Manning

Community Visioning Final Report and Feasibility Study | 2016

IOWA'S LIVING ROADWAYS

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Manning Community Visioning
Final Report and Feasibility Study

RDG PLANNING • DESIGN

Prepared by:
RDG Planning & Design

Program Partners:
Iowa Department of Transportation
Trees Forever
ISU Landscape Architecture
ISU Extension Community and Economic Development

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Participants

Manning Visioning Committee

Geri Spies, Chairperson
Karen Reinke
Jean Behrens
Cory Arp
Brad Benton
Dawn Rohe
Jessica Singsank
Jamie Blum
Jason Christiansen
Tammy Eberly
Marsha Clausen
Ridge Muhlbauer
Harvey Dales

Other Participants

John Ohde, City of Manning Operations Manager
Dave Paulson, Carroll County Engineering & Roads
Dakin Schultz, Iowa Department of Transportation

Trees Forever

770 7th Avenue
Marion, IA 52302
319.373.0650
www.treesforever.org

Brad Riphagen
515.370.1291
briphagen@treesforever.org

Iowa State University

Landscape Architecture Extension
2321 North Loop Drive, Suite 121
Ames, IA 50010
515.294.3721
www.communityvisioning.org

Julia Badenhope, Program Director and Professor of Landscape Architecture
Matthew Gordy, Studio Director, Iowa's Living Roadways Community Visioning Program
Sandra Oberbroeckling, Program Coordinator

RDG Planning & Design

900 Farnam St. #100
Omaha, Nebraska 68102
402.392.0133
http://www.rdgusa.com/

Jennifer Cross, PLA, ASLA
402.449.0801
jcross@rdgusa.com

Ashleigh Gildon
Landscape Architectural Intern
University of Nebraska-Lincoln

RDG PLANNING ● DESIGN

Consultant History and Expertise

From our newest team members to the founding principals who began their practices in the 1960s, RDG Planning & Design is a multifaceted network of design and planning professionals. Diverse in knowledge and experience, we are united in the pursuit of meaning for our clients and ourselves. Officially formed in 1989 as the Renaissance Design Group Corporation and crafted to bring well established firms together into practice, our two business centers of RDG IA Inc. and RDG Schutte Wilscam Birge, Inc. create one distinct organization with the shared purpose of creating meaning together.

CREATE.

Creation is a result of every interaction with our clients and those they serve. Ultimately, we help create lasting relationships between people and the places they live and love.

MEANING.

We find meaning in relationships, and in people and the deep connections they have to their environments. When we find meaning, we achieve a deeper understanding of how to create the very best spaces to work, live, and play.

TOGETHER.

The most important member of our team is you. You know your needs better than anyone else, and you're the advocate for the effort because you'll love and care for your space long after we celebrate its completion.

Fifty years of dedication to success have taken us around the world. Today, our commitment to communication and technology allows us to engage our clients anywhere they may be from our offices in Omaha, Nebraska; Ames and Des Moines, Iowa; and Ft. Myers, Florida. We're free from boundaries and able to work on a regional, national, or global scale. Our interdisciplinary approach allows us to integrate our broad areas of expertise and apply the right team members to any given endeavor.

161 EMPLOYEES | **59** LICENSED PROFESSIONALS | **36** LEED APS | **64%** OF STAFF ARE STOCKHOLDERS

SERVICES:

- Architecture
- Art Studio
- Engineering
- Graphic Design & Multimedia
- Interior Design
- Landscape Architecture
- Lighting Design
- Strategic Facilities Planning
- Sustainability

MARKETS:

- College & University
- Community Planning
- Regional Planning
- Corporate
- Early Learning
- Government
- Healthcare
- K-12 Education
- Parks & Recreation
- Public Safety
- Restoration
- Senior Living
- Sports
- Urban Design
- Worship

Program Overview

The City of Manning is one of 10 communities selected to participate in the 2016 Iowa's Living Roadways Community Visioning Program. The program, which selects communities through a competitive application process, provides professional planning and design assistance along transportation corridors to small Iowa communities (populations of fewer than 10,000).

Goals for the Visioning Program include:

- Developing a conceptual plan and implementation strategies with local communities
- Enhancing the natural, cultural, and visual resources of communities
- Assisting local communities in using external funds as leverage for transportation corridor enhancement

Each visioning community works through a planning process consisting of four phases of concept development:

1. Program initiation
2. Needs assessment and goal setting
3. Development of a concept plan
4. Implementation and sustained action

Each visioning community is represented by a steering committee of local residents and stakeholders who take part in a series of meetings that are facilitated by field coordinators from Trees Forever. Iowa State University organizes design teams of professional landscape architects, design interns, and ISU faculty and staff. The program is sponsored by the Iowa Department of Transportation.

Community Goals

The Manning visioning committee identified a number of goals and priority areas during the visioning process, which are included below:

- Downtown Improvements
- Creation of a greenspace at the entrance of Main Street
- Signage and monument enhancements on Highway 141
- Signage enhancements and various park improvements to Great Western Park
- Creation of a park adjacent to the Trestle Bridge

Capturing the Manning Vision

Based on the needs and desires of the local residents, as well as a detailed inventory of community resources, the design team developed a conceptual transportation enhancement plan. This plan, as well as the inventory information, is illustrated in the following set of presentation boards. These boards include the Program Overview, Local Geography, Bioregional Assessment, Transportation Assets and Barriers Assessment, Transportation Behavior and Needs Assessment, Transportation Inventory and Analysis, Concept Overview, and Community Design Boards.


Review of community analysis


Community tour during design workshop


Design presentation at the Hausbarn


Design presentation at the Hausbarn


Community members at design presentation at the Hausbarn

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7. Concept Overview
8. Downtown Improvements
9. Creation of a greenspace at the entrance of Main Street
10. Signage and monument enhancements on Highway 141
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Program Overview

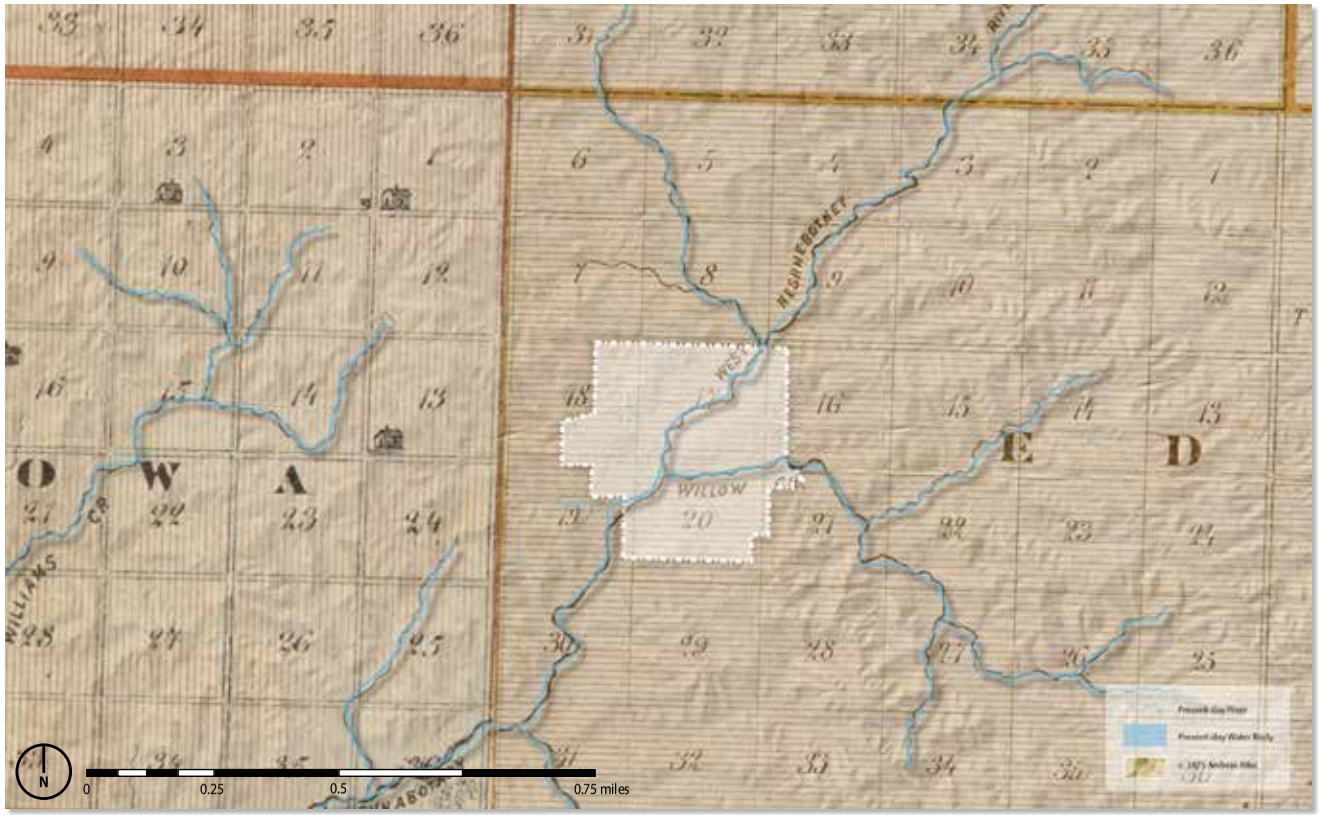
Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Settlement Patterns

During the 1800s, state atlases were one of the most underdeveloped branches of American cartography. Responding to that need, an entrepreneur named Alfred Andreas joined a group of former military associates to canvass and map counties in the state of Illinois. Using the experience he gained in Illinois, Andreas devised a plan to earn more money from mapping by subdividing the counties into smaller areas and producing more detailed maps. This idea led to Andreas' production of the Illustrated Historical Atlas of the State of Iowa – 1875, which had nearly 23,000 subscribers.

The historic atlas depicts useful information such as administrative boundaries, transportation routes, forest coverage, water bodies, cities, rural family settlements, and so on. Overlaying present-day city boundaries on Andreas atlas map reveals how far the city has expanded laterally over time. As with the historic vegetation map, map overlays can be used to reveal where remnant vegetative communities may still exist in the region.



Map Source: Iowa Department of Natural Resources, "Natural Resources Geographic Information Systems Library," http://www.igsb.uiowa.edu/nrgislibx/.

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Iowa State University: Julia Badenhope, Sandra Oberbroeckling, Matthew Gordy, Jessica Adiwijaya, Miao Fangzhou, Anh Le, Katherine Gould, Evan Kay, Richard Garcia

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Historic Vegetation

Historic vegetation maps provide insight into vegetative patterns that existed within the landscape prior to significant disturbance associated with nonnative settlement. When combined with other maps that depict vegetative conditions from other eras, this map is helpful in predicting where pockets of native vegetation of various types may still exist. When considering future landscape restoration, the maps provide insight into what types of vegetation thrived historically and could thrive again.

The plant communities mapped by the United State General Land Office (GLO) surveyors varied in classification as time went on, and the extent of each surveyor's plant knowledge influenced how they classified vegetation. When faculty and students at Iowa State University interpreted the hand-drawn maps and notes to create a GIS map, they did not recategorize any vegetation types. For example, "slough" and "marsh" appear as separate map units, but both describe similar conditions—herbaceous vegetation on perennially wet to partially flooded land. "Oak barrens," adjacent "timber," and "large expanses of timber" are also identified. "Oak barrens" undoubtedly referenced what is called oak savanna today. Oak savannas are frequently burned woodlands dominated by oak and hickory species with a unique, shade tolerant, prairie community beneath. "Timber" and "prairie," as used by the GLO, are catchall names that included many vegetation types. Examining water-table data can reveal hydraulic patterns that would have influenced what specific plant communities were present in vast areas of "timber" and "prairie."

Map Source: Iowa Department of Natural Resources, "Natural Resources Geographic Information Systems Library," http://www.igsb.uiowa.edu/nrgislibx/.

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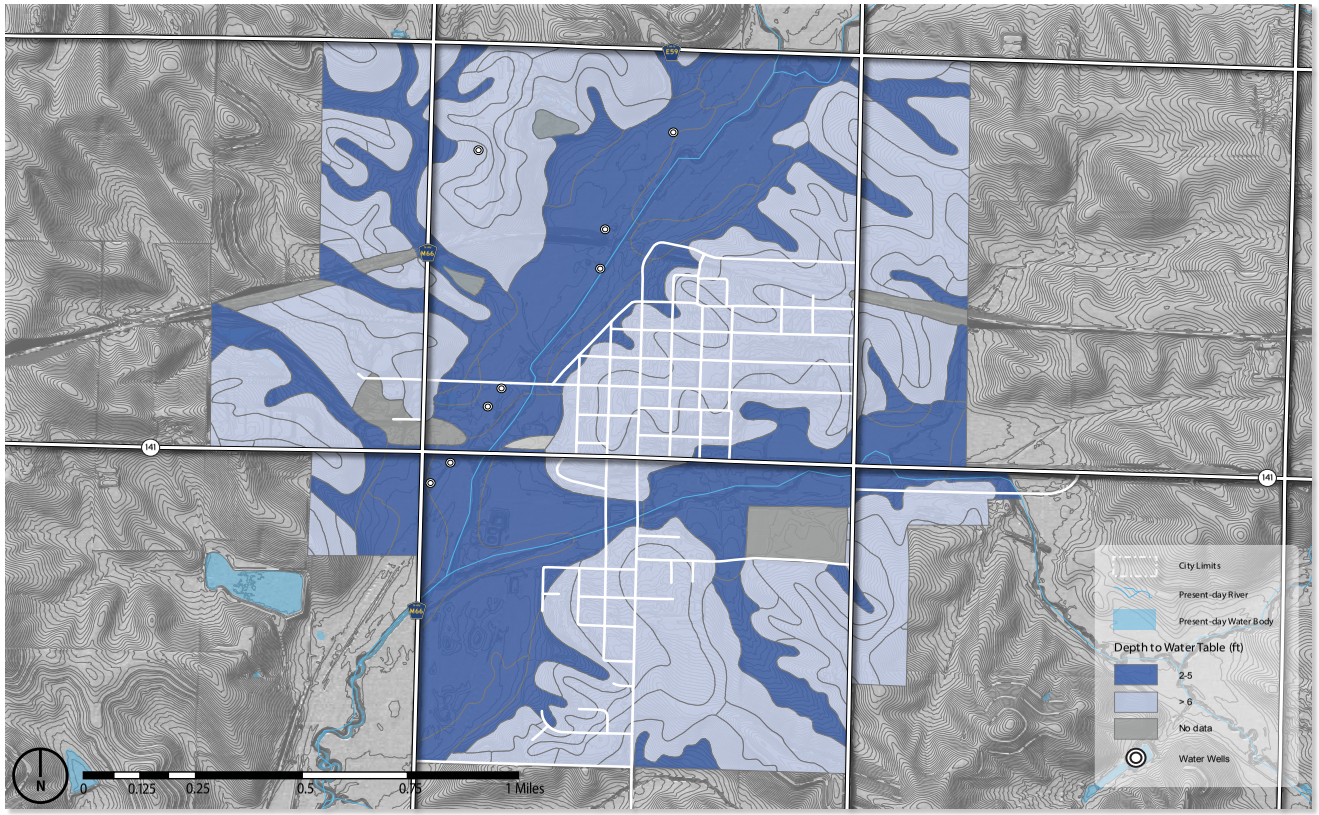
Depth to Water Table

The water table is a groundwater-saturated zone in the soil that becomes rivers, springs, and lakes when the water table reaches the surface. The water table generally mimics surface topography, but there are differences depending on the permeability and porosity of soils and bedrock in the area. The water-table depth is typically defined as a range because the depth is constantly changing with the seasons and the weather. For example, an area with a water-table depth ranging from one foot to three feet is closer to one foot below the surface after the spring snowmelt. Impermeable layers such as concrete also affect the water table by preventing precipitation from infiltrating into the soil and contributing to the subsurface water level. As a result, the water table is lower in those areas.

Prior to the significant landscape alterations caused by nonnative settlement, the water table was a driving factor that affected vegetation growth in the area. For example, historically a quaking aspen in the landscape would indicate that water is located not far below the surface. Today, quaking aspens are highly sought-after specimen trees and are found in many places they would not have existed historically.



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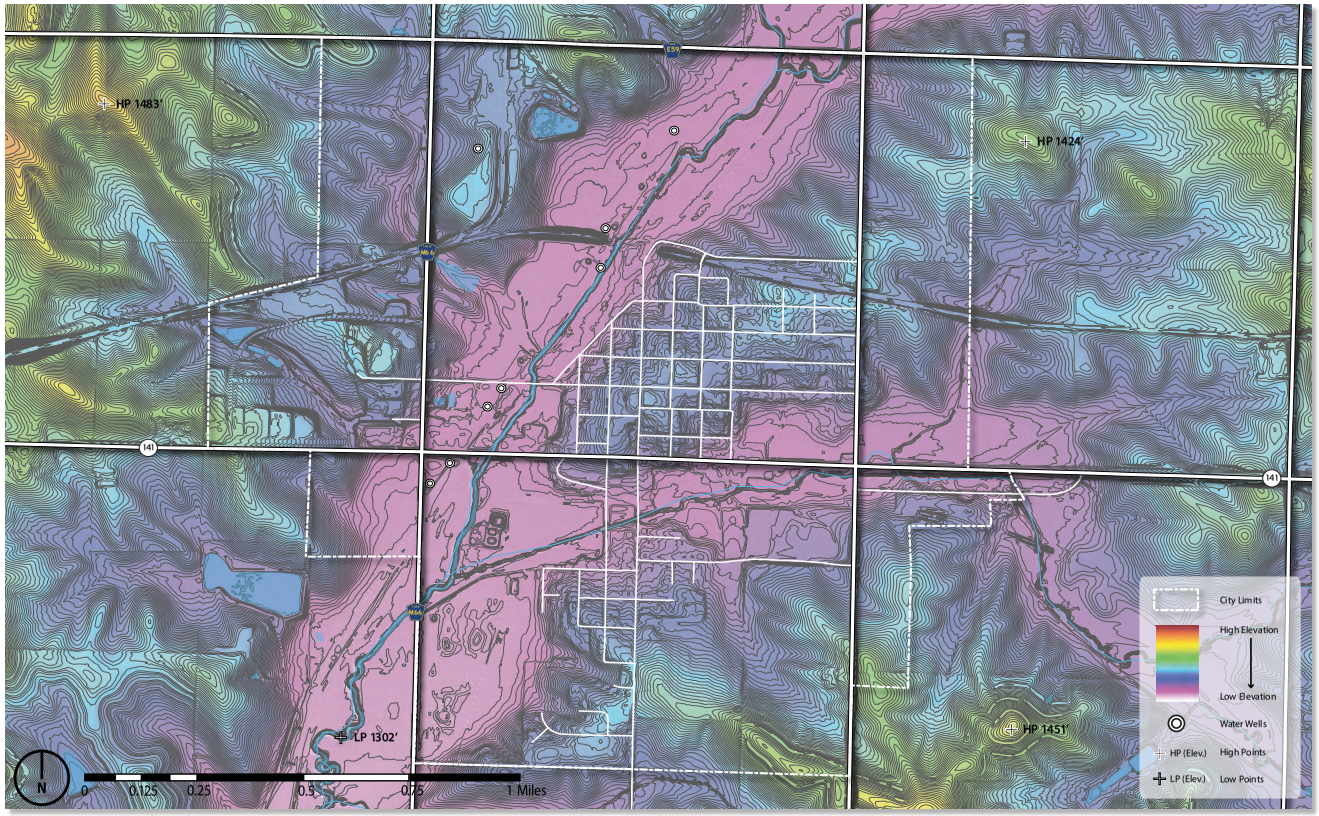
Elevation and Flow

The map to the left displays elevation using warm and cool colors. The warm colors represent higher elevations and the cool colors represent lower elevations. The elevation of the land and how quickly it changes greatly impacts many landscape systems. Areas where the color changes quickly signifies a high slope percentage, which can be a major barrier to transportation access and development.

The colorization also helps reveal the direction of surface runoff. In general, runoff will move from areas with warmer colors to the nearest area with a cooler color. Valleys where runoff is collected are easily identified because they appear as cool-colored veins surrounded by warmer colors.



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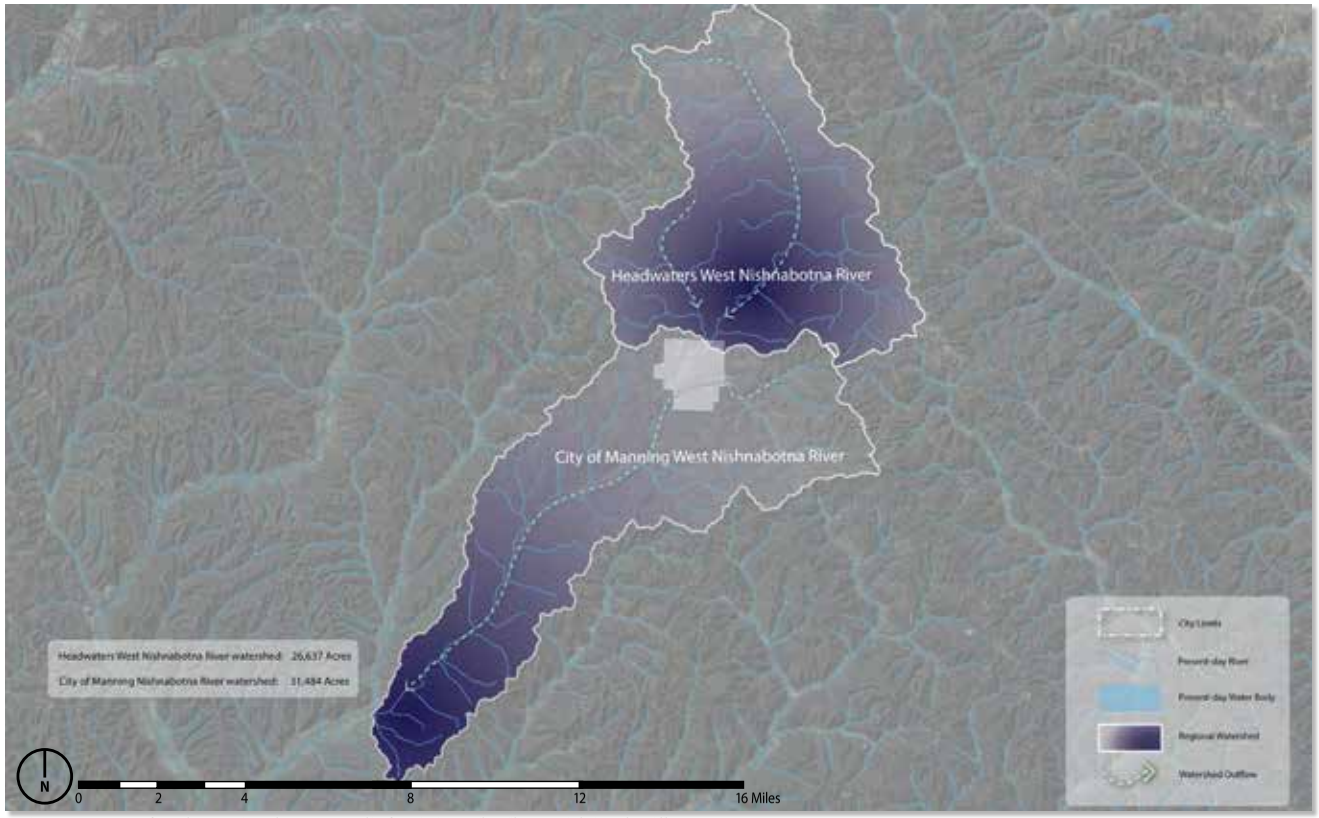
Regional Watersheds

Watersheds are expanses of landscape that are confined by the slope and elevation of the terrain. When in plan view, watershed boundaries show the extent of a drainage area that is flowing to a single outlet The watershed boundary is defined by the highest ridgelines circling around to the outlet where water flows out of the watershed. The boundary determines whether precipitation is directed into one watershed or an adjacent watershed. It is important to consider scale when identifying and defining watersheds because they are nested features that can be examined at many scales. For example, many sub-watersheds that are smaller than a city block fit together like puzzle pieces to make a watershed encompassing an entire city or more. This puzzle hierarchy builds upward to watersheds that cover thousands of miles, such as the Mississippi River watershed.

Where a community lies within its watershed determines what capacity it has to manage large watershed issues. For example, a community located in a lowland floodplain will have little capacity to reduce the amount of water draining toward it from upland areas. That said, communities always have the power to reduce their contribution to the total runoff production for the watershed.



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Present Day Land Cover

The land-cover map depicts both natural and man-made surfaces on the landscape based upon aerial imagery. The Iowa DNR created 15 unique classes for this dataset, including water, wetland, coniferous forest, deciduous forest (short, medium, tall), grass (type 1, type 2), cut hay, corn, soybeans, barren/fallow land, structures, roads/impervious, and shadow/no data. These classes are useful in clearly distinguishing different types of landscape features that would otherwise be difficult to discern from an aerial photograph.

For example, the balance of pervious and impervious coverage is clearly evident because impervious areas are represented as pink or magenta. Large expanses of impervious surfaces can cause significant drainage issues without proper planning, because they prevent the infiltration of precipitation and provide little to no friction to slow precipitation that is running off the surface.

Map Source: Iowa Department of Natural Resources, "Natural Resources Geographic Information Systems Library," http://www.igsb.uiowa.edu/nrgislibx/.

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Present Day Vegetation

Overlaying a present-day aerial image on the historic, 1875 Andreas Atlas shows how management of the land over several decades has changed the locations of trees and other native vegetation in the landscape.

Interestingly, there are typically no tree markings in close proximity to most communities. Possible causes of this phenomenon are earlier harvesting of forest resources or the fact that community founders may have avoided wet areas. Today, most Iowa communities have a good amount of canopy coverage. Although trees may have been cleared during early settlement, the settlers would have replanted tree species that they found useful and pleasant, which eventually resulted in the establishment of urban forests. Those species would include trees that produce fruits and nuts, as well as others that provide wind protection and shade. These choices may explain the overplanting of maple species across the state. In addition to their pleasant appearance, most maples have a fast growth rate that quickly provides shade and wind protection, as well as the additional benefit of producing the sap required to make maple syrup.

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Strategies for Using Native Plants

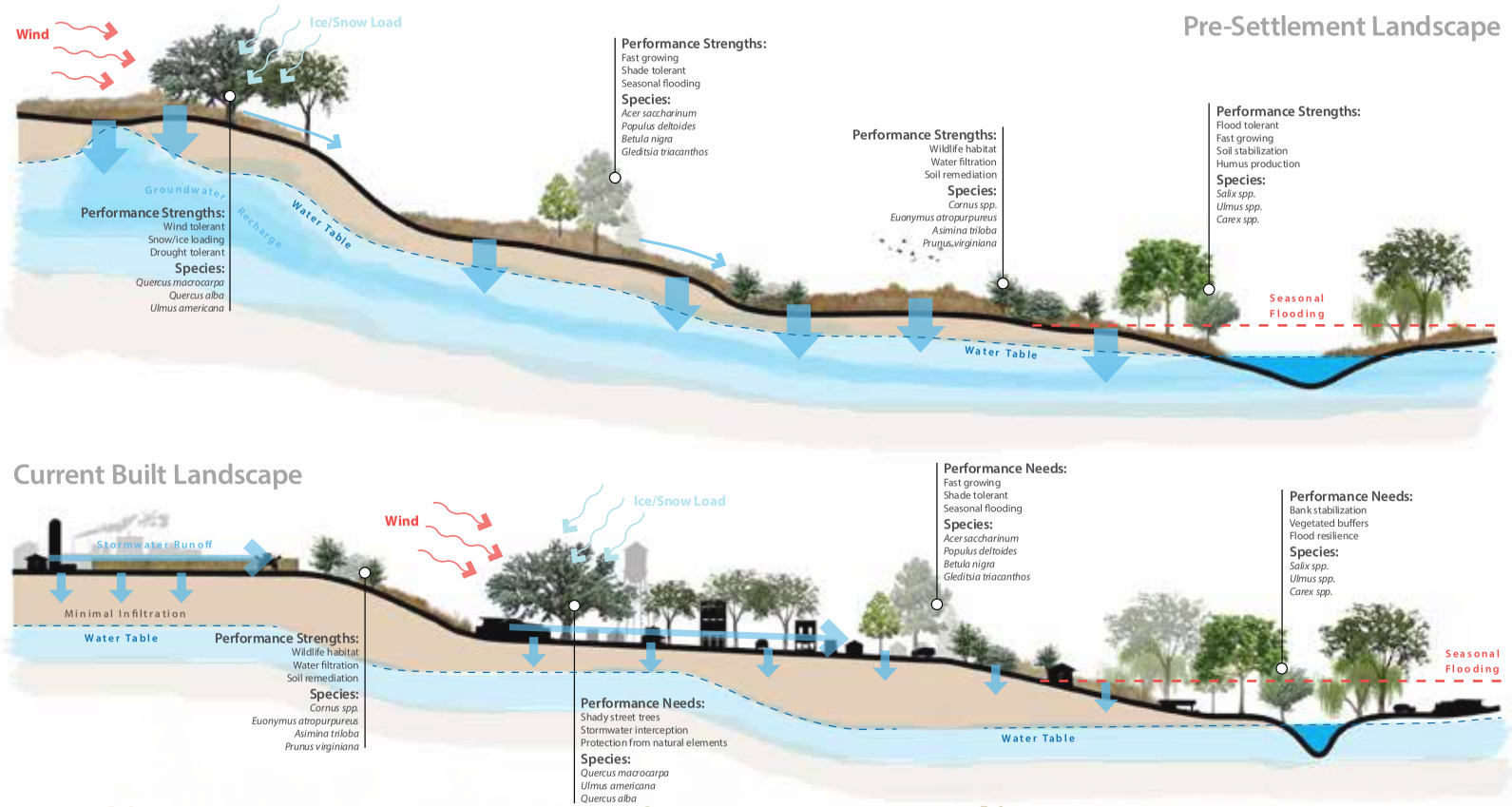
As open space disappears, it becomes increasingly necessary to look at our own landscapes as a refuge for biodiversity. Native organisms including plants, mammals, birds, amphibians, and insects create an intricate web of life. This is a wonderful natural orchestration with each species' life cycle highly dependent on the others.

For example: Spring wild flowers are pollinated by and provide nectar to tiny flies. These flies become food for early spring birds. The timing is orchestrated perfectly. It is not a coincidence that the local native plants have seeds and berries ready just when the birds need them. Bird droppings are the best way to get their seed dispersed. Plants and animals that have evolved together depend upon each other for survival.

Unfortunately, native plants, a vital part of the natural web of life, are being lost at an alarming rate. Removing a certain native plant from the landscape will likely remove the insect that feeds on that plant, which in turn may eradicate the bird that feeds on that insect. And this is just a simplified example. The loss of a species can quickly escalate to affect an entire ecosystem. To paraphrase Paul Ehrlich, author of Native Plants: Relationship of Biodiversity to the Function of the Biosphere, removing native species from an ecosystem is like taking rivets out of an airplane wing; it is impossible to know which one will be the last one that was holding the whole thing together.

There are real and practical pay-offs to encouraging a more biologically diverse city. Healthy, balanced ecosystems clean our water and our air. Pollinators are vital to food production.

There are also other profound reasons for using native plants in our cities. Aesthetically and spiritually, native plants enhance our sense of place. Native plants are one of the most visible elements in the local landscape. They are part of what makes a region unique. Learning and growing native plants promotes a deeper understanding and respect for the land. This information was developed by the Native Plant Society of northeastern Ohio.



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Strategies for Using Native Plants

Iowa State University: Julia Badenhope, Sandra Oberbroeckling, Matthew Gordy, Jessica Adiwijaya, Miao Fangzhou, Anh Le, Katherine Gould, Evan Kay, Richard Garcia

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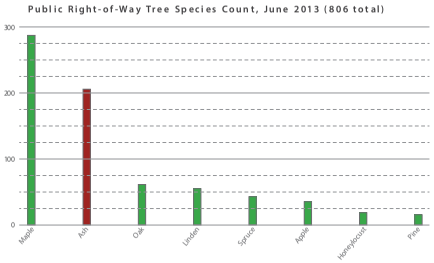
The Urban Forest

The map on the left depicts public right-of-way trees that have been surveyed by the Iowa Department of Natural Resources (Iowa DNR).[1] The trees are divided into three categories: healthy trees, hazard trees, and ash trees. Hazard trees were determined using the Iowa DNR's priority rating. The ratings range from one to seven; trees with a rating of six or seven were classified as hazard trees.** A six rating is indicative of a tree that is "dangerous, dead, or dying, and no amount of maintenance will increase longevity or safety." A seven rating means there are "insects, pathogens, or parasites present and detrimental to tree longevity; treatment should be given to maintain longevity." Ash trees have been identified specifically due to imminent threats from the Emerald Ash Borer (EAB),* an invasive highly destructive beetle that has already killed tens of millions of ash trees in North America.[2] EAB was first discovered in Iowa in 2010 and has been confirmed in 30 Iowa counties andcounting.[3]

Map Source: data courtesy of the Iowa Department of Natural Resources Community Tree Inventory program, http://www.iowadnr.gov/Conservation/Forestry/Urban-Forestry/Community-Tree-Inventories

The Urban Forest

The map on the left depicts public right-of-way trees that have been surveyed by the Iowa Department of Natural Resources (Iowa DNR).[1] The trees are divided into three categories: healthy trees, hazard trees, and ash trees. Hazard trees were determined using the Iowa DNR's priority rating. The ratings range from one to seven; trees with a rating of six or seven were classified as hazard trees.** A six rating is indicative of a tree that is "dangerous, dead, or dying, and no amount of maintenance will increase longevity or safety." A seven rating means there are "insects, pathogens, or parasites present and detrimental to tree longevity; treatment should be given to maintain longevity." Ash trees have been identified specifically due to imminent threats from the Emerald Ash Borer (EAB),* an invasive highly destructive beetle that has already killed tens of millions of ash trees in North America.[2] EAB was first discovered in Iowa in 2010 and has been confirmed in 30 Iowa counties and counting.[3]



The bar graph above depicts the breakdown of the tree species surveyed by the Iowa DNR . Take note of the large number of ash and maple trees. Increasing species diversity in the urban forest will make it more resilient should a new exotic bug or plant disease emerge. There is a strong possibility that 26% (208 ash trees) of Manning's city owned trees will die once EAB becomes established in the community. With proper planning and management, the costs of removing dead and dying trees can be extended over years, mitigating public safety issues.

1 Iowa Department of Natural Resources Community Tree Inventories, http://www.iowadnr.gov/Conservation/Forestry/Urban-Forestry/Community-Tree-Inventories

2 EAB is a significant threat to our urban, suburban, and rural forests because it kills stressed and healthy ash trees. EAB is so aggressive that ash trees may die within two or three years after they become infested. Ash trees are as important ecologically as they are economically in the forests of the eastern United States. Emerald Ash Borer the Green Menace, USDA Program Aid No. 1769, 2008, https://www.aphis.usda.gov/publications/plant_health/content/printable_version/EAB-GreenMenace-reprint-June09.pdf.

3 "Iowa Tree Pests website," Entomology and Plant Science Bureau of the Iowa Department of Agriculture and Land Stewardship (IDALS), last updated February 9, 2016, http://www.iowatreepests.com/eab_home.html.

Manning

Urban Forestry Conditions

Iowa State University: Julia Badenhope, Sandra Oberbroeckling, Matthew Gordy, Jessica Adiwijaya, Miao Fangzhou, Anh Le, Katherine Gould, Evan Kay, Richard Garcia
Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development

IOWA'S LIVING ROADWAYS
Spring 2016

What Factors Affect Transportation in Manning?

Transportation is integral to small-town life and a vibrant economy. In the context of the Community Visioning Program, we recognize walking, biking, and driving as quintessential modes of travel to various destinations important to residents and visitors. Access to these destinations is crucial for many everyday activities—getting to work and school, participating in community events, and providing for basic needs such as food, health care, and healthy activity.

In this participatory assessment, we want to find out which factors and conditions affect transportation use in Manning, where these factors and conditions are most prevalent, and how they influence route and transportation choices locally. Because residents have the best knowledge of how Manning's transportation system works, we use focused, small-group conversations, mapping, and photos of the best and worst places taken by residents to understand local transportation.

City Park has places to walk and rest, as well as basketball and tennis courts.

Main Street is a destination for residents because of the many businesses.

The new trail has safe pedestrian crossings and connects to IKM Manning School.

Wide, smooth sidewalks at City Park invite people to walk, bike, and run.

Great Western Park Trail is a restorative place to exercise and spend time outdoors.

Freedom Rock is a source of pride for many Manning residents.

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Different Users = Different Needs

To capture insights about transportation from a variety of perspectives, we invited Manning residents with different transportation needs to participate in focus groups. A total of 57 residents attended Manning's workshop. Participants were separated into four user groups and the Manning steering committee.

Actives (9 participants): This user group represents those in the community who engage in outdoor recreation, including cycling, walking, running, swimming, skiing, etc. The availability of multiple venues for outdoor recreation matters to this group.

Seniors and Mobility Impaired (12 participants): Accessibility—both in terms of physical access and proximity—is a major concern for this user group. Handicapped parking, curb ramps, and smooth surfaces are critical transportation features. Because some people in this user group do not or are unable to drive, having goods and services within walking distance is important.

Youth (11 participants): This group uses primarily non-motorized modes of transportation, so pedestrian- and bike-friendly streets and sidewalks are important. These users value the ability to get to popular destinations on foot or via bicycle. Having goods and services within walking distance is important.

Parents (17 participants): Safety of their children is a primary concern of this user group. Access to safe and easy routes to school activities is another significant factor to this group. Parents of young children desire smooth, wide surfaces for strollers.

Steering Committee (8 participants): The common denominator for this user group is that their observations are influenced by special knowledge of the transportation system acquired during the Community Visioning assessment process. As a result, this group is more representative of decision makers.

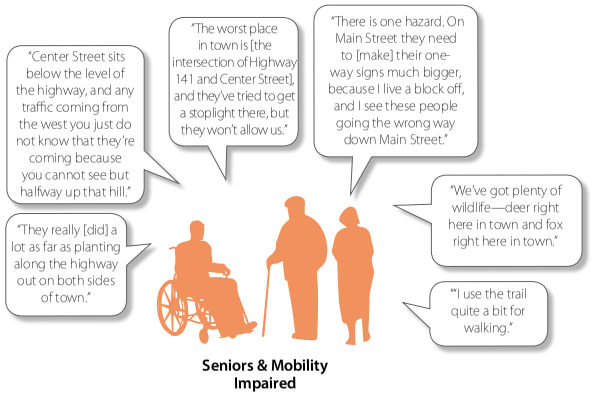
Manning

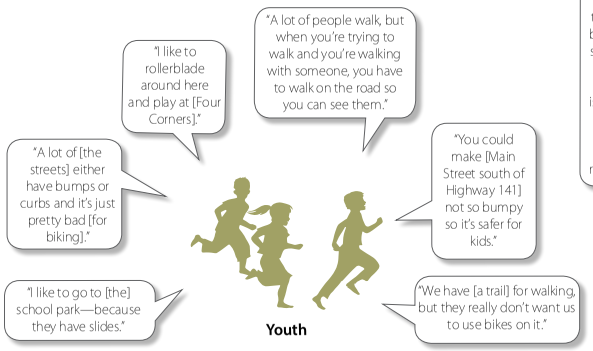
Transportation Assets and Barriers | Overview

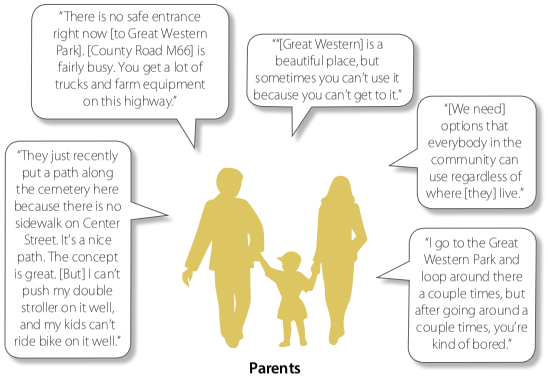
Transportation Assets and Barriers - What People Said

Determining how user groups utilize spaces is an integral part of assessing needs, opportunities and constraints within a community. As part of the community analysis quotes from each user group are displayed to the right. The focus groups were divided into five groups including:

- Seniors and Mobility Impaired
- Actives
- Youth
- Parents
- Steering Committee







Manning

Transportation Assets and Barriers | What People Said

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Transportation Assets and Barriers - Emerging Themes

Discovering emerging themes and consistencies among user groups helps validate survey and focus group information. The overlapping opportunities / concerns within the community help validate community improvements needed. The chart on the opposite page displays each group's collective thoughts on a particular issue and can be compared to other user groups within the community of Manning.

Actives User Group: bike, run, and walk for recreation. They are concerned about broken and missing sidewalks and having safe intersection crossings. Actives also desire longer trails that connect destinations.

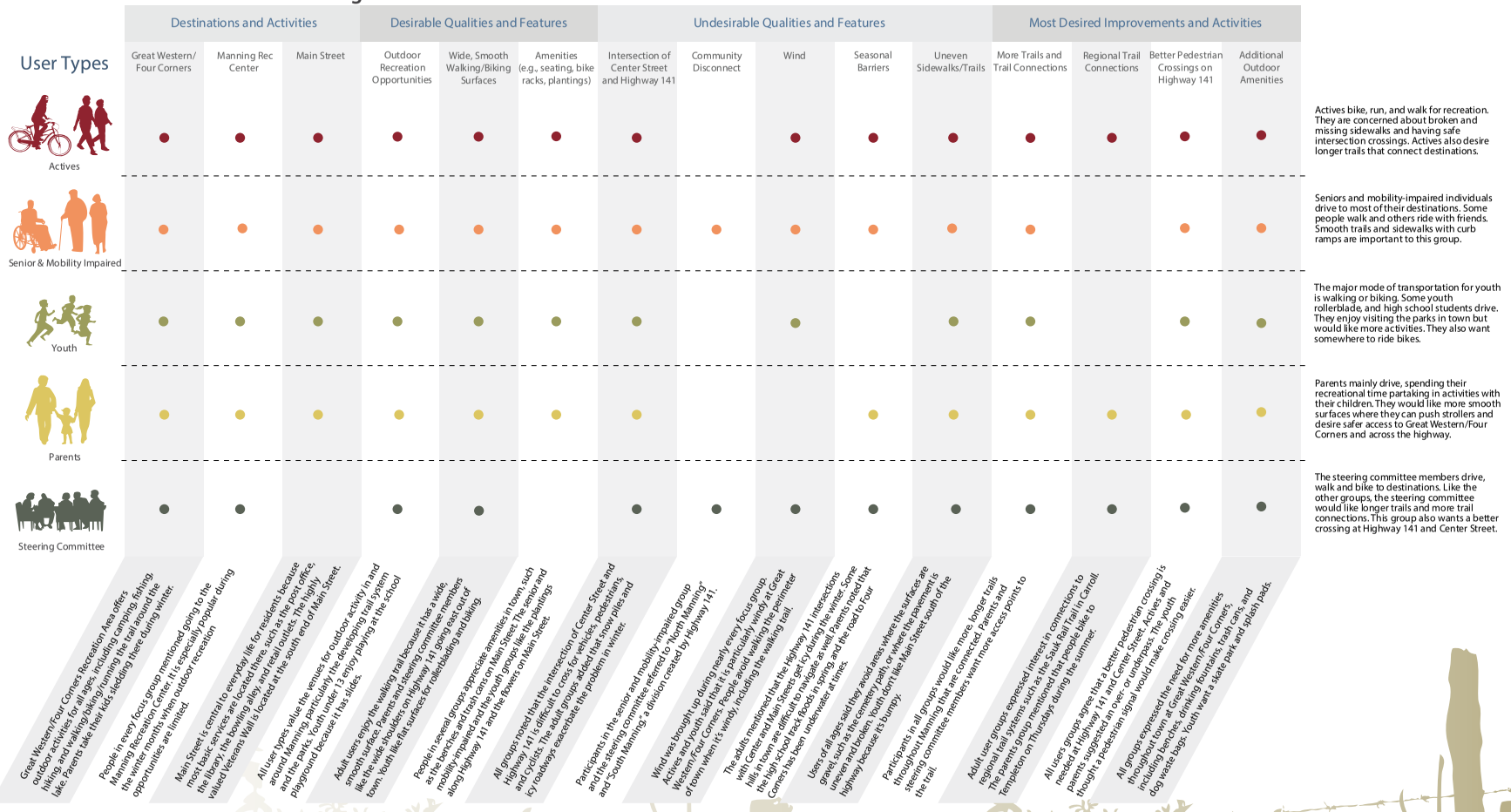
Seniors and Mobility-impaired User Group: individuals drive to most of their destinations. Some people walk and others ride with friends. Smooth trails and sidewalks with curb ramps are important to this group.

Youth User Group: the major mode of transportation for youth is walking or biking. Some youth rollerblade, and high school students drive. They enjoy visiting the parks in town but would like more activities. They also want somewhere to ride bikes.

Parents User Group: mainly drive, spending their recreational time partaking in activities with their children. They would like more smooth surfaces where they can push strollers and desire safer access to Great Western/Four Corners and across Highway 141.

The Steering Committee User Group: drive, walk and bike to destinations. Like the other groups, the steering committee would like longer trails and more trail connections. This group also wants a better crossing at Highway 141 and Center Street.

What Matters to Manning Residents



Manning

Transportation Assets and Barriers | Emerging Themes

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

IOWA'S LIVING ROADWAYS

TAB 3c

Transportation Assets and Barriers - Analysis of Barriers

Manning's Barriers: Common Factors

The analysis of barriers is a synthesis of the feedback we received from the five transportation user groups. The steering committee is not considered a user group, but rather an amalgamation of all user types. Although not shown on an individual map, input from the steering committee is incorporated into the maps of all five of the transportation user groups.

Sidewalk Barriers

Missing sidewalks and sidewalks in bad condition can make walking around town difficult. The actives, parents, and senior and mobility-impaired groups all think that the lack of sidewalks on Highway 141 make it challenging to get to West Side Market and the Manning Regional Health Care Center for pedestrians and cyclists. The parents and actives groups said that pedestrians can't easily reach the Quakerdale Center because there are no sidewalks on 3rd Street. The youth think it is hard to bike on uneven pavement and find the sidewalks on Main Street and throughout the Manning Cemetery as being particularly difficult. The parents and actives groups appreciate the recently added path along Manning Cemetery but would like to see it paved.

Visibility

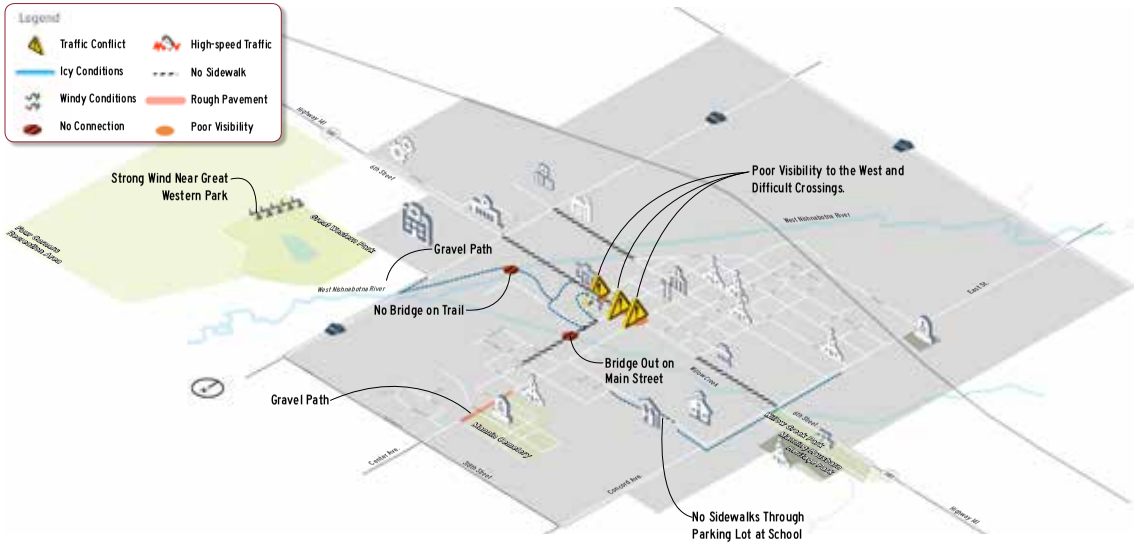
All focus groups said that it is hard to see oncoming traffic from the west at the intersection of Center Street and Highway 141 because of the hill. The senior and mobility-impaired group noted that parked cars at the intersection of 3rd and Center Streets obscure the view of oncoming traffic.

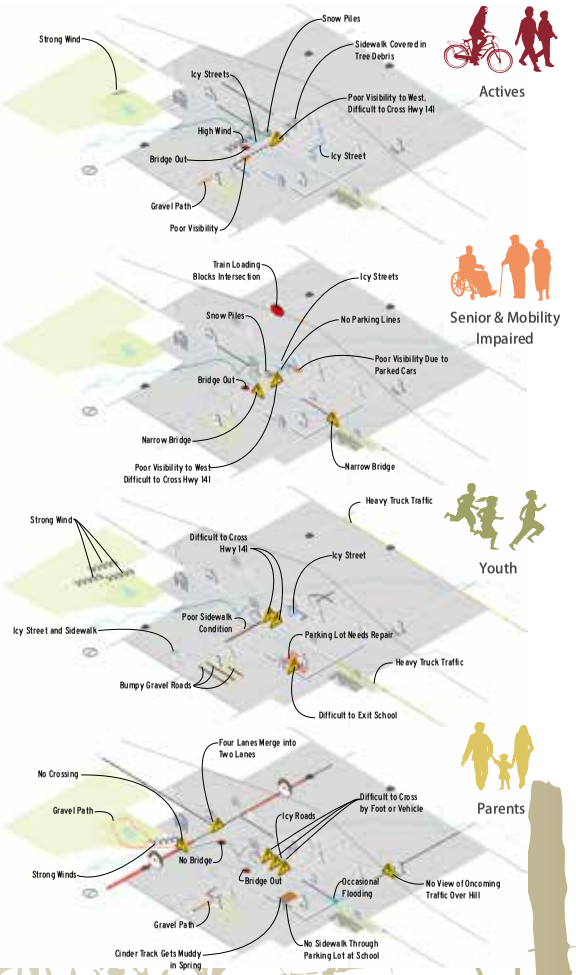
Seasonal Weather Barriers

The actives and senior and mobility-impaired groups indicated that winter snow piles diminish views of traffic at the intersection of Main Street and Highway 141. The senior and mobility-impaired group also mentioned icy conditions on Main Street following sidewalk snow removal. The actives group said that Sue Street and Main Street south of Highway 141 are difficult to navigate during winter conditions. The actives, parents, and youth groups associate strong winds at Great Western Park as a use barrier. The parents said that the intersection of Highway 141 and East Street floods occasionally. The actives and parents groups mentioned that the cinder track at the high school and the Great Western Park Trail are often too muddy to use in spring.

Main Street

Main Street is viewed as an asset to the community overall, but the seniors and mobility-impaired group pointed out that they often see people driving the wrong way down the street because the one-way signs are too small, and that people aren't sure where to park because the parking stripes are faded.





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Manning

Transportation Assets and Barriers | Analysis of Barriers

Transportation Assets and Barriers - Assets and Preferred Routes

The analysis of assets and routes is a synthesis of the feedback received from the four transportation user groups. The steering committee is not considered a user group, but rather an amalgamation of all user types. Although not shown on an individual map, input from the steering committee is incorporated into the maps of the four user groups.

Community Assets

The Veterans Memorial Wall, Freedom Rock, and the Milwaukee Railroad Trestle are landmarks in which Manning residents take pride. The senior and mobility-impaired and youth groups appreciate the plantings along Highway 141 and potted plants along Main Street. Residents value the outdoor recreation venues available to them, including City Park, Great Western Park, Four Corners Recreational Area, and the trail system that was started in 2012. People in the actives group mentioned the Arts and Antiques Tour available for visitors to walk, bike, or drive; the tour highlights community landmarks with artistic and historic significance.

Walking

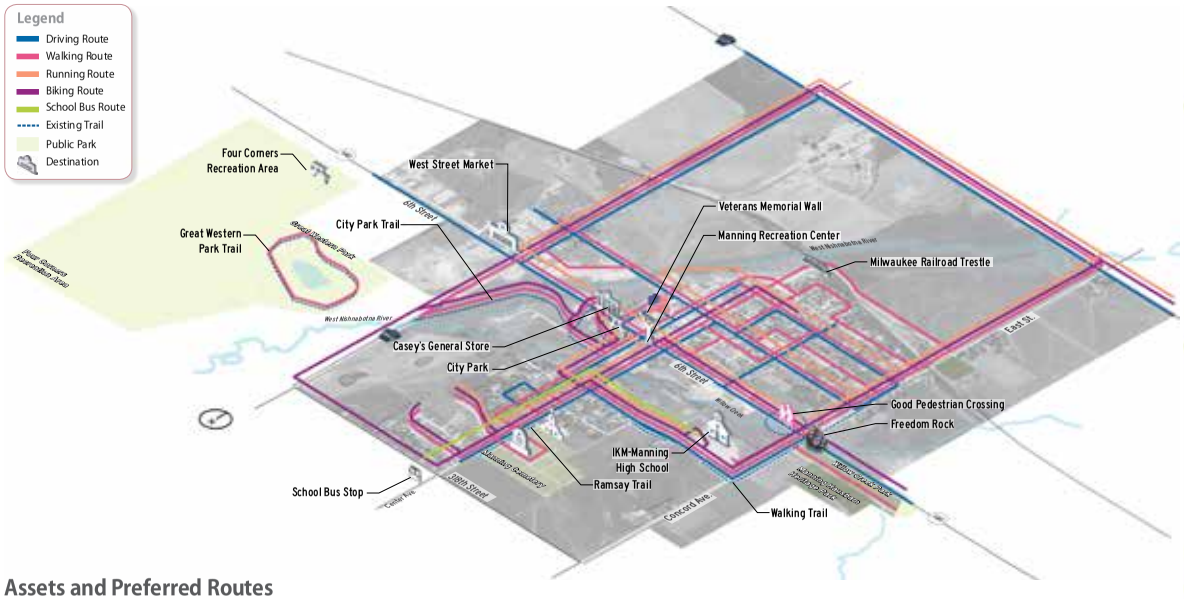
Residents walk to local services and for exercise. Those who walk for exercise prefer to do so on the perimeter of town and paths leading through local parks. Walkers like to go to Freedom Rock, the recreational center, schools, and local shops along Main Street. Walking trails are important to all user groups but residents would like better connections in town and to Four Corners Recreational Area.

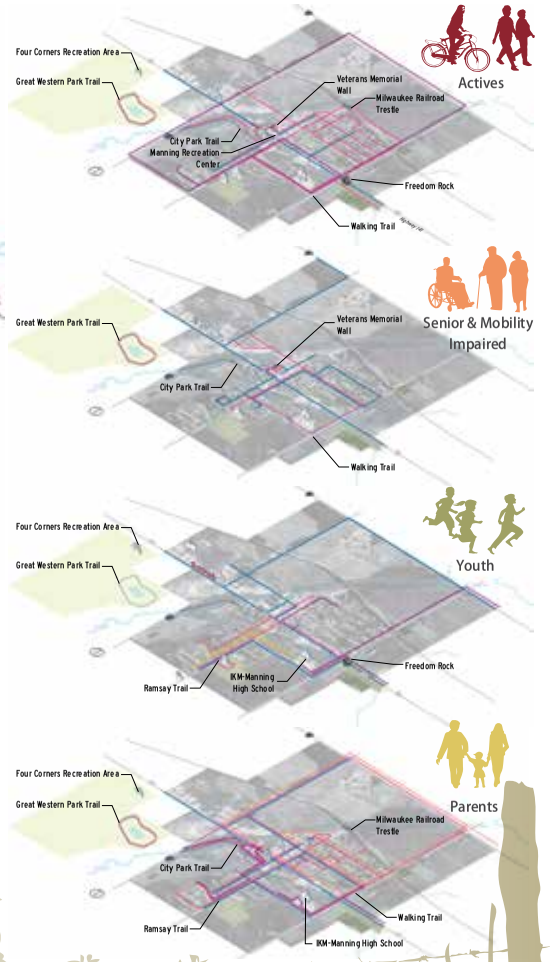
Biking and Running

Adults bike for recreation, while youth bike as a primary means of getting around town. Cyclists bike the perimeter of town to achieve distance goals. Destinations for bikers include the Manning Recreation Center, school, Freedom Rock, and Manning City Park. Residents would like to see more connections in town and to area destinations such as Four Corners Recreational Area and the Sauk Rail Trail in Carroll. Some adults run for exercise and the older youth participate in track at school. Runners tend to run a perimeter route similar to that of cyclists. They typically do not use the trail system.

Driving

Manning residents drive to work and to run errands. Highway 141, Main Street and Center Street are the busiest streets. Main Street is considered an important hub for its collection of retail, dining, and other service destinations. Residential roads are less busy making them great for walking or biking; however, participants noted the lack of good sidewalks in some areas.





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Manning

Transportation Assets and Barriers | Assets and Preferred Routes

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development

IOWA'S LIVING ROADWAY
Summer 2016
TAB 3e

Transportation Assets and Barriers - Desired Improvements

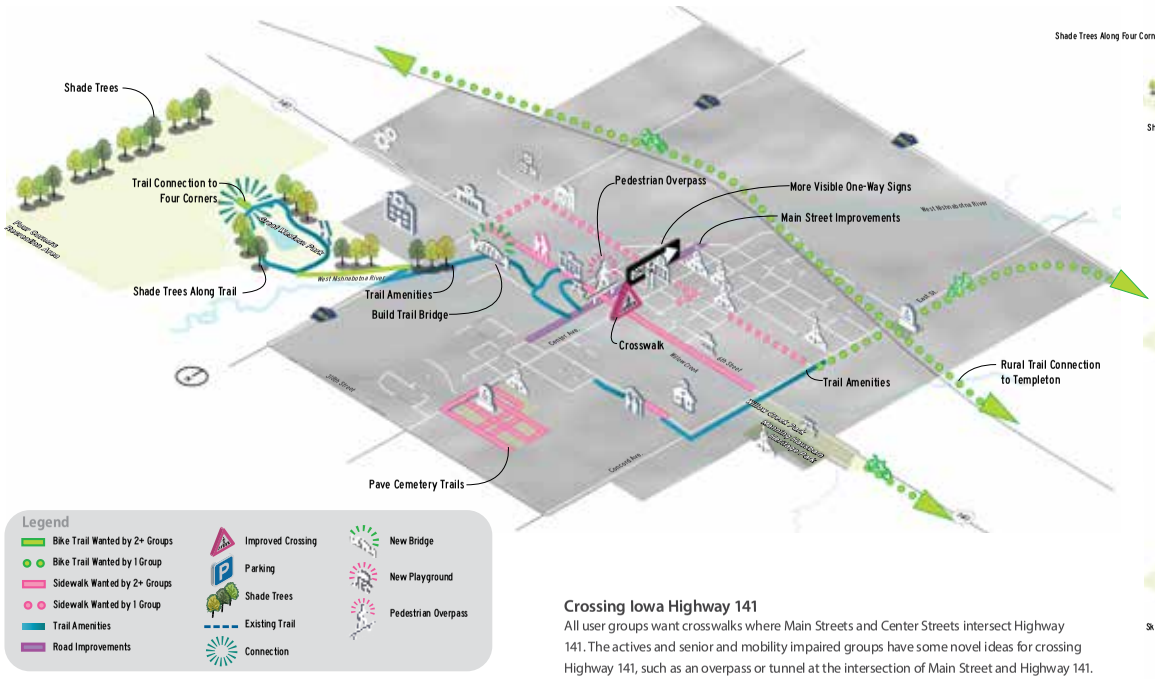
The analysis of desired improvements is a synthesis of the feedback we received from the four transportation user groups. The steering committee is not considered a user group, but rather an amalgamation of all user types. Although not shown on an individual map, input from the steering committee is incorporated into the maps of all four user groups.

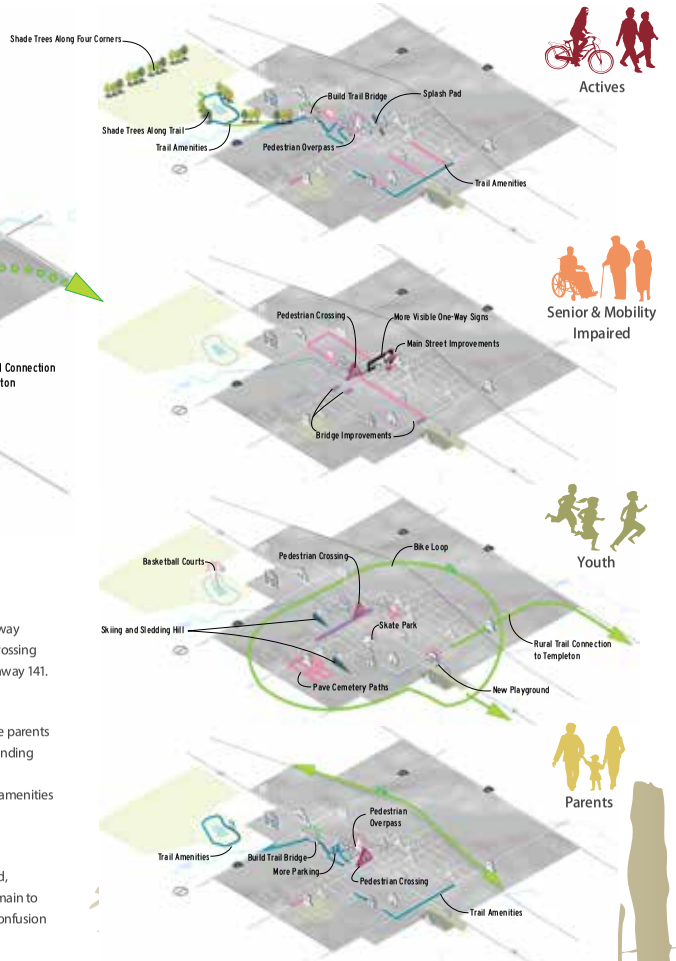
The information on this board should in no way be interpreted as design solutions, but rather as a series of suggestions for improvements taken from the focus-group sessions. These are just a preliminary sample of what might be explored as the design process moves forward over the next few months.

Crossing Iowa Highway 141
All user groups want crosswalks where Main Streets and Center Streets intersect Highway 141. The actives and senior and mobility impaired groups have some novel ideas for crossing Highway 141, such as an overpass or tunnel at the intersection of Main Street and Highway 141.

Trail Improvements
All user groups value the new trail systems that have been in the works since 2012. The parents and youth groups would like to see bike trail access to and from rural areas and surrounding towns such as Templeton. The actives group desires a trail connection to Four Corners Recreation Area just west of town. Other desired trail improvements include new trail amenities such as benches, shade trees, restrooms, and drinking fountains.

Main Street Improvements
The seniors and mobility impaired group wants on street parking stalls to be repainted, coordinated snow removal, and a lower curb. The youth wanted the sidewalks along main to be smoother for bike riding. Other issues include larger one-way signs to eliminate confusion for those visiting.





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Manning

Transportation Assets and Barriers | Desired Improvements

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

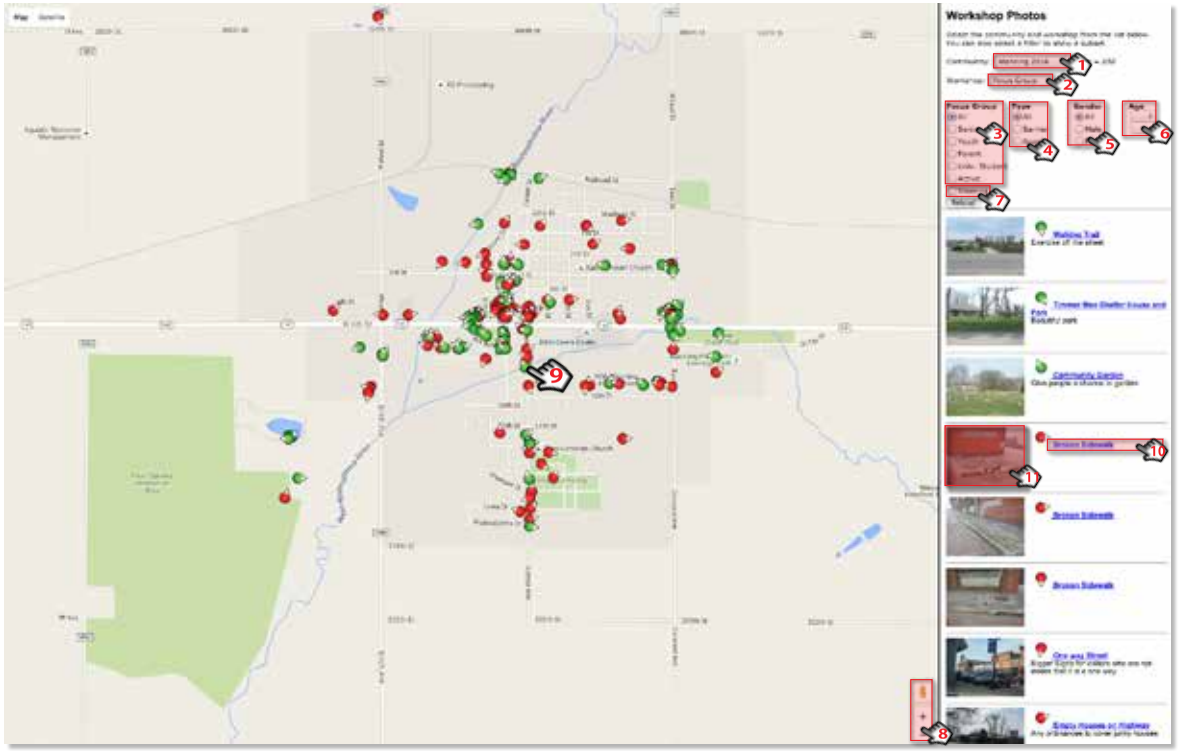
Transportation Assets and Barriers - How to Use Your Map

In addition to focus-group discussions, participants in the transportation assets and barriers workshops engaged in a photomapping activity. Each person was given a GPS-enabled digital camera and a worksheet. They were asked to photograph and describe the three best assets and the three worst barriers in their community.

The Iowa State University research staff uploaded the data from the cameras and entered the information from the worksheets into an online database, which is linked to an interactive online map. The map showing the images and descriptions is available to the public via the Community Visioning Program website at www.communityvisioning.org. On the homepage, click on the link reading: “Transportation Assets and Barriers Maps for the visioning communities are available HERE.”

The database can be queried to sort the images by the following criteria:

- User Types: Senior & Mobility Impaired, Youth, Parents, Active, or Steering Committee
- Photo Designation: Asset or Barrier
- Participant Gender
- Participant Age



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- Participant Gender
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Use these instructions to navigate the map, view photos and comments associated with the data points, and save photos as .jpg files.

1. Select your **Community** from the dropdown menu.
2. Select "Focus Group" from the dropdown list of **Workshop** types.
3. You have the option to view a specific **Focus Group** demographic. The default view shows data points from all the demographic groups.
4. Select the **Type** of data you wish to view. You have the option to view only assets, only barriers, or both. The default view shows all the data points on the map.
5. You have the option to view the data by the **Gender** of the participants. The default view shows data from both male and female participants.
6. Finally, you can sort the data by **Age.** Sort options include participants who are exactly, older than or younger than 21, 45, or 60 years old.
7. When you have selected the desired criteria for the data points you wish to view, click **Reload.**
8. When you mouse over the map, the pointer becomes a hand symbol. Use the hand to "grab" the map to move to different areas of the community. To zoom in or out, click on the + and – symbols.
9. When you click on any data point, a thumbnail of the photo along with the description provided by the participant will pop up on the map. If there are multiple data points clustered together, you may need to zoom in to select the desired point.
10. Thumbnails of all the photos, along with the descriptions, are shown along the right side of the window under the search criteria. To find out where in the community a photo was taken, click on the photo title, which is a link that will reload the map so that the photo's data point is centered on the map.
11. To see a larger image, click on the thumbnail of the photo. A new tab with a full-size image will open in your browser. To save the image, right-click on the image and select "Save Image As."

Manning

Transportation Assets and Barriers | How to Use Your Map

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Transportation Inventory and Analysis

Knowledge of the transportation systems in and around the community of Manning is critical for sustainable transportation enhancement planning. Transportation systems include paved and unpaved roadways, pedestrian and bike trails, waterways, and railroad lines.

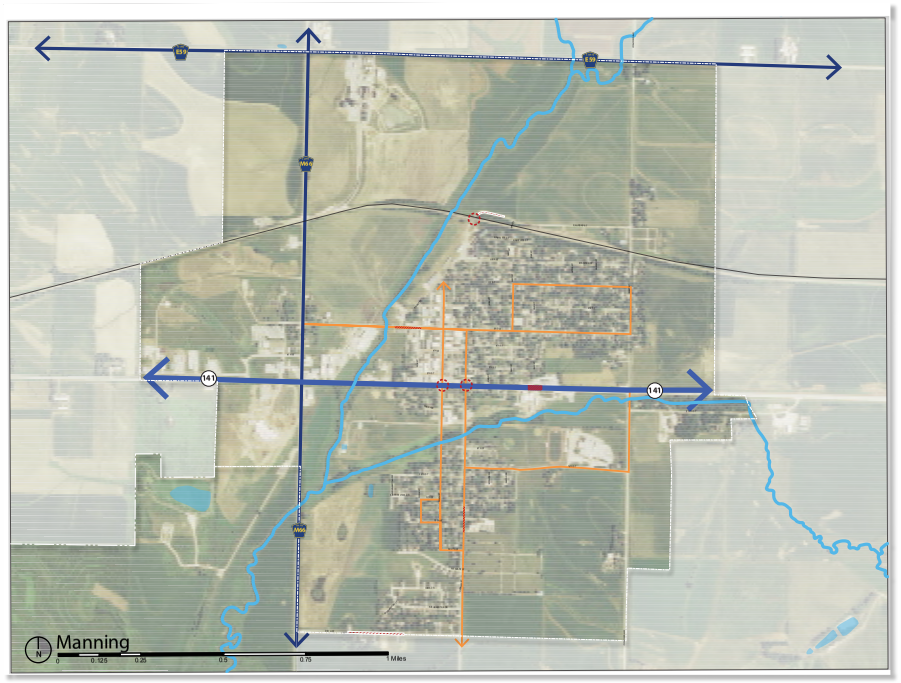
The Manning visioning design team worked with the Iowa Department of Transportation (IDOT) personnel and local officials to identify past, present, and future transportation systems in the area. They discussed possible transportation-related restraints and opportunities that could potentially affect project areas.

The majority of the traffic in Manning is along Highway 141, (West 6th Street) running east-west and Main Street running north-south. Highway 141 is a major truck route, and according to the IDOT this thoroughfare carries a significant traffic load (see inset one). This route is the primary method of travel. Slowing traffic is problematic and creates potential conflict for pedestrian circulation. The intersection of Highway 141 and Main Street currently does not have pedestrian crossings, making it difficult for residents to cross Highway 141. The existing crosswalk is located at 6th and Center Street, and is hard to see pedestrians crossing the roadway due to changes in topography.

The major routes within the city limits include Main Street, Center Street, and Birch Avenue. Current issues include recognizing the need for pedestrian safety measures. Trucks are currently routed through the town, making those streets difficult to cross. These roads link many of the amenities in Manning and are considered the high-use roads for locals. While there are a few common pedestrian routes that locals use within the town, implementation of the City's trail plan would connect to the nearby Great Western Park, and offer a safer route for pedestrians.

Manning maintains several drainage districts that are managed by both the county and city. It was noted that there were several areas in town that had excess water runoff issues. The problems ranged from water pooling on the road on 318th Street all the way up to flash floods occurring on Highway 141 at the Sue and May Street intersections. Improving storm water management strategies would assist in the mitigation of these water conflicts throughout town.

The West Nishnabotna River runs along the western edge of Manning and is a valuable and underutilized resource as it currently stands. The river has severe erosion and undercutting in areas, and steep banks limit accessibility for canoeing and kayaking.



Map Source: Iowa Department of Natural Resources, "Natural Resources Geographic Information Systems Library," accessed April 2014, http://www.igsb.uiowa.edu/nrgislibx/.

City Boundary
Waterway
Iowa State Highway
Pocahontas County Highway
Major Roads
Points of Potential Conflict
Excess Water Runoff Conflict

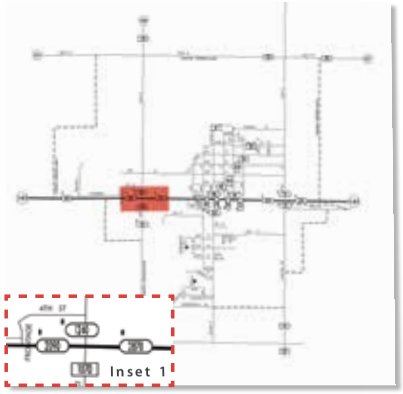
Transportation Inventory & Analysis

Knowledge of the transportation systems in and around the community of Manning is critical for sustainable transportation enhancement planning. Transportation systems include paved and unpaved roadways, pedestrian and bike trails, waterways, and railroad lines.

The Manning visioning design team worked with the Iowa Department of Transportation (IDOT) personnel and local officials to identify past, present, and future transportation systems in the area. They discussed possible transportation-related restraints and opportunities that could potentially affect project areas.

The majority of the traffic in Manning is along Highway 141, (West 6th Street) running east-west and Main Street running north-south. Highway 141 is a major truck route, and according to the IDOT this thoroughfare carries a significant traffic load (see inset one). This route is the primary method of travel. Slowing traffic is problematic and creates potential conflict for pedestrian circulation. The intersection of Highway 141 and Main Street currently does not have pedestrian crossings, making it difficult for residents to cross Highway 141. The existing crosswalk is located at 6th and Center Street, and is hard to see pedestrians crossing the roadway due to changes in topography.

The major routes within the city limits include Main Street, Center Street, and Birch Avenue. Current issues include recognizing the need for pedestrian safety measures. Trucks are currently routed through the town, making those streets difficult to cross. These roads link many of the amenities in Manning and are considered the high-use roads for locals. While there are a few common pedestrian routes that locals use within the town, implementation of the City's trail plan would connect to the nearby Great Western Park, and offer a safer route for pedestrians.



Source: Iowa Department of Transportation, "2012 Annual Average Daily Traffic," accessed July 2016, http://www.iowadot.gov/maps/msp/traffic/2012/cities/Manning.pdf

Manning maintains several drainage districts that are managed by both the county and city. It was noted that there were several areas in town that had excess water runoff issues. The problems ranged from water pooling on the road on 318th Street all the way up to flash floods occurring on Highway 141 at the Sue and May Street intersections. Improving storm water management strategies would assist in the mitigation of these water conflicts throughout town.

The West Nishnabotna River runs along the western edge of Manning and is a valuable and underutilized resource as it currently stands. The river has severe erosion and undercutting in areas, and steep banks limit accessibility for canoeing and kayaking.

Manning

Transportation Inventory & Analysis

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Community Concept Plan

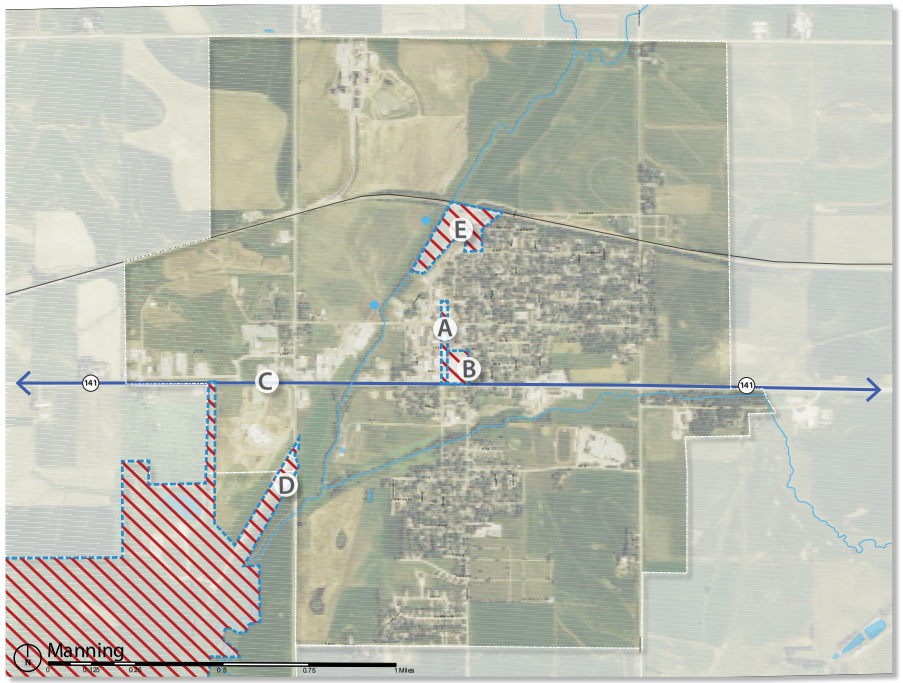
Manning utilized the results of the special places mapping, focus group findings, and transportation inventory to identify a list of goals and opportunities to create a vision for the community. Drawing on this vision, the design team developed a preliminary concept plan at a design workshop that was open to the public.

The concept plan is based on the priorities of the community with guidance from the Manning visioning committee. The improvements illustrated on this plan and in more detail on other boards are intended to recognize and reinforce important community features and make the town more enjoyable for all residents and visitors.

The goals that the visioning committee ranked as the highest priority and that the design team will address in this plan include:

- Downtown Improvements
- Creation of a greenspace at the entrance of Main Street
- Signage and monument enhancements on Highway 141
- Signage enhancements and various park improvements to Great Western Park
- Creation of a park adjacent to the Trestle Bridge

The concept plan creates a cohesive identity for Manning through materials and patterns, that improves the overall landscape, highlights local businesses, provides recreational opportunities, and promotes the community values.



Map Source: Iowa Department of Natural Resources, "Natural Resources Geographic Information Systems Library," accessed April 2014, http://www.igsb.uiowa.edu/nrgislibx/.

City Boundary
Waterway
Highway 3 Corridor Improvements
Multi-Use Trail System
Community Priority Area

Community Concept Plan

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Manning

Community Concept Plan

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Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

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Community Concept Plan - Opinion of Probable Cost

Description	Extended Amount	
DOWTOWN IMPROVEMENTS		
SUB-TOTAL	**$**	**195,321.00**
MOBILIZATION/GENERAL CONDITIONS - 5%	**$**	**9,766.05**
CONTINGENCY - 15%	**$**	**29,298.15**
DESIGN AND ENGINEERING - 10%	**$**	**19,532.10**
Inflation - 3%	**$**	**5,859.63**
ESTIMATED CONSTRUCTION COST	**$**	**259,776.93**

MAIN STREET GREENSPACE		
SUB-TOTAL	**$**	**321,494.00**
MOBILIZATION/GENERAL CONDITIONS - 5%	**$**	**16,074.70**
CONTINGENCY - 15%	**$**	**48,224.10**
DESIGN AND ENGINEERING - 10%	**$**	**32,149.40**
Inflation - 3%	**$**	**9,644.82**
ESTIMATED CONSTRUCTION COST	**$**	**427,587.02**

HIGHWAY 141 IMPROVEMENTS		
SUB-TOTAL	**$**	**28,000.00**
MOBILIZATION/GENERAL CONDITIONS - 5%	**$**	**1,400.00**
CONTINGENCY - 15%	**$**	**4,200.00**
DESIGN AND ENGINEERING - 10%	**$**	**2,800.00**
Inflation - 3%	**$**	**840.00**
ESTIMATED CONSTRUCTION COST	**$**	**37,240.00**

GREAT WESTERN PARK IMPROVEMENTS		
SUB-TOTAL	**$**	**112,110.00**
MOBILIZATION/GENERAL CONDITIONS - 5%	**$**	**5,605.50**
CONTINGENCY - 15%	**$**	**16,816.50**
DESIGN AND ENGINEERING - 10%	**$**	**11,211.00**
Inflation - 3%	**$**	**3,363.30**
ESTIMATED CONSTRUCTION COST	**$**	**149,106.30**

**TRESTLE PARK	Phase 1 & 2**		
SUB-TOTAL	**$**	**1,854,875.10**
MOBILIZATION/GENERAL CONDITIONS - 5%	**$**	**92,743.76**
CONTINGENCY - 15%	**$**	**278,231.27**
DESIGN AND ENGINEERING - 10%	**$**	**185,487.51**
Inflation - 3%	**$**	**55,646.25**
ESTIMATED CONSTRUCTION COST	**$**	**2,466,983.88**

Downtown Improvements

Main Street is the heart of the local business in Manning, as well as the heart of the downtown district overall.

The plan proposes 4'x8' planting beds with columnar trees that have the added benefit of being a storm-water management tool. Alternatively, a trench drain could be installed along the existing curb line at the proposed planting beds to direct storm water into the existing drainage system. In conjunction with the trees, the plan features hanging perennial planter baskets installed on the existing light poles. The proposed plan replaces the existing round planters with rectangular concrete planters that would accommodate donor name plates, and reduce maintenance compared to the existing planters. Benches would be updated to showcase the historic character of the street, while embracing the modern flair of the new branding and signage Manning has recently installed. The Main Street concept utilizes planters located on mid-block bump-outs to give seasonal character with vegetation.

The seasonal midblock crossings would give the street more character and accommodate the elderly citizens that currently utilize the space. Visually narrowing the existing right-of-way by implementing bump-outs at the mid-blocks would add additional interest, provide shade, and give an opportunity to add more gathering spaces outside of businesses. Implementing these types of planters without changing the existing drainage systems is a cost effective way to increase use during the warm weather without impeding snow removal in the winter. The mid-block gathering spaces should be designed for easy removal and storage in winter.

View North, Existing Pedestrian Corridor

View North, Proposed Pedestrian Corridor Improvements

Downtown Improvements

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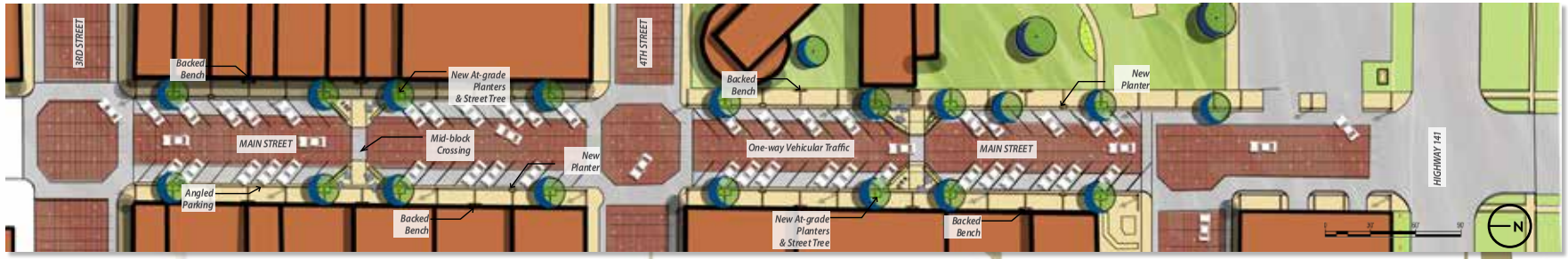
Proposed Site Amenities



Proposed Main Street Concept Plan

Manning

Downtown Improvements

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

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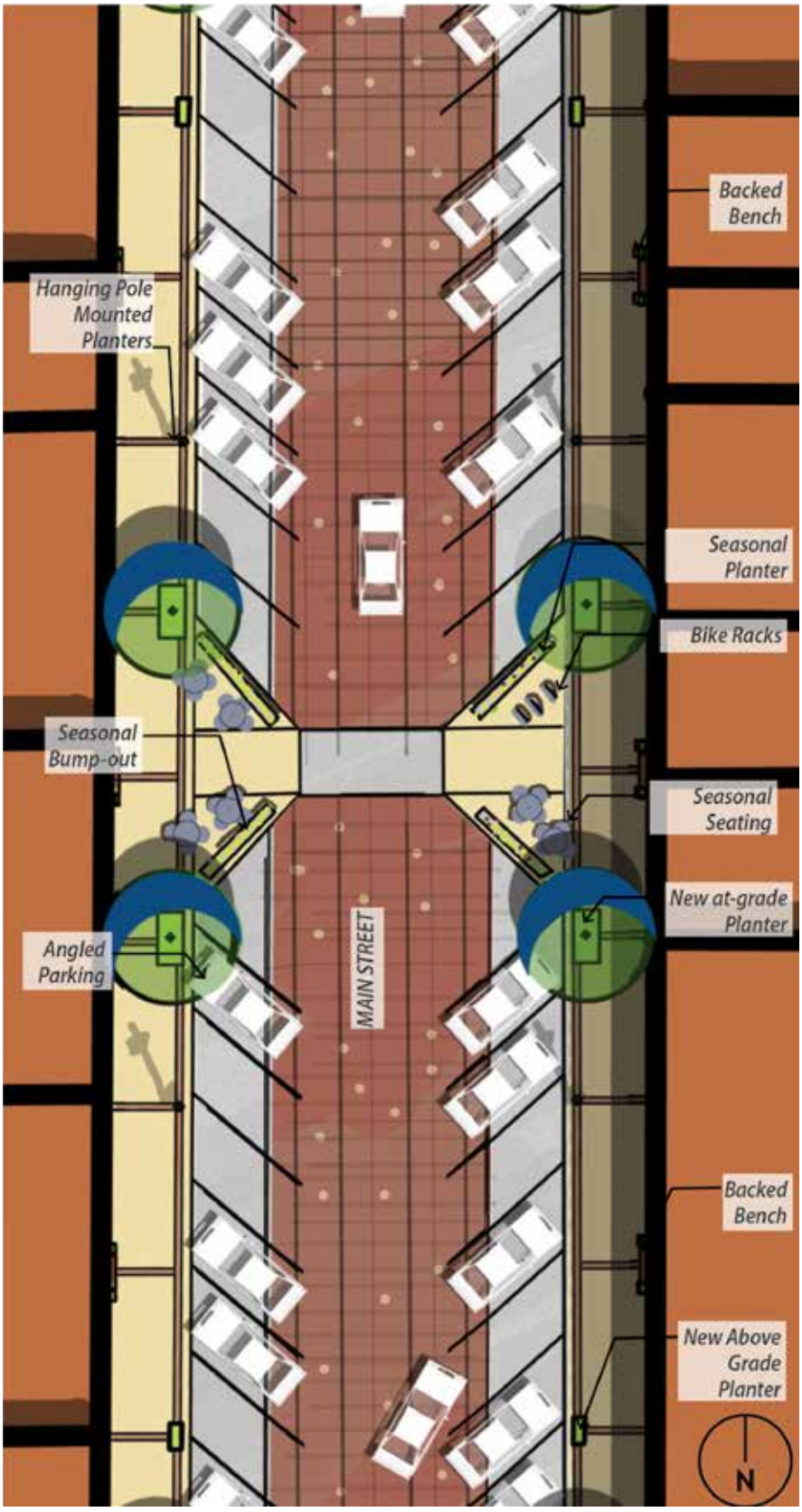
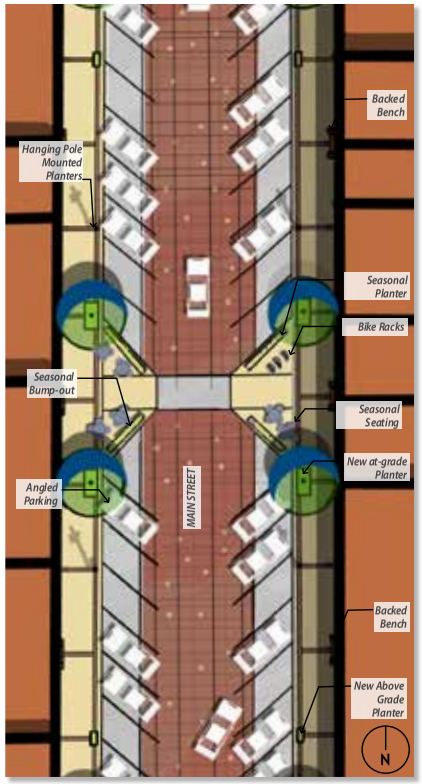
Downtown Improvements - cont.



Plan Enlargement: Typical Block Plan Layout



Typical block improvements on Proposed Main Street Concept Plan

View North, Existing Conditions on Main Street

View North, Proposed Main Street Enhancements

Manning

Downtown Improvements

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

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Downtown Improvements - Opinion of Probable Cost

Description	Quantity	Unit	Unit Cost	Extended Amount
GENERAL REQUIREMENTS				
Traffic Control	1	LS	$10,000.00	$ 10,000.00
DEMOLITION				
REMOVAL				
Concrete Sidewalks	800	SF	$3.50	$ 2,800.00
Compacted Subgrade	800	SF	$2.00	$ 1,600.00
Temporary Erosion Control	1	LS	$5,000.00	$ 5,000.00
HARDSCAPE				
Concrete Paving- Sidewalks	800	SF	$6.00	$ 4,800.00
Concrete Paving - Curbs	176	LF	$20.00	$ 3,520.00
LANDSCAPE				
Amended Soil For Shrubs & Perennials	45	CY	$45.00	$ 2,025.00
Deciduous Shade Trees - 2" Caliper	16	EA	$350.00	$ 5,600.00
Perennials - in grade planters	800	SF	$15.00	$ 12,000.00
Perennials - Hanging Pots	36	SF	$12.00	$ 432.00
Perennials - Site Planters	102	SF	$12.00	$ 1,224.00
SITE IMPROVEMENTS				
Trash Receptacles	12	EA	$1,500.00	$ 18,000.00
Seasonal Bumpout	4	EA	$15,000	$ 60,000.00
Hanging Flower Pots	8	EA	$90.00	$ 720.00
1.5' x 1.5' Planters	24	EA	$450	$ 10,800.00
1.5' x 4' Planters	8	EA	$600	$ 4,800.00
Benches	12	EA	$1,800	$ 21,600.00
Café Tables & Chairs	8	EA	$3,000	$ 24,000.00
Bike Racks	8	EA	$800	$ 6,400.00
SUB-TOTAL				**$ 195,321.00**
MOBILIZATION/GENERAL CONDITIONS - 5%				**$ 9,766.05**
CONTINGENCY - 15%				**$ 29,298.15**
DESIGN AND ENGINEERING - 10%				**$ 19,532.10**
Inflation - 3%				**$ 5,859.63**
ESTIMATED CONSTRUCTION COST				**$ 259,776.93**

Main Street Greenspace

The relocation of the Manning Regional Healthcare Center (MRHC) from the northeast corner of Highway 141 and Main Street has the potential to become a community asset as a new park that can be utilized for various events and activities to fit Manning's needs. The corner of Highway 141 and Main Street is underutilized and directional signage to the business district is unclear. A new park at this prominent location would be an effective anchor for downtown as a multi-use space for all to enjoy. Ideas for the new park include a performance stage, prominent plantings, new signage, and art panels.

The placement of the new plantings and signage should provide wayfinding and showcase Main Street. One of the entrances into the parking will be relocated to accommodate fire access. This project could be done in phases if needed, with new signage, artwork, and planting as an initial phase, followed by the performance stage as a future phase. These components extend the comfortable outdoor landscape of The Plaza (the MRHC's long-term care facility), while creating opportunities to interact with the community members and visitors during events or activities. The new park would not interrupt the implementation of the MRHC's current plan, but will require close collaboration between the city and the MRHC.

Main Street Greenspace - Opinion of Probable Cost

Description	Quantity	Unit	Unit Cost	Extended Amount
GENERAL REQUIREMENTS				
Traffic Control	1	LS	$5,000.00	$ 5,000.00
DEMOLITION				
REMOVAL				
Temporary Erosion Control	1	LS	$5,000.00	$ 5,000.00
PCC Roadway	15,694	SF	$5.00	$ 78,470.00
PCC Curb & Gutter Roadway	396	LF	$12.00	$ 4,752.00
HARDSCAPE				
Concrete Paving - Curb and Gutter	460	LF	$35.00	$ 16,100.00
Concrete Paving- Roadway	3,875	SF	$6.00	$ 23,250.00
Concrete Paving - Walks	2,933	SF	$5.00	$ 14,665.00
Site Infrastructure				
Site Lighting	4	EA	$8,000.00	$ 32,000.00
Shelter / Stage / Concrete Pad	400	SF	$100.00	$ 40,000.00
Metal Panels / Artwork	12	EA	$3,000.00	$ 36,000.00
Benches	6	EA	$1,800.00	$ 10,800.00
Trash Receptacles	4	EA	$1,500.00	$ 6,000.00
LANDSCAPE				
Amended Soil For Shrubs & Perennials	33	CY	$45.00	$ 1,485.00
Deciduous Shade Trees - 2" Caliper	18	EA	$350.00	$ 6,300.00
Perennials	1,200	SF	$15.00	$ 18,000.00
Hardwood Mulch	33	CY	$40.00	$ 1,320.00
Sod	8,941	SY	$2.50	$ 22,352.50
SUB-TOTAL				**$ 321,494.50**
MOBILIZATION/GENERAL CONDITIONS - 5%				**$ 16,074.73**
CONTINGENCY - 15%				**$ 48,224.18**
DESIGN AND ENGINEERING - 10%				**$ 32,149.45**
Inflation - 3%				**$ 9,644.84**
ESTIMATED CONSTRUCTION COST				**$ 427,587.69**

Proposed Downtown Greenspace Concept Plan

View West, Existing Greenspace Conditions

View Northeast, Proposed Stage and Screen Wall Art Panels

Aerial View Southwest, Proposed Greenspace Improvements

The relocation of the Manning Regional Healthcare Center (MRHC) from the northeast corner of Highway 141 and Main Street has the potential to become a community asset as a new park that can be utilized for various events and activities to fit Manning's needs. The corner of Highway 141 and Main Street is underutilized and directional signage to the business district is unclear. A new park at this prominent location would be an effective anchor for downtown as a multi-use space for all to enjoy. Ideas for the new park include a performance stage, prominent plantings, new signage, and art panels.

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Manning

Main Street Greenspace

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Highway 141 Improvements

Highway 141 is one of the main vehicular corridors through Manning. It is currently a four-lane highway and is oriented towards vehicular transportation. The highway has a mixture of building uses along it from local businesses, residential areas, to the City Park and Community Center. Focus groups have found that the highway's lack of sidewalks are a major safety hazard for the adults and children that need to cross the highway from the community baseball fields and the Community Center. The focus group also found that there is also a lack of wayfinding signage along this corridor.

The proposed solution to Highway 141 is to reduce the highway from four lanes to three. The three lanes would consist of two travel lanes, with the middle lane becoming the turning lane. This change would occur throughout the central core of town and help reduce traffic speeds and increase visibility of the pedestrians along the roadway. By removing one travel lane in each direction, it becomes possible to install sidewalks along the highway. This improves safety for both pedestrian and vehicular traffic without impeding the current traffic patterns. Further traffic studies will be required by the IDOT prior to implementation.

It was noted during the transportation meeting that there is a desire to see additional landscaping and artwork along Highway 141. This artwork would need to conform to the IDOT regulations and be placed in the clear zone of the 30 MPH area, and not impede drivers' sight triangle.

Way-finding signage is essential to every community. It highlights areas of interest to visitors and residents and shows a sense of pride and cohesive design throughout the town. Signage for the community of Manning is shown in the image on the far left of the pole-mounted directional sign. This proposed sign follows current MUTCD (Manual on Uniform Traffic Control Devices) guidelines for text and arrows depending on the speed and type (pedestrian or vehicular) of traffic. The signs should have 3M reflective finishes to add nighttime visibility. The IDOT will need to confirm locations and proposed text prior to installing these pole mounted signs to existing street lights within the community.

Proposed MUTCD Compliant 3M Reflective Signage

View East, Proposed Pedestrian Corridor Improvements

Highway 141 Improvements

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Proposed Locations for Sculptural Signage

Manning

Highway 141 Improvements

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

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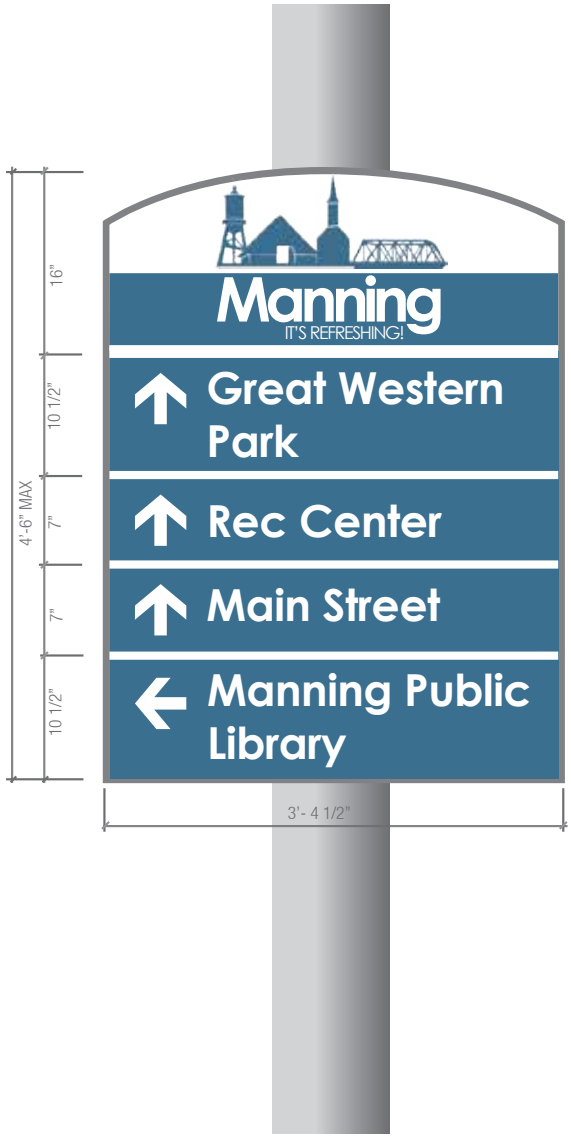
Highway 141 Improvements - Signage Guide

Destination signage size will vary based on the posted travel speeds along a given roadway. Signs located in areas with posted speeds <25 MPH a minimum 4" Letter height is required. Signs located in zones above a 25 MPH speed require a 6" letter height. Font type should be Clearview, or alternate IDOT approved font. The cap of the sign cannot occupy more than 20% of the total sign area. Below are guidelines for signs with a 4" or 6" letter height standard*.

Speeds < 25 MPH
Sign Panel Size: 3' 4 1/2" x 4' - 6" high (54 in.)
Text Area Size: 31 in. wide
Arrow Icon Size: 3 3/4 in. diameter
Text Height Size: 4 in. (Capital Letter "M")
Max. Viewing Distance: 100 ft.
Preferred # of Characters Per Line: 12
Max # of Characters Per Line: 15
Preferred # of Lines Per Destination: 1
Max # of Lines Per Destination: 2
Max # of Destinations Per Sign: 4

Speeds > 25 MPH
Sign Panel Size: 4.5 ft. wide (54 in.) x 9 ft. high (96 in.)
Text Area Size: 40.3 in. wide; with margins: 44.5 in. wide
Arrow Icon Size: 7 in. diameter
Text Height Size: 6 in. (Capital Letter "M")
Max. Viewing Distance: 150 ft.
Preferred # of Characters Per Line: 12
Max # of Characters Per Line: 15
Preferred # of Lines Per Destination: 1
Max # of Lines Per Destination: 2
Max # of Destinations Per Sign: 4



*Refer to the MUTCD requirements for additional guidelines on size, font, arrows, mounting, etc. Contact your local DOT district representative for coordination and approvals.

Destination signs require standard directional arrows and are located on the left hand side of the sign consistently. Destinations are listed from top to bottom, straight ahead, left then right, in that order.

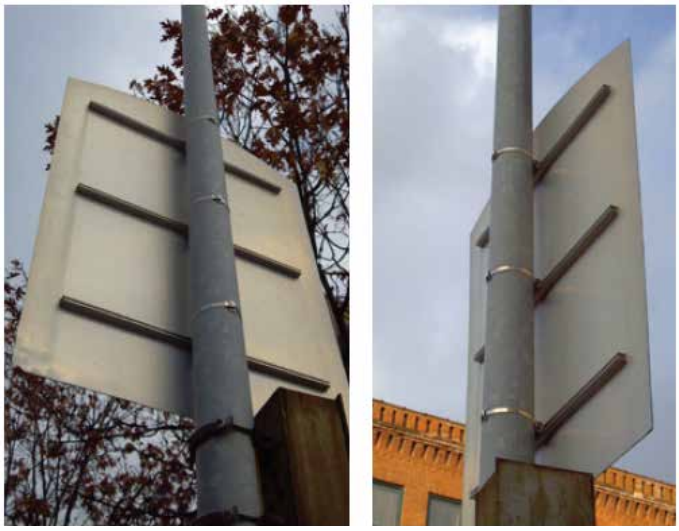
All messages, borders, backgrounds, etc. of the guide sign and enhancement markers shall be retroreflective.

The Vehicular Signage locations will need to be determined and verified with the IDOT prior to implementation. These signs are classified in the MUTCD per section 2A.05 C, Guide Signs. Guide signs show route designations, destinations, directions, distances, services, points of interest and other geographical, recreational, or cultural information (see appendix). Typical destinations include libraries, parks, schools, museums, etc. A map with locations and listed destinations will be required for submission to the IDOT for review and approval prior to placement of a directional sign. To fully implement some or all of these signs, the following steps are required:

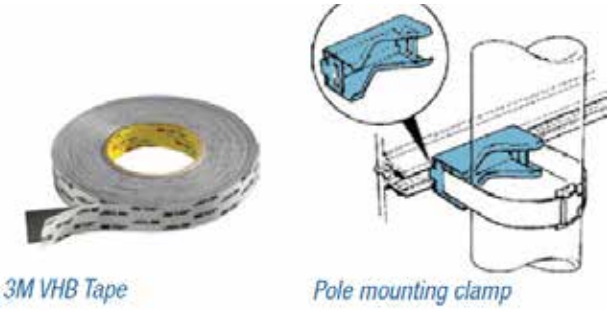
1. Determination of any phasing or partial implementation of signs. Ultimately, all or a group of locations needs to be authorized.

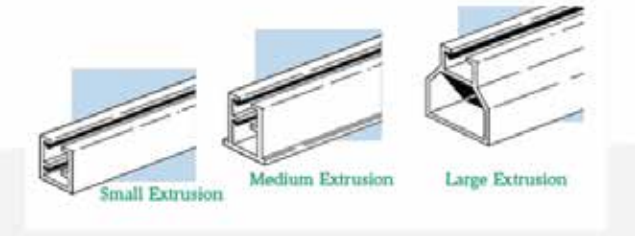
2. Throughout Manning, some existing community based wayfinding signs exist and need to be inventoried for removal.

3. The exact mounting height needs to be determined. This is not an absolute, prescribed height and can be varied. Most communities choose to mount these signs with the bottom of the sign at nine to ten feet above grade. This allows for a smaller sign to still be placed below and also keeps the sign high enough to reduce most pedestrians from being able to reach or vandalize the signs. Additional consideration is needed for poles /signs located very close to a vehicular travel lane. These signs can be at risk of being struck by a large/tall vehicle passing by. In these situations, the height can be raised or the sign can be offset slightly on the pole to minimize this risk.



These images are taken of the Downtown Des Moines vehicular wayfinding signage system.





Highway 141 Improvements - Signage Guide Continued

4. For each location, some additional field coordination is necessary including:
    - For existing poles scheduled to receive signs, any existing banner brackets or signs need to be considered for removal. In addition, some poles may require some base plate strengthening as advised by the City.
    - For locations requiring new poles, the exact location of the pole needs to be field determined and coordinated with utilities and other site features. In addition, the exact pole type, size and finish needs to be determined.
    - All locations require an inventory of nearby existing signage to confirm the proposed wayfinding sign will not obscure or conflict with any other signage.

5. The exact sign mounting system needs to be finalized and fully specified. Based on recent experiences in other communities including the City of Des Moines, the following options should be considered:
    - The illustrations on this page convey a system that has been used with some success in Downtown Des Moines. The horizontal channels are adhered to the panel using “very high bond” tape and a traditional pole mounting clamp is then utilized. An alternate system has also been used comprised of an Astro sign bracket, Stellar Series, Cable Mount to attach the signs to the poles. Each system has unique considerations and should be evaluated for Manning’s needs.

6. Finally, the procurement method needs to be identified and integrated into the final design, specification, fabrication, and installation. Some communities choose to only contract for the sign panel fabrication and take on the installation themselves. Other more turn-key options can be utilized. Each option will result in a slightly different process and involvement by design professionals and field installation specialists.

7. Utilize MUTCD recommendation for ground mounted break-away poles.

8. Signs should utilize 3M reflectivity to increase night time visibility.

Highway 141 - Opinion of Probable Cost

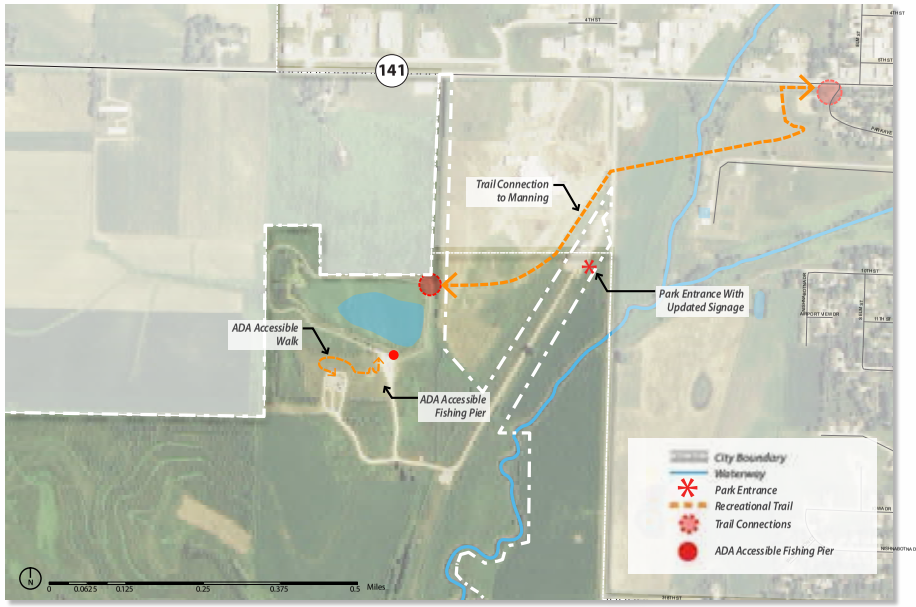
Description	Quantity	Unit	Unit Cost	Extended Amount
SITE IMPROVEMENTS				
Free Standing Artwork	4	EA	$3,500.00	$ 14,000.00
Pole Mounted Sign	6	EA	$3,000.00	$18,000.00
SUB-TOTAL				**$ 32,000.00**
MOBILIZATION/GENERAL CONDITIONS - 5%				**$ 1,600.00**
CONTINGENCY - 15%				**$ 4,800.00**
DESIGN AND ENGINEERING - 10%				**$ 3,200.00**
Inflation - 3%				**$ 960.00**
ESTIMATED CONSTRUCTION COST				**$ 42,560.00**

Great Western Park Improvements

Great Western Park provides active recreation opportunities for Manning, however, the park entrance is not clearly marked and is easy to miss, often mistaken for a private driveway. The concept plan proposes new, improved signage to be placed at the entrance beyond the right-of-way. The sign should feature Manning's new identity branding and be constructed from durable materials like etched aluminum and corten steel. During the special places mapping assessment, committee members noted that there are no existing trail routes from the park to the community. Creating a dedicated trail that connects to the community is a top priority. The proposed trail would connect the northeast corner of the existing lake trail then follow the trail by the MRHC, before crossing West Street to eventually connect with the trail at the community baseball fields.

Additional improvements to Great Western Park include the creation of an accessible walkway from the campsites to the shelter and restrooms, and creating a larger accessible fishing pier. Current access is less than ideal, forcing campers to either walk down the steep hill, or walk along the roadway. Creating an accessible walkway will improve safety and the park experience overall.

The existing fishing pier at Great Western Park is narrow and does not meet accessibility requirements based on its current configuration. Serious erosion of the path creates a large step and is an impediment to access. The narrow dimensions of the pier limits the number of users that can use it at one time. Proposed improvements include widening the pier to a minimum of 10 feet, extending the accessible walkway to the pier, and adding a 4" wheel stop edge on the pier to meet accessibility requirements.



Map Source: Iowa Department of Natural Resources, "Natural Resources Geographic Information Systems Library," accessed April 2014, http://www.igsb.uiowa.edu/nrgislibx/.

View South, Existing Conditions at Great Western Park

View East, Proposed Signage at Great Western Park

Great Western Park Improvements

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Manning

Great Western Park

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Great Western Park - Opinion of Probable Cost

Description	Quantity	Unit	Unit Cost	Extended Amount
HARDSCAPE				
H.M.A. Trail - connection to Hospital	1,716	SY	$35.00	$ 60,060.00
Concrete Paving - Walks	5,000	SF	$5.00	$ 25,000.00
SITE IMPROVEMENTS				
Fishing Pier	420	SF	$40.00	$ 16,800.00
Entrance Signage	1	EA	$9,500	$ 9,500.00
Mileage Marker Signs	15	EA	50	$ 750.00
SUB-TOTAL				**$ 112,110.00**
MOBILIZATION/GENERAL CONDITIONS - 5%				**$ 5,605.50**
CONTINGENCY - 15%				**$ 16,816.50**
DESIGN AND ENGINEERING - 10%				**$ 11,211.00**
Inflation - 3%				**$ 3,363.30**
ESTIMATED CONSTRUCTION COST				**$ 149,106.30**

*Contact your local DOT district representative for coordination and approvals if sign is located within the ROW.

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Trestle Park

The City of Manning is in the process of procuring the former mill site located at the corner of Julia and Front Streets. Developing this land is a top priority for the committee. This would include facilities to accommodate residents, RV and tent camping, as well as pedestrians and cyclists along the proposed trail. Major programmatic elements would include: a new park shelter, nature play area, sand volleyball courts, cornhole, and river access.

The proposed concept for the park relies heavily on the history of the site with the existing Trestle Bridge being a key element. A new park shelter will model an old rail depot, a new park kiosk will take the shape of a train engine, and IOWA artwork will carry out this historic theme. The feature of Trestle Park will boast a nature play area including water and sand play. The nature play will embrace unorganized play and offer elements that exercise a child's fine and gross motor skills along with their creativity and imagination. In addition sand volleyball and cornhole will be located across the roadway adjacent to the nature play for all to enjoy.

Trail connections to the community and to the south along the West Nishnabotna River provide pedestrian and cyclist access throughout the park. A 10'-12' wide paved trail would be ideal for pedestrian and cyclist use, with a mow strip on either side of the trail to increase safety.

The park will includes native prairie plantings, overstory trees, and river access. RV and tent camping is located along the river with a large loop drive, individual campsites, trail connections, and river access. Shade trees are proposed throughout the park to both create "rooms" within the park and to screen views.

Plan View, Trestle Park

Existing View North, Trestle Bridge and park area to the right.

Trestle Park

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Manning

Trestle Park Concept Plan

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Trestle Park - cont.

The park welcomes visitors with the IOWA artwork along Laura Street and a large open lawn. The view is framed with the proposed shelter and the Trestle Bridge. Once beyond the shelter a large nature play area is proposed with several opportunities for creative play. Each element requires further design detailing and needs to comply with playground safety standards.

- Sand play: A fine motor skill and activity that allows the child to create endless artwork.
- Lazy stream and rock bubbler: The rock bubbler with an activated timer switch allows water to flow down the stream. Water gates, draw gates, and stones allow the children to modify the flow of water and see how water reacts when they force new conditions.
- Splash pad: This area will showcase water jets, streams, and sprays available on an activated timer system to reduce water waste. This may require rubberized surfacing depending on the type of water play installed.
- Rolling hills: Berms of varying shapes with 3:1 slope ratios allow children to roll, climb, and utilize imaginative play.
- Balance and log play: Large logs or timbers elevated to varying heights offer a challenge to children to climb, weave, and play while balancing and using gross motor skills.
- Exercise area: Outdoor pull up bars, cycling, strength, and cardio options are all available. These provide similar opportunities for exercise as a typical fitness center.
- Wilderness climb: Large boulders, logs, and ropes make for great opportunities to climb and test the full range of motion. These elements can be prefabricated or may be developed depending on the type of climbing application the community desires.
- Hillslide: Located at the top of the largest berm the hillslide allows for a fun ride down the slope and could range from 6-7' in height. Resilient surfacing will be required at the base of the slide exit.
- Stump climbers: Stumps arranged within the slope of the hillslide challenge and provide quick access to the top.
- Labyrinth: A winding path from both sides of the nature play come together at the center allowing children to follow a winding path. The center may have a sculpture or artwork for interaction.
- Look-out towers: The towers are elevated within the tree canopy and offer enclosed connections. The towers challenge large motor skills, while offering opportunities for creative play.

Plan View, Nature Play

View South, Proposed Nature Play

View North, Proposed Shelter and Open Lawn Showcasing View of the Trestle Bridge

Trestle Park, Nature Play & Shelter

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Manning

Trestle Park Nature Play & Shelter

Landscape Architect and Intern: RDG Planning & Design - Jen Cross, PLA, ASLA and Ashleigh Gildon

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development Summer 2016

Trestle Park Phase One - Opinion of Probable Cost

Description	Quantity	Unit	Unit Cost	Extended Amount
PHASE ONE				
GENERAL REQUIREMENTS				
Traffic Control	1	LS	$5,000.00	$ 5,000.00
DEMOLITION				
REMOVAL				
Temporary Erosion Control	1	LS	$10,000.00	$ 10,000.00
HARDSCAPE				
Concrete Paving- Roadway	18,433	SF	$6.00	$ 110,598.00
Concrete Paving - Walks	9,666	SF	$5.00	$ 48,327.50
Concrete Paving - Parking Lot	2,578	SF	$5.00	$ 12,890.00
Concrete Paving - Curb & Gutter	1,306	LF	$6.00	$ 7,836.00
Pavement Markings - Parking Lines	53	LF	$0.50	$ 26.50
UTILITIES				
Electrical Service	400	LF	$15.00	$ 6,000.00
Imported soil	500	CY	$12.00	$ 6,000.00
Utilities - Water Line	400	LF	$50.00	$ 20,000.00
Utilities, Sewer	400	LF	$40.00	$ 16,000.00
Utilities Sanitary	400	LF	$65.00	$ 26,000.00
Site Lighting	15	EA	$8,000.00	$ 120,000.00
LANDSCAPE				
Amended Soil For Shrubs & Perennials	177	CY	$25.00	$ 4,425.00
Deciduous Shade Trees - 2" Caliper	32	EA	$350.00	$ 11,200.00
Ornamental Trees	10	EA	$250.00	$ 2,500.00
Shrubs & Perennials	3,135	SF	$18.00	$ 56,430.00
Sand for Volleyball Courts & Cornhole	4,230	SF	$4.00	$ 16,920.00
Seed Mix & Prep	0.5	AC	$605.00	$ 302.50
Sod	8,941	SY	$2.50	$ 22,352.50
NATURE PLAY				
PLAY AREA 1 - LAZY STREAM				
Rock Bubbler	1	EA	$750.00	$ 750.00
Stream - Colored Concrete	633	SF	$8.00	$ 5,064.00
Boulders	25	EA	$350.00	$ 8,750.00
Wood Decking	60	SF	$25	$ 1,500.00
SPLASH PAD				
Spray Jets	25	EA	$2,000.00	$ 50,000.00
Water Play Surfacing w/ Conc Subbase	1,258	SF	$16.00	$ 20,128.00
SAND PLAY				
Sand	361	SF	$4.00	$ 1,444.00
PLAY AREA 2 - OUTDOOR CLIMB / EXERCISE AREA				
Rubberized Surfacing	1,868	SF	$16.00	$ 29,888.00
Logs	10	EA	$400.00	$ 4,000.00
Log Balance Beams	4	EA	$800.00	$ 3,200.00
Chin-Up Bar	1	LS	$500.00	$ 500.00
Exercise stations	4	EA	$2,500.00	$ 10,000.00
Climbing Boulders + Install	1	LS	$38,875.00	$ 38,875.00
Boulders	10	EA	$350.00	$ 3,500.00
PLAY AREA 3 - HILLSLIDE				
Stumps	75	EA	$40.00	$ 3,000.00
Hillslide	1	EA	$7,000.00	$ 7,000.00
Rolling Hills	72	CY	$15.00	$ 1,080.00
Logs	1	LS	$1,500.00	$ 1,500.00
Rubberized Surfacing	225	SF	$16.00	$ 3,600.00
PLAY AREA 4 - LOOKOUT TOWERS				
Colored Concrete	512	SF	$8.00	$ 4,096.00
Lookout Towers	150	SF	$100.00	$ 15,000.00
Mulch - Shredded Hardwood	944	CY	$35.00	$ 33,040.00
Net Climbers	3	EA	$5,000.00	$ 15,000.00
STRUCTURES				
Shelter with Restroom Facilities	2,450	SF	$140.00	$ 343,000.00
Train Kiosk	1	ALLOW	$15,000	$ 15,000.00
SITE IMPROVEMENTS				
Trash Receptacles	6	EA	$1,500.00	$ 9,000.00
Picnic Tables	10	EA	$2,500	$ 25,000.00
Benches	4	EA	$1,800	$ 7,200.00
SUB-TOTAL - Base Bid				**$ 1,162,923.00**
MOBILIZATION/GENERAL CONDITIONS - 5%				**$ 58,146.15**
CONTINGENCY - 15%				**$ 58,146.15**
DESIGN AND ENGINEERING - 10%				**$ 58,146.15**
Inflation - 3%				**$ 58,146.15**
ESTIMATED CONSTRUCTION COST				**$ 1,395,507.60**

Trestle Park - Conceptual Layout

Trestle Park - Nature Play Conceptual Layout

Trestle Park Phase Two - Opinion of Probable Cost

Description	Quantity	Unit	Unit Cost	Extended Amount
PHASE TWO - CAMPGROUNDS				
GENERAL REQUIREMENTS				
Seed Mix & Prep	2	AC	$605.00	$ 1,210.00
HARDSCAPE				
Concrete Paving- Roadway	37,085	SF	$6.00	$ 222,510.00
Concrete Paving - Walks	6,436	SF	$5.00	$ 32,180.00
Concrete Paving - Parking Lot	1000	SF	$5.00	$ 5,000.00
Concrete Paving - Curb & Gutter	3,625	LF	$6.00	$ 21,750.00
UTILITIES				
Utilities, Electric	800	LF	$15.00	$ 12,000.00
Site Lighting	15	EA	$5,000.00	$ 75,000.00
LANDSCAPE				
Amended Soil For Shrubs	372	CY	$25.00	$ 9,300.00
Deciduous Shade Trees - 2" Caliper	50	EA	$350.00	$ 17,500.00
Shrubs	50	EA	$35.00	$ 1,750.00
Perennials	500	SF	$18.00	$ 9,000.00
Sod	7,267	SY	$2.50	$ 18,167.50
SITE IMPROVEMENTS				
Trash Receptacles	6	EA	$1,500.00	$ 9,000.00
Picnic Tables	10	EA	$2,500	$ 25,000.00
SUB-TOTAL				**$ 459,367.50**
MOBILIZATION/GENERAL CONDITIONS - 5%				**$ 22,968.38**
CONTINGENCY - 15%				**$ 68,905.13**
DESIGN AND ENGINEERING - 10%				**$ 45,936.75**
Inflation - 3%				**$ 13,781.03**
ESTIMATED CONSTRUCTION COST				**$ 610,958.78**

Implementation Strategies

The visioning program is just the beginning of the planning process for the implementation of projects that will contribute to an enhanced quality of life in Manning. Although there is value in data gathering, analysis, conclusions, and recommendations, the greatest value is providing the residents of Manning with the opportunity to look at their community from different perspectives and to motivate future change. It is the design team's intent to provide the community with a framework for significant future development and enhancement of community resources.

Key Recommendations: Based on economic return and increased quality of life, it is recommended that projects be approached individually, keeping in mind that some may run concurrently and others may require phasing.

- **Main Street Improvements:** Improvements in Manning's business district from Highway 141 to 2nd Street not only beautifies the community but also poses an opportunity for economic gain by supporting existing businesses and encouraging a new tax base. Creating a welcoming streetscape invites community members and visitors alike to spend time in the community and in turn help grow local businesses. This project holds a larger investment and could be implemented in phases or per block, as the community receives funding. Opportunities through the Main Street program or other grant programs may be available to match funds.

- **Downtown Greenspace:** Creating an entry point onto Main Street opens up the business district of Manning and encourages citizens to explore downtown. The development of a vertical façade on the corner provides wayfinding and the opportunity for additional community branding. It could be implemented in phases as the community receives funding. Coordination with hospital personnel is essential in the implementation of this project. The opportunity to partner with the Manning Regional Health Center will provide benefits to its current residents and the community.

- **Highway 141 Improvements:** The logistics of working in the right-of-way and negotiating access to private property will require careful consideration and collaboration with the IDOT. Signage is vital to a community's reinforcement of identity and showcasing its assets to visitors. Implementing pole mounted signage in key locations will show progress and is an easy change for many communities.

- **Great Western Park Improvements:** Great Western Park is a large community asset and offers recreational opportunities with its connecting trail, fishing, camping, and shelter. Improvements to this park will take coordination as it is a county park rather than a city owned entity. Implementing a sign within the city limits at the park entrance will help increase the visibility of the park. Working with Carroll County to make the park more accessible with the pier and connection to the campgrounds and trails is a possible candidate for REAP funding.

- **Trestle Park:** This improvement has been a long-time goal of many community residents. Creation of a park offers opportunities to promote health and wellness within Manning. The goal to create a park that references the heritage of the rail line that runs along the north property line gives a unique character to this city park. Natural play provides learning opportunities for children of all ages and integrating this into the park will create a unique experience. Implementing natural play can be done in phases, or to varying degrees of intensity based on funding available. The connection to the river and camping may provide opportunities for additional grant funding. Extending the trail network and connecting to adjacent neighborhoods also provides opportunities for additional funding. Trestle Park is a gem that many communities will aspire to have in their own communities.

Available Resources

There are many creative ways that communities can raise the resources necessary to fund and implement projects. The following list is a compilation of various sources and opportunities for funding the projects conceptualized during the visioning process. This list is not all-inclusive; it is meant to serve as a tool to assist in brainstorming ideas.

Funding Opportunities

- Grants
- Partnerships (private and public)
- Trusts and endowments
- Fund-raising and donations
- Memorials
- Volunteer labor
- Low-interest loans
- Implementation of project in phases

Funding Sources

- Iowa Department of Transportation
- Iowa Department of Natural Resources
- Iowa Department of Education
- Iowa Department of Economic Development
- Utility companies
- Trees Forever

Grant Programs

- Alliant Energy and Trees Forever Branching Out Program
- Federal Transportation Enhancement Act (TEA-21)
- Federal Surface Transportation Program (STP)
- Iowa Clean Air Attainment Program (ICAAP)
- Iowa DOT/DNR Fund Iowa
- Iowa DOT Iowa's Living Roadways Projects Program
- Iowa DOT Living Roadways Trust Fund Program
- Iowa DOT Pedestrian Curb Ramp Construction Program
- Iowa DOT Statewide Transportation Enhancement Funding
- Iowa DNR Recreation Infrastructure Program
- Land and Water Conservation Fund
- National Recreational Trails Program
- Pheasants Forever
- Revitalization Assistance for Community Improvement (RACI) Grant Program
- State Recreational Trails Program

Appendix A

Common Contacts for Community Visioning

Signing

- General questions: District 1 Planner – Mike Clayton
  515-239-1202 or mike.clayton@dot.iowa.gov
- Specific types of signing: Office of Traffic & Safety at
  http://www.iowadot.gov/iowaroadsigns/index.aspx

Funding

- General questions: District 1 Planner – Mike Clayton
  515-239-1202 or mike.clayton@dot.iowa.gov

- Federal and State Rec Trails Program:
  http://www.iowadot.gov/systems_planning/fedstate_rectrails.htm
  Yvonne Diller (Office of Systems Planning)
  515-239-1252 or yvonne.diller@dot.iowa.gov

- Statewide Transportation Alternatives Program:
  http://www.iowadot.gov/systems_planning/trans_enhance.htm
  Pam Lee (Office of Systems Planning)
  515-239-1810 or pamella.lee@dot.iowa.gov

  Safe Routes to Schools: http://www.iowadot.gov/saferoutes
  Deb Arp (Office of Systems Planning)
  515-239-1681 or debra.arp@dot.iowa.gov

- Regional Transportation Enhancement Program: Shirley Helgevold (MIDAS Council of Governments) 515-576-7183, ext. 212 or shelgevold@midascog.net

Roadside Vegetation

- Mark Masteller (Office of Design)
  515-239-1424 or mark.masteller@dot.iowa.gov
  or
  Evelyn O'Loughlin (Office of Design)
  515-239-1078 or evelyn.oloughlin@dot.iowa.gov

Appendix B

Please refer to full IDOT funding guide at:
http://www.iowadot.gov/pol_leg_services/Funding-Guide.pdf

Included in this appendix is the list of programs available, more information is located at the link above.

Guide to
Transportation Funding Programs

of interest to local governments and others

In this document you will find information regarding state and federal programs that provide transportation project funding of interest to local governments and other entities. This information is intended to serve as a guide for preliminary funding searches. For more detail, we encourage you to contact the Iowa Department of Transportation (DOT) office listed for each program. (In some cases, the DOT district office or a Regional Planning Affiliation/Metropolitan Planning Organization is the recommended contact – maps and information for your area can be found beginning on page 81.)

Please note: the FAST Act, a surface transportation reauthorization bill passed in Dec. 2015, made several changes to funding programs. While this document incorporates many of the changes, USDOT guidance has not yet been received for some programs. You are advised to contact the offices listed for the most current information.

As always, to help you find as many potential funding sources as possible, we have included some programs under more than one heading.

April 2016

IOWA DOT
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IOWA DOT

Office of Traffic and Safety

2A-2

Standards and Guidelines - MUTCD

Traffic and Safety Manual
Chapter 2
Signing
Originally Issued: 12-17-01
Revised:11-05-15

The Manual on Uniform Traffic Control Devices (MUTCD) contains the basic principles, guidance and standards that control the use of traffic signs for all streets and highways open to the public. The MUTCD provides standards and guidance on the design, placement, maintenance and uniformity of traffic signs. The Iowa DOT currently uses the 2009 MUTCD except for exceptions noted in the Administrative Rule Chapter 761, Section 130.1 (1).

Signs should be designed to command attention, provide a clear message, permit adequate time to respond and command respect. The combination of sign size, shape, color, contrast, composition, simplicity of the message, legibility, and uniformity must be used to achieve this goal.

Many traffic signs are a standard shape, size and color and shown in the "Standard Highway Signs" book. All symbols and colors for signs not shown in the "Standard Highway Signs" book shall follow the procedures for experimentation and change. Word message signs to notify road users of special regulations or to warn road users of a situation that may not be readily apparent may be developed without the need for experimentation.

Uniformity of traffic signs serves many purposes and is important. Uniformity aids in recognition and understanding, reducing perception and reaction times. Uniformity assists the motorists, police officers, and traffic courts by providing a common interpretation to everyone. Uniformity means treating similar situations in a similar manner. The use of uniform traffic signs does not by itself lead to uniformity. The use of a standard traffic sign where it is not appropriate is as much of a problem as the use of a nonstandard sign. This may even be worse as the use of signs where they are not needed may lead to disrespect for those locations where the sign is needed and appropriate.

Part 1A and Part 2A of the MUTCD provide the general standards and guidance for traffic control devices and traffic signs. Part 2 of the MUTCD also shows many typical standard signs approved for use on the highway.

Additional signing guidelines and details specific to the Iowa Department of Transportation may be found in the SI-Series Standard Road Plans.

PART 2
SIGNS

CHAPTER 2A. GENERAL

Section 2A.01 Function and Purpose of Signs

Support:

01 This Manual contains Standards, Guidance, and Options for the signing of all types of highways, and private roads open to public travel. The functions of signs are to provide regulations, warnings, and guidance information for road users. Words, symbols, and arrows are used to convey the messages. Signs are not typically used to confirm rules of the road.

02 Detailed sign requirements are located in the following Chapters of Part 2:

Chapter 2B — Regulatory Signs, Barricades, and Gates
Chapter 2C — Warning Signs and Object Markers
Chapter 2D — Guide Signs for Conventional Roads
Chapter 2E — Guide Signs for Freeways and Expressways
Chapter 2F — Toll Road Signs
Chapter 2G — Preferential and Managed Lane Signs
Chapter 2H — General Information Signs
Chapter 2I — General Service Signs
Chapter 2J — Specific Service (Logo) Signs
Chapter 2K — Tourist-Oriented Directional Signs
Chapter 2L — Changeable Message Signs
Chapter 2M — Recreational and Cultural Interest Area Signs
Chapter 2N — Emergency Management Signs

Standard:

03 **Because the requirements and standards for signs depend on the particular type of highway upon which they are to be used, the definitions for freeway, expressway, conventional road, and special purpose road given in Section 1A.13 shall apply in Part 2.**

Section 2A.02 Definitions

Support:

01 Definitions and acronyms that are applicable to signs are given in Sections 1A.13 and 1A.14.

Section 2A.03 Standardization of Application

Support:

01 It is recognized that urban traffic conditions differ from those in rural environments, and in many instances signs are applied and located differently. Where pertinent and practical, this Manual sets forth separate recommendations for urban and rural conditions.

Guidance:

02 *Signs should be used only where justified by engineering judgment or studies, as provided in Section 1A.09.*

03 *Results from traffic engineering studies of physical and traffic factors should indicate the locations where signs are deemed necessary or desirable.*

04 *Roadway geometric design and sign application should be coordinated so that signing can be effectively placed to give the road user any necessary regulatory, warning, guidance, and other information.*

Standard:

05 **Each standard sign shall be displayed only for the specific purpose as prescribed in this Manual. Determination of the particular signs to be applied to a specific condition shall be made in accordance with the provisions set forth in Part 2. Before any new highway, private road open to public travel (see definition in Section 1A.13), detour, or temporary route is opened to public travel, all necessary signs shall be in place. Signs required by road conditions or restrictions shall be removed when those conditions cease to exist or the restrictions are withdrawn.**

Section 2A.04 Excessive Use of Signs

Guidance:

01 *Regulatory and warning signs should be used conservatively because these signs, if used to excess, tend to lose their effectiveness. If used, route signs and directional guide signs should be used frequently because their use promotes efficient operations by keeping road users informed of their location.*

Section 2A.05 Classification of Signs

Standard:

01 **Signs shall be defined by their function as follows:**

A. Regulatory signs give notice of traffic laws or regulations.
B. Warning signs give notice of a situation that might not be readily apparent.
C. Guide signs show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information.

Support:

02 Object markers are defined in Section 2C.63.

Section 2A.06 Design of Signs

Support:

01 This Manual shows many typical standard signs and object markers approved for use on streets, highways, bikeways, and pedestrian crossings.

02 In the specifications for individual signs and object markers, the general appearance of the legend, color, and size are shown in the accompanying tables and illustrations, and are not always detailed in the text.

03 Detailed drawings of standard signs, object markers, alphabets, symbols, and arrows (see Figure 2D-2) are shown in the "Standard Highway Signs and Markings" book. Section 1A.11 contains information regarding how to obtain this publication.

04 The basic requirements of a sign are that it be legible to those for whom it is intended and that it be understandable in time to permit a proper response. Desirable attributes include:

A. High visibility by day and night; and
B. High legibility (adequately sized letters, symbols, or arrows, and a short legend for quick comprehension by a road user approaching a sign).

05 Standardized colors and shapes are specified so that the several classes of traffic signs can be promptly recognized. Simplicity and uniformity in design, position, and application are important.

Standard:

06 **The term legend shall include all word messages and symbol and arrow designs that are intended to convey specific meanings.**

07 **Uniformity in design shall include shape, color, dimensions, legends, borders, and illumination or retroreflectivity.**

08 **Standardization of these designs does not preclude further improvement by minor changes in the proportion or orientation of symbols, width of borders, or layout of word messages, but all shapes and colors shall be as indicated.**

09 **All symbols shall be unmistakably similar to, or mirror images of, the adopted symbol signs, all of which are shown in the "Standard Highway Signs and Markings" book (see Section 1A.11). Symbols and colors shall not be modified unless otherwise provided in this Manual. All symbols and colors for signs not shown in the "Standard Highway Signs and Markings" book shall follow the procedures for experimentation and change described in Section 1A.10.**

Option:

10 Although the standard design of symbol signs cannot be modified, the orientation of the symbol may be changed to better reflect the direction of travel, if appropriate.

Standard:

11 **Where a standard word message is applicable, the wording shall be as provided in this Manual.**

12 **In situations where word messages are required other than those provided in this Manual, the signs shall be of the same shape and color as standard signs of the same functional type.**

Option:

13 State and local highway agencies may develop special word message signs in situations where roadway conditions make it necessary to provide road users with additional regulatory, warning, or guidance information, such as when road users need to be notified of special regulations or warned about a situation that might not be readily apparent. Unlike colors that have not been assigned or symbols that have not been approved for signs, new word message signs may be used without the need for experimentation.

Standard:

14 **Except as provided in Paragraph 16 and except for the Carpool Information (D12-2) sign (see Section 2I.11), Internet addresses and e-mail addresses, including domain names and uniform resource locators (URL), shall not be displayed on any sign, supplemental plaque, sign panel (including logo sign panels on Specific Service signs), or changeable message sign.**

Guidance:

15 *Unless otherwise provided in this Manual for a specific sign, and except as provided in Paragraph 16, telephone numbers of more than four characters should not be displayed on any sign, supplemental plaque, sign panel (including logo sign panels on Specific Service signs), or changeable message sign.*

Option:

16 Internet addresses, e-mail addresses, or telephone numbers with more than four characters may be displayed on signs, supplemental plaques, sign panels, and changeable message signs that are intended for viewing only by pedestrians, bicyclists, occupants of parked vehicles, or drivers of vehicles on low-speed roadways where engineering judgment indicates that an area is available for drivers to stop out of the traffic flow to read the message.

Standard:

17 **Pictographs (see definition in Section 1A.13) shall not be displayed on signs except as specifically provided in this Manual. Pictographs shall be simple, dignified, and devoid of any advertising. When used to represent a political jurisdiction (such as a State, county, or municipal corporation) the pictograph shall be the official designation adopted by the jurisdiction. When used to represent a college or university, the pictograph shall be the official seal adopted by the institution. Pictorial representations of university or college programs shall not be permitted to be displayed on a sign.**

Section 2A.07 Retroreflectivity and Illumination

Support:

01 There are many materials currently available for retroreflection and various methods currently available for the illumination of signs and object markers. New materials and methods continue to emerge. New materials and methods can be used as long as the signs and object markers meet the standard requirements for color, both by day and by night.

Standard:

02 **Regulatory, warning, and guide signs and object markers shall be retroreflective (see Section 2A.08) or illuminated to show the same shape and similar color by both day and night, unless otherwise provided in the text discussion in this Manual for a particular sign or group of signs.**

03 **The requirements for sign illumination shall not be considered to be satisfied by street or highway lighting.**

Option:

04 Sign elements may be illuminated by the means shown in Table 2A-1.

05 Retroreflection of sign elements may be accomplished by the means shown in Table 2A-2.

06 Light Emitting Diode (LED) units may be used individually within the legend or symbol of a sign and in the border of a sign, except for changeable message signs, to improve the conspicuity, increase the legibility of sign legends and borders, or provide a changeable message.

Table 2A-1. Illumination of Sign Elements

Means of Illumination	Sign Element to be Illuminated
Light behind the sign face	• Symbol or word message • Background • Symbol, word message, and background (through a translucent material)
Attached or independently mounted light source designed to direct essentially uniform illumination onto the sign face	• Entire sign face
Light emitting diodes (LEDs)	• Symbol or word message • Portions of the sign border
Other devices, or treatments that highlight the sign shape, color, or message: Luminous tubing Fiber optics Incandescent light bulbs Luminescent panels	• Symbol or word message • Entire sign face

Table 2A-2. Retroreflection of Sign Elements

Means of Retroreflection	Sign Element
Reflector “buttons” or similar units	Symbol Word message Border
A material that has a smooth, sealed outer surface over a microstructure that reflects light	Symbol Word message Border Background

Standard:

07 **Except as provided in Paragraphs 11 and 12, neither individual LEDs nor groups of LEDs shall be placed within the background area of a sign.**

08 **If used, the LEDs shall have a maximum diameter of 1/4 inch and shall be the following colors based on the type of sign:**

- **A. White or red, if used with STOP or YIELD signs.**
- **B. White, if used with regulatory signs other than STOP or YIELD signs.**
- **C. White or yellow, if used with warning signs.**
- **D. White, if used with guide signs.**
- **E. White, yellow, or orange, if used with temporary traffic control signs.**
- **F. White or yellow, if used with school area signs.**

09 **If flashed, all LED units shall flash simultaneously at a rate of more than 50 and less than 60 times per minute.**

10 **The uniformity of the sign design shall be maintained without any decrease in visibility, legibility, or driver comprehension during either daytime or nighttime conditions.**

Option:

11 For STOP and YIELD signs, LEDs may be placed within the border or within one border width within the background of the sign.

12 For STOP/SLOW paddles (see Section 6E.03) used by flaggers and the STOP paddles (see Section 7D.05) used by adult crossing guards, individual LEDs or groups of LEDs may be used.

Support:

13 Other methods of enhancing the conspicuity of standard signs are described in Section 2A.15.

14 Information regarding the use of retroreflective material on the sign support is contained in Section 2A.21.

Section 2A.08 Maintaining Minimum Retroreflectivity

Support:

01 Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.22).

Standard:

02 **Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-3.**

Support:

03 Compliance with the Standard in Paragraph 2 is achieved by having a method in place and using the method to maintain the minimum levels established in Table 2A-3. Provided that an assessment or management method is being used, an agency or official having jurisdiction would be in compliance with the Standard in Paragraph 2 even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time.

Guidance:

04 *Except for those signs specifically identified in Paragraph 6, one or more of the following assessment or management methods should be used to maintain sign retroreflectivity:*

- *A. Visual Nighttime Inspection—The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.*
- *B. Measured Sign Retroreflectivity—Sign retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.*
- *C. Expected Sign Life—When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.*
- *D. Blanket Replacement—All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.*

Table 2A-3. Minimum Maintained Retroreflectivity Levels[1]

Sign Color	Sheeting Type (ASTM D4956-04)				Additional Criteria
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Post-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			[2]
	Y*; O*	Y ≥ 75; O ≥ 75			[3]
White on Red	W ≥ 35; R ≥ 7				[4]
Black on White	W ≥ 50				–

[1] The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.
[2] For text and fine symbol signs measuring at least 48 inches and for all sizes of bold symbol signs
[3] For text and fine symbol signs measuring less than 48 inches
[4] Minimum sign contrast ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)
* This sheeting type shall not be used for this color for this application.

Bold Symbol Signs

• W1-1,2 – Turn and Curve • W1-3,4 – Reverse Turn and Curve • W1-5 – Winding Road • W1-6,7 – Large Arrow • W1-8 – Chevron • W1-10 – Intersection in Curve • W1-11 – Hairpin Curve • W1-15 – 270 Degree Loop • W2-1 – Cross Road • W2-2,3 – Side Road • W2-4,5 – T and Y Intersection • W2-6 – Circular Intersection • W2-7,8 – Double Side Roads	• W3-1 – Stop Ahead • W3-2 – Yield Ahead • W3-3 – Signal Ahead • W4-1 – Merge • W4-2 – Lane Ends • W4-3 – Added Lane • W4-5 – Entering Roadway Merge • W4-6 – Entering Roadway Added Lane • W6-1,2 – Divided Highway Begins and Ends • W6-3 – Two-Way Traffic • W10-1,2,3,4,11,12 – Grade Crossing Advance Warning	• W11-2 – Pedestrian Crossing • W11-3,4,16-22 – Large Animals • W11-5 – Farm Equipment • W11-6 – Snowmobile Crossing • W11-7 – Equestrian Crossing • W11-8 – Fire Station • W11-10 – Truck Crossing • W12-1 – Double Arrow • W16-5P,6P,7P – Pointing Arrow Plaques • W20-7 – Flagger • W21-1 – Worker

Fine Symbol Signs (symbol signs not listed as bold symbol signs)

Special Cases

- W3-1 – Stop Ahead: Red retroreflectivity ≥ 7
- W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35
- W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7
- W3-5 – Speed Reduction: White retroreflectivity ≥ 50
- For non-diamond shaped signs, such as W14-3 (No Passing Zone), W4-4P (Cross Traffic Does Not Stop), or W13-1P,2,3,6,7 (Speed Advisory Plaques), use the largest sign dimension to determine the proper minimum retroreflectivity level.

E. Control Signs—Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.

F. Other Methods—Other methods developed based on engineering studies can be used.

Support:

05 Additional information about these methods is contained in the 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see Section 1A.11).

Option:

06 Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines described in this Section:

A. Parking, Standing, and Stopping signs (R7 and R8 series)
B. Walking/Hitchhiking/Crossing signs (R9 series, R10-1 through R10-4b)
C. Acknowledgment signs
D. All signs with blue or brown backgrounds
E. Bikeway signs that are intended for exclusive use by bicyclists or pedestrians

Section 2A.09 Shapes

Standard:

01 **Particular shapes, as shown in Table 2A-4, shall be used exclusively for specific signs or series of signs, unless otherwise provided in the text discussion in this Manual for a particular sign or class of signs.**

Table 2A-4. Use of Sign Shapes

Shape	Signs
Octagon	Stop*
Equilateral Triangle (1 point down)	Yield*
Circle	Grade Crossing Advance Warning*
Pennant Shape/Isosceles Triangle (longer axis horizontal)	No Passing*
Pentagon (pointed up)	School Advance Warning Sign (squared bottom corners)* County Route Sign (tapered bottom corners)*
Crossbuck (two rectangles in an "X" configuration)	Grade Crossing*
Diamond	Warning Series
Rectangle (including square)	Regulatory Series Guide Series** Warning Series
Trapezoid	Recreational and Cultural Interest Area Series National Forest Route Sign

* This sign shall be exclusively the shape shown.

** Guide series includes general service, specific service, tourist-oriented directional, general information, recreational and cultural interest area, and emergency management signs.

Section 2A.10 Sign Colors

Standard:

01 **The colors to be used on standard signs and their specific use on these signs shall be as provided in the applicable Sections of this Manual. The color coordinates and values shall be as described in 23 CFR, Part 655, Subpart F, Appendix.**

Support:

02 As a quick reference, common uses of sign colors are shown in Table 2A-5. Color schemes on specific signs are shown in the illustrations located in each appropriate Chapter.

03 Whenever white is specified in this Manual or in the "Standard Highway Signs and Markings" book (see Section 1A.11) as a color, it is understood to include silver-colored retroreflective coatings or elements that reflect white light.

04 The colors coral and light blue are being reserved for uses that will be determined in the future by the Federal Highway Administration.

05 Information regarding color coding of destinations on guide signs, including community wayfinding signs, is contained in Chapter 2D.

Option:

06 The approved fluorescent version of the standard red, yellow, green, or orange color may be used as an alternative to the corresponding standard color.

Section 2A.11 Dimensions

Support:

01 The "Standard Highway Signs and Markings" book (see Section 1A.11) prescribes design details for up to five different sizes depending on the type of traffic facility, including bikeways. Smaller sizes are designed to be used on bikeways and some other off-road applications. Larger sizes are designed for use on freeways and expressways, and can also be used to enhance road user safety and convenience on other facilities, especially on multi-lane divided highways and on undivided highways having five or more lanes of traffic and/or high speeds. The intermediate sizes are designed to be used on other highway types.

Standard:

02 **The sign dimensions prescribed in the sign size tables in the various Parts and Chapters in this Manual and in the "Standard Highway Signs and Markings" book (see Section 1A.11) shall be used unless engineering judgment determines that other sizes are appropriate. Except as provided in Paragraph 3, where engineering judgment determines that sizes smaller than the prescribed dimensions are appropriate for use, the sign dimensions shall not be less than the minimum dimensions specified in this Manual. The sizes shown in the Minimum columns that are smaller than the sizes shown in the Conventional Road columns in the various sign size tables in this Manual shall only be used on low-speed roadways, alleys, and private roads open to public travel where the reduced legend size would be adequate for the regulation or warning or where physical conditions preclude the use of larger sizes.**

Option:

03 For alleys with restrictive physical conditions and vehicle usage that limits installation of the Minimum size sign (or the Conventional Road size sign if no Minimum size is shown), both the sign height and the sign width may be decreased by up to 6 inches.

Guidance:

04 *The sizes shown in the Freeway and Expressway columns in the various sign size tables in this Manual should be used on freeways and expressways, and for other higher-speed applications based upon engineering judgment, to provide larger signs for increased visibility and recognition.*

05 *The sizes shown in the Oversized columns in the various sign size tables in this Manual size should be used for those special applications where speed, volume, or other factors result in conditions where increased emphasis, improved recognition, or increased legibility is needed, as determined by engineering judgment or study.*

06 *Increases above the prescribed sizes should be used where greater legibility or emphasis is needed. If signs larger than the prescribed sizes are used, the overall sign dimensions should be increased in 6-inch increments.*

Standard:

07 **Where engineering judgment determines that sizes that are different than the prescribed dimensions are appropriate for use, standard shapes and colors shall be used and standard proportions shall be retained as much as practical.**

Guidance:

08 *When supplemental plaques are installed with larger sized signs, a corresponding increase in the size of the plaque and its legend should also be made. The resulting plaque size should be approximately in the same relative proportion to the larger sized sign as the conventional sized plaque is to the conventional sized sign.*

Section 2A.12 Symbols

Standard:

01 **Symbol designs shall in all cases be unmistakably similar to those shown in this Manual and in the "Standard Highway Signs and Markings" book (see Section 1A.11).**

Support:

02 New symbol designs are adopted by the Federal Highway Administration based on research evaluations to determine road user comprehension, sign conspicuity, and sign legibility.

03 Sometimes a change from word messages to symbols requires significant time for public education and transition. Therefore, this Manual sometimes includes the practice of using educational plaques to accompany new symbol signs.

Guidance:

04 *New warning or regulatory symbol signs not readily recognizable by the public should be accompanied by an educational plaque.*

Option:

05 Educational plaques may be left in place as long as they are in serviceable condition.

06 State and/or local highway agencies may conduct research studies to determine road user comprehension, sign conspicuity, and sign legibility.

Guidance:

07 *Although most standard symbols are oriented facing left, mirror images of these symbols should be used where the reverse orientation might better convey to road users a direction of movement.*

Standard:

08 **A symbol used for a given category of signs (regulatory, warning, or guide) shall not be used for a different category of signs, except as specifically authorized in this Manual.**

09 **Except as provided in Paragraph 11, a recreational and cultural interest area symbol (see Chapter 2M) shall not be used on streets or highways outside of recreational and cultural interest areas.**

10 **A recreational and cultural interest area guide sign symbol (see Chapter 2M) shall not be used on any regulatory or warning sign on any street, road, or highway.**

Option:

11 A recreational and cultural interest area guide sign symbol (see Section 2M.04) may be used on a highway guide sign outside of a recreational and cultural interest area to supplement a comparable word message for which there is no approved symbol for that message in Chapters 2B through 2I or 2N.

Support:

12 Section 2M.07 contains provisions for the use of recreational and cultural interest area symbols to indicate prohibited activities or items in non-road applications.

Section 2A.13 Word Messages

Standard:

01 **Except as provided in Section 2A.06, all word messages shall use standard wording and letters as shown in this Manual and in the "Standard Highway Signs and Markings" book (see Section 1A.11).**

Guidance:

02 *Word messages should be as brief as possible and the lettering should be large enough to provide the necessary legibility distance. A minimum specific ratio of 1 inch of letter height per 30 feet of legibility distance should be used.*

03 *Abbreviations (see Section 1A.15) should be kept to a minimum.*

04 *Word messages should not contain periods, apostrophes, question marks, ampersands, or other punctuation or characters that are not letters, numerals, or hyphens unless necessary to avoid confusion.*

05 *The solidus (slanted line or forward slash) is intended to be used for fractions only and should not be used to separate words on the same line of legend. Instead, a hyphen should be used for this purpose, such as "TRUCKS - BUSES."*

Standard:

06 **Fractions shall be displayed with the numerator and denominator diagonally arranged about the solidus (slanted line or forward slash). The overall height of the fraction is measured from the top of the numerator to the bottom of the denominator, each of which is vertically aligned with the upper and lower ends of the solidus. The overall height of the fraction shall be determined by the height of the numerals within the fraction, and shall be 1.5 times the height of an individual numeral within the fraction.**

Support:

07 The "Standard Highway Signs and Markings" book (see Section 1A.11) contains details regarding the layouts of fractions on signs.

Guidance:

08 *When initials are used to represent an abbreviation for separate words (such as "U S" for a United States route), the initials should be separated by a space of between 1/2 and 3/4 of the letter height of the initials.*

09 *When an Interstate route is displayed in text form instead of using the route shield, a hyphen should be used for clarity, such as "I-50."*

Standard:

10 **All sign lettering shall be in upper-case letters as provided in the "Standard Highway Signs and Markings" book (see Section 1A.11), unless otherwise provided in this Manual for a particular sign or type of message.**

11 **The sign lettering for names of places, streets, and highways shall be composed of a combination of lower-case letters with initial upper-case letters.**

Support:

12 Letter height is expressed in terms of the height of an upper-case letter. For mixed-case legends (those composed of an initial upper-case letter followed by lower-case letters), the height of the lower-case letters is derived from the specified height of the initial upper-case letter based on a prescribed ratio. Letter heights for mixed-case legends might be expressed in terms of both the upper- and lower-case letters, or in terms of the initial upper-case letter alone. When the height of a lower-case letter is specified or determined from the prescribed ratio, the reference is to the nominal loop height of the letter. The term loop height refers to the portion of a lower-case letter that excludes any ascending or descending stems or tails of the letter, such as with the letters "d" or "q." The nominal loop height is equal to the actual height of a non-rounded lower-case letter whose form does not include ascending or descending stems or tails, such as the letter "x." The rounded portions of a lower-case letter extend slightly above and below the baselines projected from the top and bottom of such a non-rounded letter so that the appearance of a uniform letter height within a word is achieved. The actual loop height of a rounded lower-case letter is slightly greater than the nominal loop height and this additional height is excluded from the expression of the lower-case letter height.

Standard:

13 **When a mixed-case legend is used, the height of the lower-case letters shall be 3/4 of the height of the initial upper-case letter.**

14 **The unique letter forms for each of the Standard Alphabet series shall not be stretched, compressed, warped, or otherwise manipulated.**

Support:

15 Section 2D.04 contains information regarding the acceptable methods of modifying the length of a word for a given letter height and series.

Section 2A.14 Sign Borders

Standard:

01 **Unless otherwise provided, each sign illustrated in this Manual shall have a border of the same color as the legend, at or just inside the edge.**

02 **The corners of all sign borders shall be rounded, except for STOP signs.**

Guidance:

03 *A dark border on a light background should be set in from the edge, while a light border on a dark background should extend to the edge of the sign. A border for 30-inch signs with a light background should be from 1/2 to 3/4 inch in width, 1/2 inch from the edge. For similar signs with a light border, a width of 1 inch should be used. For other sizes, the border width should be of similar proportions, but should not exceed the stroke-width of the major lettering of the sign. On signs exceeding 72 x 120 inches in size, the border should be 2 inches wide, or on larger signs, 3 inches wide. Except for STOP signs and as otherwise provided in Section 2E.16, the corners of the sign should be rounded to a radius that is concentric with that of the border.*

Section 2A.15 Enhanced Conspicuity for Standard Signs

Option:

01 Based upon engineering judgment, where the improvement of the conspicuity of a standard regulatory, warning, or guide sign is desired, any of the following methods may be used, as appropriate, to enhance the sign's conspicuity (see Figure 2A-1):

A. Increasing the size of a standard regulatory, warning, or guide sign.
B. Doubling-up of a standard regulatory, warning, or guide sign by adding a second identical sign on the left-hand side of the roadway.
C. Adding a solid yellow or fluorescent yellow rectangular "header panel" above a standard regulatory sign, with the width of the panel corresponding to the width of the standard regulatory sign. A legend of "NOTICE," "STATE LAW," or other appropriate text may be added in black letters within the header panel for a period of time determined by engineering judgment.
D. Adding a NEW plaque (see Section 2C.62) above a new standard regulatory or warning sign, for a period of time determined by engineering judgment, to call attention to the new sign.
E. Adding one or more red or orange flags (cloth or retroreflective sheeting) above a standard regulatory or warning sign, with the flags oriented so as to be at 45 degrees to the vertical.
F. Adding a solid yellow, a solid fluorescent yellow, or a diagonally striped black and yellow (or black and fluorescent yellow) strip of retroreflective sheeting at least 3 inches wide around the perimeter of a standard warning sign. This may be accomplished by affixing the standard warning sign on a background that is 6 inches larger than the size of the standard warning sign.
G. Adding a warning beacon (see Section 4L.03) to a standard regulatory (other than a STOP or a Speed Limit sign), warning, or guide sign.
H. Adding a speed limit sign beacon (see Section 4L.04) to a standard Speed Limit sign.
I. Adding a stop beacon (see Section 4L.05) to a STOP sign.
J. Adding light emitting diode (LED) units within the symbol or legend of a sign or border of a standard regulatory, warning, or guide sign, as provided in Section 2A.07.
K. Adding a strip of retroreflective material to the sign support in compliance with the provisions of Section 2A.21.
L. Using other methods that are specifically allowed for certain signs as described elsewhere in this Manual.

Support:

02 Sign conspicuity improvements can also be achieved by removing non-essential and illegal signs from the right-of-way (see Section 1A.08), and by relocating signs to provide better spacing.

Standard:

03 **The NEW plaque (see Section 2C.62) shall not be used alone.**

04 **Strobe lights shall not be used to enhance the conspicuity of highway signs.**

Figure 2A-1. Examples of Enhanced Conspicuity for Signs

A – W16-15P plaque above a regulatory or warning sign if the regulation or condition is new

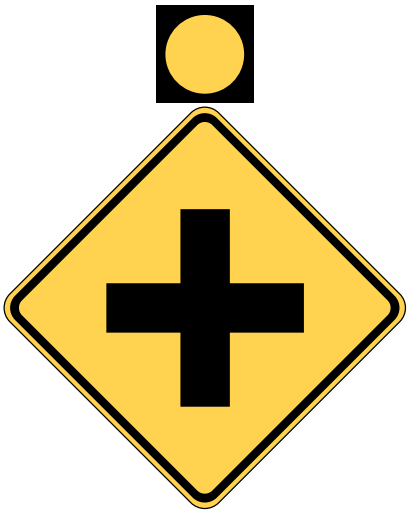
B – Red or orange flags above a regulatory, warning, or guide sign

C – W16-18P plaque above a regulatory sign

D – Solid yellow, solid fluorescent yellow, or diagonally striped black and yellow (or black and fluorescent yellow) strip of retroreflective sheeting around a warning sign

E – Vertical retroreflective strip on sign support

F – Supplemental beacon



Section 2A.16 Standardization of Location

Support:

01 Standardization of position cannot always be attained in practice. Examples of heights and lateral locations of signs for typical installations are illustrated in Figure 2A-2, and examples of locations for some typical signs at intersections are illustrated in Figures 2A-3 and 2A-4.

02 Examples of advance signing on an intersection approach are illustrated in Figure 2A-4. Chapters 2B, 2C, and 2D contain provisions regarding the application of regulatory, warning, and guide signs, respectively.

Standard:

03 **Signs requiring separate decisions by the road user shall be spaced sufficiently far apart for the appropriate decisions to be made. One of the factors considered when determining the appropriate spacing shall be the posted or 85th-percentile speed.**

Guidance:

04 *Signs should be located on the right-hand side of the roadway where they are easily recognized and understood by road users. Signs in other locations should be considered only as supplementary to signs in the normal locations, except as otherwise provided in this Manual.*

05 *Signs should be individually installed on separate posts or mountings except where:*

A. One sign supplements another;
B. Route or directional signs are grouped to clarify information to motorists;

Support:

07 The clear zone is the total roadside border area, starting at the edge of the traveled way, available for use by errant vehicles. The width of the clear zone is dependent upon traffic volumes, speeds, and roadside geometry. Additional information can be found in AASHTO's "Roadside Design Guide" (see Section 1A.11).

Guidance:

08 *With the increase in traffic volumes and the desire to provide road users regulatory, warning, and guidance information, an order of priority for sign installation should be established.*

Support:

09 An order of priority is especially critical where space is limited for sign installation and there is a demand for several different types of signs. Overloading road users with too much information is not desirable.

Guidance:

10 *Because regulatory and warning information is more critical to the road user than guidance information, regulatory and warning signing whose location is critical should be displayed rather than guide signing in cases where conflicts occur. Community wayfinding and acknowledgment guide signs should have a lower priority as to placement than other guide signs. Information of a less critical nature should be moved to less critical locations or omitted.*

Option:

11 Under some circumstances, such as on curves to the right, signs may be placed on median islands or on the left-hand side of the road. A supplementary sign located on the left-hand side of the roadway may be used on a multi-lane road where traffic in a lane to the right might obstruct the view to the right.

Guidance:

12 *In urban areas where crosswalks exist, signs should not be placed within 4 feet in advance of the crosswalk (see Drawing D in Figure 2A-3).*

Section 2A.17 Overhead Sign Installations

Guidance:

01 *Overhead signs should be used on freeways and expressways, at locations where some degree of lane-use control is desirable, and at locations where space is not available at the roadside.*

Support:

02 The operational requirements of the present highway system are such that overhead signs have value at many locations. The factors to be considered for the installation of overhead sign displays are not definable in specific numerical terms.

Option:

03 The following conditions (not in priority order) may be considered in an engineering study to determine if overhead signs would be beneficial:

A. Traffic volume at or near capacity,
B. Complex interchange design,
C. Three or more lanes in each direction,
D. Restricted sight distance,
E. Closely-spaced interchanges,
F. Multi-lane exits,
G. Large percentage of trucks,
H. Street lighting background,
I. High-speed traffic,
J. Consistency of sign message location through a series of interchanges,
K. Insufficient space for post-mounted signs,
L. Junction of two freeways, and
M. Left exit ramps.

04 Over-crossing structures may be used to support overhead signs.

Support:

05 Under some circumstances, the use of over-crossing structures as sign supports might be the only practical solution that will provide adequate viewing distance. The use of such structures as sign supports might eliminate the need for the foundations and sign supports along the roadside.

Section 2A.18 Mounting Height

Standard:

01 **The provisions of this Section shall apply unless specifically stated otherwise for a particular sign or object marker elsewhere in this Manual.**

Support:

02 The mounting height requirements for object markers are provided in Chapter 2C.

03 In addition to the provisions of this Section, information affecting the minimum mounting height of signs as a function of crash performance can be found in AASHTO's "Roadside Design Guide" (see Section 1A.11).

Standard:

04 **The minimum height, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, of signs installed at the side of the road in rural areas shall be 5 feet (see Figure 2A-2).**

05 **The minimum height, measured vertically from the bottom of the sign to the top of the curb, or in the absence of curb, measured vertically from the bottom of the sign to the elevation of the near edge of the traveled way, of signs installed at the side of the road in business, commercial, or residential areas where parking or pedestrian movements are likely to occur, or where the view of the sign might be obstructed, shall be 7 feet (see Figure 2A-2).**

Option:

06 The height to the bottom of a secondary sign mounted below another sign may be 1 foot less than the height specified in Paragraphs 4 and 5.

Standard:

07 **The minimum height, measured vertically from the bottom of the sign to the sidewalk, of signs installed above sidewalks shall be 7 feet.**

08 **If the bottom of a secondary sign that is mounted below another sign is mounted lower than 7 feet above a pedestrian sidewalk or pathway (see Section 6D.02), the secondary sign shall not project more than 4 inches into the pedestrian facility.**

Option:

09 Signs that are placed 30 feet or more from the edge of the traveled way may be installed with a minimum height of 5 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.

Standard:

10 **Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement. All route signs, warning signs, and regulatory signs on freeways and expressways shall be installed with a minimum height of 7 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement. If a secondary sign is mounted below another sign on a freeway or expressway, the major sign shall be installed with a minimum height of 8 feet and the secondary sign shall be installed with a minimum height of 5 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.**

11 **Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.**

Option:

12 A route sign assembly consisting of a route sign and auxiliary signs (see Section 2D.31) may be treated as a single sign for the purposes of this Section.

13 The mounting height may be adjusted when supports are located near the edge of the right-of-way on a steep backslope in order to avoid the sometimes less desirable alternative of placing the sign closer to the roadway.

Standard:

14 **Overhead signs shall provide a vertical clearance of not less than 17 feet to the sign, light fixture, or sign bridge over the entire width of the pavement and shoulders except where the structure on which the overhead signs are to be mounted or other structures along the roadway near the sign structure have a lesser vertical clearance.**

Option:

15 If the vertical clearance of other structures along the roadway near the sign structure is less than 16 feet, the vertical clearance to an overhead sign structure or support may be as low as 1 foot higher than the vertical clearance of the other structures in order to improve the visibility of the overhead signs.

16 In special cases it may be necessary to reduce the clearance to overhead signs because of substandard dimensions in tunnels and other major structures such as double-deck bridges.

Support:

17 Figure 2A-2 illustrates some examples of the mounting height requirements contained in this Section.

Section 2A.19 Lateral Offset

Standard:

01 **For overhead sign supports, the minimum lateral offset from the edge of the shoulder (or if no shoulder exists, from the edge of the pavement) to the near edge of overhead sign supports (cantilever or sign bridges) shall be 6 feet. Overhead sign supports shall have a barrier or crash cushion to shield them if they are within the clear zone.**

02 **Post-mounted sign and object marker supports shall be crashworthy (breakaway, yielding, or shielded with a longitudinal barrier or crash cushion) if within the clear zone.**

Guidance:

03 *For post-mounted signs, the minimum lateral offset should be 12 feet from the edge of the traveled way. If a shoulder wider than 6 feet exists, the minimum lateral offset for post-mounted signs should be 6 feet from the edge of the shoulder.*

Support:

04 The minimum lateral offset requirements for object markers are provided in Chapter 2C.

05 The minimum lateral offset is intended to keep trucks and cars that use the shoulders from striking the signs or supports.

Guidance:

06 *All supports should be located as far as practical from the edge of the shoulder. Advantage should be taken to place signs behind existing roadside barriers, on over-crossing structures, or other locations that minimize the exposure of the traffic to sign supports.*

Option:

07 Where permitted, signs may be placed on existing supports used for other purposes, such as highway traffic signal supports, highway lighting supports, and utility poles.

Standard:

08 **If signs are placed on existing supports, they shall meet other placement criteria contained in this Manual.**

Option:

09 Lesser lateral offsets may be used on connecting roadways or ramps at interchanges, but not less than 6 feet from the edge of the traveled way.

10 On conventional roads in areas where it is impractical to locate a sign with the lateral offset prescribed by this Section, a lateral offset of at least 2 feet may be used.

11 A lateral offset of at least 1 foot from the face of the curb may be used in business, commercial or residential areas where sidewalk width is limited or where existing poles are close to the curb.

Guidance:

12 *Overhead sign supports and post-mounted sign and object marker supports should not intrude into the usable width of a sidewalk or other pedestrian facility.*

Support:

13 Figures 2A-2 and 2A-3 illustrate some examples of the lateral offset requirements contained in this Section.

Section 2A.20 Orientation

Guidance:

01 *Unless otherwise provided in this Manual, signs should be vertically mounted at right angles to the direction of, and facing, the traffic that they are intended to serve.*

02 *Where mirror reflection from the sign face is encountered to such a degree as to reduce legibility, the sign should be turned slightly away from the road. Signs that are placed 30 feet or more from the pavement edge should be turned toward the road. On curved alignments, the angle of placement should be determined by the direction of approaching traffic rather than by the roadway edge at the point where the sign is located.*

Option:

03 On grades, sign faces may be tilted forward or back from the vertical position to improve the viewing angle.

Section 2A.21 Posts and Mountings

Standard:

01 **Sign posts, foundations, and mountings shall be so constructed as to hold signs in a proper and permanent position, and to resist swaying in the wind or displacement by vandalism.**

Support:

02 The latest edition of AASHTO's "Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" contains additional information regarding posts and mounting (see Page i for AASHTO's address).

Option:

03 Where engineering judgment indicates a need to draw attention to the sign during nighttime conditions, a strip of retroreflective material may be used on regulatory and warning sign supports.

Standard:

04 **If a strip of retroreflective material is used on the sign support, it shall be at least 2 inches in width, it shall be placed for the full length of the support from the sign to within 2 feet above the edge of the roadway, and its color shall match the background color of the sign, except that the color of the strip for the YIELD and DO NOT ENTER signs shall be red.**

Section 2A.22 Maintenance

Guidance:

01 *Maintenance activities should consider proper position, cleanliness, legibility, and daytime and nighttime visibility (see Section 2A.09). Damaged or deteriorated signs, gates, or object markers should be replaced.*

02 *To assure adequate maintenance, a schedule for inspecting (both day and night), cleaning, and replacing signs, gates, and object markers should be established. Employees of highway, law enforcement, and other public agencies whose duties require that they travel on the roadways should be encouraged to report any damaged, deteriorated, or obscured signs, gates, or object markers at the first opportunity.*

03 *Steps should be taken to see that weeds, trees, shrubbery, and construction, maintenance, and utility materials and equipment do not obscure the face of any sign or object marker.*

04 *A regular schedule of replacement of lighting elements for illuminated signs should be maintained.*

Section 2A.23 Median Opening Treatments for Divided Highways with Wide Medians

Guidance:

01 *Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings should be signed as two separate intersections.*