Strategies for Preserving Local Rural Roads

Craig E Hardy; Wi. PE/RLS
IOWA COUNTY; WISCONSIN
(IOWA COUNTY IOWA - NOT THAT THERE’S ANYTHING WRONG WITH IT)
ISSUE - Agriculture in Wisconsin – Wisconsin is Agriculture

Source UW-Extension 2007 data:
- Contribute $59.16 billion to total business sales (12.5 percent of total)
- 353,991 jobs (10 percent of total employment)
- $20.2 billion of total income (about 9.0% of total)
Wisconsin counties have jurisdictional authority for all County Highways (alphanumeric – A, B, BB, etc.) perform maintenance activity by contract or agreement on:
- All State highways (#’d – STH 133, USH 14, USH 151, IH 90)
- Some Town roads (named – Red Dog Road, Leaches Crossing)
A lot of **structure, control**, and **opportunity** are built into state statutes:
- §§ 32 Eminent Domain - acquisition
- §§ 59.0 Counties – Governmental authority and structure
- §§ 66.0 General Municipality Law – mutual agreement authority
- §§ 82.0 Town Highways
- §§ 83.0 County Highways – Jurisdictional authority
- §§ 84.0 State Trunk Highway
- §§ 86.0 Miscellaneous Highway Provisions
- §§ 90.0 Fences
- §§ 196.0 Regulating Utilities – permitting authority
- §§ 340.0 Vehicles
- §§ 346.0 Rules of the Road – fines and fees
- And others
DEMOGRAPHICS
INFRA-STRUCTURE IS LARGE FOR COUNTY SIZE

Infra-structure
- Freeway, Highway, Roads
  - 190.5 CL miles of State Highway
  - 365.7 CL miles County Highway – 18/72 statewide
  - 783 CL miles of Town Road and Village Streets
  - 1,339+ CL miles of roads in the county
- Bridges
  - State – 57 – 2 POSTED
  - County – 52
  - Township & Village – 93
  - 28/145 Local Bridges have some lane or load restriction on them.

Demographics
- Lifestyle is agricultural
  - 14 Townships – smallest is 300 in population for 40 Sq. Miles
  - 11 Villages
  - 2 Cities (4300 and 2900 in population)
- Population – (tax base is rural)
  - 23,687 - 2010 census – 48/72 in the state
  - 20,150 – 1990 census
  - 22,500 – 1860 census
- County land area
  - 762.58 Sq. miles – 35/72 largest in the state
  - 25.6 mean travel time to work = 11/72 highest in the state (rely on road system)
  - Population < poverty level = 9.8% (58/72) - not eligible for economic development $

Tax Base
- Countywide Increasing $5.7M to 9.6M (+40% in a decade)
- Highway Department share of tax levy stagnant/declining – unchanged in same timeframe
  - 1999 – $2,700,000
  - 2010 – $2,132,612
  - 2016 – $2,568,765
Right of way management is performed by “…maintaining authority…” per Statute. Authority of Highway Commissioner given in SS 83.01 (7) duties:

- (a). “…and of the maintenance of all highways maintained by the county.”
- (b). “Except as provided under 83.015(2b), shall perform all duties…and shall do or cause examinations for the establishment, construction, improvement, and maintenance of highways....”
- (c). “..charge of all county road machinery and tools, and...for proper maintenance, repair and storage, and shall...inventory…”
- (d). “…make an annual report to the Board itemizing all expenditures for the prior year, estimate amount for succeeding year, and make recommendations deemed advisable.
- (e). “…and commissioner’s employees may enter lands for making surveys…”
- (f). “Whenever any fence encroaches…issue orders to remove…”
- (g). “…compiles records of laying out, alteration, or discontinuance of all highways in the county outside of the limits of cities or villages.
CTH’S BISECT PROPERTIES
SEPTIC/SANITARY SEWERS/FARMS
331477

REVOCAIBLE OCCUPANCY PERMIT

Encroachment Revocable Occupancy Permit - Welsh.pdf - Adobe Reader

Revocable Occupancy Permits

Encroachment location: Sta. 115+60 - Sta. 117+60, Left.

Being part of NW 1/4 of NW 1/4 Sec 34 T6N R5E

Encroachment description: Large stone retaining wall and stairs.

The use and occupancy of road right of way under this permit is conditioned upon the Occupant’s compliance with these provisions:

1. This permit only authorizes the described encroachment to remain temporarily within the CTH K right of way by 18.4 feet, however, if the described encroachment is damaged from any cause whatsoever, to the extent that repair costs would be equal to or greater than 50% of the assessed or estimated value of the described encroachment at the time of said occurrence, then it cannot be repaired, re-erected and/or replaced anywhere within the existing road right of way.

2. In the event that the Agency deems it necessary to revoke this permit on the basis of a need to expand capacity or improve safety, the Agency reserves the right to give notice regarding the removal of the described encroachment. The Agency may terminate this permit upon (30) days written notice to the Occupant. The Occupant shall remove the described encroachment maintained under this permit within the time specified in the notice.

3. If the Agency determines that the installation or use of the described encroachment authorized under this permit increases the difficulty of road maintenance, creates conditions adverse to the best interest of the highway users, the general public, or presents a threat to road safety, then the occupant, upon notification by the Agency shall promptly remove the encroachment from the road right of way.

4. Failure by the Occupant to comply with the provisions of this permit is cause for the Agency to terminate this permit and to require the Occupant to take immediate action to clear the right of way to a safe condition.

5. Issuance of this permit shall not be construed as a waiver of the occupant’s obligation to comply with any more restrictive requirements imposed by local ordinance.

Date

February 22, 2013

State of Wisconsin

Iowa County

On the above date, this instrument was acknowledged before me by the named person(s).

Signature: Notary Public, State of Wisconsin
COUNTY BOARD
So then....... 
What are the problems?
INFRA-STRUCTURE RELATED
Where are there problems?
EVERYWHERE

problem
ˈpräbləm/noun
a matter or situation regarded as unwelcome or harmful and needing to be dealt with and overcome.
Where are the problems – 5/8 CTH w/ some type of posting 
30/202 Bridges in county posted (28/145 on Local system)
NARROW ROW - HOUSE BUILT IN 1832
(WISCONSIN STATEHOOD 1848?)
WELLS AND SEPTIC BEDS ON ROW
NOT UNIQUE TO AGRICULTURE – ISSUES WITH OSOW EQUIPMENT.
DETERIORATING INFRA-STRUCTURE + UNDERFUNDING = UNIQUE SOLUTIONS
2014 Adopted Countywide Vehicle Registration Fee = $400,000
Solution Repair in 2015-Detour route = 19 miles / one way
Scheduled for STP-Bridge replacement in 2019
EDUCATE COUNTY BOARD – HIGHWAY INFRA-STRUCTURE HAS VALUE - INVESTMENT

- **Original** cost/investment - IOWA COUNTY
- 2009 – 18-month report of operations
  - Infra-structure
  - Equipment
  - Staff
  - Work tasks
- Source 2010 GASB Report
  - Highways - $94M
  - Bridges - $6.5M
  - Culverts - $2.7M
  - Right of Way – 3251.6 acres at $856K
  - **Total Original Investment to-date = $104.1M County Highways Only**
- Stagnant tax levy > 15 years = underfunded
- Large system for the county’s size

RISK MANAGEMENT REMEDY -
1. Identify and recognize the **problem**
2. Gain **policy consensus = County Board support**
7 Sections – Justification of Operations
Capital Improvements - Preventative Maintenance - Routine Maintenance
Reactive maintenance - Equipment Fleet - Buildings/Grounds - Personnel/Staffing

147Pps.
COUNTY HIGHWAY DEPARTMENT = FRONTLINE DEFENSES (BATTLE ISN’T NEWSWORTHY UNTIL...)
2009-Large farm operation hauling manure
Small county = Big News, locally at least

- Damaged county road eastbound lane
  - 3 locations over 2 miles
  - Overall length of ¾ mile
  - Deformed wheel paths to a depth of 6-inches
    - Just about drag a car bumper

- CHALLENGES - partially related to history
  - Equipment Size versus Infra-structure
  - Historic (Initial) Road Design and Construction
    - Only have plans for 45% of the system
      - Even Built to a standard? - Only a fraction has been improved
        - Users and equipment has changed with time
        - County Highway Improvement cycle of >80 years
  - Past Practices - Construction Methods
§§ 86.02  Injury to highway. Any person who shall injure any highway by obstructing or diverting any creek or watercourse or sluiceway, or by dragging logs or timber thereon, or by any other act, shall be liable in treble damages, to be recovered by the political division chargeable with the maintenance of highway injured, and the amount recovered shall be credited to the highway maintenance fund.

Landowner causing damage liable to $705,000 by statute
CTH IMPROVEMENT STANDARD? - HISTORY

- BUILT TO A STANDARD IN 1958 – Road Mix surface
- COUNTY POTHOLED SOFT SPOTS, GRAVELLED AND RE-PAVED IN 1978 – 1 LAYER (2-INCH)
- SEALCOATED IN 1981, 85, AND 87
- 1996 RECLAIMED VIA SCARIFIER BLADE, RESHAPED, PAVED 2 LAYERS (3-INCH)
- SEALCOATED IN 2001
- LOAD FAILURE - WEDGE REPAIRS IN 2009

CHASING OUR TAIL
CONSTRUCTION METHOD
IN CUT OR FILL ARE THE RESULTS THE SAME?
MINNESOTA ROAD STUDY RECOMMENDATION -
“YOU’RE THE COMMISSIONER/ENGINEER - JUST BUILD IT!”

Cell 84 (Thick)
- 5.5” HMA with PG58-34
- 9” gravel aggregate base
- A-6 subgrade soil (existing subgrade soil).

Cell 83 (Thin)
- 3.5” HMA with PG58-34
- 8” gravel aggregate base
- A-6 subgrade soil (existing subgrade soil).
Highway Department Operations
Construction Needs + Lack of Funding $\leq$ Preventative Maintenance $\$
Based on Last Improvement Year
Iowa County Hwy Dept.
PAVED Surfaces

<table>
<thead>
<tr>
<th>Years Since Last Treatment</th>
<th>Miles</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2</td>
<td>7.460</td>
<td>2.0</td>
</tr>
<tr>
<td>3 to 4</td>
<td>13.690</td>
<td>3.7</td>
</tr>
<tr>
<td>5 to 6</td>
<td>7.820</td>
<td>2.1</td>
</tr>
<tr>
<td>7 to 8</td>
<td>9.300</td>
<td>2.5</td>
</tr>
<tr>
<td>9 to 10</td>
<td>9.290</td>
<td>2.5</td>
</tr>
<tr>
<td>Over 10</td>
<td>318.140</td>
<td>87.0</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>365.700</td>
<td></td>
</tr>
</tbody>
</table>

Replacement Life Cycle = 1.28%/Yr/Decade = 78.2 Years
Recent History - Program Life Cycle (2.7+2.7+5.25)/4 = 2.66 Mi/Yr = 137.4 Years
Preventative Maintenance – 38.4% (140.3 Mi.) of system untouched in > decade
A separate issue in either case compounds problems
SEALCOAT APPLICATION HISTORY (1999-2012)

10Yr – 5/13; 7Yr – 2/13; 5Yr - None
THEN LET’S DEVELOP A STRATEGY
“RESOLVE THE CONFLICTS OR HOW DO WE FINE THE VIOLATORS”

1. **Education** - Create a stepped notification and enforcement process - Verbal, written, enforcement.
2. **Publish Documentation** - Document and catalogue historical problems and provide verbal notification.
3. **Develop Local Ordinances** to address and control problems/issues
4. **2nd chance clause** - Send written notification (cc corp counsel) and meet with landowner to advise of problems and develop solutions.
5. **Enforcement** - Correct the problems, fine the offenders, and bill the violators for repairs
6. **Engineering solutions** - Identify goals for a proactive remedy to the problems – to **stop repetitive repairs**.
“IDENTIFY THE ISSUES COMMON TO FARMING OPERATIONS?”
Spring cultivation - Horticulture disturbance of drainage patterns cause long term damages
AFFECTS OF DAMAGE OVER TIME
Ingress/Egress of Right-of-way without an Access
Existing inadequate, poorly designed, not maintained accesses create issues
Users not using permitted ingress/egress accesses – consider

- moving
- changing to fit operations and decrease damages
- safety for all users
- FINES
PARK OBJECTS ON RIGHT-OF-WAY
Fall Harvests – Loading and off-loading of products on roadway
Size and width – greater than roadway
Equipment not staying on paved surfaces wears out the edges
EDUCATION - PUBLIC NOTICES

Preserving and Protecting Rural Roads:
Proactive Steps Wisconsin Towns, Counties and the Ag Industry are Taking

Kevin Erb
UW Extension
Environmental Resources Center

Effects of Implements of Husbandry ‘Farm Equipment’ on Pavement Performance
Pooled Fund TPF-5(148)

Dr. Halil Ceylan
Simon Wang, Dr. Sungwhan Kim, Dr. Rangan Gopalakrishnan
Iowa State University
Professional Nutrient Applicators Association of Wisconsin
Chula Vista, Wisconsin Dells
December 20, 2011

UW-Extension Forage Council Brat Fry
Requirements for Farm Machinery on Public Roads

Presented by:
Sergeant Mike Klingenberg
Wisconsin State Patrol
IMPLEMENT SOLUTIONS

• Adopted Highway Access Ordinance
  • Regulate ingress/egress locations
  • Created Permitting Process and Review Criteria for spotting accesses.
  • Created minimum Construction Standards for highway accesses
• Adopted a Utility Accommodation Policy and Permitting Process
  • Regulate public and private utilities on right-of-way
  • Explain who needs right-of-way permits
  • Revocable Occupancy Permits for areas still contested
• Adopted OSOW Permitting process
  • OSOW – Oversize/Overweight
  • Work in Right-of-Way
  • Utility Accommodation Policy
• Returned to Seasonal and Special Load Postings
  • Provide Public Notices
  • Created GIS Mapping of Routes
• Infra-structure Assessments – identify engineering opportunities / problem areas
  • Guardrail – hazard protection
  • Signage – warnings of curvature
  • Culverts – condition, sizes, and investment
  • Drainage – problem areas
  • Perform Traffic Counts – design data
  • Determine % Heavy Loads on routes – pavement design data
• Implemented road construction improvement standards
  • Design based on pavement life cycle analysis
  • Design based on ADT and % heavy loads
  • Consider/review local agricultural operations
CATTLE PASSAGE – HISTORICALLY BY STATUTE
ADOPTED A HIGHWAY ACCESS/DRIVEWAY ORDINANCE:

• Vary by County as an Ordinance.
• Landowners review the Iowa County Ordinance for specific requirements.
  • Information provided electronically to be accessible
  • Information download from county webpage
  • Single Application form for all permit types
• Highway Department concerns:
  • Stopping Sight Distance criteria.
  • Ingress/egress visibility.
  • Minimum or maximum spacing criteria.
  • Size, length, width and construction standards established.
SEND VIOLATION NOTICES AND IMPLEMENT PENALTIES
ORDINANCE = LOCAL FINES $

Highway Department has established permit procedures and fees for work to be performed on the County Highway right of way should you as the landowner deem it to be necessary to perform. Please contact the County Highway office to coordinate.

This letter is being sent by registered mail carrier to you as the landowner to notify you of your recent violation of the County Highway Access Ordinance at the location identified. Enclosed are photos of the violation or unpermitted activity and/or damages which occurred. Please accept this letter as a written notice to cease and desist these activities, and to contact the Iowa County Highway Department for resolution of this matter. Failure to comply with this request may subject you to forfeitures, fines, penalties, damages, liability, or a combination of the above; as the department is authorized to remove such encumbrance, replace the right-of-way to the pre-existing condition prior to the disturbance, and bill all associated costs for the violation and corrective actions to you, as the landowner of record.

Per section 4 of the Ordinance – “No access subject to this Ordinance shall be installed, altered, changed, replaced, or extended until an application for an access permit has been approved by the Iowa County Highway Commissioner or his/her designee”. If you have the desire to install a new driveway access or to perform work on an existing location, a permit is required which may obtained from the Highway Department offices. If you have questions as to the location of the right-of-way line or width within/along your property, please contact the Highway Office and arrangements will be made to provide some flagging to delineate the right-of-way line for you. Please contact the Highway Department offices to notify us of your intent to permit these activities after the fact, or remove the encumbrances you have placed. If the Department does not receive any notification/contact from you within thirty (30) days of the date of this letter, the department will remove the
DEFINE PERMIT ACTIVITY IN R/W

- **If law enforcement involved = unpermitted activity**
  - Traffic Scene Incident Management
  - Traffic Accident reconstruction
  - Directing or controlling traffic for other situations

- **All other activity in ROW requires a permit:**
  - Utility lines temporarily placed in R/W
  - Blocking lanes of traffic
  - Other activities where lane closures or road restrictions exist

- Requirements vary depending on the length of time in the ROW.

- Vehicles stopped or standing on Highway

- Manual of Uniform Traffic Control Devices

- Federal Highway Administration requirements for vehicle marking (beacons) and reflective clothing (type II vests) for all personnel working in the ROW.
INFORM - PUBLISH PUBLIC NOTICES

- Spring Cultivation
- Spring Load limits
- OSOW Permits
- Access Control (D/W) Ordinance
- Utility Accommodation Policy
- Right-of-way Permits
- Right-of-way Encroachments
  - Revocable Occupancy Permits
  - Private Utility on Public Right-of-way Agreements
Reference: 2010 Harvest Operations
Road Blockage and Clearway

To whom it may concern:
The enclosed pictures were taken on October 22, 2010 during the full grain harvest. The pictures depict equipment owned and operated by the premier co-op in Mount Horeb, while on CTH A north of Barneveld, Wisconsin. With this letter, the Iowa County Highway Department and Sheriff's Department hereby place you on notice for violation of the following state statutes:

86.01 Materials left in the highway, penalty
86.02 Injury to Highway
86.021 Highways, cultivation of; injury by farm machinery

Due to the potential to cause bodily harm or damage to the general travelling public within the county highway right of way because of blocking the travel lanes of the respective highway, this letter shall serve as proper Notice for the cease and desist of certain operations related to harvesting of crops. For all future events, the firm listed above shall properly load / unload materials within the limits of the property(s) being served, in lieu of on the county highway right of way. The operations depicted in the attached photographs could cause a number of incidents related to the general travelling public related to obstructing the roadway for bi-directional traffic, improper notification to the general public for a highway obstruction, debris (corn) left on the roadway creating a slip/hazard for passing motorists, and other issues. This letter shall serve as official Notice of the violations stated above, and continued future occurrences will result in full enforcement of the laws related thereto.

Respectfully Submitted,

[Signature]
Consider your operations when applying for permits and constructing accesses, then discuss with maintaining authority.
PERMIT FOR WORK IN RIGHT-OF-WAY

Chapter 80.07(5) of Wisconsin Statutes provides that the authority maintaining the highway shall permit before any excavation or fill or installation of a curb, sidewalk, pole, etc., is made on a public highway.

Permit issued to: [Name] of [Wisconsin]

Name of Contractor/Individual Performing Work: [Name]

State Description and Purpose of Work: [Description]

Conditions of Permit: The surface of the roadway connecting with rural type highway sections shall slope down and away from the highway shoulder a sufficient amount and distance to preclude ordinary surface water drainage from the roadway area. Driveways onto the highway numbered.

Any and all disturbances in the County Right-of-Way must be made visible, using approved control methods such as grass seed, paint or erosion control material.

Go Under the: [Number] miles of County Town Highway [Description of Town Highway]

(SWER) of the section of: [Section]

Town Village City of: [Place]

Signed: [Signature] (Please print)

Craig Hardy, Highway Commissioner

www.iowacounty.org
PERMIT OFF-ROAD LOADING STATIONS
Or CABC/Breaker approach pads – Harvest
PERMIT - FEEDLOT ACCESSES ALONG ROW
EDUCATE USERS OF STATUTORY LOAD CLASSIFICATION

- Wis SS 348 tables – allowable axle to load weight configurations
  - §§ 348.15 Class A Highway
  - 348.295 Axle spacing configuration weight table
  - §§ 348.16 allows Class B Highways
  - Posting at 60% of Class A table

- Seasonal Restrictions by Maintaining Authority
  - §§ 348.17 provides authority to locals
  - Iowa County posts at Class B weights 6T/axle

- Special Location Load Limit Postings
  - Bridges
  - Culverts/Stream crossings
  - Segment of Highway
INFRA-STRUCTURE AGE COMPOUNDS PROBLEMS
AGE + EXCESSIVE STRUCTURAL LOAD = RECIPE FOR FAILURE
WATER - DRAINAGE / INFILTRATION + LOAD = RECIPE FOR FAILURE
EDUCATE PUBLIC & USERS

TYPES OF DAMAGE
TYPES OF DISTRESS

• Age Deterioration – Oxidation of Asphalt
  • Preventative Maintenance Program underfunded
  • Construction Improvement Life Cycle High (78-137 yrs)

• Structural or Load Deterioration
  • Point Loading
  • Widespread subgrade failure

• Water Damage/Infiltration Deterioration
• Freeze/Thaw Cycle damage
EDUCATION – REPAIR COSTS
MAINTENANCE TYPES TYPICALLY PERFORMED

- Crackfilling
  - Rout-N-Seal varies at $500 - $5000/mile
  - Overband at $4500-$5000/mile
- Maintenance Wedging – $65.00/Ton
  - 1” deflection in a 4 foot lane wheel path costs $2.50/SF or $5,900/Mile
- Maintenance Wedging full lane width
  - $6.85/SF for 1” overlay or $38,000 to $48,000/Mile
- Structural Overlay 2” thickness roadway width
  - $88,000/Mile
- Reconditioning – 3” Asphalt Surface @ 24 foot width
  - Pulverization w/ new mat - $225,000/Mile
  - Full Depth Reclamation w/ new mat - $323,000/Mile
- Reconstruction - $1,000,000/Mile
PREVENTATIVE MAINTENANCE STRATEGY EXPLANATION
WEDGING / RUT FILLING = BAND-AID OR REPAIR NOT A FIX
CORE - PAVEMENT SEALCOATS
CREATED OSOW PERMITTING PROCESS

• Weight exceeds 80,000#'s/5, or 92,000#'s/6 axle with statutory exclusions.
• Width exceeds 8’6”
• Height exceeds 13’6”
• Length exceeds
  • 40’ Single
  • 65’ combination

• Implements of Husbandry
  • Caveats by Legislature
    • height no restrictions
    • Weight some equipment exceed statutes form manufacturer
  • Some exclusions by equipment definitions
STATE LEGISLATURE - 2015
IMPLEMENTED A NO-FEE IOH PERMIT

PERMITS FREE TO OWNER
OWNERS DETERMINE USING
CAN’T BE DENIED ACCESS

LOCALS HAVE SOME SAY

SPECIAL POSTINGS VALID

SPECIFY SPECIAL CONDITIONS

FROZEN ROADS OR NOT

RESTRICT TIMES

RESTRICT DAYS BY TEMPERATURE

RESTRICT TO TIME OF DAY

ETC.
ENGINEERING ASSESSMENTS

• BETTER UNDERSTANDING OF INFRA-STRUCTURE
  • IDENTIFY ALL APPURtenANCES
  • UNDERSTAND ORIGINAL ROAD DESIGN/CONSTRUCTION

• GIS MAPPING OF NBI BRIDGE POSTINGS – OSOW

• CULVERT INVENTORY AND CONDITION ASSESSMENTS

• GIS MAPPING OF CULVERT LOCATIONS
  • INTERACTIVE ACCESS TO DATA
  • BEST IN AN ACCESS DATABASE = QUERIES & REPORTS
CULVERT DATABASE
“ACCESS” MORE INTERACTIVE = GIS
NBI BRIDGES TO GIS MAPPING AVAILABLE W/ LOAD POSTINGS
### Design Criteria for County Trunk Highways Functionally Classified as Collectors

<table>
<thead>
<tr>
<th>TRAFFIC VOLUME</th>
<th>ROADWAY WIDTH DIMENSIONS</th>
<th>BRIDGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Design Speed</td>
<td>Design</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>C1 0-400</td>
<td>40 MPH</td>
<td>22'-24'</td>
</tr>
<tr>
<td>C2 400-750</td>
<td>50 MPH</td>
<td>22'-24'</td>
</tr>
<tr>
<td>C3 1500-3500</td>
<td>60 MPH</td>
<td>24'</td>
</tr>
<tr>
<td>C4 Over 3500</td>
<td>60 MPH</td>
<td>24'</td>
</tr>
</tbody>
</table>

1. Where a range of widths is shown, the smaller number is the minimum width and the larger number is the maximum width eligible for federal or state project participation.

2. Bridges in Design Classes C3 and C4 with a total length over 100 feet may be designed with a clear roadway width of 30 feet.

3. For County Trunk Highways in design class C3, a design speed of 55 mph is acceptable.

4. Lateral clearance requirements for roadways under bridges are included in FDM 11-35-1.

Source: Administrative Rule Trans 205, "County Trunk Highway Standards"

### Design Criteria for County Trunk Highways Functionally Classified as Local Roads

<table>
<thead>
<tr>
<th>TRAFFIC VOLUME</th>
<th>ROADWAY WIDTH DIMENSIONS</th>
<th>BRIDGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Design Speed</td>
<td>Design</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>L1 0-250</td>
<td>40 MPH</td>
<td>20'-22'</td>
</tr>
<tr>
<td>L2 250-400</td>
<td>40 MPH</td>
<td>22'</td>
</tr>
<tr>
<td>L3 400-750</td>
<td>50 MPH</td>
<td>22'-24'</td>
</tr>
<tr>
<td>L4 Over 3500</td>
<td>60 MPH</td>
<td>24'</td>
</tr>
</tbody>
</table>

1. Where a range of widths is shown, the smaller number is the minimum width and the larger number is the maximum width eligible for federal or state project participation.

2. For County Trunk Highway is design class L4, a design speed of 55 mph is acceptable.

3. Bridges in Design Classes L4 and L5 with a total length over 100 feet may be designed with a clear roadway width of 30 feet.

4. Clearance requirements for underpass bridges are included in FDM 11-35-1.

Source: Administrative Rule Trans 205, "County Trunk Highway Standards"
ENHANCE PAVEMENT STRUCTURE
4-INCH PAVEMENT (DESIGN FOR LOADS)
8-INCH 1-1/4 DENSE CABC
12-INCH NOMINAL 3” BREAKER RUN
SAVE $ = RECYCLING VS RECONSTRUCT OPTIONS, WHERE APPLICABLE
PULVERIZATION EXAMPLE @ $225,000/MI
STANDARD ESAL TRUCK CONFIGURATION

(WISCONSIN IS 18,000# AXLE LOAD OR 4.7 ESALS)

(STATUTES ALLOW 20,000# FRONT AXLE)
DESIGN AND RECONSTRUCT ROADS
EDUCATION - WHAT WOULD BE IOH IMPACT COSTS?

To add 1.5 inches of Asphalt Surface

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>$11.37/SY</td>
</tr>
<tr>
<td>CABC</td>
<td>$1.29/SY</td>
</tr>
<tr>
<td>Tack Oil</td>
<td>$0.08/SY</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td><strong>$12.73/SY</strong></td>
</tr>
</tbody>
</table>

Length 1.5 7920 LF  
Shoulder 1 2 LF  
Area 1760 SY  
**$22,412.34**

Additional Pavement thickness of 1.5 inches for 1.5 miles

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>$46.50/ton</td>
</tr>
<tr>
<td>Trucking</td>
<td>$6.35/ton</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$52.85</strong></td>
</tr>
</tbody>
</table>

Length 7920 LF  
Width 24 LF  
Square yardage 21120 SY  
Asphalt 115#/SY/1in thickness  
Weight 2000#/Ton  
Thickness 1.5 inch  
Ton 1821.6  
**$96,280.48**

Increased Cost for Improvement  
**$118,692.82**  
$79,128.55/mile
3C’S – COORDINATION, COOPERATION, & COLLABORATION ARE IMPORTANT

Contact Information:

Iowa County Highway Department
1215 N Bequette St.
Dodgeville Wis., 53533

HTTP://WWW.IOWACOUNTY.ORG/DEPARTMENTS/HIGHWAY

• Craig Hardy, Wi. PE/RLS
  • Iowa County Highway Commissioner
  • (608) 935-3381 X605
  • Craig.Hardy@iowacounty.org