HCI: TXDOT’S HIGHWAY COST INDEX

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Overview of the Highway Construction Index (HCI) System

- Uses indices to compare the cost of main highway construction items of the monthly construction letting
- Generates every month moving index reports corresponding to 1-month, 3-month and 12-month statewide and by district
- Excludes prices less than 5% and over 3,000% of the base period prices corresponding to 1997
- Projects not awarded by the Commission and defaulted contracts are taken out from the database
- Aviation, building and maintenance projects are not included
- A common unit of measure is needed for items tracked in HCI for use in calculations
- Applies conversion factors to adjust items to common units of measure: e.g., all concrete pavement is expressed in CY
Components of HCI

Categories:
- Earthwork
- Base Course
- Surfacing
- Structures

Elements for Surfacing:
- Surface Treatment
- Bituminous Mixtures
- Concrete Pavement

Controlling Items for Surface Treatment:
- Asphalt by the GAL
- Aggregate by the CY

There are 4 categories with 16 elements containing 34 controlling items tracked by HCI
Price Indices

- A price index is a numerical value that summarizes price levels.
- It measures the change over time in the price of particular item or group of items.
- Base period = the point of time to which all later prices are compared.
- The base year for HCI = 1997.
- This base period is expressed by equating 1997 prices to an index = 100.
- It means that the index for any given year expresses all prices relative to that of 1997.
- Index numbers are ordinarily expressed in percentages.
Example of a Price Index Calculation

- **Roadway Excavation Prices per CY**
  - Base Period (1997) = $2.98
  - Base Period Index = 100
  - Current Period (OCT 2013) = $10.12
  - What is its Current Period Index?

- **Current Period Index (I) = \( \frac{P_n}{P_o} \times 100 \)**

- \[ I = \frac{10.12}{2.98} \times 100 = 339.59 \]

- **Percent Increase = Current Period Index – Base Period Index**
  - % Increase = 339.59 – 100 = 239.59%
  - % Increase = \( \left( \frac{10.12}{2.98} - 1 \right) \times 100\% = 239.59\% \)
Weighted Averages in SY

Unweighted Average = \( \frac{71+52+64}{3} \) = $62.33 per SY

Weighted Average = \( \frac{228,726.60}{4,084.60} \) = $56.00 per SY

But there’s one little problem...
Conversion to CY

- Need to account for the different depths:

  - 8" CRCP: \(8" \times \frac{1\ YD}{36"} \times 788.60\ \text{SY} = 175.24\ \text{CY}\)

  - 12" CRCP: \(12" \times \frac{1\ YD}{36"} \times 3,184\ \text{SY} = 1,061.33\ \text{CY}\)

  - 6" CRCP: \(6" \times \frac{1\ YD}{36"} \times 112\ \text{SY} = 18.67\ \text{CY}\)
Weighted Averages in CY

- **Unweighted Average** = \( \frac{319.50 + 156.00 + 384.00}{3} \) = $286.50 per CY

- **Weighted Average** = \( \frac{228,726.60}{1,255.24} \) = $182.22 per CY

- HCl picks up the $182.22 price with a quantity of 1,255.24 CY
HCI Values During the Past 10 Years

HCI index (1997 base)

- 1-Month Index
- 3-Month Index
- 12-Month Index
HCI and CPI (Consumer Price Index)
HCI and PPI (Producer Price Index: Petroleum)
Texas Department of Transportation

Highway Cost Index (1997 Base) Index Report for October 2013

CONSTRUCTION DIVISION - CONTRACT LETTING
Example of Using HCI in Dispute Resolution

- Project let in March of 2012 was put on hold
- Work will finally begin in October of 2013
- 12” Flexible Base had a unit price of $10 per SY
- Both parties agree to use the 12-Month Indices
- HCI corresponding to Flexible Base in MAR 12 = 170.75
- HCI corresponding to Flexible Base in OCT 13 = 219.46

\[
\frac{P_n}{P_0} = \frac{HCI_n}{HCI_0}
\]
where \( P_n = P_0 \times \frac{HCI_n}{HCI_0} \)

\[
P_n = $10 \times \frac{219.46}{170.75} = $12.85 \text{ per SY}
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References


- Link to TxDOT’s HCI on the web:
  

- Link to the U.S. Energy Administration Information (EIA):
  
  http://www.eia.gov/