



**AGENDA MEMORANDUM**  
City Council Meeting of April 27, 2021

**DATE:** April 20, 2021

**TO:** Peter Zaroni, City Manager

**FROM:** Richard E. Martinez, Director of Public Works  
[RichardM5@cctexas.com](mailto:RichardM5@cctexas.com)  
(361) 826-3419

Update on Amended City Council Policy 28:  
Award Guidelines for Arterial and Collector Streets with Concrete or Asphalt Pavement

**STAFF PRESENTERS:**

<b><u>Name</u></b>	<b><u>Title/Position</u></b>	<b><u>Department</u></b>
1. Richard Martinez	Director	Public Works

**ISSUE:**

City Council Policy 28 outlines the guidelines for awarding arterial and collector street construction contracts using concrete pavement (PCC) or asphalt pavement (HMAC). The policy was amended by City Council on October 27, 2020 and emphasize the evaluation of the geotechnical soil conditions and recommend the removal of the residential streets from this policy.

**BACKGROUND:**

For the FY 2021 policy update, Public Works contracted with Roadway Asset Services (RAS) to re-evaluate the life cycle cost analysis between HMAC and PCC pavements. RAS has the required experience for evaluating pavement networks and general performance. Scott Gordon, Principal Engineer and President, has over 30 years of experience in pavement evaluation, including providing similar services for 4 out of the 5 major cities in Texas.

This policy update included an emphasis on the evaluation of existing geotechnical soil conditions. Public Works proposed incorporating geotechnical testing in the design phase of the project to determine the plasticity index (PI) of the existing soil. The plasticity index is the size of the range

of water contents where the soil exhibits plastic properties. As was indicated in the recommendations from RAS, soils with a PI greater than 30 are characterized as an expansive soil. The expansiveness of clay soils has a major impact on the performance of pavement structures. Pavements on clay soils must be designed with an additional stabilized layer, which should be accounted for in the initial design and capital expenses. Expansive soils also require more frequent maintenance due to the higher percentage of cracking and differential movement anticipated and, in some cases, with different types of maintenance. HMAC pavements will likely require additional mill and overlay activities to correct differential movement and PCC pavements will likely require grinding and additional panel replacements due to the differential movements.

To determine an updated life cycle cost analysis, RAS used maintenance activities, assigned costs to the activities, applied discount and inflation rates using a 40- year analysis timeline. The details of this life cycle cost analysis can be found in Attachment A.

The results from the RAS cost analysis indicated that the City should not use concrete pavement for arterial and collector streets on soils with a PI greater than 30. If the PI is less than 30, then this policy will be used to determine the selection of asphalt or concrete. Therefore, if the initial construction bid is within \$128,000 per lane mile between HMAC and PCC, then PCC should be chosen. If the difference in initial construction bid is greater than \$128,000, then HMAC should be chosen. With a minimal differential in price, Public Works recommended utilizing the existing \$125,000 per lane mile for construction bids on arterial and collector roadway projects. An additional item recommended for consideration in the selection of pavement surfaces was the adjacent pavement types. In areas of PCC, prioritization will now be given to PCC, similarly on areas with HMAC. For example, if a proposed project is adjacent to an existing PCC section, PCC pavement will be selected for continuity.

Additionally, the October 27 policy update validated previous recommendations to eliminate residential streets from the evaluation of PCC. This was due to the general location of utilities in residential areas and lower traffic loads on residential streets. Typically, utilities are in the street. Street cuts needed to repair utility lines would result in costly repairs. At that time and still today, it is not deemed financially advantageous to bid residential streets in PCC.

Below is a summary of the recommendations Public Works submitted for City Council's adoption:

1. When the project contains a majority subgrade with a PI greater than 30 or deemed as a moderate to highly expansive soil by the design Geotechnical Engineer, the City should recommend asphalt pavement (HMAC).
2. When the lifetime maintenance cost difference of concrete pavement (PCC) is below **\$125,000/lane mile**, the City should recommend PCC.
3. For residential projects, the City should recommend HMAC.
4. Other criteria to consider is if the adjacent pavement section is PCC, consideration should be given to providing a uniform surface type, at the discretion of the City Public Works staff.

Council Policy 28 was amended, and the Resolution adopting the policy is listed below and provided in Attachment B:

*If the project contains a majority subgrade with a Plasticity Index (PI) greater than 30 or deemed as moderately to highly expansive soil by the design Geotechnical Engineer, the asphalt pavement alternative will be used by City Council when deciding to award a contract for arterial and collector roadways.*

*“If the PI is less than 30 and the construction cost for concrete pavement is within \$125,000 per lane mile (\$17.75/square yard), which should represent the future anticipated maintenance cost, of the asphalt pavement alternative, the concrete pavement alternative will be used by City Council when deciding to award a contract for arterial and collector roadways.*

*This policy will be updated annually.*

**LIST OF SUPPORTING DOCUMENTS:**

- PowerPoint Presentation
- Attachment A - Roadway Asset Services, LLC (RAS) Letter Report
- Attachment B - City of Corpus Christi Resolution #032255