FROM ENGINEERS TO ARBORISTS- THE EVOLUTION OF A SIDEWALK REPAIR PROJECT IN COCONUT GROVE, FLORIDA

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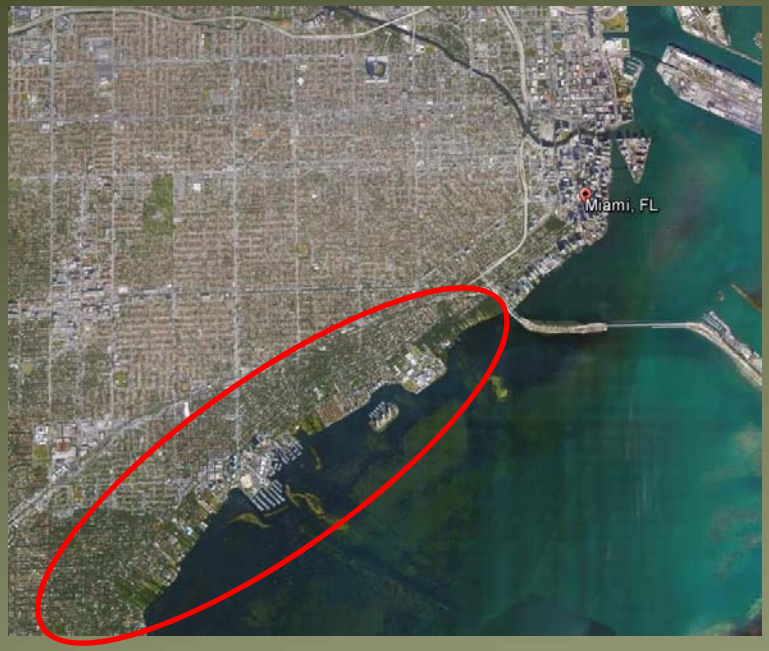
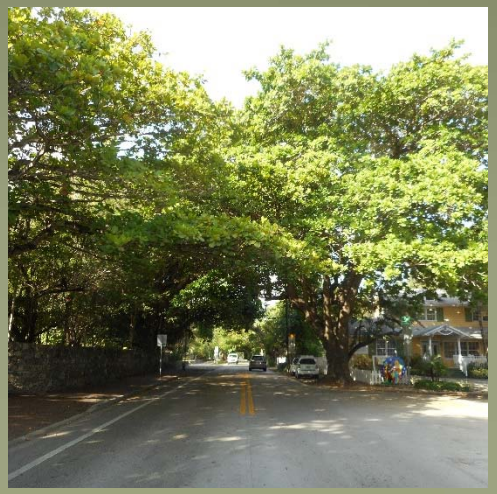
Coconut Grove





PROJECT SCOPE

- Analyze optional hardscape and landscape materials for enhancement and improvement of pedestrian experience
  - Analyze sidewalk materials and recommend preferred option
  - Analyze tree spaces and recommend preferred option
  - Analyze condition of existing trees
- Prepare recommendations for sidewalk replacement materials, preservation of quality trees, removal and replacement of bad trees to ensure canopy of Coconut Grove.

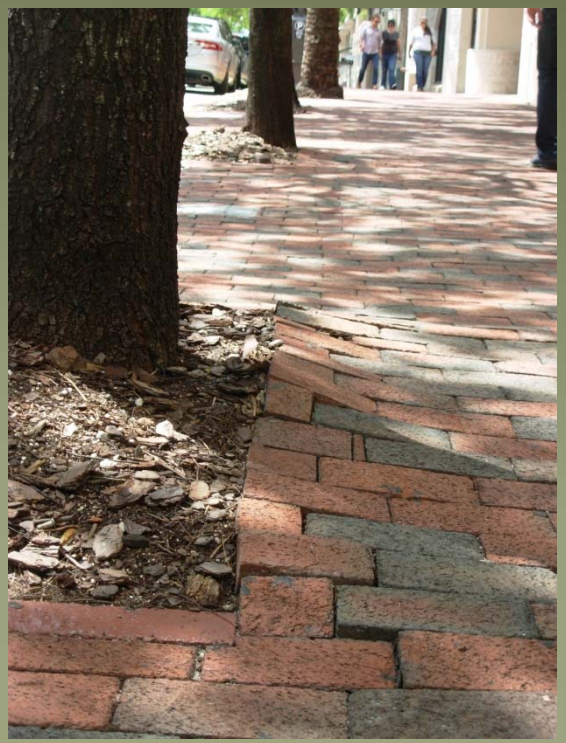
Proposed Street Improvements

PROCESS

- Evaluate existing conditions
- Paving design and decisions
- Planter design
- Landscape design and tree selections
- Public involvement
- Preparation of Construction Documents
- Permitting
- Construction
- Maintenance

Sidewalk conditions and problems:

Lifting & settlement of clay pavers



Sidewalk conditions and problems :

Broken clay pavers at driveways

Sidewalk conditions and problems:

- Grading significantly higher at building edge vs. top of curb
- No ADA compliance

Tree space conditions and problems:

Undefined and uneven edges

Tree space conditions and problems:

Root bound trees against curb and edges

Tree space conditions and problems:

Constrained tree space – compounded by added plastic edge and fencing

Tree space conditions and problems:

Tree grates with concrete collars and concrete planters

Raised planters

Tree space conditions and problems:

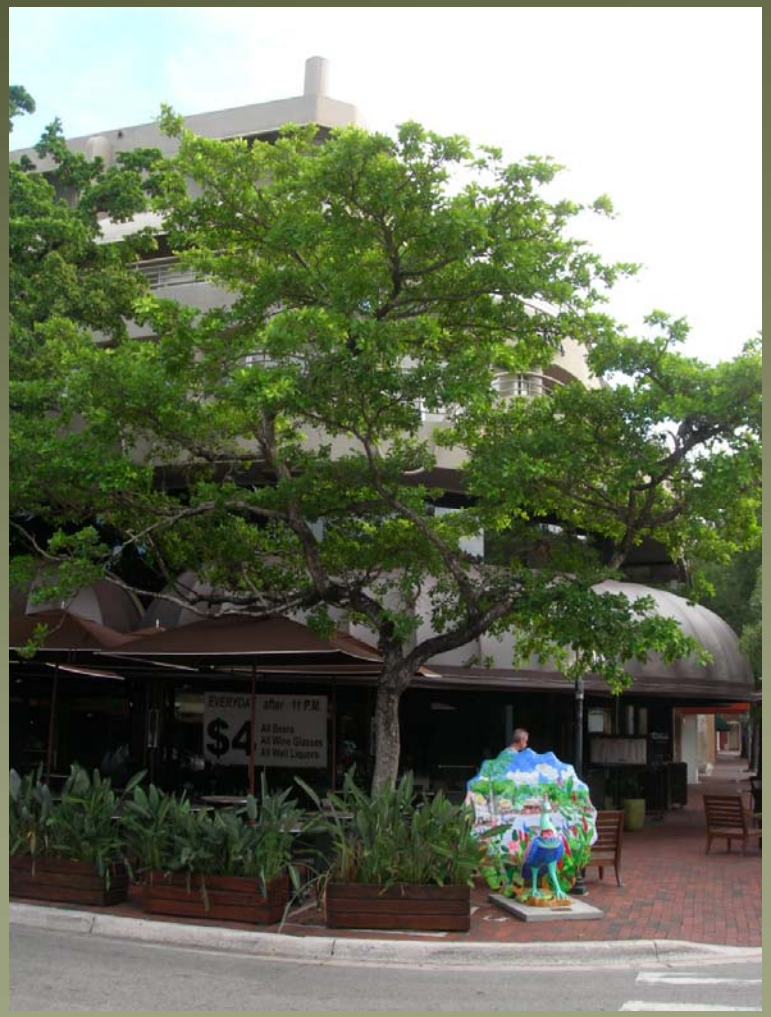
Planters with small trees and empty planters

Tree space conditions and problems:

Extent of root growth

Existing tree conditions:

Evaluate health and structure

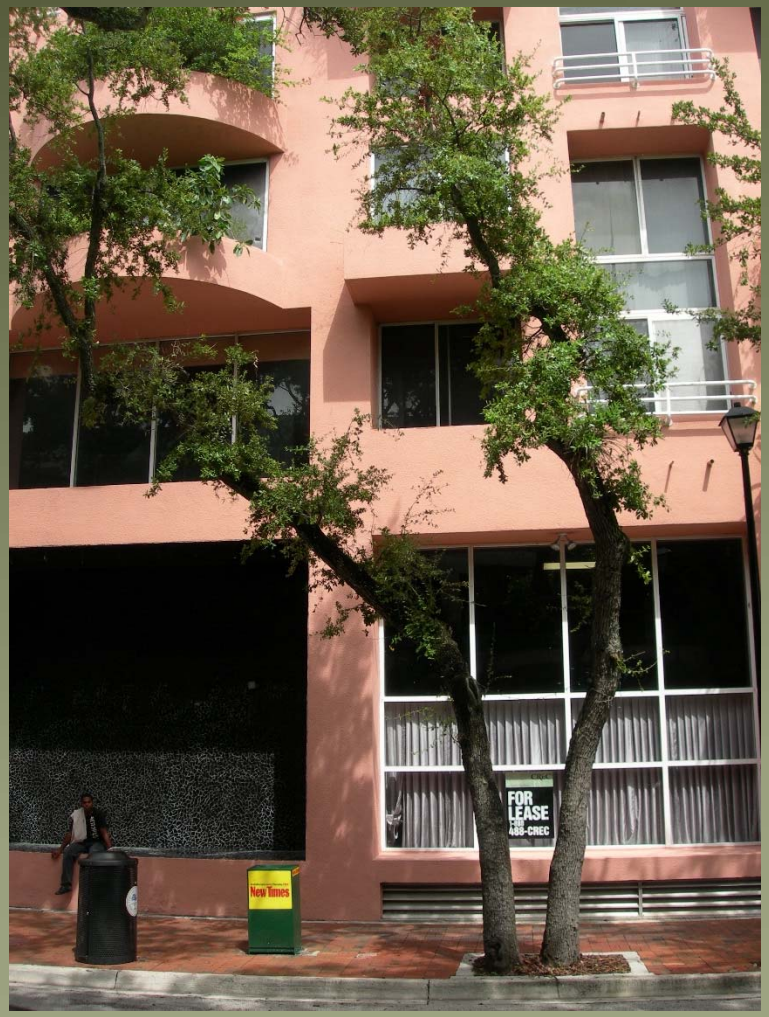


Black Olive

Gumbo Limbo

Existing tree conditions:

HEALTH



Existing tree conditions:

Old live oak with damaged & decayed trunk and leader

Existing tree conditions:

Mahogany with severe trunk damage

Deep trunk wounds

ALTERNATIVE PAVING SOLUTIONS

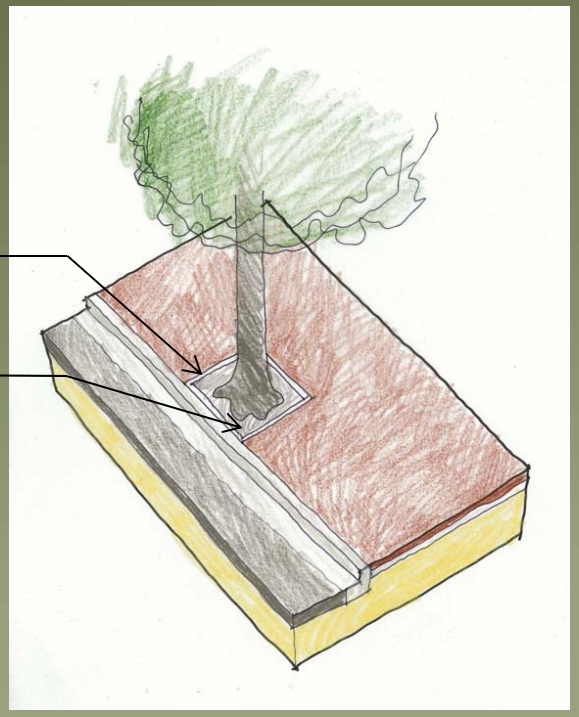
- OPTION 1: Preserve existing pavers- clean and reset, as needed, on sand base
  - Replace pavers in driveway with appropriate traffic bearing pavers with proper base (concrete)
- OPTION 2: Replace all pavers with new pavers on sand base
- OPTION 3: Replace or re-use existing pavers set on concrete base
- OPTION 4: Poured-in-place concrete

ALTERNATIVE PLANTER DESIGN

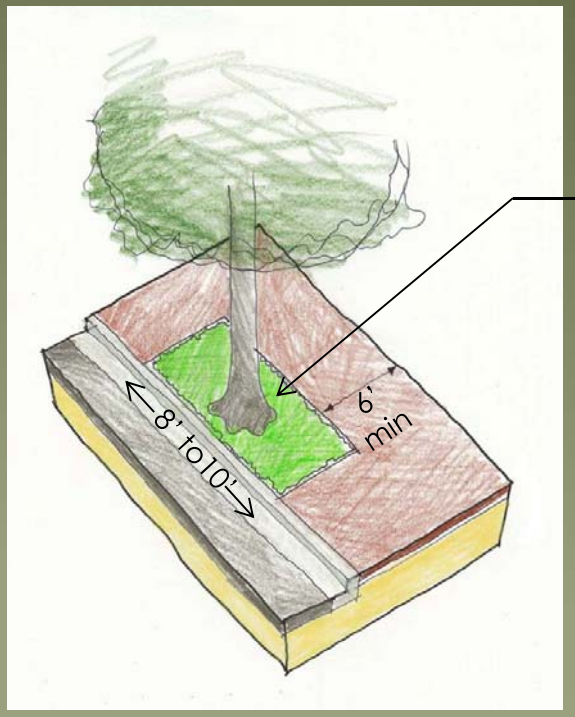
- OPTION 3: Preserve existing pavers- clean and reset, as needed, on sand base
  - Replace pavers in driveway with appropriate traffic bearing pavers with proper base (concrete)
- OPTION 4: Replace all pavers with new pavers on sand base
- OPTION 2: Replace or re-use existing pavers set on concrete base
- OPTION 1: Poured-in-place concrete

ALTERNATIVE TREE SPACE CONDITIONS

Enlarge all tree spaces and underplant with low maintenance groundcover



Typical Existing Planting Space



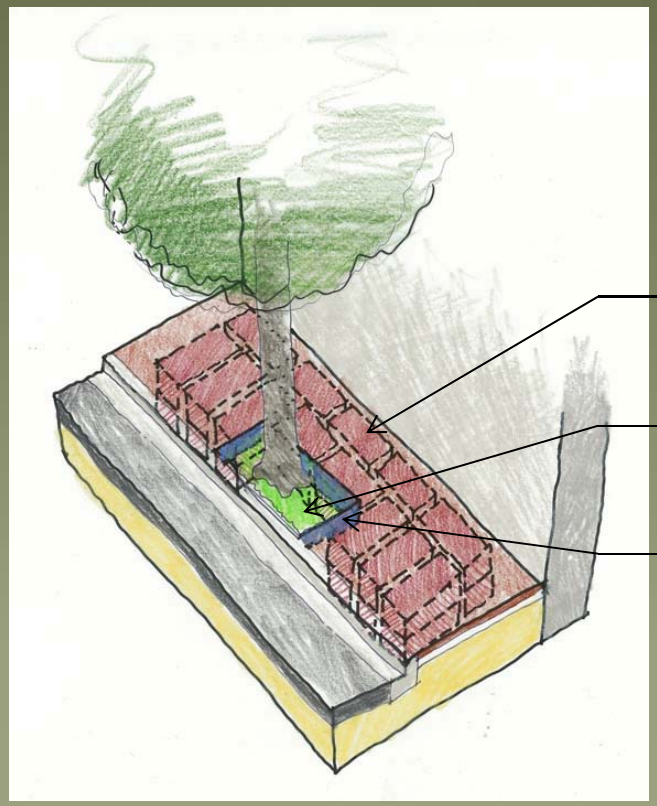
Enlarged Tree Space

ALTERNATIVE TREE SPACE CONDITIONS

Enlarge existing tree space

Before After – DIFFERENT PICTURES

ALTERNATIVE TREE SPACE SOLUTIONS
New tree spaces



New Tree Planting

TREE SELECTION

PINK TRUMPET TREE
Tabebuia heterophylla

Average size at installation
Height: 14'
Diameter Breast Height: 3"

Average size in 20+ years
Height: 30-40'
Diameter Breast Height: 8"

VERAWOOD
Bulnesia dobium

Average size at installation
Height: 12'
Diameter Breast Height: 2 1/2"

Average size in 20+ years
Height: 30-40'
Diameter Breast Height: 8"

APPLE BLOSSOM SHOWER
Cassia javanica

Average size at installation
Height: 12'
Diameter Breast Height: 4"

Average size in 20+ years
Height: 35-40'
Diameter Breast Height: 10"

LIVE OAK
Quercus virginiana

Average size at installation
Height: 20'
Diameter Breast Height: 6"

Average size in 50+ years
Height: 60'+
Diameter Breast Height: 18"

BRIDAL VEIL
Caesalpinia granadillo

Average size at installation
Height: 15'
Diameter Breast Height: 2"

Average size in 20+ years
Height: 30'
Diameter Breast Height: 8"

GOLDEN SHOWER
Cassia fistula

Average size at installation
Height: 12'
Diameter Breast Height: 2"

Average size in 20+ years
Height: 35-40'
Diameter Breast Height: 10"

BEAUTYLEAF
Calophyllum brasiliense

Average size at installation
Height: 16'
Diameter Breast Height: 4 1/2"

Average size in 20+ years
Height: 30-40
Diameter Breast Height: 10'

BAHAMAS LYSILOMA
Lysiloma sabicu

Average size at installation
Height: 12
Diameter Breast Height: 2"

Average size in 30+ years
Height: 35-40'
Diameter Breast Height: 10'

LONG JOHN TRIPLARIS
Triplaris cumingiana

Average size at installation
Height: 12'
Diameter Breast Height: 2"

Average size in 20+ years
Height: 45
Diameter Breast Height: 10'

YLANG-YLANG
Cananga odorata

Average size at installation
Height: 14'
Diameter Breast Height: 3"

Average size in 15+ years
Height: 40-50'
Diameter Breast Height: 12"

SATIN LEAF
Chrysophyllum oliviforme

Average size at installation
Height: 14'
Diameter Breast Height: 3"

Average size in 20+ years
Height: 30-40
Diameter Breast Height: 8"

SILVER BUTTONWOOD
Conocarpus erectus var. sericeus

Average size at installation
Height: 14'
Diameter Breast Height: 3"

Average size in 20+ years
Height: 30
Diameter Breast Height: 8"

PUBLIC INVOLVEMENT

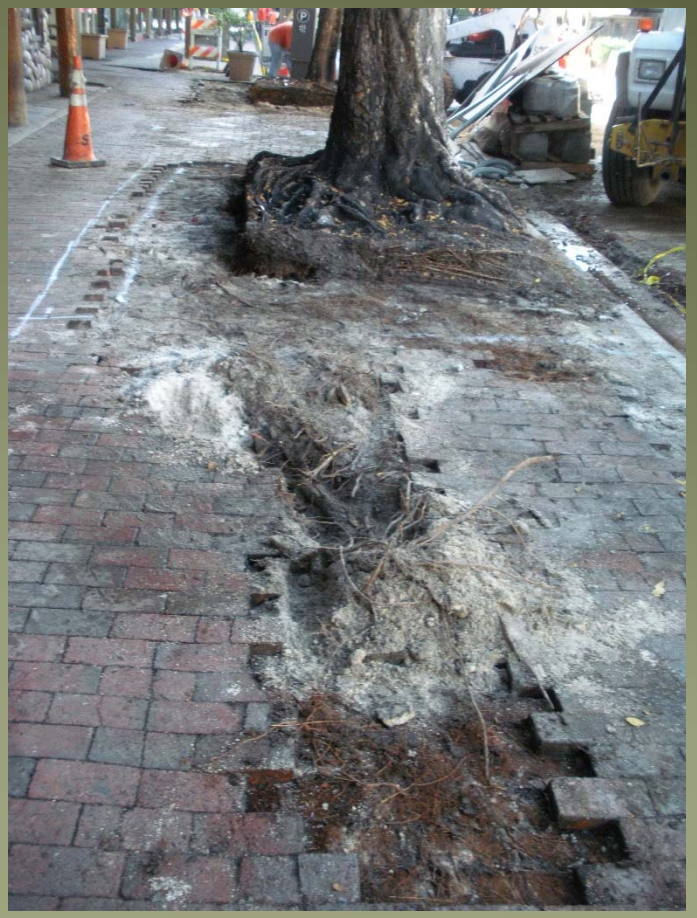
- Meet with all residents, stakeholders
- Review by boards
- Public presentations
- Handholding during construction
- Bloggers
- Feedback

CONSTRUCTION

- Air spading

CONSTRUCTION

- Vacuum truck



CONSTRUCTION

- Vacuum truck

CONSTRUCTION

- Planter enlargement

Silva cell installation

2 layer system- 49” deep

1 layer system – 29” deep

Tree selection

- Field tagging

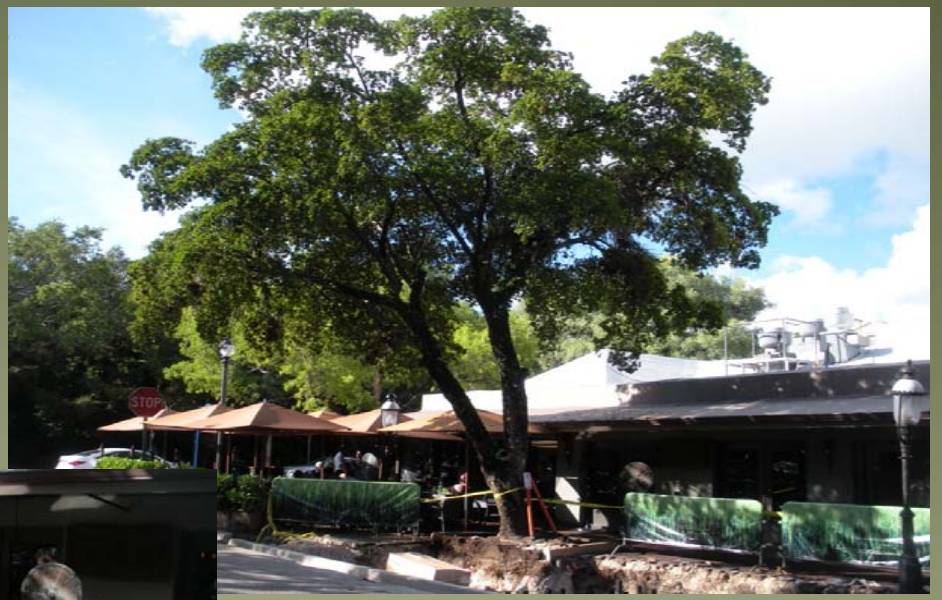
Tree Delivery

UNFORSEEN CONDITIONS

- Tree relocations

UNFORSEEN CONDITIONS

- Unanticipated removals



UNFORSEEN CONDITIONS

- Working block by block
- ADA – grading issues
- Maintain sidewalk open for merchants

UNFORSEEN CONDITIONS

- Unknown utilities, old cities, abandoned utilities
- Merchant restaurant needs – tables, positioning trees
- Construction equipment staging below new trees

GOING FORWARD

- More phases to do
- Main Highway – drainage issues – project stalled
- Flexibility – work with people, however stand your ground
- Involvement of professionals is critical throughout process
- Still more education to do with municipalities
- Maintenance program

AFTER