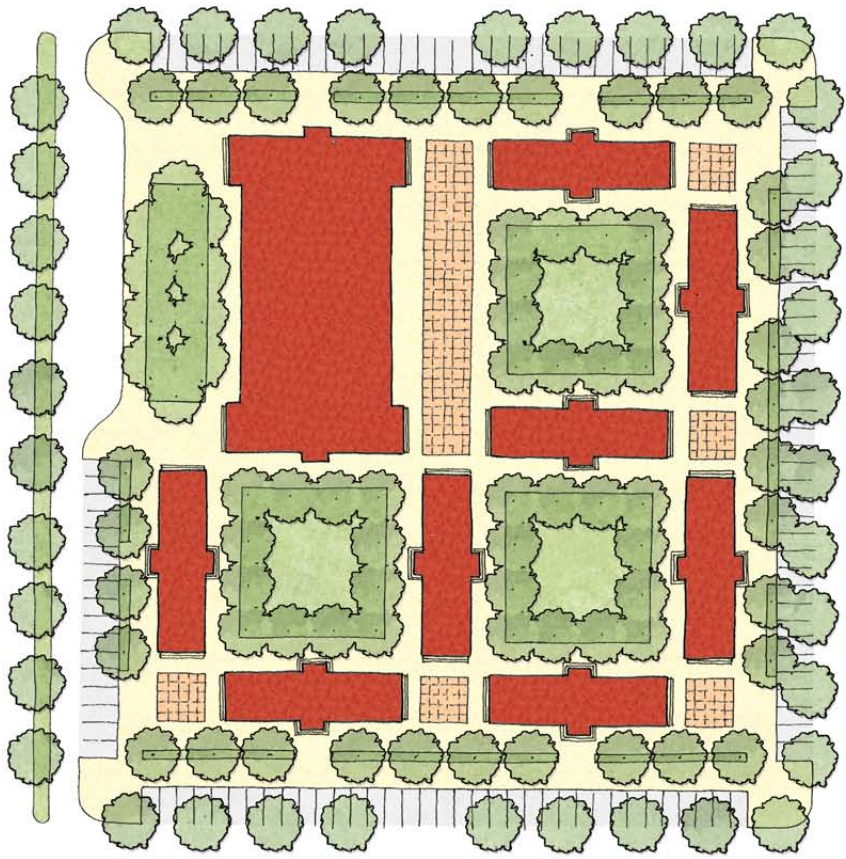












CIVIC BY DESIGN BIG IDEA 1/20
 CIVILIZING 20 PLACES IN 20 MONTHS

MIXED INCOME BLOCK TEMPLATE
 TRANSIT ORIENTED DEVELOPMENT CONDITION

Housing Type	Units By Income Level					
	HIGH	MEDIUM	AFFORDABLE			TOTAL
			60-80% A.M.I	30-60% A.M.I	<30% A.M.I	
MANSION						
HOUSE						
COTTAGE						
GRANNY FLAT						
BUNGALOW						
DUPLEX						
APARTMENT HOUSE						
TOWNHOUSE						
LIVE / WORK						
APARTMENT BUILDING						
MIXED USE						
TOWER						
TOTAL						

GOAL : 15,000 Affordable A.M.I** Units in 10 years
 SOLUTION : 2,500 Mixed-Income blocks in 10 years or 250 blocks a year

* Per the Urban Street Design Guideline Subdivision Ordinance
 ** Annual Median Income

CIVIC BY DESIGN BIG IDEA 1/20
 CIVILIZING 20 PLACES IN 20 MONTHS

MIXED INCOME BLOCK TEMPLATE
 WEDGE DEVELOPMENT CONDITION



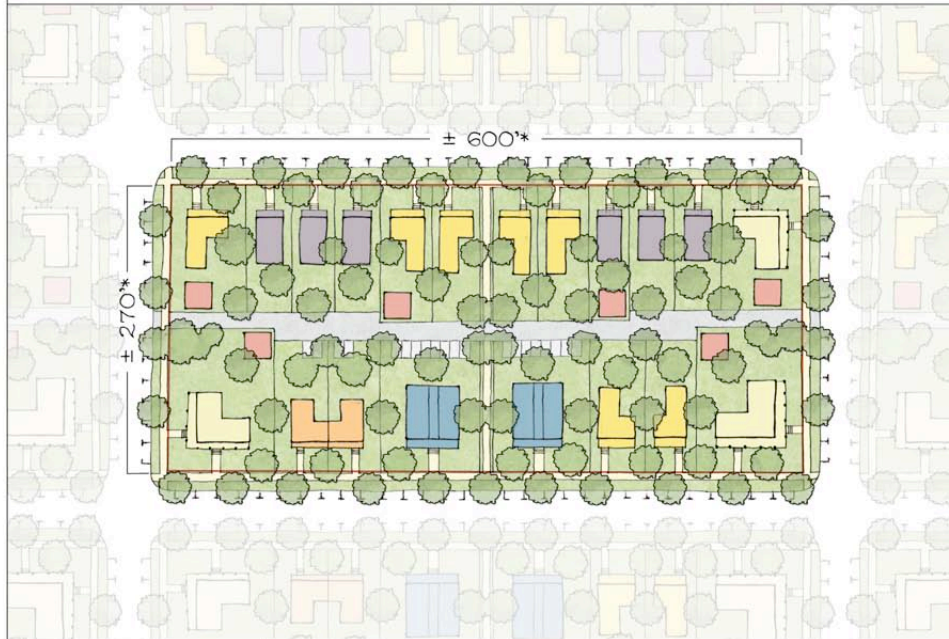
Housing Type	Units By Income Level					TOTAL
	HIGH	MEDIUM	AFFORDABLE			
			60-80% A.M.I	30-60% A.M.I	<30% A.M.I	
MANSION	2					2
HOUSE	1	2				3
COTTAGE		2				2
GRANNY FLAT		10			1	11
BUNGALOW		6	1			7
DUPLEX		1		1		2
APARTMENT HOUSE		4				4
TOTAL	3	25	1	1	1	31

GOAL : 15,000 Affordable A.M.I** Units in 10 years
 SOLUTION : 5,000 Mixed-Income blocks in 10 years or
 500 blocks a year at 4.5 DUA

* Per the Urban Street Design Guideline Subdivision Ordinance
 ** Annual Median Income

CIVIC BY DESIGN BIG IDEA 1/20
 CIVILIZING 20 PLACES IN 20 MONTHS

MIXED INCOME BLOCK TEMPLATE
 WEDGE DEVELOPMENT CONDITION



Housing Type	Units By Income Level					TOTAL
	HIGH	MEDIUM	AFFORDABLE			
			60-80% A.M.I	30-60% A.M.I	<30% A.M.I	
MANSION	3					3
HOUSE	1	6				7
COTTAGE		6				6
GRANNY FLAT		5			1	6
DUPLEX		1	1			2
APARTMENT HOUSE		7		1		8
TOTAL	4	25	1	1	1	32

GOAL : 15,000 Affordable A.M.I** Units in 10 years
 SOLUTION : 5,000 Mixed-Income blocks in 10 years or
 500 blocks a year at 6.5 DUA

* Per the Urban Street Design Guideline Subdivision Ordinance
 ** Annual Median Income

CIVIC BY DESIGN BIG IDEA 1/20
 CIVILIZING 20 PLACES IN 20 MONTHS

MIXED INCOME BLOCK TEMPLATE
 CORRIDOR DEVELOPMENT CONDITION



Housing Type	Units By Income Level					TOTAL
	HIGH	MEDIUM	AFFORDABLE			
			60-80% A.M.I	30-60% A.M.I	<30% A.M.I	
COTTAGE	2					2
GRANNY FLAT		18	1		1	20
DUPLEX		1	1			2
APARTMENT HOUSE	2	2				4
TOWNHOUSE		8			1	9
LIVE / WORK	1	2		1		4
APARTMENT BUILDING	1	11				12
MIXED USE		11		1		12
TOTAL	6	53	2	2	2	65

GOAL : 15,000 Affordable A.M.I** Units in 10 years
 SOLUTION : 2,500 Mixed-Income blocks in 10 years or
 250 blocks a year at 22 DUA

* Per the Urban Street Design Guideline Subdivision Ordinance
 ** Annual Median Income

CIVIC BY DESIGN BIG IDEA 1/20
 CIVILIZING 20 PLACES IN 20 MONTHS

MIXED INCOME BLOCK TEMPLATE
 CENTER/CORRIDOR DEVELOPMENT CONDITION



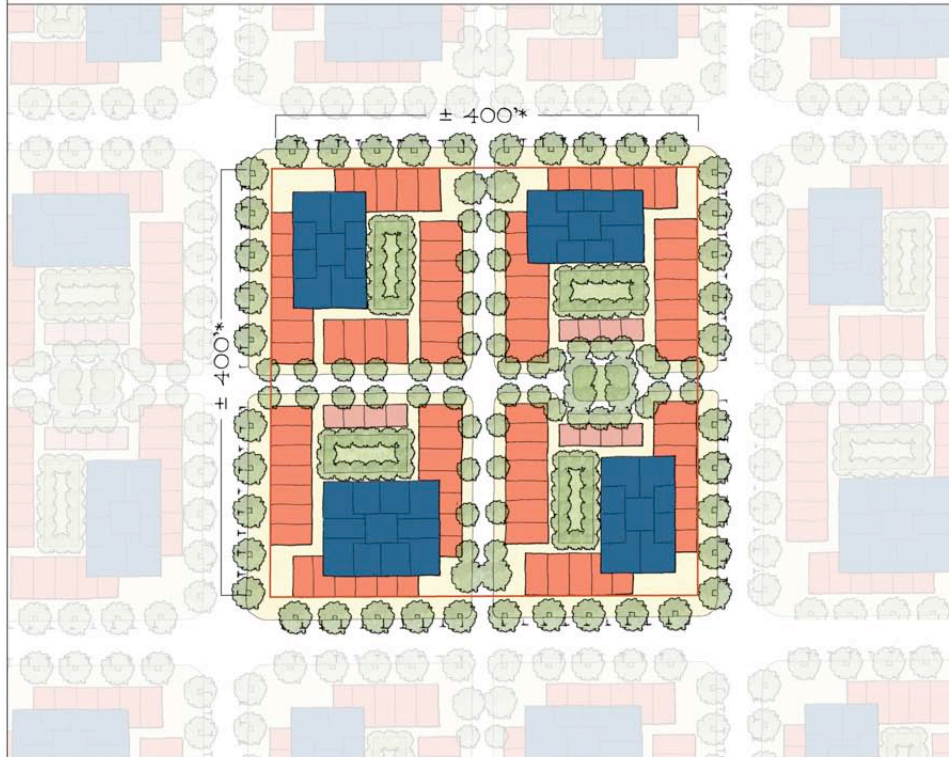
Housing Type	Units By Income Level					
	HIGH	MEDIUM	AFFORDABLE			TOTAL
			60-80% A.M.I	30-60% A.M.I	<30% A.M.I	
GRANNY FLAT		26	1	1	4	32
APARTMENT HOUSE	10	70	2	2		84
TOWNHOUSE	2	4	2			8
APARTMENT BUILDING	4	34		2	2	42
TOTAL	16	134	5	5	6	166

GOAL : 15,000 Affordable A.M.I** Units in 10 years
 SOLUTION : 940 Mixed-Income blocks in 10 years or
 94 blocks a year at 38 DUA

* Per the Urban Street Design Guideline Subdivision Ordinance
 ** Annual Median Income

CIVIC BY DESIGN BIG IDEA 1/20
 CIVILIZING 20 PLACES IN 20 MONTHS

MIXED INCOME BLOCK TEMPLATE
 CENTER DEVELOPMENT CONDITION



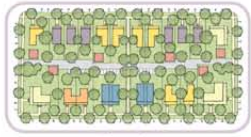
Housing Type	Units By Income Level					
	HIGH	MEDIUM	AFFORDABLE			TOTAL
			60-80% A.M.I	30-60% A.M.I	<30% A.M.I	
GRANNY FLAT		5	5		2	12
TOWNHOUSE	20	47	5	10		82
TOWER	57	568	15	15	25	680
TOTAL	77	620	25	25	27	774

GOAL : 15,000 Affordable A.M.I** Units in 10 years
 SOLUTION : 194 Mixed-Income blocks in 10 years or
 19.4 blocks a year at 193 DUA

* Per the Urban Street Design Guideline Subdivision Ordinance
 ** Annual Median Income



Rural



Sub-urban



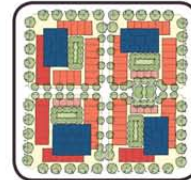
Learning Cottage



General Urban



Urban Center



Urban Core



Agriculture Blocks



Plaza

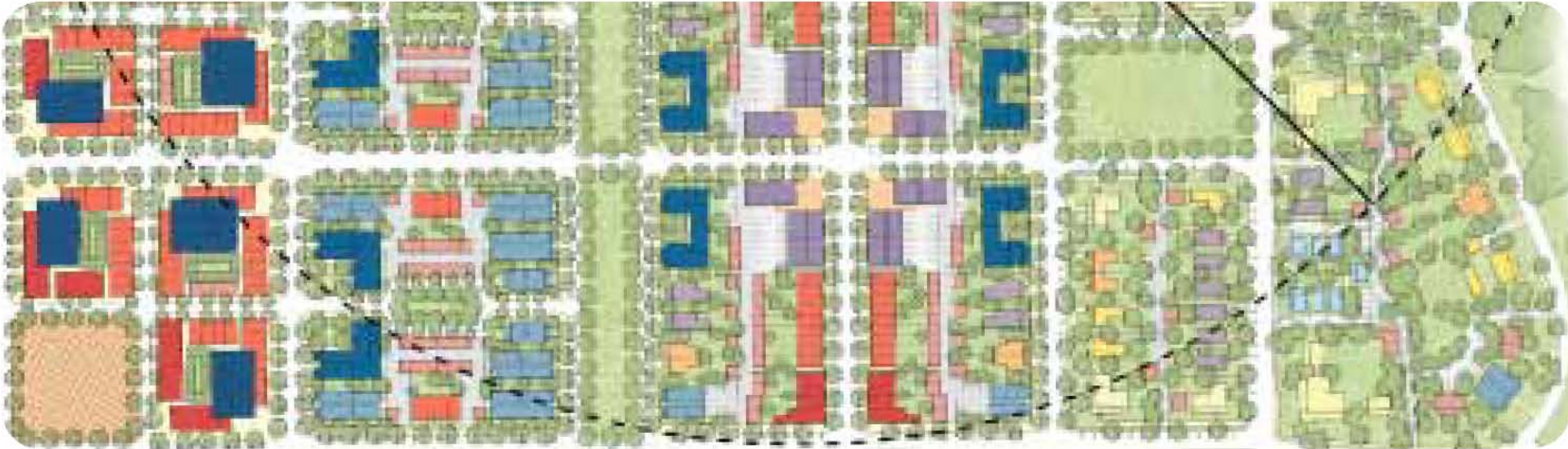
URBAN CORE

URBAN CENTER

GENERAL URBAN

SUB-URBAN

RURAL

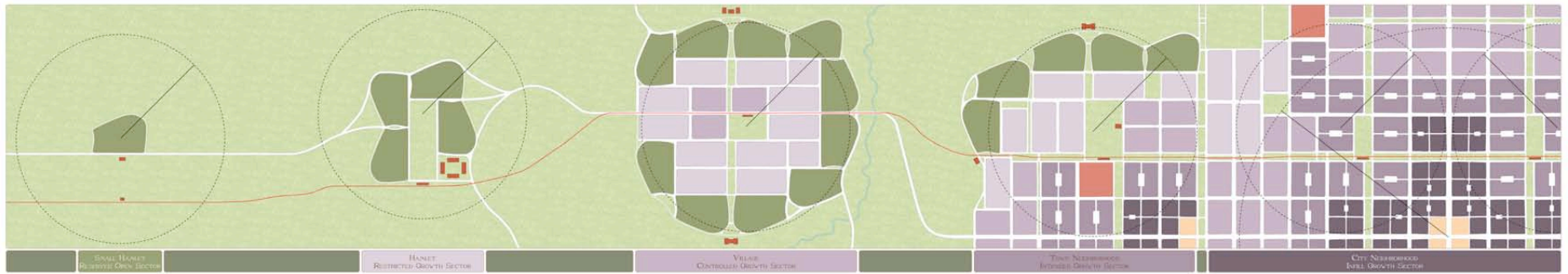


SEASONAL URBANISM

How would you integrate the apparatus of sustainability into your codes (passive house design, wind turbines, green roofs, photovoltaic's, rain barrels etc.)? How would you integrate the practices of sustainability into your codes (seasonal grasses, front yard gardening, composting etc.)?

What water strategy would make the most sense in your community and what changes to the code would be necessary to achieve it (eg rain water harvesting, grey water use, reuse water, infiltration etc)

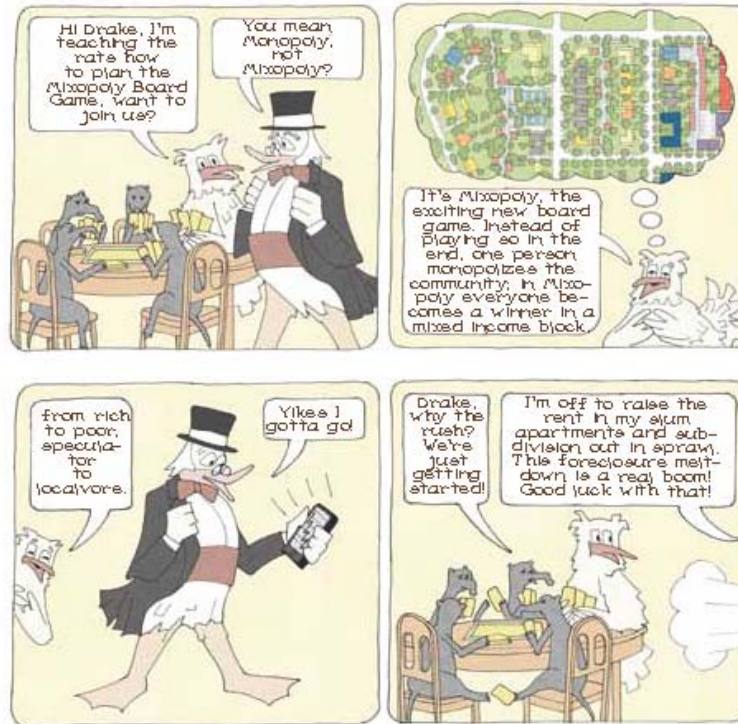
What code changes would be necessary to allow urban agriculture and how would that look in a form-based format?







THE CHICKEN



To learn more about the new Mixopoly Game and advancements in 2011 visit:
<http://www.civicbydesign.com>

The Mixopoly Game can be ordered through:
info@civicbydesign.com

For an example of a Smartcode with an agricultural add-on and lots of other stuff go to the website:
<http://transect.org/retrofit.html>

MIXOPOLY



LIGHT IMPRINTER'S ALMANAC Mixopoly

You can use the Mixopoly Game:

- » to jumpstart a discussion of mixed-income neighborhood design
- » to focus on the value of design and aesthetics within sustainable communities
- » allow non-designers to think creatively in a hands-on workshop
- » to create a custom design for a community through public participation
 - » to complement diverse approaches for providing affordable, mixed-income housing

