NDOR
Nebraska
Department of Roads

ATIS Evaluation for 511 and Internet-Based ATIS Enhancements and Implementation

Task 1: Evaluation of Existing Web and Phone-Based ATIS in Nebraska

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1. INTRODUCTION AND OVERVIEW

The Nebraska Department of Roads (NDOR) currently makes statewide travel information available via the Internet and 511 phone service. As NDOR moves forward with enhancing and automating its ATIS capabilities, the department desires to upgrade its current web and phone based ATIS services. NDOR has established a target date of August/September 2003, so that the enhanced ATIS is in place and operational prior to the next winter driving season.

Key to the success, quality, and content of a statewide travel information system is having a centralized, comprehensive database from which to enter and extract data. NDOR's Road Condition System (RCS) currently serves as the statewide database for road closure and restriction information. The RCS was implemented primarily to assist NDOR in their winter maintenance activities, but also can serve as a source for information about the state's road conditions which can then be disseminated to the public.

As part of the Joint Operations Center (JOC) project, NDOR desires to upgrade its RCS program to the Highway Condition Reporting System (HCRS) to be used for collecting current and planned road closures, current and planned restrictions, major incidents, weather information, and other potential impacts to the state's highway system. It is envisioned that the HCRS will provide NDOR with a more comprehensive road condition data collection system and database, including additional features and details not currently available with RCS, increased functionality, and a system that is more user-friendly for the Districts and maintenance staff. The HCRS would also serve as the database for Nebraska's phone and web-based travel information systems.

NDOR has requested an evaluation of its current 511 and Internet travel information systems, and how HCRS would provide enhanced content and functionality for the Department's ATIS as it expands. The following are the major tasks and activities that Kimley-Horn is preparing as part of this evaluation:

- Task 1: Evaluate existing web and phone-based ATIS systems in Nebraska against the respective national guidelines and recommended best practices;
- Task 2: Develop a list of prioritized needs, services, and content requirements to enhance current ATIS capabilities and information, and evaluate against HCRS features and functions; and
- Task 3: Develop an implementation plan and schedule to meet the Department's established target date for the enhanced ATIS systems to be in place.

This report for Task 1 summarizes the evaluations of NDOR's 511 service and the web-based travel information available from NDOR's web site and Meridian's safetravelusa.com.

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2. EVALUATION OF NEBRASKA'S 511

2.1 Overview of Current System

On October 1, 2001, Nebraska became the first state to implement a statewide 511 service. 511 in Nebraska replaced the State Patrol's road report number (1-800-906-9069), which will be phased out as the public becomes more aware of 511. When 511 was initially deployed in Nebraska, the objective was to provide the traveling public with easy access to weather and road condition information so they can make informed decisions regarding when and where to travel. Callers navigate menus and receive the desired travel information by pressing the appropriate keys on their telephones.

Nebraska's 511 service currently has weather, road condition, and construction information. The two main sources of information are:

- #SAFE Advanced Traveler Weather Information System (ATWIS); and
- Road Condition System (RCS).

The #SAFE ATWIS, developed by Meridian Environmental Technologies, Inc., collects detailed weather information for the states of Nebraska, North Dakota, South Dakota, Minnesota, and Montana. This weather information comes from a variety of public and private sources and is assimilated at the Regional Weather Information Center, which is located at the University of North Dakota.

NDOR developed RCS in-house to report on weather conditions affecting state highways during the winter. RCS has since expanded to include information on road construction. NDOR staff input information into RCS through workstations connected to the NDOR network.

The #SAFE ATWIS and RCS feed into the central database for 511 at the #SAFE Operations Center. The database automatically polls ATWIS and RCS every five minutes via a secure ftp server link. The Operations Center, maintained by Meridian, then records a voice message of any data transmitted to the database.

When callers dial 511 in Nebraska, they are asked to press the appropriate key to hear information by segment or by mile marker. Callers are then asked to choose which #SAFE state is desired. Next, the 511 service requests that callers enter a highway number on their phone keypad followed by the pound sign. If the callers originally asked for information by segment, then the 511 system lists the segments and asks the callers to select the segment they desire. If, instead, callers requested information by mile marker, then they are prompted to specify the direction of travel and mile marker or exit number. The appropriate voice message is then retrieved from the Operations Center database and callers hear construction and road condition information for the selected road section, followed by a detailed weather forecast.

2.2 National 511 Guidelines

Shortly after the deployment of Nebraska's 511 system, the 511 Deployment Coalition published *Implementation Guidelines for Launching 511 Services*, version 1.0, detailing national standards for basic and optional content for travel information. These guidelines were revised and released as version 1.1 in June of 2002. The 511 guidelines developed by the Coalition provide Recommendations for basic content, which includes highways and public transportation, as well as for optional or 'enhanced' content.

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2.2.1 Basic Content for 511

According to the national 511 guidelines, every 511 system should have highway travel information that is accurate, timely, and reliable. Highway information should be route/corridor-based and Focus on limited access roadways. The basic highway data should be retrieved and transmitted to callers automatically, i.e. without live operators. Routes in non-urban areas should be divided into logical segments defined between major towns, landmarks, or roadways. Greater detail is needed in urban areas, where segments would generally be defined between major interchanges. Basic highway content should include:

- Construction/maintenance projects;
- Road closures and major delays;
- Major special events; and
- Current and forecasted weather and road surface conditions.

In order for callers to make informed decisions on when and where to travel, the following details should comprise the basic highway information:

- Location;
- Direction of travel;
- General description and impact;
- Days/hours and/or duration; and
- Detours/restrictions/routing advice.

Public transportation, or transit, information should also be a basic component of every 511 system. Information on all public transportation agencies within the 511 coverage area should be provided. Each agency is responsible for providing accurate, timely information through recorded messages within 511 or call transfers to transit call centers. Basic transit information should be grouped logically, such as by mode or geographic region, and include the following:

- Description of agency's operations;
- Major service disruptions, changes, or additions;
- Where appropriate, an option to transfer to the agency's customer service center; and
- Other "broadcast" information such as special fares and the agency's Internet address.

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2.2.2 Optional Content

The 511 Deployment Coalition encourages implementers of 511 systems to consider including "optional" content categories as they expand their 511 systems. Optional functionalities will be more appropriate in some areas than in others, so implementers should carefully determine what local callers need and/or expect in a 511 system. Possible optional content categories include the following:

- Travel times;
- Major arterial information;
- Tourism;
- Detailed special events;
- Parking;

Yellow pages and concierge services;

- Interregional information;
- Special services like mileage calculators and driving directions;
- Transit multimodal routing and trip planning;
- Local transportation services;
- Incident reporting; and
- Commercial vehicle information.

Many of the optional content types require the involvement of other agencies besides the 511 implementer. For example, local government entities would need to be involved in providing major arterial information. Private entities would most likely participate in categories such as yellow pages and concierge services. Tourism information could be provided by public or private entities, depending on the nature of the content.

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2.3 Evaluation of Nebraska's 511 Using the Coalition Guidelines

The 511 Deployment Coalition highly recommends that implementers of 511 systems continually improve their systems through higher quality service and additional functionalities. In Accordance with the 511 Deployment Coalition recommendation, an evaluation is in order as to how well the current 511 system in Nebraska meets the national guidelines. **Table 1** compares the existing features of Nebraska's 511 to recommended basic content as well as optional content outlined in the national 511 guidelines (version 1.1).

Table 1 – Evaluation of the Content of Nebraska's 511

Content Level	Implementation Guidelines for Launching 511 (according to the 511 Deployment Coalition)	Existing Functionality/Feature?
Basic	Basic highway data retrieved and transmitted to caller automatically	Yes
Basic	Route-specific details on major highways	Yes
Basic	Routes are subdivided into segments	Yes
Basic	Detailed information inside metro areas	No
Basic	Construction, maintenance activities	Yes, limited detail
Basic	Road closures and major delays (incidents or congestion)	No
Basic	Special event information that affects traffic (routes, alternates)	No
Basic	Current and forecasted weather and road surface conditions	Yes
Basic	Information includes location, direction of travel, brief description, duration, and detour/restriction/routing advice when appropriate	Yes: location, direction, description; No: duration, advice
Basic	Public transit information	No
Basic	Voice-activated telephony system	No
Optional	Segment travel times	No
Optional	Major arterial congestion/speed data	No
Optional	Tourism	No
Optional	Other special event information (locations, descriptions, times)	No
Optional	Parking locations and lot status	No
Optional	Yellow pages and concierge services	No
Optional	Information outside the metro area (statewide)	Yes
Optional	Information outside the state	Yes, only to SD and segments of WY, CO, and IA
Optional	Special services like mileage calculators, driving directions	No
Optional	Multimodal links – trip planning, airport, mode options	No
Optional	Local transportation services – carpools, ridesharing	No
Optional	Incident reporting	No
Optional	Commercial Vehicle Information	No

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2.3.1 Review of Nebraska 511 Basic Content

The basic structure of Nebraska's current 511 system meets some of the national 511 guidelines in that route-specific information about road segments is transmitted to callers. Callers are given details about construction, road surface, and current and forecasted weather conditions.

Nebraska's initial deployment of 511 does not meet the following national guidelines for basic content:

- There is no detailed condition or incident information about the metro areas (Omaha and Lincoln);
- Construction information is too brief and does not indicate duration or give detour advice;
- Road delay or closure information due to incidents or congestion is missing;
- special event information that relates to traffic is not present;
- here is no public transportation information; and
- The system requires callers to punch keys rather than using voice-activation.

In addition, some of the features of Nebraska's 511 system, while meeting the general national guidelines, are not very user-friendly. Examples include:

- Callers have to know the highway number to access travel information. Out-of-state and tourist callers often only know the names of towns and landmarks, not the highway number;
- The determination of how the road is divided into segments, while perhaps logical to maintenance personnel, might be confusing to the average traveler;
- There is no time stamp indicating when the information was most recently updated; and
- Information is often quite vague, such as: 'speed is reduced', 'difficult driving conditions', 'road construction', etc.

2.3.2 Nebraska 511 Optional Content

Few optional content features have been implemented in Nebraska's 511 to date. As Nebraska enhances its 511 service, all basic content features not included in the current system should be implemented. Implementing some of the optional content categories may add significant value to the 511 service. NDOR has identified the following optional content types as candidates for possible implementation:

- Tourism;
- Detailed, local special events;
- Yellow pages and concierge services; and
- Commercial vehicle information.

2.3.3 Other Considerations

RCS cannot currently address many of the basic content features not yet implemented as part of 511. A significant upgrade of RCS, or a change to a more robust system, such as the Highway Condition Reporting System (HCRS) used by Arizona's 511 service, must occur if Nebraska's 511 system is to meet all of the national guidelines for basic content. The punch-key telephony system needs to be upgraded to a voice-activated response system. Meridian, as the operator of the current telephony system, must make this upgrade or another telephony system provider will need to be selected.

Public transportation information may be the most difficult basic content category to implement in the 511 system. There are numerous transit agencies in the metro areas and throughout the state, and directories of urban, rural, taxi, and inter-city bus providers from throughout the state are included on the NDOR public transportation page (www.dor.state.ne.us/intermodal/transit-dir/index.htm). There is no standard format, beyond the national 511 guidelines mentioned herein, for how transit data should be presented. Following are some potential solutions for including transit information on 511:

- Convert the data to a format that could be accessed by the voice system that provides the name of the transit provider, service area, services, and contact information; and
- Provide a transfer option to the transit call center if selected by the caller.

A key issue for including public transportation information as part of NDOR's 511 is ensuring that the information is up to date and reliable. Because these transit providers are outside of the jurisdiction of NDOR, there could be liability issues with NDOR providing outdated information. Furthermore, if the call transfer option is selected, NDOR would need to make a business decision about costs for transferring calls, and whether those costs would be borne by the Department or passed on to the individual transit providers. Call transferring would require that a call transfer function be included as part of the telephony system, which would need to be implemented by Meridian.

It is important to note that very few of the early 511 implementers are currently providing public transportation information as part of their systems. Utah, Arizona and Minnesota provide transit as an option. Presently, Arizona and Minnesota transfer calls to a limited number of transit agencies only within the metropolitan areas. As part of future 511 system enhancements, these states are looking at options for providing more comprehensive information and functionality related to public transportation information.

2.4 Conclusions and Content Recommendations

Nebraska's 511 service provides information statewide on weather, road conditions, and construction. National 511 guidelines have established certain categories of information considered basic and integral for ATIS. Many of these basic content categories are not currently part of Nebraska's 511 system. Upgrading the 511 service to incorporate all basic content categories is highly recommended. These upgrades should include:

- Detailed condition or incident information about the metro areas (Omaha and Lincoln);
- More detailed, specific information statewide, such as duration of events, time stamp
- indicating when last updated, detour advice, and contact person for more information;
- Road delay or closure information due to incidents or congestion;
- Special event information that relates to traffic;
- Public transportation information (or at least a transfer to a transit call center);
- A voice-activated system that allows callers to access highway information even if they only know the names of towns or landmarks; and
- Division of highways into segments that are better understood to callers.

Nebraska should also consider implementing the optional content categories that most appropriately meet the needs of travelers in Nebraska. For the initial 511 enhancement, it is recommended that the focus be on improving the basic content categories.

3. EVALUATION OF NEBRASKA'S WEB-BASED TRAVEL INFORMATION

A scan of Nebraska's existing Internet-based ATIS was performed. NDOR maintains the *Travel & Weather Info* web site (www.dor.state.ne.us/rca). This site can be accessed through the NDOR home page (http://www.dor.state.ne.us) via the "Travel & Weather" connection shown in **Figure 1** and the "Detour/Roadwork Info" tab illustrated in **Figure 2**. The 511 icon located on the NDOR web site provides a link to the www.safetravelusa.com web site, which is maintained by Meridian Environmental Technology, Inc. NDOR's main page also provides links to multimodal information, including rail and air, as well as non-motorized transportation resources and information.
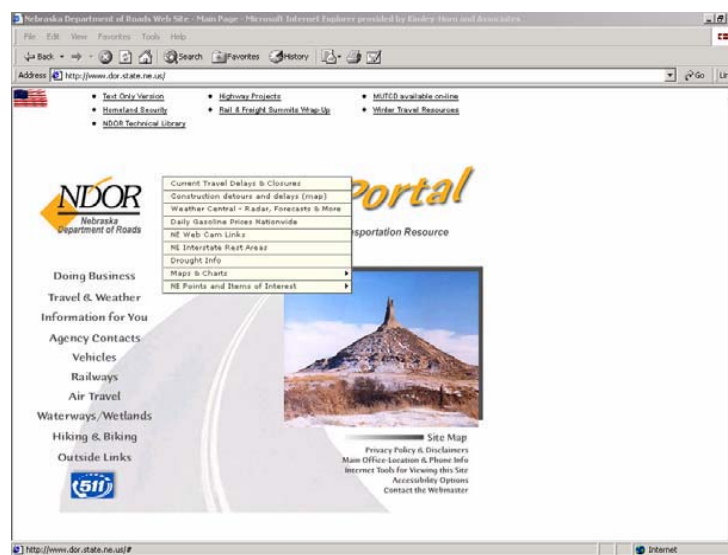

Figure 1 – NDOR Web Page

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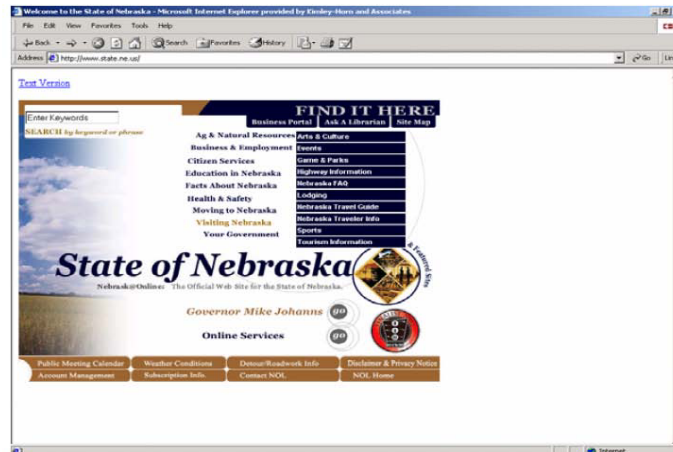Phone-Based ATIS in Nebraska
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Figure 2 – State of Nebraska Home Page

The weather conditions tab located on the State of Nebraska home page, shown in Figure 2, links to www.Accuweather.com. This site provides weather-related information in categories such as travel, ski, health, marine, sports, garden, meteorologist, aviation, agriculture, video, the World, and US.

This evaluation focuses on NDOR's Travel and Weather Info web site and Meridian's www.safetravelusa.com site.

3.1 NDOR Travel and Weather Info Web Site

The NDOR Travel and Weather Info web page is primarily static and text-based with links to more interactive information. The site contains information on road conditions, weather, construction activities, maps and guides, and trucking-related information. Currently, there is no automated data feeding into the NDOR site. Table 2 lists the main topics and links shown on the web site and provides a brief description of the link and/or the address of the link.

Table 2 – NDOR Web Site Contents

Main Topics/Links	Notes/Additional Links
Road Conditions	
Go Directly to 511 on the Web	www.safetravelusa.com
Road Conditions in Surrounding States by PHONE	Scrolls to "Road Conditions in Surrounding States by Phone," and includes toll-free and long distance numbers for neighboring states.
Road Conditions in Surrounding States by WEB	Scrolls to "Road Conditions in Surrounding States by Web," and provides links to neighboring States' road conditions web pages.
Nebraska WebCams Links	These links are not originated or maintained by NDOR. Camera views are still-frame and not traffic-focused on Lincoln or additional links. Omaha cameras are focused on traffic.

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Table 2 – NDOR Web Site Contents (continued)

Main Topics/Links	Notes/Additional Links
Road Conditions (continued)	
Learn More about 511	Provides information for 511 phone access and web site. Discusses what can and cannot be found on phone and web. Includes data disclaimer.
Winter Driving Tips	Information regarding winter travel and survival information via additional links.
Road Sensor Data from SSI Site	Includes wind speeds, surface data, humidity in real time from road sensors. www.roadweather.com
National Traffic and Road Closure Information	Links to FHWA site that provides US coverage and links to each State's data. www.fhwa.dot.gov/trafficinfo/index.htm
Weather Central	
Nebraska Current Weather, Warnings and Radar	Current conditions updated regularly throughout the day as conditions dictate. Includes Place, Temperature, Humidity, Pressure, Conditions, Updated, and Warnings.
Regional Direct Radar Links	Links to specific radar sites covering all of Nebraska updated every 15-30 minutes.
National Weather Service	Scrolls to "Regional Radar Direct Links."
UM Weather Resources	Link to non-profit site sponsored by the University of Michigan at Ann Arbor that provides worldwide weather information.
Farmer's Almanac 2002-2003	www.almanac.com/index.php
National Forecast Map	www.agriculture.com/agweather/maps/nation.html
AccuWeather Forecasts	www.accuweather.com
Intellicast Forecasts	www.intellicast.com
US Severe Weather Map	www.wunderground.com/severe.asp
Current US Surface Temperatures	www.agriculture.com/agweather/maps/usacurt.html
Current US Wind Conditions	www.agriculture.com/agweather/maps/windsp.html
Midwest Heat Index and Wind-Chill Maps	www.wunderground.com/US/Region/Midwest/HeatIndex.html
High Plains Regional Climate Center	www.hprcc.unl.edu/index.html
Drought Related Info	Up-to-date drought related news releases and information from NDOR and links to other resources.
Construction Information	
Traveling to Husker Home Football Games	Discussion on construction zones and consider using alternate routes and leaving earlier.
Monthly Construction and Detour Map and Key	November 2002 Map (PDF file) November 2002 Key (PDF file)
Omaha Metro Construction Information	Link to PDF file. Metro Omaha newsletter published by NDOR.
West Dodge Road Project	Link to NDOR Highway Projects web page.

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Table 2 – NDOR Web Site Contents (continued)

Main Topics/Links	Notes/Additional Links
Construction Information (continued)	
Lincoln Projects/Links	City Engineering Link Antelope Valley East "O" Street
I-80 Flood and Repair Photos (July 2002)	Link to site containing flood details.
Work Zone Safety Awareness Information	Link to NDOR work zone information page.
Travel Maps and Guides	
Map Library	Link to NDOR Map web page.
Nebraska Speeding Fines	Link to PDF file showing fine information.
NE WebCams Link	These links are not originated or maintained by NDOR. Camera views are still-frame and not traffic-focused on Lincoln or additional links. Omaha cameras are focuses on traffic.
Nebraska Mileage Chart	Link to PDF mileage chart.
Miscellaneous Nebraska Travel Information and Frequently Requested Information	Nebraska facts and information.
Nebraska Rest Area List and Info	Link to PDF file.
Daily Gasoline Prices Nationwide	www.fuelgaugereport.com
NE Historical Markers by County	Link to PDF file.
Bicycle and Hiking Info	Link to "Frequently Requested Info" site.
Link to NE Tourism	Link to www.visitnebraska.org
Trucking Related Information	
Truck Permit and Routing Information	Specifically for Motor carriers. Contains contacts, duties & responsibilities, resources, and links.
Motor Carrier Permit Section Holiday Schedule for 2002	Link to Motor Carrier Section.
Road Conditions in Surrounding States by Phone	
Nebraska	Inside NE 511 Outside NE 402-471-4533 TDD Users OUTSIDE NEBRASKA call 1-800-833-7352 and provide the relay operators with the number you wish. - TDD Users INSIDE NEBRASKA call 711 and provide the relay operators with the number you wish.
Colorado	303-639-1111
Wyoming	307-772-0824
Kansas	800-585-ROAD

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Table 2 – NDOR Web Site Contents (continued)

Main Topics/Links	Notes/Additional Links
Road Conditions in Surrounding States by Phone (continued)	
Iowa	Inside Iowa 800-288-1047 Bordering States 800-288-1047 Other States 515-288-1047 After 11-15-02 you may also call 511 for Iowa Road Reports
Missouri	800-222-6400
South Dakota	605-773-7515
Minnesota	800-542-0220
Illinois	800-452-4368
Road Conditions in Surrounding States by Web	
Nebraska	Colorado
Missouri	Kansas
Iowa	Wyoming
Minnesota	South Dakota
Illinois	
Regional Radar Direct Links	
Omaha, Nebraska	Kansas City, Missouri
Nebraska Sand Hills	Garden City, Kansas
Scottsbluff, Nebraska	Des Moines, Iowa
Denver, Colorado	Rapid City, South Dakota

The Web Communications Office is responsible for maintenance, updating, and programming the NDOR web site. All information posted on the web site, including emergency advisories or information from the statewide closure system is posted to the web site by staff in the Web Communications Office. The RCS was developed by NDOR and is currently being used statewide to input roadway conditions. Roadway condition information is provided by maintenance workers, visual operations, neighboring states (via fax), weather reports and storm tracking, law enforcement personnel, etc. Information that is deemed beneficial is input into the system by district maintenance supervisors, district superintendents, district engineers or designated administrative personnel. Not all information entered into the RCS is made available to the public on the web site. NDOR is looking at the potential of allowing the State Highway Patrol to input information into the RCS.

3.2 Nebraska Information on Meridian Web Site

The Meridian site serves as Nebraska's 511 web site. The home page is located at www.safetravelusa.com and it provides information for Nebraska road conditions and weather, as well as for Montana, the Dakotas, and Minnesota. **Figure 3** illustrates the Safe Travel USA home page. In order to access Nebraska's information, the state needs to be selected.

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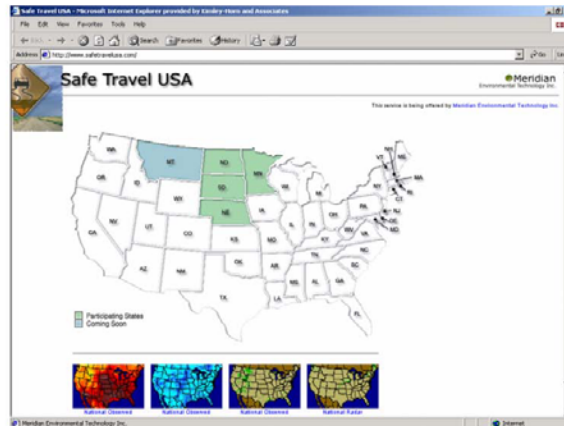Phone-Based ATIS in Nebraska
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Figure 3 – Meridian 511 Web Page

The Nebraska page shows a network of freeways and highways. These roads are color-coded based on driving conditions, which range from normal seasonal to road closures and shows construction locations. In order to obtain a "road report" for a specific point on the highway, position the cursor over a road on the state map and select by clicking once with the mouse. The "road report" will appear along the right edge of the map as shown in Figure 4. A typical "road report" appears follows:

Location:
For travelers on Nebraska State Highway 95.
Road Information:
Normal seasonal driving conditions between milepost 1 and 16.
Weather Forecast:
The forecast until 12 o'clock Central Time this Wednesday morning. Skies will be mostly cloudy becoming mostly clear. Visibility will be 10 miles. There will be widely scattered very light rain developing. Winds will be 8 miles per hour from the west changing to 9 miles per hour from the west-northwest. Temperatures will range from 51 to 55 degrees decreasing to 41 to 43 degrees.

The road information for the Meridian site is provided by NDOR. The data is stored as the file named DOR511.Output on the NDOR FTP server. Meridian polls the FTP server every five minutes, and any new information is posted to the web. This information also is included on the 511 phone service for Nebraska, also operated and maintained by Meridian. NDOR information, combined with Meridian's weather data and forecasts, is output to both the web and phone systems.
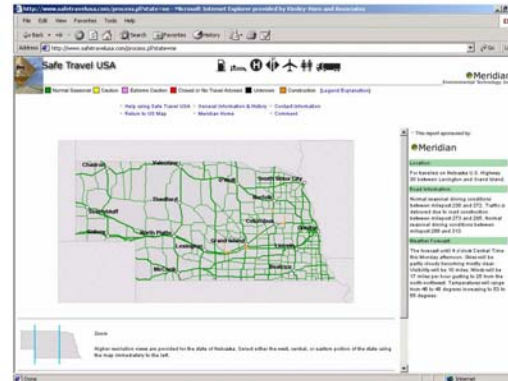
Figure 4 – Nebraska Information by Meridian

3.3 NDOR and Meridian Web-Based ATIS Evaluation

The Volpe National Transportation System Center has developed evaluation criteria for public travel information web sites. For this task, an evaluation of the NDOR site and the Meridian site was performed against these criteria. Table 3 lists the criteria and the corresponding results. It is important to note that not all of the criteria in the guidelines are applicable to NDOR (such as HOV or toll information). Unlike the 511 guidelines presented in the previous section, these criteria are not divided into basic and optional categories.

Table 3 – Web Site Evaluation Based on Criteria for Nebraska

Guidelines/Evaluation Criteria and Recommended Content	Existing Functionality/Feature?	
	NDOR Site	**Meridian Site**
Information grouped by: current state (congestion, weather), trip planner, and carpooling	No	No
Map, table, or list summarizing routes in the region	Yes	Yes
Time stamp for all current information	Yes/No	No
Detailed information inside metro areas	Limited detail	No
Legend indicates congestion is graphically coded	No	No
Route-specific details (travel times, speeds, road conditions)	Yes, weather and road conditions	Yes, weather and road conditions
Major arterial travel information	No	No
Landmarks on map	No	No

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Table 3 – Web Site Evaluation Based on Criteria for Nebraska (continued)

Guidelines/Evaluation Criteria and Recommended Content	Existing Functionality/Feature?	
	NDOR Site	**Meridian Site**
Closures, construction, maintenance activities	Yes, limited detail	Yes, limited detail
Incidents (location, severity, duration, impacts)	No	No
Special event information that affects traffic (routes, alternates)	Yes, limited	No
Real-time camera views	Yes, limited to Omaha metro area	No
Graphic or written cues indicating camera view orientation	Not apparent	No
Prevailing vehicle speeds for segments of highways	No	No
Real-time travel time estimates between markers	No	No
Information about HOV lanes, including routes and how to use	No	No
Current condition information on HOV lanes separate from general purpose lanes	No	No
Information or links on carpooling/vanpooling/ridesharing	No	No
Toll information, media, and/or purchase	No	No
Special services like trip planning, driving directions	No	No
Parking locations and lot status	No	No
Tourism	Yes	No
Information outside the metro area	Yes, statewide system	Yes, statewide system
Links to transit information	Yes, bus information link on NDOR home page	No
Multimodal links – public transportation facilities like airports	Yes, rail and airport information accessed on NDOR home page	No
Links to other traffic-related agencies and web sites	Yes	No
Contact information	Yes	Yes

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3.3.1 Other States' Web-Based ATIS

As a point of reference, a review of other states' and regions' web-based travel information systems was performed to identify content, formats, and level of detail provided on other public and private sites. As part of this evaluation, the sites were reviewed against the web guidelines and evaluation criteria. It is important to remember that these are guidelines and not requirements. While some states and regions might provide additional or enhanced content from what is currently available in Nebraska, it is important to note that none of the ATIS web sites incorporate all of the recommended content listed in the guidelines.

This scan identified four key ATIS web sites in the United States that primarily focus on statewide travel information but also have some metropolitan elements, and two sites that are metropolitan focused with some broader regional or statewide elements. The areas surveyed included:

- Arizona – **www.az511.com**;
- Minnesota – **http://www.511mn.dot.state.mn.us:8080/MN_TRIP/index.jsp**;
- Colorado – **www.cotrip.org**;
- Utah – **www.utahcommuterlink.com/ie.htm**;
- Houston – **http://traffic.tamu.edu/incmap/incmap.aspx**; and
- Various California Cities through Travel Advisory News Network (TANN) - **http://traffic.tann.net**.

Table 4 presents these web sites and the results of the evaluation.

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Table 4 – Web Site Evaluation for Other Regions Based on Web ATIS Criteria (continued)

Web ATIS Guidelines/Evaluation Criteria and Recommended Content	Existing Functionality/Feature?					
	Arizona	**Minnesota**	**Colorado**	**Utah**	**Houston**	**TANN(1)**
Information or links on carpooling/vanpooling/ridesharing	Yes	Yes	Yes	No	No	No
Toll information, media, and/or purchase	No	No	No	No	No	No
Special services like trip planning, driving directions	Yes	Yes	Yes	Yes	Yes	No
Parking locations and lot status	No	Yes, buried	No	No	No	No
Tourism	Yes	Yes	Yes	Yes, buried	Yes	No
Information outside the metro area	Yes	Yes	Yes	Yes	Yes	Yes
Links to transit information	Yes	Yes	Yes	Yes	Yes	Yes
Multimodal links – public transportation facilities like airports	Yes	Yes	Yes	No	Yes	Yes
Links to other traffic-related agencies and web sites	Yes	Yes	Yes	Yes	Yes	Yes
Contact information	Yes	Yes	Yes	Yes	Yes	Yes

(1) Travel Advisory News Network – Provides metro-specific information for cities in Arizona, California, Colorado, Connecticut, Washington DC, Georgia, Illinois, Michigan, Minnesota, New York, Texas, Utah, Washington, and Wisconsin. Content varies from area to area based on data provided by the public agencies.

Table 4 – Web Site Evaluation for Other Regions Based on Web ATIS Criteria

Web ATIS Guidelines/Evaluation Criteria and Recommended Content	Existing Functionality/Feature?					
	Arizona	**Minnesota**	**Colorado**	**Utah**	**Houston**	**TANN**(1)
Information grouped by: current state (congestion, weather), trip planner, and carpooling	Yes	No	No	No	Yes	No
Map, table, or list summarizing routes in the region	Yes	Yes	Yes	Yes	Yes	Yes
Time stamp for all current information	Yes	Yes	Yes	Yes	Yes	Yes
Detailed information inside metro areas	Yes	Yes	Yes	Yes	Yes	Yes
Legend indicates congestion is graphically coded	Yes	Yes	Yes	Yes	Yes	Yes
Route-specific details (travel times, speeds, road conditions)	No	No	No	No	Yes	No
Major arterial travel information	No	No	Yes	Yes, limited	Yes	Yes
Landmarks on map	Yes	Yes	Yes, on some maps	Yes	Yes, limited	Yes
Closures, construction, maintenance activities	Yes	Yes	Yes	Yes	Yes	Yes
Real-time Incidents (location, severity, duration, impacts)	Yes	Yes	No	Yes	Yes	Yes
Special event information that affects traffic (routes, alternates)	Yes	Yes, limited	No	No	Yes	No
Real-time camera views	Yes	Yes	Yes	Yes	Yes	Yes
Graphic or written cues indicating camera view orientation	Yes	Yes	Yes	No	Yes	No
Prevailing vehicle speeds for segments of highways	Yes	No	Yes	Yes	Yes	Yes
Real-time travel time estimates between markers	No	No	No	No	Yes	No
Information about HOV lanes, including routes and how to use	No	No	No	No	No	No
Current condition information on HOV lanes separate from general purpose lanes	No	No	No	No	Yes	Yes

3.4 Evaluation Conclusions

The NDOR web site was easy to use and contains many functional links. There is information on the web site that is not included in the ATIS guidelines, including winter driving tips and trucking-related information, which are regionally important issues for Nebraska. There are also links to all the surrounding states' road conditions web sites, which is useful for region-wide travel. This site provides access to a wealth of real-time weather-related information, but it is lacking real-time traffic-related content.

Navigating the Meridian web site was straightforward and uncomplicated. The site provides significant detail with regards to weather along the specified routes; however, there was limited specific detail on driving conditions. Enhancements to NDOR's reporting system have the potential to increase the amount and accuracy of the real-time data, which Meridian may choose to incorporate into the www.safetravelusa.com site.

The scan of other regions' ATIS web sites showed that none of the regions fulfilled all the recommended ATIS web site content/criteria; however, all six of the sites provide the following recommended content:

- A map, table, or list summarizing routes in the region;
- Time stamps on current information;
- Detailed information about metro areas in addition to statewide or regional content;
- Color codes or icons indicating traffic volumes (when congested);
- Landmarks on maps; Closures, construction, and maintenance activities;
- Camera views of highways, and in some cases major arterials;
- Information outside the metro area;
- Links to transit information and other traffic-related agencies and web sites; and
- Contact information.

There is recommended content that does not apply to some of the regions; for example, HOV lanes and toll information. It is suspected that some of the recommended content is not provided because the facilities are not implemented in those areas, or infrastructure is not in place to provide information such as real-time travel time estimates between segments and information on parking lot status. Keeping in mind that every region will have different needs, the web site content should reflect the individual region's needs and maximize use of available information.

3.5 Recommended Web Enhancements
The NDOR web site contains a lot of valuable information and links, which should remain. Taking into account the web ATIS guidelines and recommended content developed by Volpe and the scan of other regions' ATIS sites, the following minimum enhancements to the NDOR web site are recommended:

- Graphical information (maps) labeled clearly with route numbers and landmarks;
- Maps showing closures, construction, maintenance activities, and real-time incidents that
- include descriptions of each. This can be accomplished with icons and detailed text descriptions;
- All information should contain a time stamp; and
- When highway/arterial CCTV views are displayed on the web site, provide cues indicating camera view orientation.

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Additional enhancements may include:

- Prevailing speeds and/or congestion on roadway/highway segments when detection is implemented;
- Provide more special event information that affects traffic (routes, alternates);
- Links to or major arterial travel information;
- Special services such as trip planning and driving directions; and
- Real-time travel times between segments.

The additional enhancements are dependent on implementation of technologies and infrastructure to support real-time data collection on freeways and arterials, algorithms to develop travel time estimates, and private partnerships for such services as trip planning or route guidance.

HCRS will provide additional information and capabilities to address content recommendations that could provide enhanced web travel information, which can be included as part of NDOR's site as well as Meridian's. Meridian, as a private company, will benefit from enhanced content provided by NDOR and may be able to incorporate the enhanced information on the www.safetravelusa.com site.

Task 2 will identify priority needs and requirements from NDOR's perspective. Recommended enhancements will be mapped to HCRS capabilities, and near-term priorities will be identified which will be documented in the Implementation Plan and provided to OZ Engineering as a basis for recommended design parameters.

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