Incorporating Sidewalks into Transportation Asset Management

Presentation by

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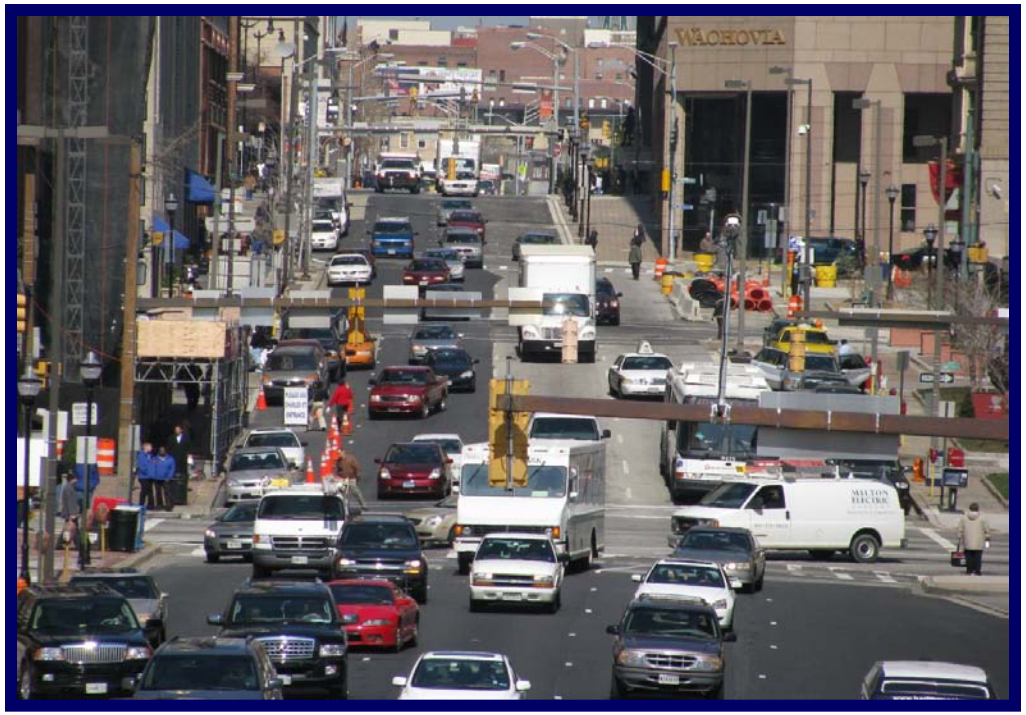
Integrated Management of Infrastructure

Example: Urban Environment



- Pavements
- Pavement Markings
- Drainage
- Signs/Signals
- Bridges
- Safety Management
- Utilities
  - Above-ground
  - Below-ground
- Urban Forestry

Not only Vehicles

Conditions

Non-ADA Compliant

Obstacle Course

Safe Routes to School

5 Year Old Subdivision – No Ramp

How did this get approved by the City?

Multiple Problems

Reconstruction to Meet ADA Compliance

ADA Compliance Issues

- Ramps
  - Slope
  - Landing Areas
  - Truncated Warning Domes
- Sidewalk
  - Cross Slope and Longitudinal Slope
  - Width
  - Driveway Aprons
- Obstructions
  - Signs, Trees, Utilities, Existing Buildings, etc.
- Tripping Hazards
- Construction Issues (No Tolerances)

The Only Logical Solution

Sidewalk Management System

(Part of a tightly-integrated TAMS)

Sidewalk Management System

- Focused on Sidewalks
- Maintenance Management (Short-term)
  - Scheduling Resources
  - Productivity Analysis
- Analysis Tools (Long-term)
  - Transition Plans (Roadmap to ADA Compliance)
  - Safe Routes to School
  - Walkable Communities/Connectivity
- Integrate with other assets to improve efficiencies

A Balance of the Capital and Maintenance Budgets

Requires:

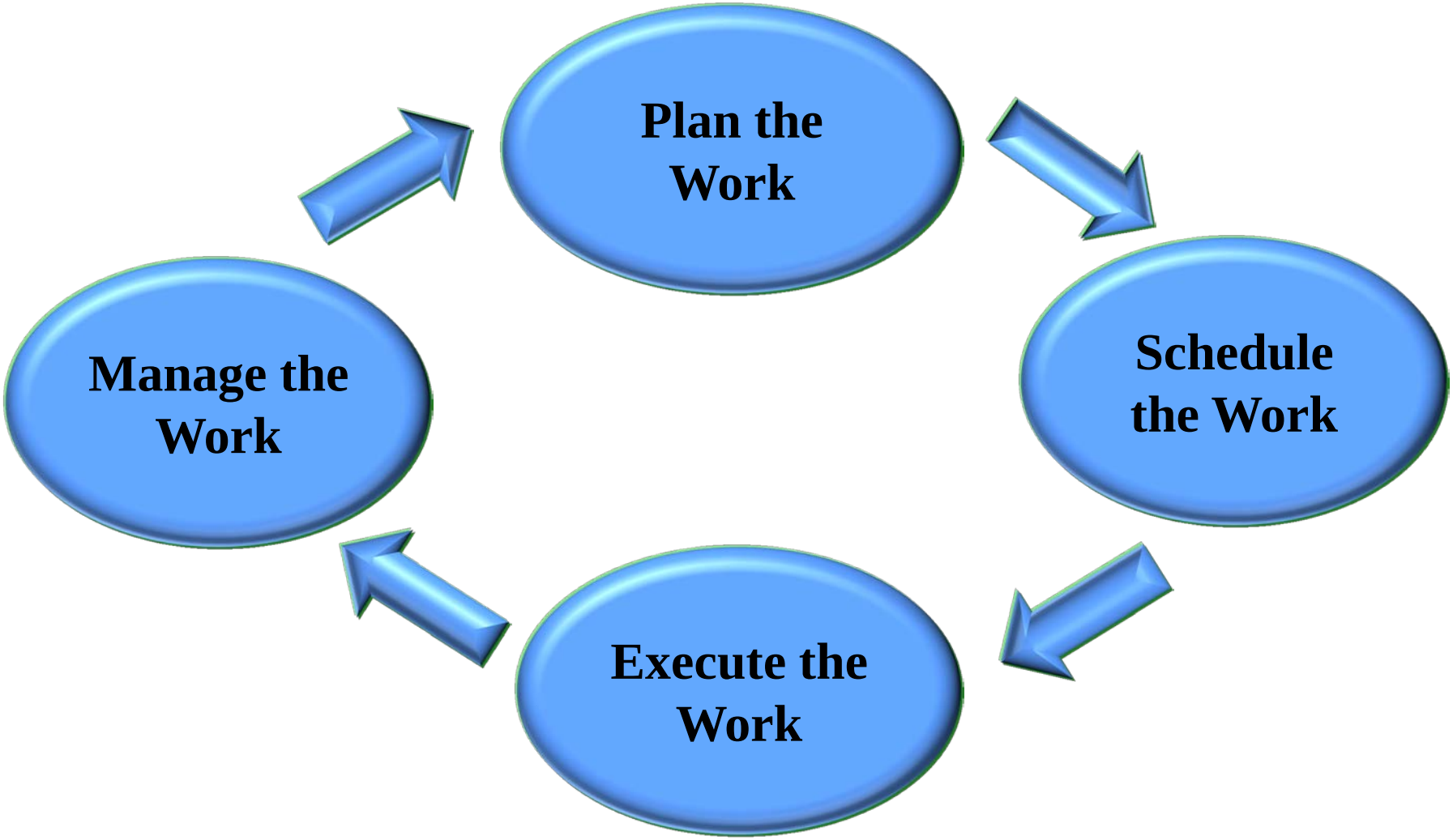
- Combined strategy for improvements
- Criticality-based response
- Collaboration of initiatives and processes
- Evaluation of alternative approaches
- Consideration of effective repairs and replacement versus enhancement

Maintenance Management

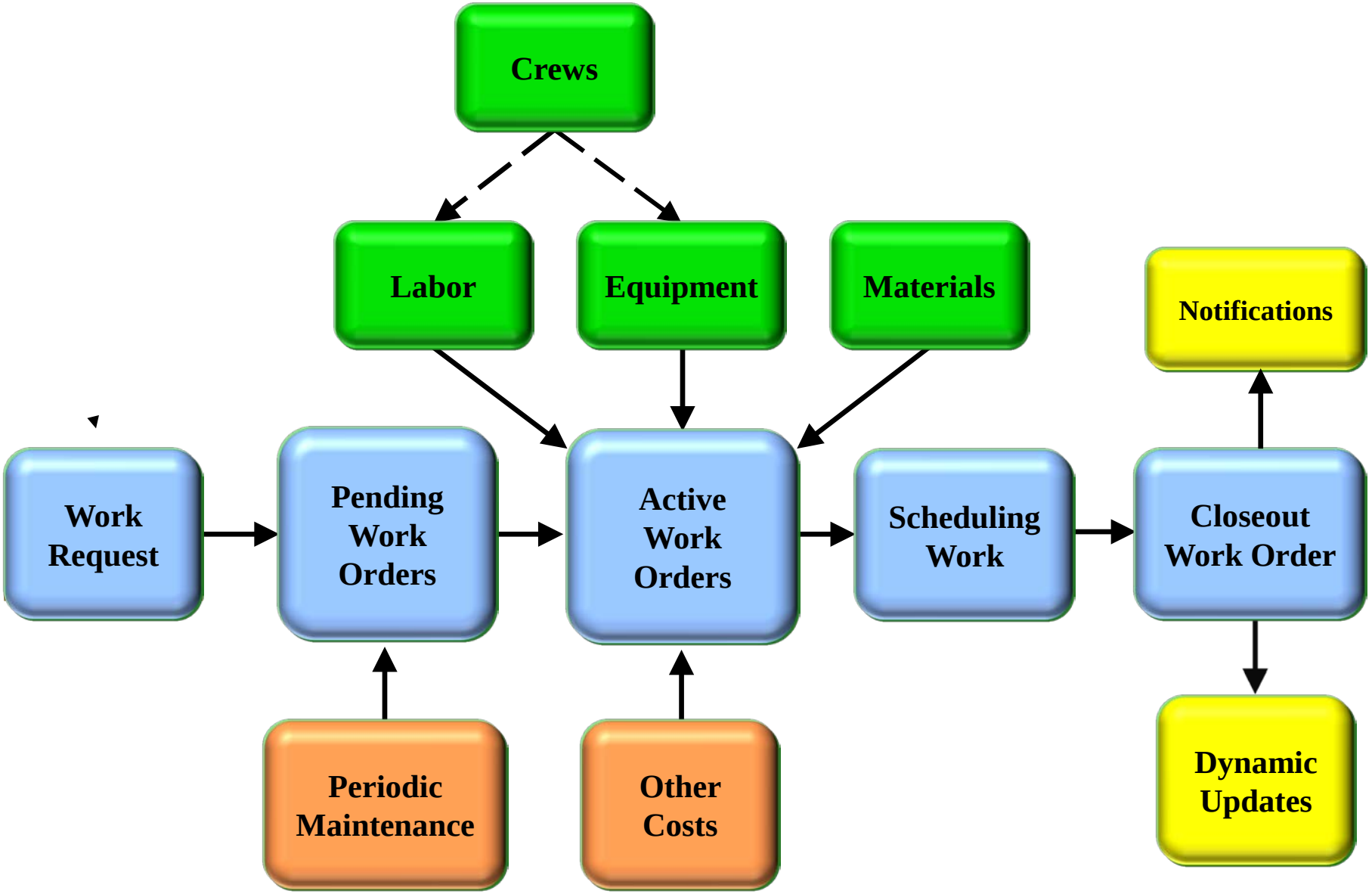
Short-Term (Day-to-Day)

Maintenance Management Cycle

Improve Planning and Execution

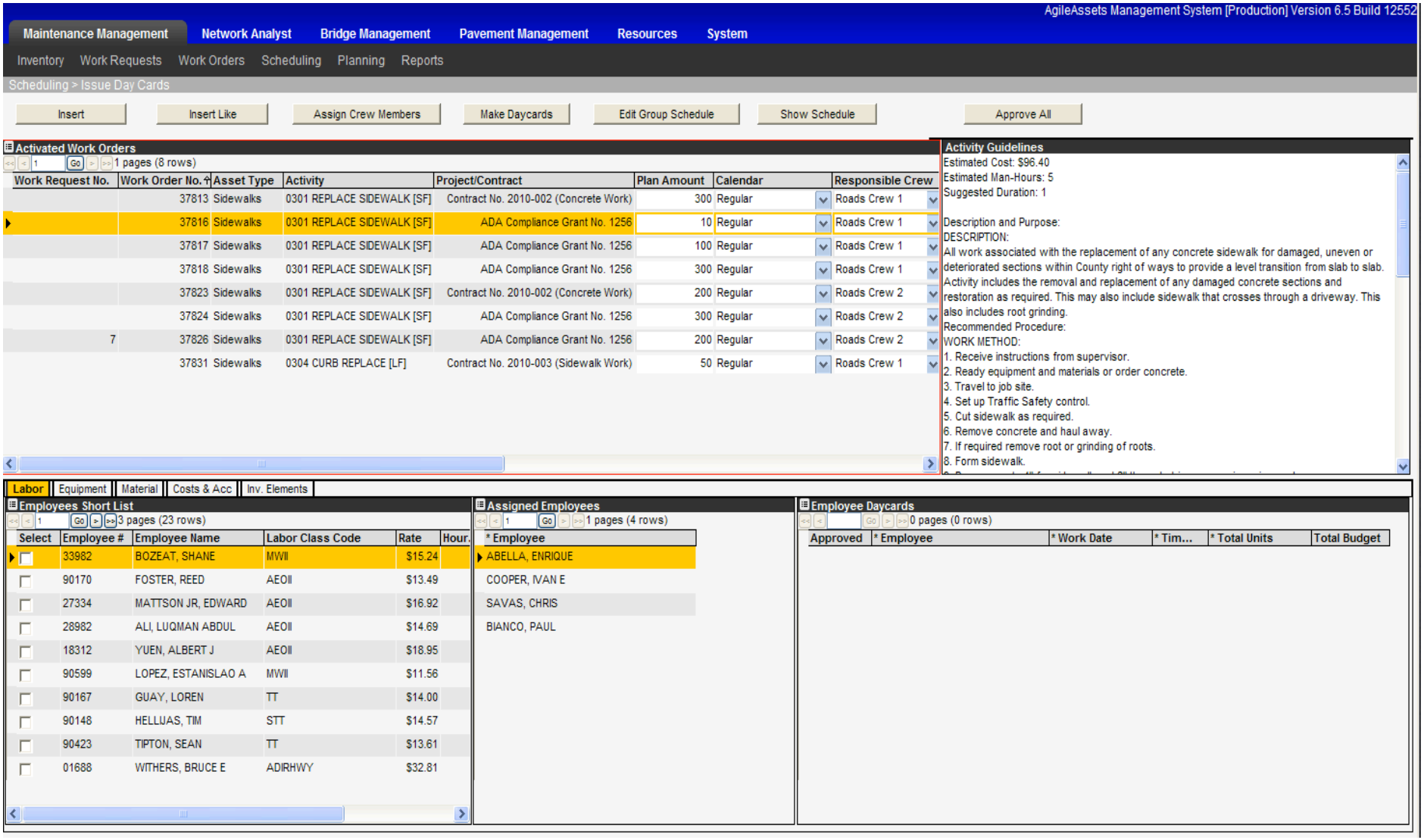


Possible Work Order Process

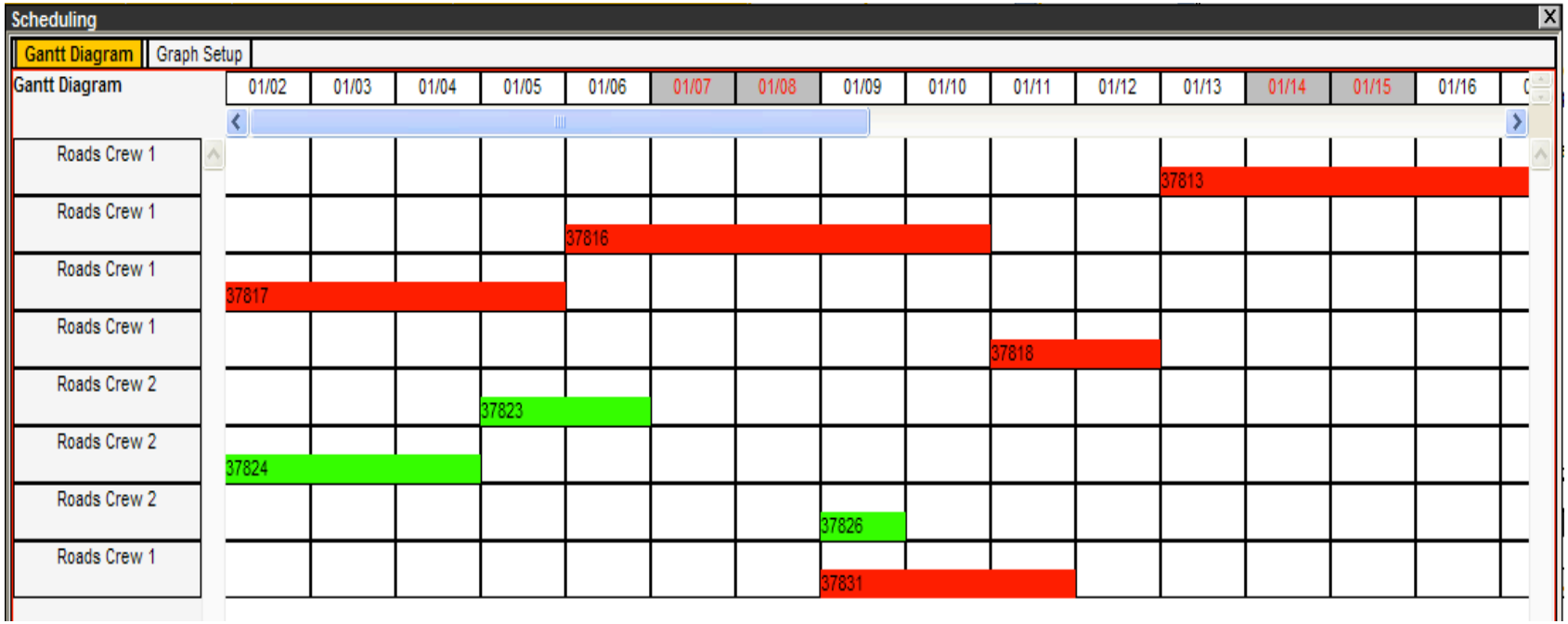


Work Orders

Tracking Labor, Equipment, Materials, Contractors, etc.



Scheduling


Scheduling
Gantt Diagram
Graph Setup
Gantt Diagram
01/02
01/03
01/04
01/05
01/06
01/07
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01/09
01/10
01/11
01/12
01/13
01/14
01/15
01/16
Roads Crew 1
Roads Crew 1
Roads Crew 1
Roads Crew 1
Roads Crew 2
Roads Crew 2
Roads Crew 2
Roads Crew 1
37813
37816
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37818
37823
37824
37826
37831

Productivity – Planned vs. Actual

Report Filters

Fiscal Year: 2011

Division: 109

Admin Unit: Sidewalks – ADA

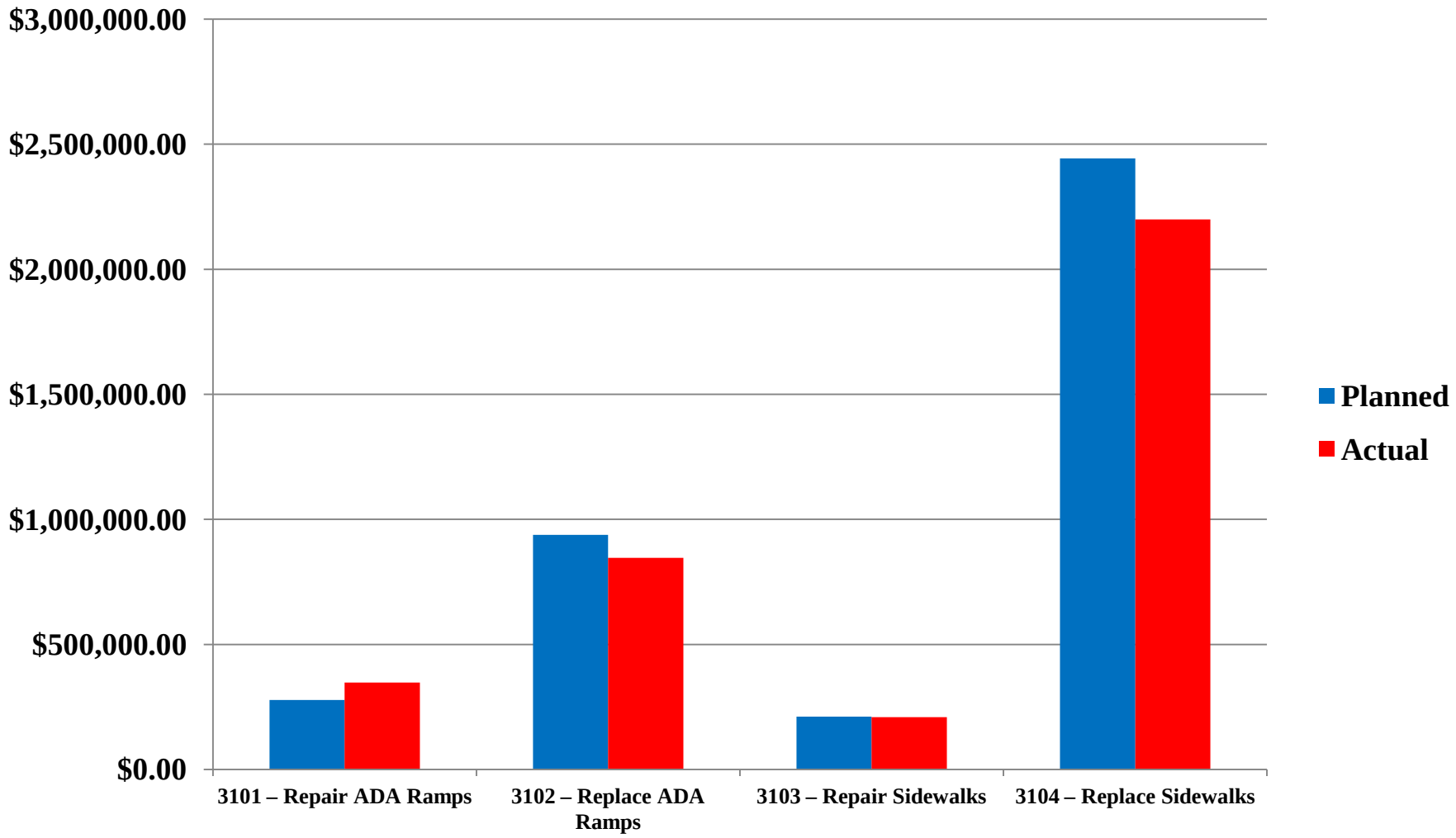
MMS Jasper Report

WBS Element: 11.10861

Work Function	Planned Cost	Actual Cost	Planned Work	Actual Work	Planned Rate	Actual Rate
3101 – Repair ADA Ramps	$278,349.00	$347,335.00	213	184	$1,306.80	$1,887.69
3102 – Replace ADA Ramps	$938,362.00	$846,004.00	182	182	$5,155.84	$4,648.37
3103 – Repair Sidewalks	$211,045.00	$209,560.00	21314	17184	$9.90	$12.20
3104 – Replace Sidewalks	$2,443,678.00	$2,199,842.00	93214	78669	$26.22	$27.96
3105 – Remove Obstruction - Trees	$56,981.00	$38,567.00	202	159	$282.08	$242.56
3106 – Relocate Obstruction - Signs	$10,556.00	$11,843.00	130	130	$81.20	$91.10
3107 – Relocate Obstruction - Lights	$117,874.00	$87,685.00	73	56	$1,614.71	$1,565.80
3108 – Relocate Obstruction - Mailboxes	$15,482.00	$13,835.00	97	81	$159.61	$170.80
3109 – Relocate Obstruction - Utilities	$212,138.00	$178,003.00	47	43	$4,513.57	$4,139.60
3110 – Repair Trailways	$15,115.00	$13,860.00	1879	1879	$8.04	$7.38
3111 – Repair Trailways	$76,500.00	$69,582.00	3564	3631	$21.46	$19.16
Totals	$4,376,080.00	$4,016,116.00				

Manage Work

- Productivity: Planned vs. Actual



Long-term Planning

ADA Transitional Plan

Safe Routes to School

Walkable Communities/Connectivity

Prioritization

- Areas surveyed were selected based on the ADA Title II regulations that require prioritization of curb ramp installation:
  - Government offices
  - Schools/libraries
  - Medical facilities
  - Major retail centers
  - Major employment centers
  - Transit stops
- Order based on Functional Class
  1. Arterials
  2. Collectors
  3. Locals
- Other factors - ?

Sample Prioritization Formula

Score=((V1*V2*WF1)+(V2*V4*WF2))*V5

Ranking Levels (Value: 1 to 5)

V1 - Value for Safe Route to School

V2 - Value for Proximity to School

V3 - Value for Land Use

V4 - Value for Density

V5 - Value for Transit Stop

Weighting Factors

WF1 - Weighting Factor "School Factors"

WF2 - Weighting Factor "Land Use"

Sidewalk Transition Plan – Prioritized Segments

Sidewalk Segment_ ID	Street Name	From Street	To Street	Safe Route to School	Proximity to School	Density	Land Use	Transit Stop	Priority Score
SW022	2nd Avenue	26th Street	27th Street	2	5	3	1	4	260
SW038	Main Street	12th Street	13th Street	2	5	3	2	3	240
SW027	Olive Street	28th Street	Brook Street	2	5	2	1	4	240
SW026	Olive Street	28th Street	Brook Street	2	4	2	1	4	200
SW012	Main Street	27th Street	28th Street	2	4	3	1	3	165
SW001	Olive Street	27th Street	28th Street	2	4	3	1	3	165
SW025	Olive Street	Brook Street	Center Road	1	2	3	2	4	160
SW036	Olive Street	Center Road	Frederick Rd	1	2	3	2	4	160
SW024	Olive Street	Brook Street	Center Rd	1	1	3	2	4	140
SW035	Olive Street	Center Road	Frederick Rd	1	1	3	2	4	140
SW029	Main Street	13th Street	14th Street	2	5	2	2	2	140
SW039	Main Street	17th Street	18th Street	1	2	3	2	3	120
SW033	Main Street	18th Street	19th Street	2	4	2	2	2	120
SW021	2nd Avenue	27th Street	28th Street	1	3	3	1	4	120
SW023	2nd Avenue	26th Street	27th Street	1	2	3	1	4	100
SW020	3rd Avenue	26th Street	27th Street	1	2	3	1	4	100
SW018	3rd Avenue	27th Street	28th Street	1	2	3	1	4	100
SW009	Olive Street	Frederick Rd	Georgia Ave	1	2	2	2	3	90
SW037	Olive Street	Frederick Rd	Georgia Ave	1	2	2	2	3	90
SW028	Market Street	6th Street	7th Street	1	1	2	2	3	75
SW013	Main Street	27th Street	28th Street	1	2	3	1	3	75
SW004	Olive Street	26th Street	27th Street	1	2	3	1	3	75
1155071	Walnut Street	1st Avenue	2nd Avenue	1	1	3	2	2	70
SW005	Olive Street	26th Street	27th Street	1	1	3	1	3	60

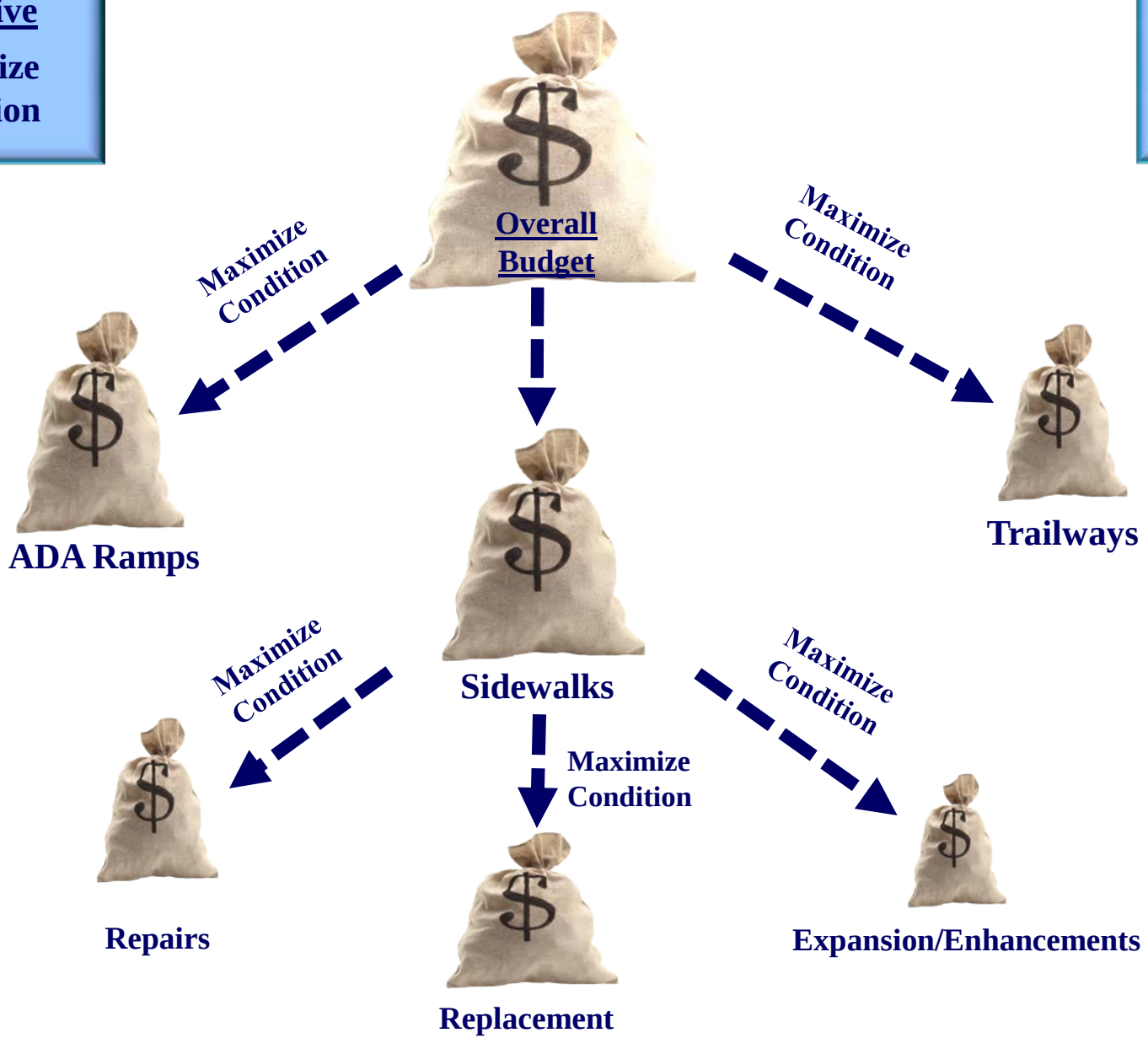
Multi-Constraint Scenario Analysis

Objective

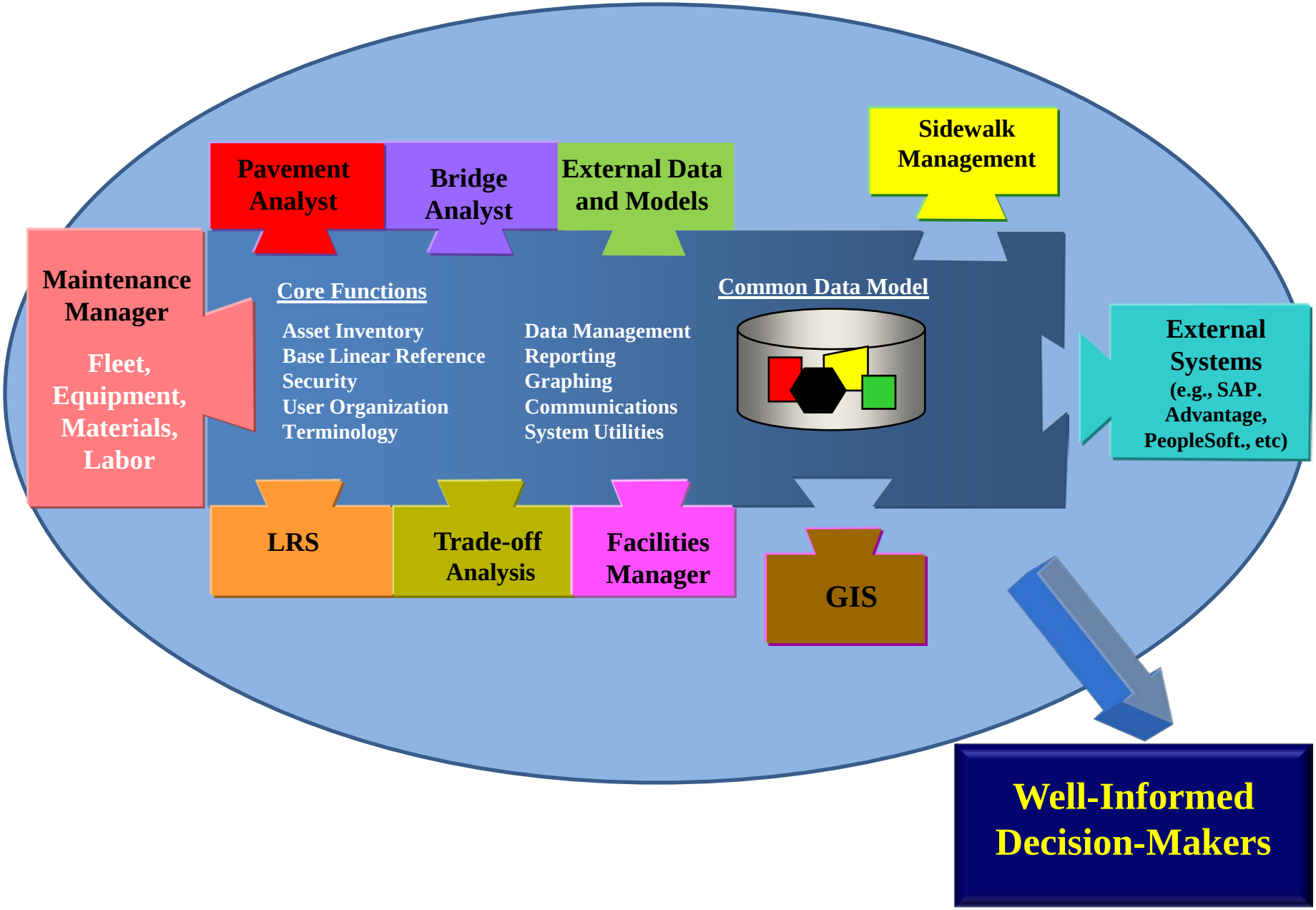
Maximize Condition

Constraint

Budget



Asset Integration - Modular Framework



Integrate with Other Assets

Urban Forestry

- Coordinate Sidewalks and Pathways w/Trees
- Designated “Significant Trees”
  - Trees
  - Tree Sites
- Project
  - Design Phase
    - Contract Doc’s Preparation
      - Protection/Replacement Plans
  - Inspection
    - Construction
    - Post-Construction

Integrate with Other Assets

Sign Management

- Coordinating Proper Signage
  - Adding Mid-block Cross-walks
- Coordinate Obstructions
  - Relocating Signs
    - A Signs Department Activity
      - Update Sidewalk Obstructions
    - Sidewalk repair/replacement/expansion project
      - Notify Signs Department

Integrate with Other Assets

Pavements

- Annual paving program
  - Non-compliant ADA Ramp Upgrades
  - Other issues
    - Failed areas
    - Driveway Aprons
    - Crosswalks
    - Tree Root issues
      - Pavement
      - Sidewalks/Curbs
    - Realignments/Widenings

Sidewalk Management

2 Options

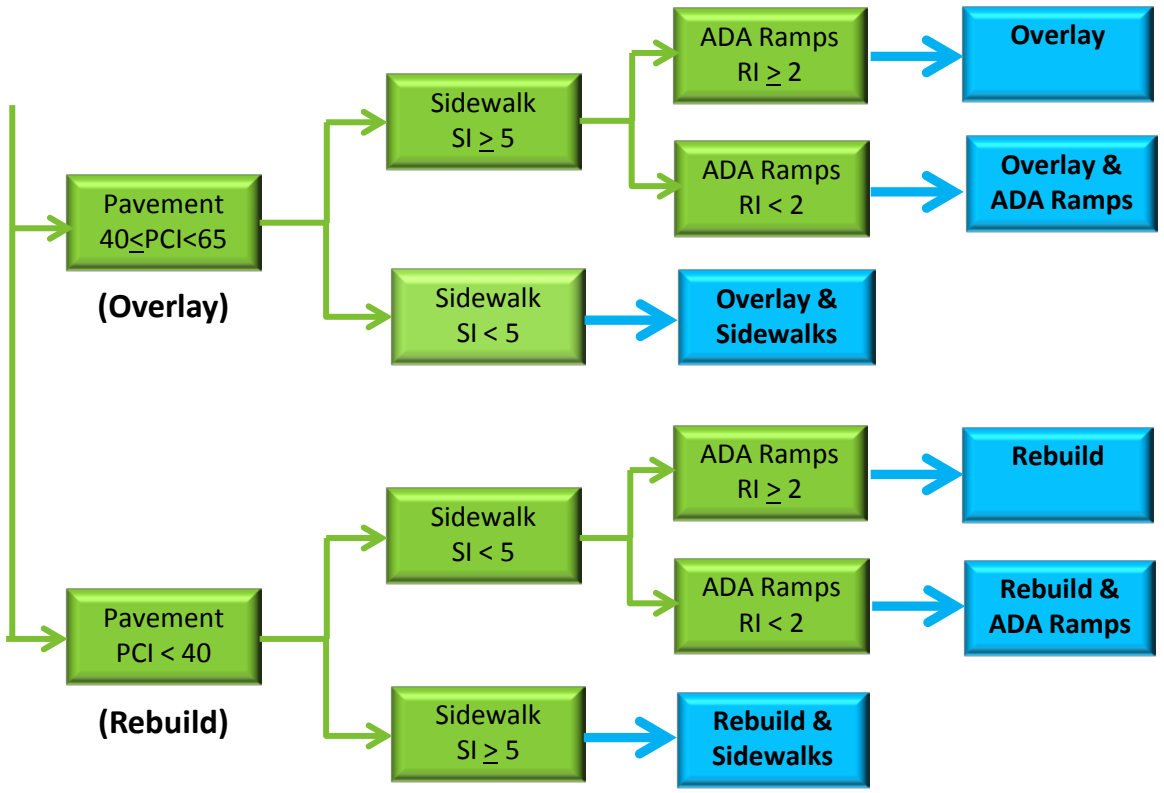
Full Management System

Pseudo (Simple System)

Pseudo (Simple) System

- Build within PMS (PMS-focused)
  - Within Standard Decision Trees
    - Add additional decision nodes
  - Separate Trees
    - Pavement Treatments
    - Sidewalk, Ramp and Crosswalk Repairs
    - Combine costs in reports
  - Con
    - Not tightly-integrated with all assets
    - Possibly no broad planning tools – Transition Plan, SRS, Connectivity

Sidewalks integrated into PMS Decision Trees



Legend

ADA Ramps
SI < 2

Decision Node

Overlay & Sidewalks

Result Node

Indices

PCI – Pavement Condition Index
SI – Sidewalk Index
RI – (ADA) Ramp Index