

MAINTAINING HOUSTON'S STREETS

REPAIR, REHABILITATION, RECONSTRUCTION

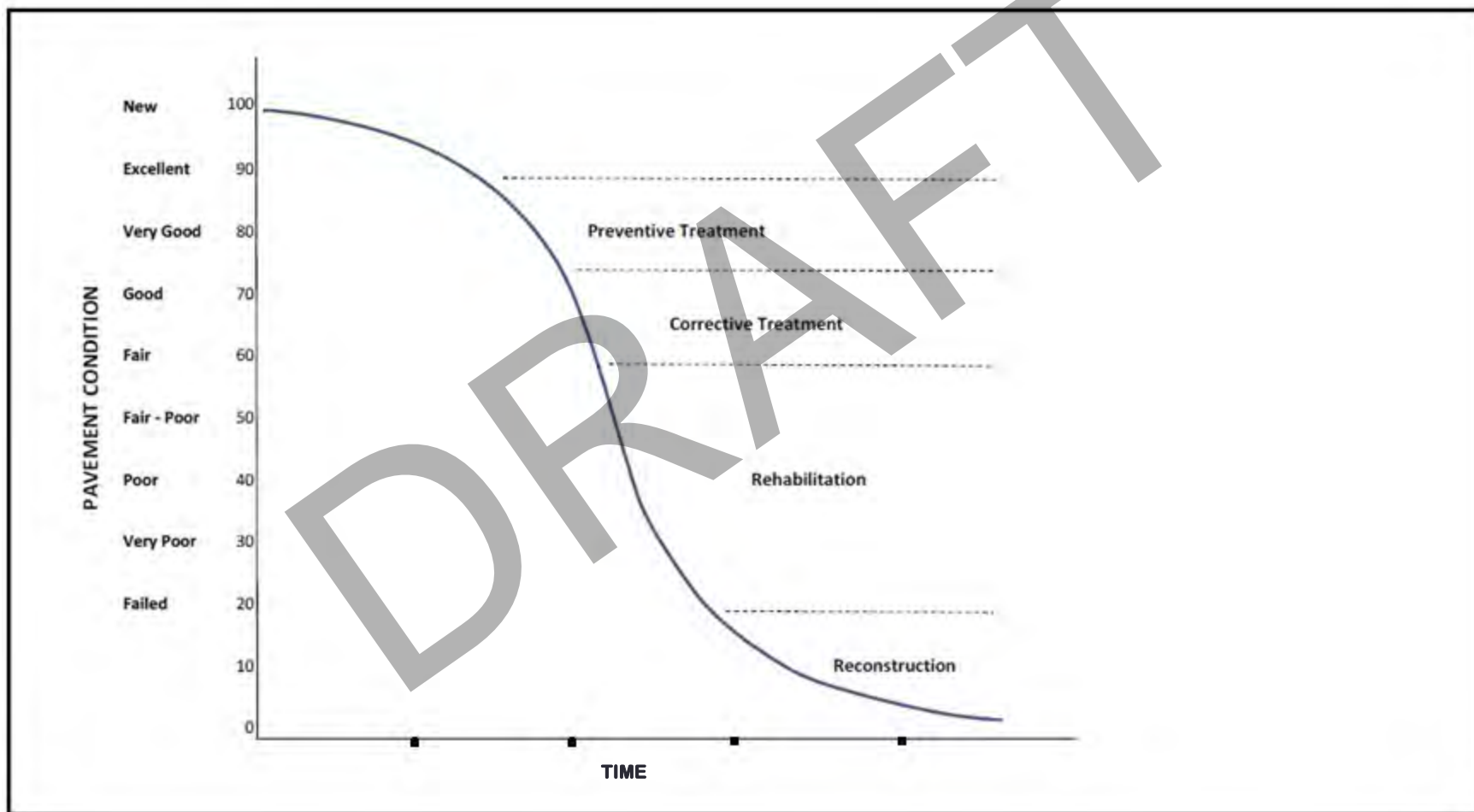
Using the Full Range of Tools for a Challenging Job

Report To: TTI Committee

May 13, 2014



Pavement Management - Suggested Treatments



Source: American Association of State Highway and Transportation Officials (AASHTO)

Definitions

Repair – to restore to safe condition after damage has occurred. Used for localized problems such as potholes, areas of pavement deterioration, concrete faulting. Typical repair methods include pothole filling, skin patching, partial depth patching/repair, full depth repair, or a single concrete panel repair.

Rehabilitation – to restore to near original condition. Used for distressed streets where the overall ride has degraded. Typical methods used are asphalt overlay or multiple concrete panel replacement.

Reconstruction – to comprehensively rebuild to a new condition with current criteria. Used to rebuild subgrade, roadway base, new roadway surface, roadway appurtenances, signalization, signage, marking, lighting, trees and plantings, and may also include replacement of utility lines located within the road right of way.

Typical Pavement Conditions Requiring Repair

- Pothole - a bowl-shaped hole formed in asphalt pavement, by excessive use or by extremes of weather, typically 2 foot in diameter and 2-6 inches deep.
- Punchout – localized area of concrete pavement that has broken into pieces, typically less than 5 feet wide.
- Faulting – the difference in elevation across a joint.
- Localized Pavement Failure – area of cracked, broken, sunken pavement ranging in size and shape.



Pothole



Localized Pavement Failure



Faulting



Punchout

Problems reported as a pothole for repair...



Repair Potholes:

- Potholes – approximately 30% of pothole calls are actually pothole repairs.
- Response Time – 3 business days



Repairs: Skin Patching

- A thin layer of asphalt applied over a deteriorated section of pavement to provide a responsive, effective repair.



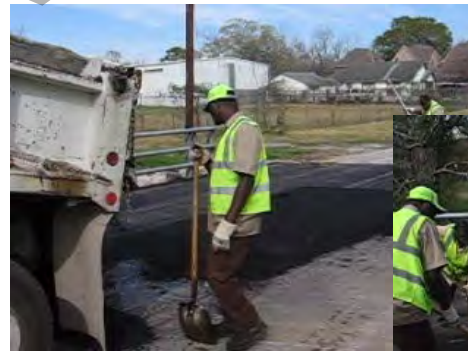
Repairs: Full Depth Patching

- Includes removal of a section of pavement down to the base material and replacing the area with new asphalt material and will generally be followed by panel replacement.



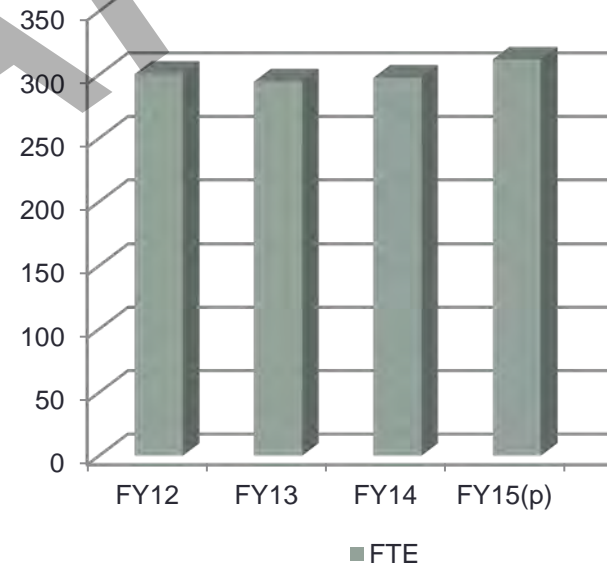
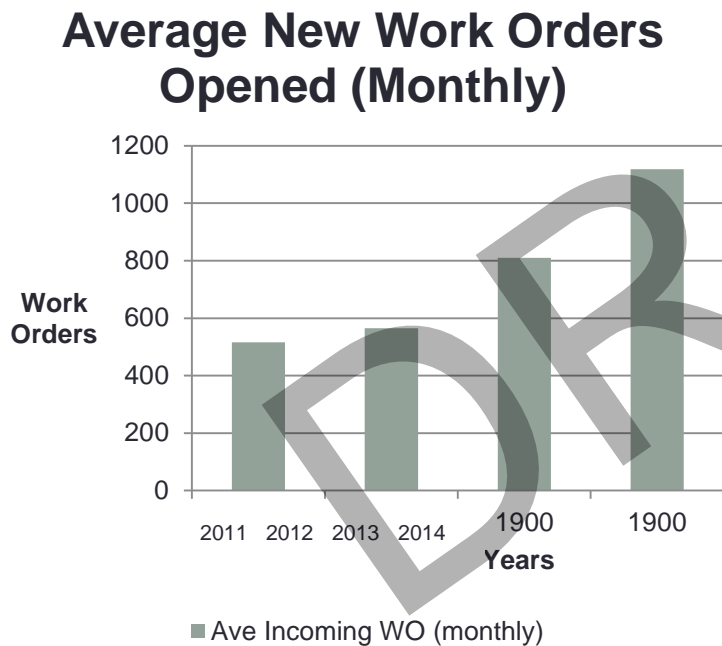
Patching Repairs:

- Average Crew size – 5 for small patches; 8-10 for larger areas.
- FY 2014 Productivity – COH target 0.80 tons/crew hour based on benchmark agencies: Charlotte, North Carolina; Dunedin, Florida; Los Angeles County.
- Cost range – averages \$200 to \$600 for asphalt patch.



Challenges in Repair ...

- Workload is increasing, same staffing.



Rehabilitation

- Overlay – used for asphalt concrete (AC) pavement.
- Panel Replacement – used for jointed reinforced concrete pavement (JRCP).

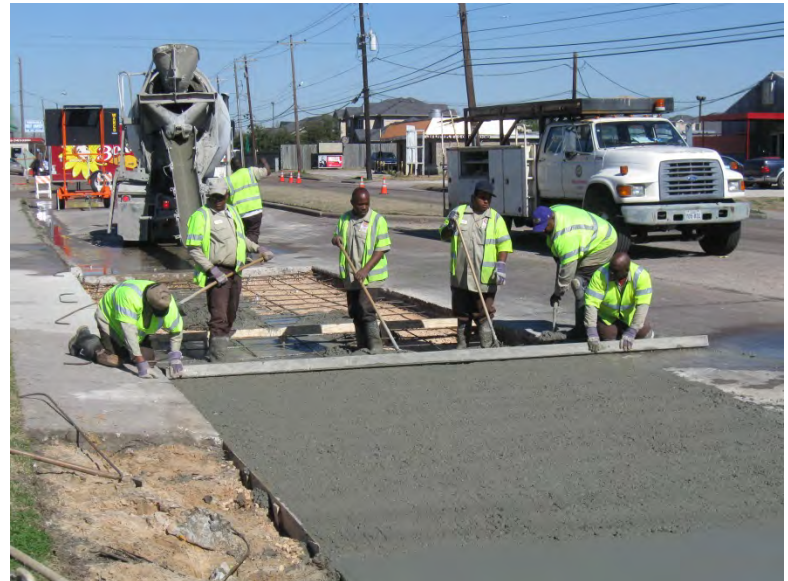
Overlay

- Mill off old asphalt.
 - Occasional base repair.
 - Level up performed.
 - Replace with new asphalt riding surface.
 - ADA Ramps.
- \$85,000 - \$125,000 per lane mile
- Expected Service Life – 6 to 12 years.
- Challenges:
- Reflective Cracking.
 - Does not improve overall drainage or correct ponding.
 - Does not address broken or subsided curbing, driveways, etc.
 - Does not correct for increased traffic since original pavement design.
 - Weather dependent.



Panel Replacement

- Break up and remove old concrete.
 - Replace and/or re-compact base material.
 - Place new reinforced concrete.
- About \$20,000 per panel, dependent on size and location.
- Expected Service Life – 12 to 18 years.
- Challenges:
- Rebuild concrete street a few panels at a time.
 - Load transfer between panels.
 - Does not correct for increased traffic since original pavement design.
 - Costly.



Assessment Process

- ✓ Street Surface Assessment Van – a technology driven inspection of pavements based on cracks, pavement deflections, and ride quality.
 - Performed every 2 to 3 years.
 - Generates a Pavement Condition Rating (PCR).

- ✓ Street Assessment – a visual inspection performed by trained Street Maintenance personnel based on ASTM standards and determined by PCR rating.
 - Used to determine if roadway condition falls within rehabilitation criteria/funding in Street Maintenance Operations.

- ✓ Assessment forwarded to Engineering and Construction Division – staff engineers evaluate for possible contract overlay, multiple panel replacement project, or further review under the Rebuild Houston Needs Assessment Process.

Street and Drainage Division follows Standard Operating Procedures.

For job type:

- Labor needed.
- Equipment needed.
- Materials needed.
- In process developing time/productivity components.
- Procedural steps for work completion.

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STANDARD OPERATING PROCEDURE

POTHOLE REPAIR
STREET & DRAINAGE DIVISION/STREET & BRIDGE MAINTENANCE
BRANCH/STREET MAINTENANCE SECTION

ORIGINAL APPROVED BY	Signature: <i>Eric K. Dalgarno</i>	DATE	09-1-12
REVISION APPROVED BY	Signature:	REVISION DATE	
REVISION APPROVED BY	Signature:	REVISION DATE	
REVISION APPROVED BY	Signature:	REVISION DATE	
APWA PRACTICE # 24.5	POLICY		
SOP PREPARED/REVISED BY:	MICHAEL		

The purpose of this Standard Operating Procedure (SOP) is to establish a formalized Branch procedure regarding pothole repair.

All Street & Drainage Division employees and contractors are covered by and are required to comply within the parameters of this SOP.

All Public Works and Engineering Safety procedures within this SOP.

PROCEDURE (SEE ATTACHED)

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STANDARD OPERATING PROCEDURE

SKIN PATCH REPAIR
STREET & DRAINAGE DIVISION/STREET & BRIDGE MAINTENANCE
BRANCH/STREET MAINTENANCE SECTION

ORIGINAL APPROVED BY	Signature: <i>Eric K. Dalgarno</i>	DATE	01-30-14
REVISION APPROVED BY	Signature:	REVISION DATE	
REVISION APPROVED BY	Signature:	REVISION DATE	
REVISION APPROVED BY	Signature:	REVISION DATE	
APWA PRACTICE # 24.5	POLICY		
SOP PREPARED/REVISED BY:	AMY		

PURPOSE
 The purpose of this Standard Operating Procedure (SOP) is to establish a formalized Branch procedure regarding skin patch repair.

SCOPE
 All SDG employees and contractors are covered by and are required to comply within the parameters of this SOP.

HEALTH AND SAFETY
 All Public Works and Engineering employees are required to comply with the Health and Safety procedures within this SOP.

PROCEDURE (SEE ATTACHED)

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
STANDARD OPERATING PROCEDURE

Street Overlay With Hot Mix Asphalt
STREET & DRAINAGE DIVISION/STREET AND BRIDGE MAINTENANCE
BRANCH/STREET MAINTENANCE SECTION

ORIGINAL APPROVED BY	Signature: <i>Eric K. Dalgarno</i>	DATE	10-25-12
REVISION APPROVED BY	Signature:	REVISION DATE	
REVISION APPROVED BY	Signature:	REVISION DATE	
REVISION APPROVED BY	Signature:	REVISION DATE	
APWA PRACTICE # 24.1	POLICY REFERENCE: None	CODE OF ORDINANCE SECTION: Sec. 2-278 Duties	
SOP PREPARED/REVISED BY:	Raymond Ortiz		

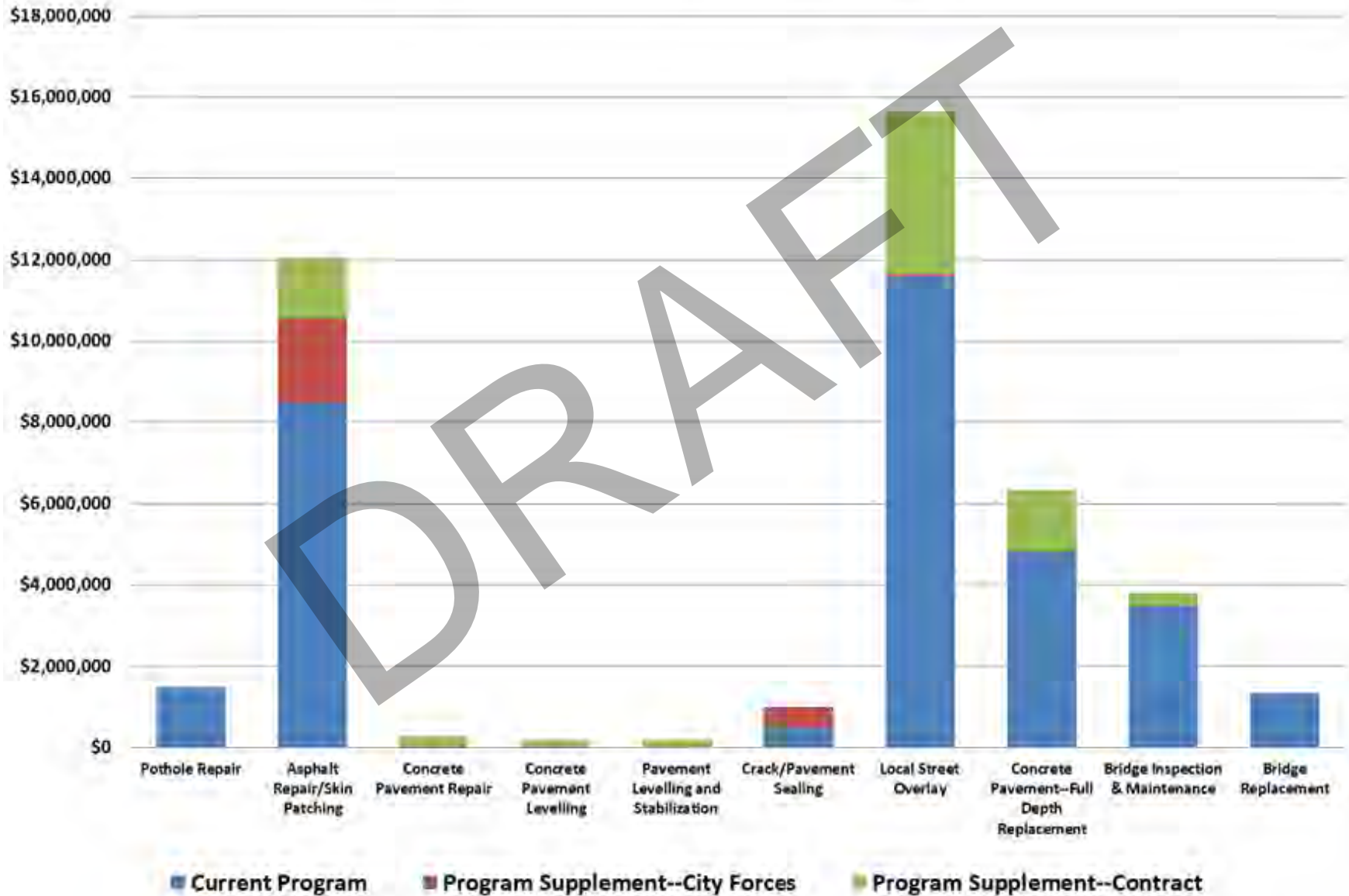
PURPOSE
 The purpose of this Standard Operating Procedure (SOP) is to establish a formalized Branch procedure regarding street overlay.

SCOPE
 All Street & Drainage Division employees and contractors are covered by and are required to comply within the parameters of this SOP.

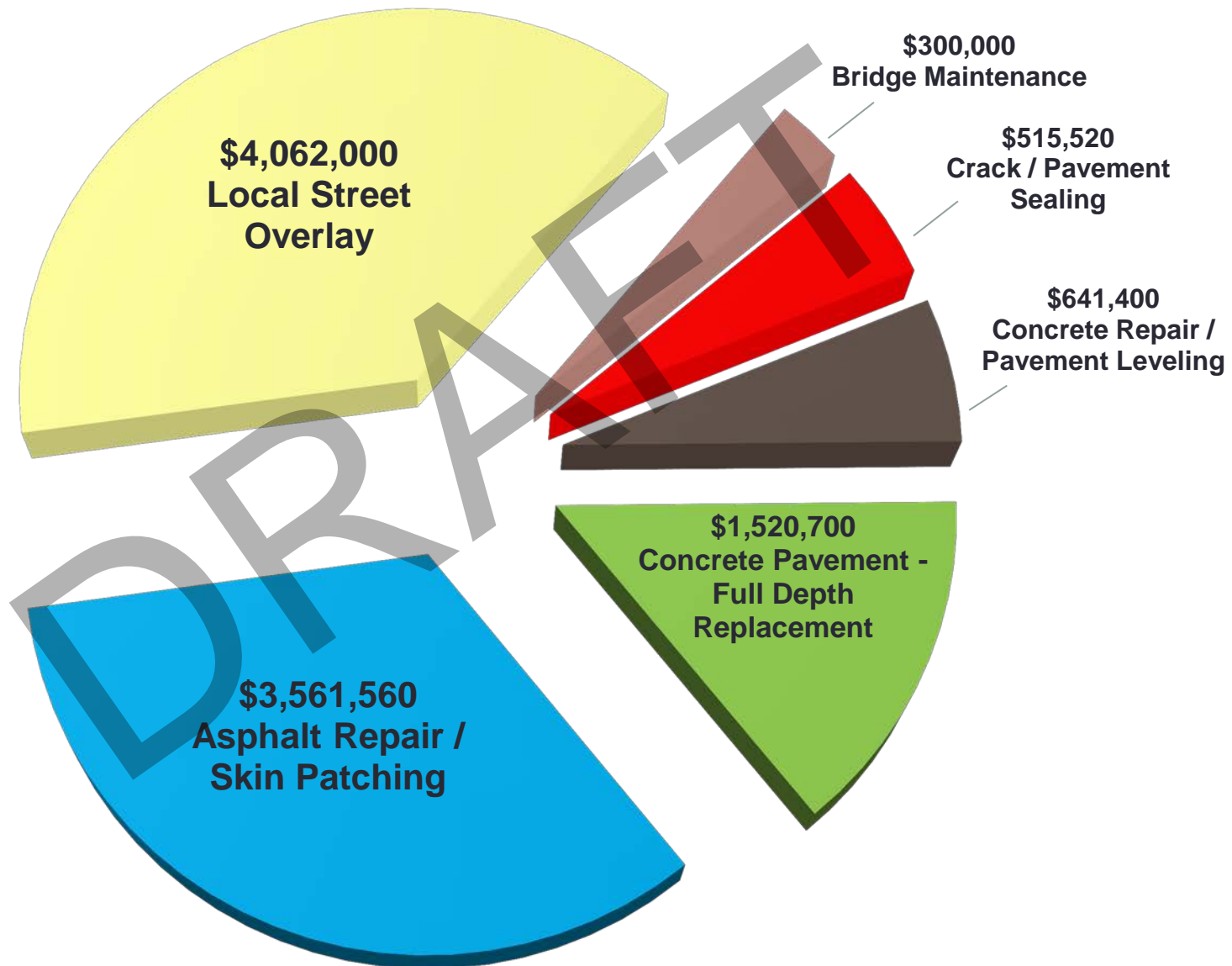
HEALTH AND SAFETY
 All Public Works and Engineering employees are required to comply with the Health and Safety procedures within this SOP.

PROCEDURE (SEE ATTACHED)

FY2015 Expansion of Street Maintenance Program



**TOTAL
INCREASE
\$10,601,180**



Street Sweeping Program Changes

CURRENT PROGRAM

- Central Business District swept weekly
- Thoroughfares & collectors swept quarterly
- Annual Curb Miles = 21,500

PROGRAM COST

Personnel	\$ 585,000
Supplies	52,900
Services	485,300
TOTAL	\$1,123,200

COMPARABLE PROGRAM BY CONTRACT

Cost Savings would allow increase in deliverable results, such as--

- Add quarterly sweeping of on-street bike lanes/routes
- Increase frequency of thoroughfare sweeping

Continuous Improvement

- ✓ All Standard Operating Procedures are reviewed on a regular basis.
- ✓ Job Information captured in work orders, including labor, equipment, and material used for future reference and tracking.
- ✓ Costs are monitored.
- ✓ Performance is measured and reviewed monthly.

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