DATE: May 14, 2018

AGENDA ITEM #2

**TO**: Environmental Commission

**FROM**: J. Logan, Staff Liaison

**SUBJECT**: Receive Report from Staff on Shoulder Paving Policy

## RECOMMENDATION:

Receive the report on the updated shoulder paving policy detail and provide feedback to staff

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## BACKGROUND

Stormwater management is under review by the Public Works Department and is a Target on the 2018/19 Environmental Commission Work Plan. During Joint meetings with Council, it was determined that the Environmental Commission would provide support and resources on this topic and should collaborate with staff specifically on the incorporation of green infrastructure principles with respect to the City's shoulder paving policy and its effect on stormwater management.

In April 26, 2016, Council adopted the Stormwater Master Plan and encouraged involvement of staff and the Environmental Commission to seek policy determinations for use of green infrastructure principles in the shoulder paving policy.

In May 9, 2016, Public Works Director Susanna Chan presented a report and engaged in discussion with Commissioners to determine collaborative efforts whereby the Commission provided support and resources specifically aimed at the shoulder paving policy. A subcommittee composed of Vice Chair Weiden, Commissioners Bray and Halkola was appointed and met with Public Works Director Chan and engineering consultants on the matter. The subcommittee presented reports on the process for shoulder paving policy revisions to the Commission. In addition, the Shoulder Paving Policy was presented to the Complete Streets Commission prior to the Council study session. Key recommendations from the report included:

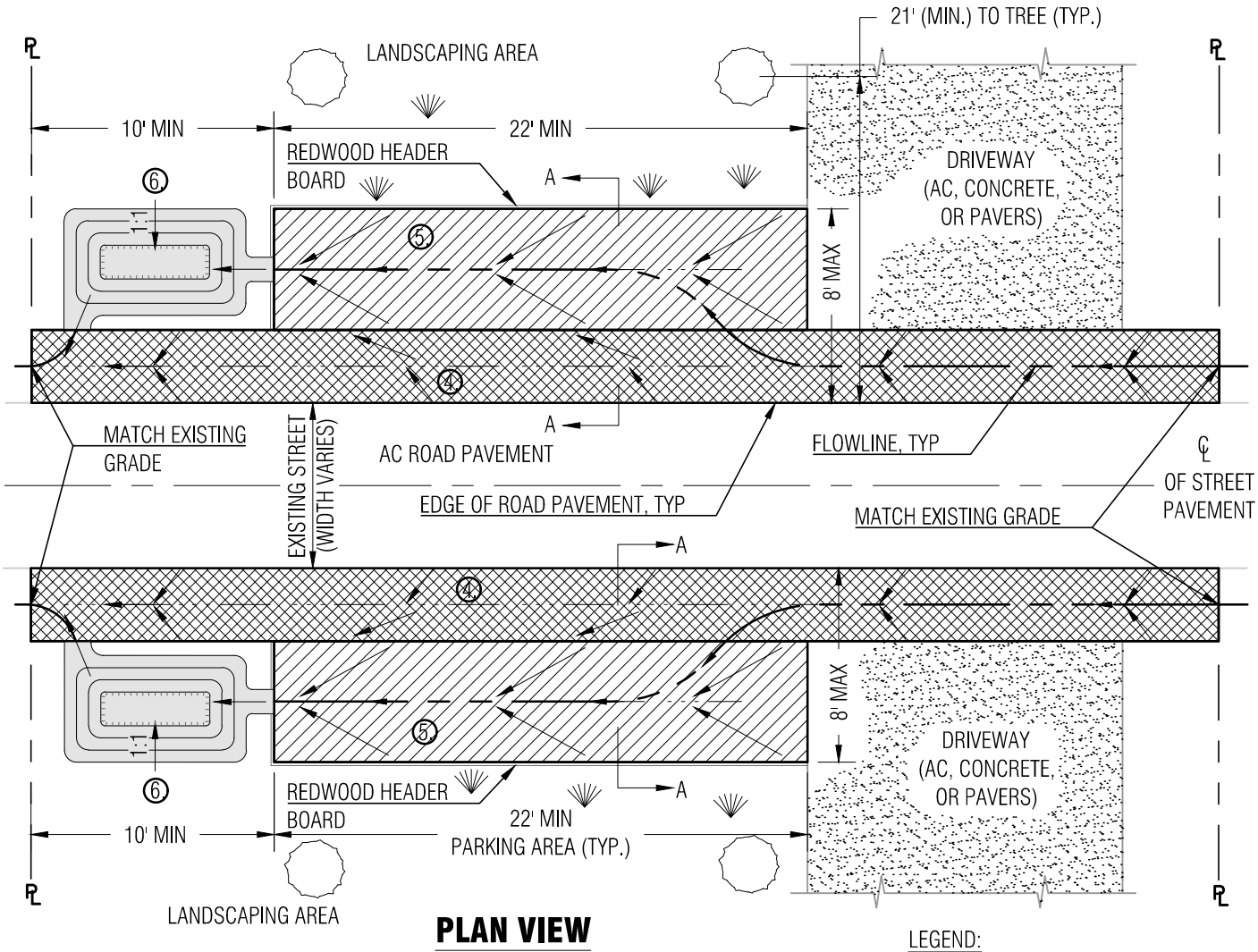
- Retain the specification for an asphalt drainage swale
- Specify permeable materials for use in parking area
- Require installation of a green infrastructure (GI) feature, such as rain garden or bioswale in landscape area

The Council supported the key recommendations and direct staff to develop a Shoulder Paving Policy Detail that can be adopted by the Council. Public Work staff has worked with the consultant to develop the detail based on Council directions (Attachment A).

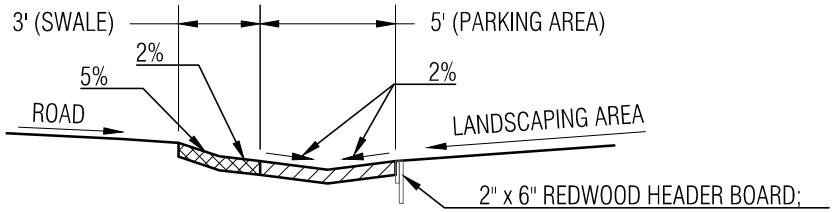
Staff is seeking Commission feedback on the updated Shoulder Paving Policy Detail.

Attachments**:**

A. Shoulder Paving Policy Detail
B. Report to Council at Study Session: November 2016




## PLAN VIEW




## SECTION A-A

LEGEND:

| | |
|---|---|
| AC | ASPHALT CONCRETE |
| ℄ | PROPERTY LINE |
| ℄ | CENTERLINE |
| | EXISTING OR NEW LANDSCAPING |
| | STREET TREE (NEW OR EXISTING) |
| | BIOSWALE/RAIN GARDEN |
| | NEW PERMEABLE SURFACE |
| | NEW AC - DRAINAGE SWALE |
| → | FLOWPATH |
| ④ | NOTES, SEE SU-20B |

SEE STANDARD DETAIL SU-20B FOR NOTES RELATED TO THE SHOULDER IMPROVEMENT POLICY.

Approved. _____ City Engineer _____ Date

CITY OF LOS ALTOS · CALIFORNIA · INCORPORATED DECEMBER 1, 1952

REVISION

| Description | Date |
|---|---|
| | |
| | |
| | |
| | |

**ENGINEERING DIVISION**

SHOULDER IMPROVEMENT POLICY (SHEET 1 OF 2)

SU-20A

NOTES:

1. IF THE STREET PAVEMENT WIDTH IS 36 FEET OR GREATER, NO SHOULDER IMPROVEMENTS ARE PERMITTED WITH THE EXCEPTION OF LANDSCAPING AND IRRIGATION.
2. POLICY DOES NOT APPLY FOR REPAIRS, RESEALING, AND REPAVING IN KIND OF EXISTING SHOULDERS, NOR DOES IT REQUIRE THAT SHOULDERS MUST BE PAVED.
3. THE SHOULDER OF A NEWLY CONSTRUCTED OR 50% OR GREATER SQUARE FOOTAGE REMODELED RESIDENCE IS REQUIRED TO BE BROUGHT INTO COMPLIANCE WITH THIS POLICY.
4. AC DRAINAGE SWALE:
   a. 3' WIDE;
   b. MAXIMUM CROSS SLOPE 5%;
   c. AC THICKNESS SHALL MATCH THE THICKNESS OF ROAD PAVEMENT OR 4" WHICHEVER IS THICKER.
5. PARKING AREA SHALL FEATURE ONE OF THE FOLLOWING MATERIALS:
   a. PERMEABLE CONCRETE PAVERS AND OPEN CELL CONCRETE BLOCKS:
      CONCRETE PAVER BLOCKS BOTH SOLID AND GRIDDED SYSTEMS (WITH OPEN CELLS FOR AGGREGATE, GRAVEL, OR GRASS) HAVE BEEN DEVELOPED IN A LARGE VARIETY OF SHAPES, TEXTURES, PATTERNS, AND COLORS. THE CONCRETE PAVERS AND OPEN CELL CONCRETE BLOCKS SHALL BE INSTALLED PER MANUFACTURE'S RECOMMENDATIONS. GAPS OF CONCRETE PAVERS, IF FEATURED BY THE TYPE OF PAVER, SHALL BE FILLED WITH SAND. OPEN CELL CONCRETE BLOCKS VARY IN SIZE BASED ON BLOCK TYPE AND SHALL BE FILLED IN WITH GRAVEL OR GRASS, ALLOWING WATER TO ENTER THE SUBGRADE. CONCRETE PAVERS AND OPEN CELL CONCRETE BLOCKS SHALL BE INSTALLED OVER A SAND BEDDING COURSE (MINIMUM 1" THICK OR PER PAVER MANUFACTURER'S RECOMMENDATION). FURTHER WATER RESERVOIR CAPACITY CAN BE ADDED BY INSTALLING OPEN GRADED BASE AND STONE SUBBASE WITH AN OPTIONAL UNDERDRAIN (TO BE ROUTED TO THE BIOSWALE/RAIN GARDEN), WITH GEOTEXTILE ON BOTTOM AND SIDES. TYPICALLY AN EDGE CONSTRAINT IS INSTALLED AT THE PERIMETER OF THE PAVERS OR LOCATIONS SUBJECT TO LATERAL LOADING. SUBGRADE EXCAVATION DEPTH REQUIRED IS 8-12 INCHES, BUT CAN BE GREATER IN DEPTH IF ADDITIONAL RESERVOIR CAPACITY IS DESIRED.
   b. COMPACTED AGGREGATE BASE (AB):
      1-1/2 INCH OR 3/4 INCH CLASS 2 AGGREGATE BASE (6 INCHES THICK ON COMPACTED NATIVE SOIL)
   c. COMPACTED STABILIZED DECOMPOSED GRANITE (DG):
      SMALL SIZED GRANITE AGGREGATE MIXED WITH A STABILIZING AGENT, COMPACTED AND PLACED OVER EXISTING PERMEABLE SURFACES AND 6 INCHES OF AGGREGATE BASE IF SUBGRADE IS LESS SUITABLE. SUBGRADE EXCAVATION REQUIRED IS 8-12 INCHES, BUT CAN BE GREATER IN DEPTH IF ADDITIONAL RESERVOIR CAPACITY IS CONSIDERED. DG LAYER SHALL BE MINIMUM 4 INCHES THICK. GRADE TO DRAIN.
6. BIOSWALE/RAIN GARDEN IN LANDSCAPE AREA DESIGNED TO RECEIVE RUNOFF FROM AC SWALE/PARKING AREA. DESIGN AND SHAPE OF BIOSWALE/RAIN GARDEN BY ARCHITECT OR ENGINEER. MINIMUM DEPTH SHALL BE 2.5'. REFER TO THE C.3 STORMWATER HANDBOOK FOR DESIGN PARAMETERS AND SPECIFICATIONS OF SOILS OR PLANTS. AREA SHALL BE DEPENDING ON LENGTH OF FRONTAGE (DISTANCE MEASURED PARALLEL TO EDGE OF ROAD BETWEEN PROPERTY LINES) AS FOLLOWS:
   a. FRONTAGE < 75': 50 SF MINIMUM
   b. 75' < FRONTAGE < 100' 100 SF MINIMUM
   c. 100' < FRONTAGE < 150' 200 SF MINIMUM
   d. FRONTAGE > 150': 300 SF MINIMUM
7. LOTS LOCATED ALONG SUGGESTED ROUTES TO SCHOOL MAY REQUIRE MODIFICATION TO THIS STANDARD DETAIL AS APPROVED BY THE CITY ENGINEER.

Approved. _____ _____
City Engineer Date

CITY OF LOS ALTOS CALIFORNIA INCORPORATED DECEMBER 1, 1952

| REVISION | |
|---|---|
| Description | Date |
| | |
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| | |

**ENGINEERING DIVISION**

SHOULDER IMPROVEMENT POLICY (SHEET 2 OF 2)

SU-20B

ATTACHMENT B

Los Altos

# Shoulder Paving Policy

**City Council Meeting**
**November 15, 2016**

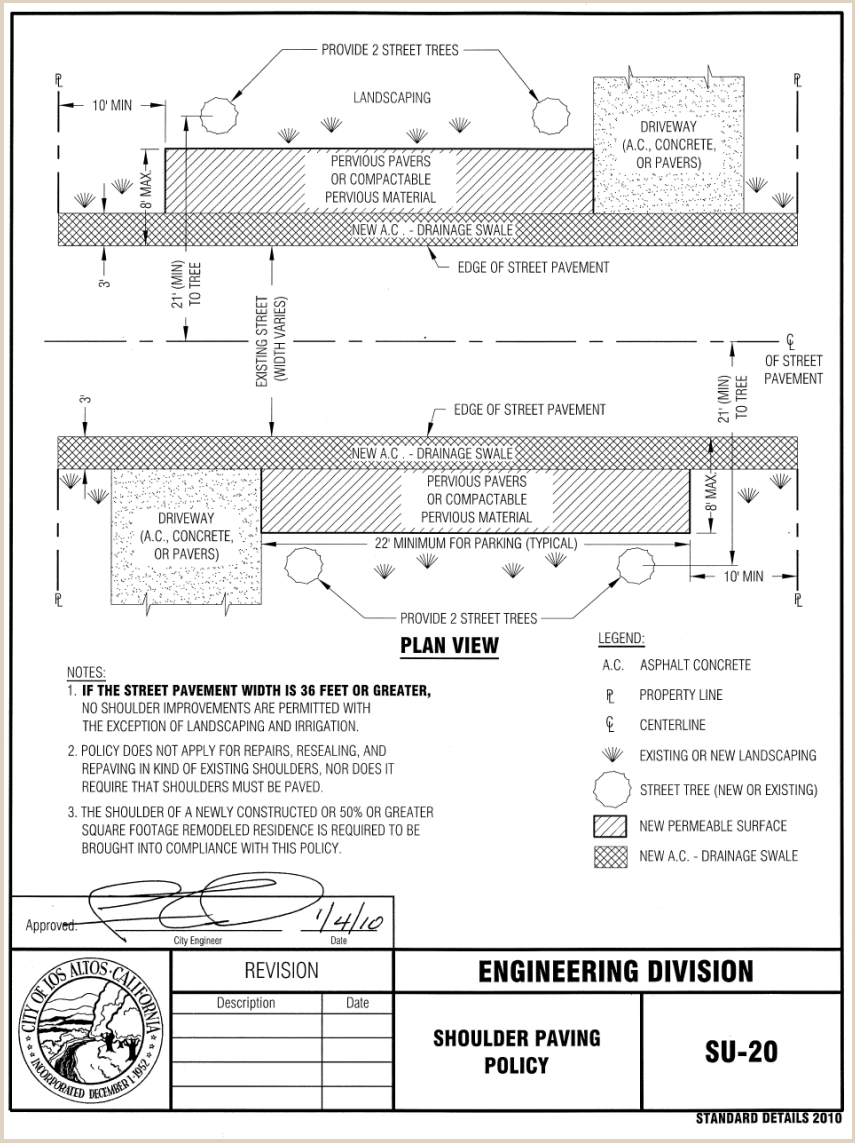
# Background

- City adopted Policy in 2001 with goals to
  - Narrow street
  - Define street edge
  - Provide traffic calming
- Policy applies to:
  - New construction
  - 50% or greater square footage remodeling

# Background

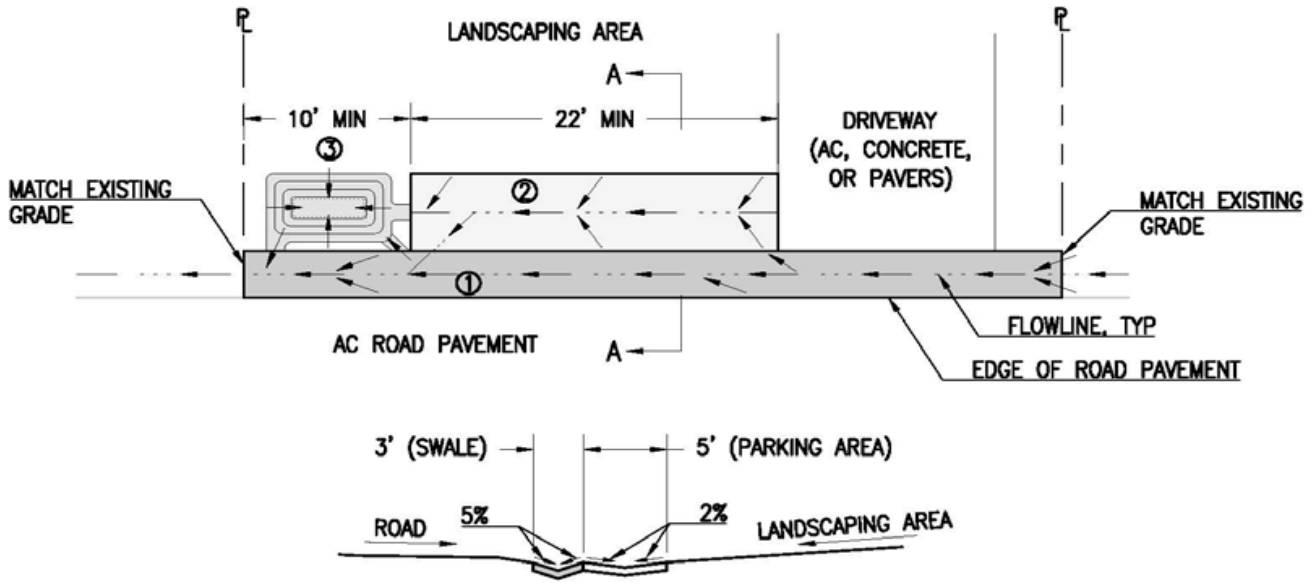
- Restrictions:
  - Does not apply to repairs, resealing & repaving in kind of existing shoulder
  - Improvements other than landscaping are not permitted with pavement width 36 ft or greater
- Major components
  - 3-foot wide asphalt concrete drainage swale
  - 5-foot wide shoulder parking area
  - Landscaping and trees

# Shoulder Paving Policy



# Shoulder Paving Policy

RECOMMENDED REVISIONS TO POLICY




SECTION A–A

NOTES:

① AC DRAINAGE SWALE: MAXIMUM 3' WIDE, MAXIMUM CROSS SLOPE 5%.
② PARKING AREA: PERMEABLE CONCRETE PAVERS, OPEN CELL CONCRETE BLOCKS, DECOMPOSED GRANITE, COMPACTED AGGREGATE BASE.
③ BIOSWALE/RAIN GARDEN IN LANDSCAPE AREA TO RECEIVE RUN–OFF FROM SWALE/PARKING AREA. DESIGN BY ARCHITECT OR ENGINEER.
SIZE DEPENDING ON LENGTH OF FRONTAGE (DISTANCE BETWEEN PROPERTY LINE)
- FRONTAGE < 75': 50 SF MINIMUM.
- 75' < FRONTAGE < 100': 100 SF MINIMUM
- 100' < FRONTAGE < 150': 200 SF MINIMUM
- FRONTAGE > 150': 300 SF MINIMUM

# Drainage Swale

- Current Policy:
  - 3-foot wide asphalt concrete swale
- Consultant Initial Recommendation:
  - Replace AC swale with concrete pavers
- Important Considerations:
  - Cost is substantially higher than AC
  - Installation requires excavation into subgrade
  - Requires vertical barrier around the perimeter to protect roadway
  - Maintenance varies depending on the type of permeable concrete paver used. May require specialized vacuum truck
- Environmental Commission Recommendation:
  - Keep 3-foot wide asphalt concrete swale in the policy

# Parking Area

- Current Policy:
  - allows pervious pavers or compactable pervious material
- Consultant Recommendation:
  - Specifies which type of permeable materials are allowable
  - Porous AC or pervious concrete is not allowed
- Important considerations:
  - Cost consideration
  - Existing clay soils will limit infiltration capacity
  - Decomposed granite and gravel are included as allowable materials. Migration of loose materials can be a concern
- Environmental Commission Recommendation
  - Concur with consultant recommendation

# Parking Area

| Alternative Pavement Materials for Parking Area | Considerations | | | | | |
|---|---|---|---|---|---|---|
| | Structurally Adequate for Parking | Impacts on Adjacent Road Condition | Cost | Maintenance Needs | Stormwater Capture | Aesthetic |
| **Permeable Concrete Pavers and Open Cell Concrete Blocks**<br>Concrete paver blocks both solid and gridded systems (with open cells for aggregate, gravel, or grass) have been developed in a large variety of shapes, textures, patterns, and colors. The concrete pavers and open cell blocks are installed with gaps filled with sand and open cells that can vary in size, based on block type, that is filled in with aggregate, gravel, or grass, allowing water to enter the subgrade. Open cell concrete blocks can be installed over a bedding course. Further water reservoir capacity can be added by installing open graded base and then stone subbase (optional underdrain), with geotextile on bottom and sides. Typically an edge constraint is installed at the perimeter of the pavers or locations subject to lateral loading. Minimum subgrade excavation depth required is approximately 8-12 inches, but can be greater in depth if additional reservoir capacity is required. A vertical barrier can be installed along the edge of concrete pavers to help prevent water infiltration into the subgrade of adjacent road structure. | Yes | • Impacts to adjacent pavement subgrade reduced if vertical treatment is installed (e.g., concrete wall and fabric) | • High, requires specialty contractor | • Moderate and infrequent, may require cleaning to maintain permeability<br>• Maintenance needs vary depending on gap size between pavers. Small gaps may require specialized vacuum equipment to sustain permeability<br>• Grass filled open cell concrete blocks may require mowing | • Allows stormwater infiltration but degree of infiltration and stormwater capture can vary greatly depending on subgrade characteristics and thickness of aggregate reservoir materials | • Different colors and patterns exist which can be specified further to meet desired aesthetic<br>• Gridded system can be installed with grass or gravel with gridded system |
| **Compacted Aggregate Base (AB)**<br>1-1/2 inch or 3/4 inch Class 2 Aggregate Base (6 inches thick on compacted native soil) | Yes with maintenance | • AB can be loosened by vehicles and from water erosion and will require sweeping off of roadside swale<br>• Impacts to adjacent pavement subgrade reduced if edge treatment is installed (e.g., geotextile fabric) | • Low to Moderate | • Simple but frequent sweeping of loose material off roadway and replacing lost AB where eroded<br>• May require maintenance and cleaning of downstream storm drain inlets | • Allows stormwater infiltration but degree of infiltration and stormwater capture can very greatly depending on subgrade characteristics | • May be consistent with aesthetic, but washout of AB into AC swale and road is possible |
| **Compacted Stabilized Decomposed Granite (DG)**<br>Small sized granite aggregate mixed with a stabilizing agent and compacted and placed over existing permeable surfaces and 6 inches of aggregate base if subgrade is less suitable. Minimum subgrade excavation required is approximately 8-12 inches, but can be greater in depth if additional reservoir capacity is considered. DG layer shall be minimum 4 inches thick. | Yes with maintenance | • DG can be loosened by vehicles and from water erosion and will require sweeping off of roadside swale<br>• Impacts to adjacent pavement subgrade reduced if edge treatment is installed (e.g., geotextile fabric) | • Low to Moderate | • Simple but frequent sweeping of loose material off roadway and replacing lost DG where eroded<br>• May require maintenance and cleaning of downstream storm drain inlets | • Allows stormwater infiltration but degree of infiltration and stormwater capture can very greatly depending on subgrade characteristics | • May be consistent with aesthetic, but washout of DG into AC swale and road is possible |

# Compacted Aggregate Base (AB)

# Decomposed Granite (DG)

# Pervious Concrete Pavers

# Landscape Area

- Current Policy:
  - Specifies minimum of 10’ existing or new landscaping in area adjacent to the shoulder parking area or driveway
- Consultant Initial Recommendation:
  - Encourage integration of GI feature, such as rain garden or bioswale

# Landscape Area

- Environmental Recommendations:
  - Separate landscape area and rain garden area
  - Require the installation of a rain garden
  - The size of the rain garden should be proportional to the frontage length of the lot

# Landscape Area

- Final Recommendation:
  - Require installation of bioswale/rain garden to receive run-off from street and parking area
  - Sizing requirements:
    - Frontage < 75': 50 sf minimum
    - 75' < Frontage < 100': 100 sf minimum
    - 100' < Frontage < 150': 200 sf minimum
    - Frontage > 150': 300 sf minimum
    - Replace a minimum of 2.5' of native soil with engineering soil

# BPAC Review

- BPAC reviewed the proposed recommendations at its October 26 meeting
- BPAC fell that overall the proposed changes provide stormwater benefits and do not adversely affect pedestrian and bicycle activities
- BPAC concerns related to the Policy:
  - No policies regarding acceptable landscaping for front yard and in the shoulder area
  - Oversight and enforcement of improvements in shoulder area
  - Patchwork implementation
  - School route impacts

# Other Considerations

- Should the policy be renamed as **Shoulder Improvement Policy**?
- Should the Policy apply to major front yard landscape improvements?
- Should the City develop guidelines and requirements regarding acceptable landscaping for front yard and in the shoulder area?
- Should parking be a requirement in the Policy?
- Should the minimum distance between street trees and the edge of the swale be specified or should root barriers for street trees be required?

# MINUTES OF THE STUDY SESSION OF THE CITY COUNCIL OF THE CITY OF LOS ALTOS, HELD ON TUESDAY, NOVEMBER 15, 2016, BEGINNING AT 5:30 P.M. AT LOS ALTOS CITY HALL, 1 NORTH SAN ANTONIO ROAD, LOS ALTOS, CALIFORNIA

## ESTABLISH QUORUM

PRESENT: Mayor Bruins, Councilmembers Mordo, Pepper and Satterlee

ABSENT: Mayor Pro Tem Prochnow

## ITEMS FOR CONSIDERATION

1. Shoulder Paving Policy: Receive a report on the proposed revisions to the Shoulder Paving Policy and provide direction as needed

Public Works Director Chan presented the report.

Public Comment: Los Altos resident Jim Wing expressed concerns about rain gardens not working on many properties and encouraged the City to require at least one parking space for improvements in the public right-of-way.

Action: Council members provided general feedback and generally supported the recommended changes.

## ADJOURNMENT

Mayor Bruins adjourned the meeting at 6:54 p.m.

_____
Jeannie Bruins, MAYOR

_____
Jon Maginot, CMC, CITY CLERK