Implementing a Gravel Road Conversion Process

Craig Parks, PE - Boone County Engineer
Nick Parr - Operations Manager
750 total centerline miles of roadway
300 small structures
192 bridges
County population 58,000
Gravel Roads

- 420 Miles Paved Roads
- 330 Miles Gravel Roads
“My Road is Nothing But Mud”

“This looks like a third world country”

“You are trying to kill me with the dust you are creating”
Why a Process?

- Promises made to residents not fulfilled
- No R/W
- No system to guide selection
- Short term fix = long term problem
- State road closure
- Funds not set aside
- We could never justify need to our Council

They were like...

We were like...
Goals

• Standardization

• Objectivity

• Transparency
- One Application per segment
- Establish point person throughout the project
- Responsible for collecting petitions
- Creates base score for segment
Base Score

- Based on 8 primary criteria
- Each criteria weighted
- 6 criteria based on roadway characteristics
- 2 criteria can vary and cause significant increase to base score
Cost of Conversion
• 4 cost ranges
• Higher cost projects are scored lower
• Lowest weight of all criteria

<table>
<thead>
<tr>
<th>Scale</th>
<th>Score</th>
<th>Weight</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than $500,000</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$250,000 to $500,000</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100,000 to $249,999</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $100,000</td>
<td>4</td>
<td></td>
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</tbody>
</table>

Traffic
• Higher ADT equates higher score
• Traffic counts taken

<table>
<thead>
<tr>
<th>Scale</th>
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<th>Weight</th>
<th>Weighted Score</th>
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</thead>
<tbody>
<tr>
<td>0-100 vpd</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101-300 vpd</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>301-500 vpd</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>&gt; 500 vpd</td>
<td>3</td>
<td></td>
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</tbody>
</table>
Termini

- Blacktop roads on each end receives higher value

<table>
<thead>
<tr>
<th></th>
<th>Scale</th>
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<th>Weight</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Ends Gravel</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One End Paved</td>
<td></td>
<td>1</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Both Ends Paved</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thoroughfare Plan Classification

- Arterials, Collectors, Local Roads score in descending order

<table>
<thead>
<tr>
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<th>Scale</th>
<th>Score</th>
<th>Weight</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Road</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collector</td>
<td></td>
<td>1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Connectivity
- The classification of the roads at each end of the segment have substantial impact to the score

<table>
<thead>
<tr>
<th>Connectivity</th>
<th>Scale</th>
<th>Score</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connects two Local Roads</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connects with one Collector with Local Road</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connects 2 Collectors</td>
<td>2</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Connects one State Road or Arterial with Local Road</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connects one State Road or Arterial with Collector</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connects 2 State Roads or Arterials</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parallel to State Road
- Parallel roads often used by detoured traffic

<table>
<thead>
<tr>
<th>Parallel to State Road</th>
<th>Scale</th>
<th>Score</th>
<th>Weight</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, or &gt; 2 miles</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, &gt; 1 mile &lt; 2 miles</td>
<td>1</td>
<td></td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Yes, within 1 mile</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, within 1/2 mile</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Public Support

- Percentage of parcel owners on the segment in support of the project
- Standard form for all petitioners
- Contact information for land owners

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<th>Scale</th>
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<th>Weight</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50% signing petition</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%-74% signing petition</td>
<td>1</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>75%-99% signing petition</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% signing petition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Right of Way

- Highest weighted score of all categories
- Percentage of parcel owners agreeable to dedication
- Score based on returned petitions
- Thoroughfare Plan is used to determine width of right of way

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<th>Weight</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50% agree to dedicate to Thoroughfare width</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%-74% agree to dedicate to Thoroughfare width</td>
<td>1</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>75%-99% agree to dedicate to Thoroughfare width</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% agree to dedicate to Thoroughfare width</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thoroughfare Plan right of way already dedicated</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conversion Scoring

• Sum of the 8 weighted scores becomes the Base Score
• Score Adjustments
  1. Amount of Work Needed before Conversion
  2. Regularity of Maintenance Needed
  3. Included in the Department’s Conversion Plan
  4. Private Financial Participation
• Score Adjustment is a **multiplier**
Amount of Work Needed before Conversion

- Major (0)
- Minor (+1)
- Shovel Ready (+1.5)
Score Adjustments

Regularity of Maintenance Needed
• Frequency of grading/material needed
• Frequency of requests for maintenance
• Staff is consulted and work order history is verified

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>Low</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

Already in the Plan
• List of roads identified by the Highway Department in 2016

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>If Yes, enter 1.5, Otherwise 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>1.5</td>
</tr>
<tr>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>
Financial Participation
• Petitioners can agree to donate funds to the project to increase score
• Score based on percentage of project cost pledged

<table>
<thead>
<tr>
<th>Multiplier</th>
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<tbody>
<tr>
<td>If yes enter the sum of 1 + percentage of private participation (i.e. If 25% participation, multiply base score by 1.25)</td>
</tr>
</tbody>
</table>
Score Adjustments

- Sum of multipliers becomes the total score adjustment
- Base score multiplied by total adjusted score to determine the segment’s final overall score

\[(\text{BASE SCORE}) \times (\text{TOTAL ADJUSTMENT}) = \text{FINAL SCORE}\]
Road Selection
Phase 1

Initial Budget Established

January

Applications Received

Traffic Counts

Preliminary Scores Talled

Recommendation of Selected Roads

Conditional Commissioner Approval

August

Preliminary Results Provided to Applicants
You have been selected!!

…..for petitioners to do what they agreed to do
R/W Dedication

- Standard dedication documents
  - Legal description attached
- R/W dedication documents are provided to the applicant
- Applicant returns as a complete packet
- All documents must be notarized
- Recorded after Commissioner approval
• Petitioners who pledged funds initially receive agreement
• Must be notarized
• No payment until conversion is complete
• Scores are re-tallied
Construction Process

Road Preparation
• Brush cleared
• Drainage work performed
• Grade & slope improvements
Chemically Modified Asphalt (CMA)
- Prime applied to gravel surface
- Single 4” lift
- Asphalt properties
  - 50/50 Mix of #9 & #11 limestone
  - 10 Gal/Ton CM-150
- Open graded
- Flexible base layer
Surface Finishing

- “Choke” is applied
  - #13 Aggregate broadcasted to prevent tracking
- 2’ Stone shoulder
- Single Chip & Seal following year
2019 Results

- 30 Applications
- $22,500 pledged
- 40 Parcels dedicated R/W
  - Typical 40’ width
  - Documents recorded
- 5 miles converted
Lessons Learned

- Process is complicated
- Involvement of applicant needs to change
- Application needs to change
- Base score should be calculated by the department
- We met our goals
  - Process is standardized
  - Process is objective
  - Process is transparent (defendable)
Questions?