



OVERSIZE/OVERWEIGHT VEHICLE UNIFIED PERMITTING PROCESS (UPP) PHASE I

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Oversize/Overweight Vehicle Unified Permitting Process (UPP) Phase I

FINAL REPORT

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- B. List of Requirements to Issue Permits by Jurisdiction
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EXECUTIVE SUMMARY

Today, in order to apply for an oversize/overweight permit, members of the hauling industry need to apply for these types of permits for large loads through each individual roadway authority they will be traveling through. MnDOT, counties and cities all administer permits for their own roadways. This requires several different permit applications and processes from each roadway authority for an individual hauler. The general purpose of this project is to explore the feasibility of a unified permitting process for oversize/overweight vehicle permit applications across all roadway authorities. MnDOT is looking to advance unified permitting endeavors in the future to help support the all roads network concept.

This research study examined the feasibility of implementing a one-stop-shop permitting software program to better support a unified permitting process. Project methodologies included reviewing the current practices and developing a plan for creating a process and policies and technologies to assist both local government and hauler needs. This report discusses the potential policy, process, and technology recommendations that can be tested for further implementation in future phases of the unified permitting process.

This document is organized to create a foundation for future unified permitting process phases. The appendices referenced throughout the report offer additional information and insight into the findings and investigation phases. These investigation phases explored the completed listening sessions, technology discoveries, and potential technology mock-ups for how the unified permitting process would function. Based on the early benefits already realized by the policy group and technical advisory panel members, it is anticipated this report can have a substantial positive impact on the future for the unified permitting process.

OVERSIZE/OVERWEIGHT VEHICLE UNIFIED PERMITTING PROCESS (UPP)

Multiple roadway authorities within Minnesota process oversize/overweight (OSOW) permits for the movement of freight on state roadways, county roads, and municipal and township streets. Movement of freight has increased in recent years to help support a growing economy. These moves often require haulers to off-load from state roadways onto the county or municipal and township roadways for final delivery, causing pinch points (i.e. construction, vertical clearance issues, etc.) which may negatively impact the forecasted life cycles of both roads and bridges. With haulers moving across roadway authorities, there is a desire to develop a unified system to process OSOW permits.

WHAT IS THE NEED?

MnDOT, counties, cities, and townships all administer permits for their own roadways. Currently, in order to apply for an OSOW permit, members of the hauling industry submit separate applications to each roadway authority in which they will be traveling. This requires several different permit applications and processes for an individual hauler crossing roadway authority lines. It is important for each jurisdiction to remain in control of permitting their own roadways, however there is a need to simplify the process for haulers to obtain the necessary permits from each road authority.

WHAT IS THE GOAL?

The focus of this project is to explore the feasibility of a unified permitting process (UPP) for OSOW vehicle permit applications across all jurisdictions. The State of Minnesota has been discussing a unified permitting process since the early 1990s. MnDOT and local roadway authorities are looking to advance unified permitting endeavors in the future to support movement considering an all roads network concept.

The goal of phase I for this project focuses on reviewing the current needs and practices to develop a plan for creating process, policies, and technologies to address both government and industry needs for creating an accessible and automated system for unified permitting within and across roadway authorities.

STAKEHOLDERS

A series of stakeholder groups were involved throughout the project. Stakeholder groups included a Policy Group and Technical Advisory Panel (TAP), in addition to individuals who were interviewed as part of the project. Members of the Policy Group also make up some of the members of the TAP, as well as, many of the TAP members were interviewed as part of this process. These interviews consisted of local government, state agencies, haulers, and law enforcement. Below is a list of involved stakeholders by associated group.

Table 1. Policy Group

Name	Title	Agency	Industry
Rich Sanders	County Engineer	Polk County	Government
Ted Coulianos	Trans. Program Supervisor	MnDOT	Government
Ted Schoenecker	Deputy State Aid Engineer	MnDOT	Government
Clark Moe	Sr. Engineering Specialist	MnDOT	Government
Abbey Bryduck	Director – Gov. Relations	AGC	Trucking
Annette Theroux	Project Manager – Consultant	Pro-West and Associates	Consultant
Brandon Crissinger	Data Development Manager	Pro-West and Associates	Consultant
Kyle Wikstrom	GIS Solutions Specialist	Pro-West and Associates	Consultant
Mike Marti	Principal – Engineer	SRF Consulting Group	Consultant
Rena Kuehl	Project Manager – Engineer	SRF Consulting Group	Consultant
Samantha Markman	Planner	SRF Consulting Group	Consultant

Table 2. Technical Advisory Panel (TAP)

Name	Title	Agency	Industry
Mike Tardy	County Engineer	Carlton County	Local Government
Cari Pedersen	Chief Engineer	City of Duluth	Local Government
Butch McConnell	ROW Permits Manager	Dakota County	Local Government
Steven Groen	ROW Use Manager	Hennepin County	Local Government
John Ekola	Bridge Engineer	Hennepin County	Local Government
Tim Stahl	County Engineer	Jackson County	Local Government
Victor Lund	Traffic Engineer	St. Louis County	Local Government
Dale Klossner	MN.IT at MnDOT	MnDOT	State Government
Cory Johnson	Engineer Admin	MnDOT	State Government
Dan Flatgard	State Prog. Admin	MnDOT	State Government
Dave Conkel	Engineer – Bridge	MnDOT	State Government
Moises Dimaculangan	Engineer – Bridge	MnDOT	State Government
Paul Weinberger	IT Division Manager	MnDOT	State Government
Peter Morey	Trans. Program Supervisor	MnDOT	State Government
Steve Lund	Engineer – Maintenance	MnDOT	State Government
Tim Andersen	Pavement Design Engineer	MnDOT	State Government
Todd Bergland	System Analysis Supervisor	MnDOT	State Government
Dan Ross	IT Division	MnGEO	State Government
Tim Worke	Director – Hwy/Trans.	AGC	Trucking
Jerry Anderson	Heavy Haul Manager	Midstate Reclamation	Trucking
Rick Johnson	Fleet Manager	Tiller Corp	Trucking

Table 3. Listening Session: Local Government

Name	Title	Agency	Industry
Taryn Erickson	City Engineer	City of Duluth	Local Government
Ron Chica	MIC Director	Duluth/Superior MIC	Local Government
Andy Witter	County Engineer	Sherburne County	Local Government
Chad Gramentz	County Engineer	Kanabec County	Local Government
Sue Miller	County Engineer	Freeborn County	Local Government
Matt Hemmila	Bridge Engineer	St. Louis County	Local Government
John Brunkhorst	County Engineer	McLeod County	Local Government

Table 4. Listening Session: MnDOT

Name	Department/Title	Agency	Industry
Ed Lutgen	Trunk Highway Bridge	MnDOT	State Government
Yihong Gao	Trunk Highway Bridge	MnDOT	State Government
Perry Collins	District 1 Area Engineer	MnDOT	State Government
David Hedeem	MnDOT Bridge	MnDOT	State Government
Ted Coulianos	MnDOT Permits	MnDOT	State Government

Table 5. Listening Session: Haulers

Name	Title	Agency	Industry
Todd Huotari	Special Projects	EFS Permit Service	Trucking
Shelley Latham	Project Manager	Perkins Specialized Trans.	Trucking
Steve Olmscheid	Truck Coordinator	Barton Sand & Gravel Co	Trucking
Jill Thomas	Executive Director	Minnesota Asphalt Assoc.	Trucking
Ray Higgins	Director	Timber Assoc.	Trucking
Paul Doran	President	Truck Crane Service Comp.	Trucking
Josh Horsch	Heavy Haul Manager	Vic's Crane and Heavy Haul	Trucking
Greg Hayes	Truck Weight Education	Alexandria Technical College	Trucking

Table 6. Listening Session: Law Enforcement

Name	Department/Title	Agency	Industry
Scott Dinehart	Sheriff's Office	St. Louis County	Enforcement
Jon Olsen	SP CVI Division	State Patrol	Enforcement
Darren Juntunen	CVI Division	State Patrol	Enforcement

PROJECT HISTORY

Permitting for an all roads network has been discussed by industry and governmental agencies for many years. Over the past 30 years, these multi-jurisdictional agencies have come together to pave the way for UPP. These agencies are helping to find ways to create an effective and efficient movement of Minnesota freight that supports economy, safety, and preservation.

OSOW PERMITTING HISTORY

1990s: In the 1990s, MnDOT implemented the country's first automated permitting software/system for the MnDOT roadway network.

2000s: In the 2000s, the Associated General Contractors (AGC) and Minnesota County Engineers Association (MCEA) OSOW Committee set out to develop a permitting process for the local roadway network.

2010s: In the 2010s, the Minnesota Local Road Research Board (LRRB) initiated attempts to determine the feasibility of an "All Roads Network" in support of processing OSOW permitting.

In 2014, Cambridge Systematics conducted the Local Permit Coordination Project which looked at the various permitting procedures across Minnesota's state, county, municipal, and township agencies. The 2014 Study then led to the current unified permitting process (UPP) project led by local agencies and included MnDOT to achieve an all roads network approach to OSOW permitting.

PROJECT METHODOLOGY

Project methodologies for the UPP project included Listening Sessions and software investigations to help determine a chosen course of action to accomplish a unified software approach for an all roads network to oversize/overweight permitting. These methodologies helped to inform the general need of a unified system, as well as to identify the potential outcomes, based on existing software, policy and process.

Listening Sessions

As part of the project methodology phase, the UPP project interviewed a series of stakeholders at various levels of government and industries. The listening sessions included all the members of the policy group and TAP members as well as members from city and county governments, state government, hauling industry, and law enforcement, listed previously in this report. These stakeholders were interviewed to get a preliminary idea of the strengths, weaknesses, and opportunities for the current OSOW permitting system.

The stakeholder interviews were held from December 2016 through March 2017. Interviews were set up as Listening Sessions where individuals across jurisdictions were invited to regional sessions to inform UPP. See below for a summary and key themes. See Appendix A for detailed interview questions.

Listening Sessions Key Themes

District 1 Regional Listening Session

DECEMBER 1, 2016 – CARLTON COUNTY TRANSPORTATION DEPARTMENT

Attendees:

MnDOT District 1	Polk County
Duluth/Superior MIC	Saint Louis County
City of Duluth	Saint Louis County Sheriff Office
Carlton County	State Patrol Commercial Vehicle

Key Themes:

- RT Vision is a common permitting software for local jurisdictions (County).
- Limited enforcement available at the local level – mostly conducted at the state level (i.e., State Patrol).
- Most permitting standards (i.e., turnaround time for approval, fee structure, and hauling specifications) are in place due to longstanding history. No real reason behind some of these numbers/information – “how it has always been done.”
- Bridge crossing (ratings) are often the choke point for permit applications. Some bridge crossings require additional analysis – local jurisdictions have limited resources to complete a detail analysis – rely on MnDOT Bridge Office.
- 90 to 98 percent of permit applications could potentially be approved automatically with a software system with data built into the permit application.
- Typically do not deny a permit – will suggest a new route for the hauler, but not a complete denial.

Metro Regional Listening Session

DECEMBER 14, 2016 – SRF CONSULTING GROUP, INC.

Attendees:

Hennepin County	Dakota County
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Key Themes:

- Dakota County has developed their own unified permitting system in-house which incorporates data for an automated approval process for loads under 220,000 pounds.
- Dakota County has created 10-ton routes that requires a 10-ton permit application separate to the standard OSOW permit.

- Dakota County has built MnDOT bridge approval into their automated permitting software. Permit application goes to MnDOT for bridge approval prior to Butch/Dakota County seeing or approving the permit.
- Hennepin County sees mostly construction equipment using their roadways for various projects throughout Hennepin County and beyond.
- Hennepin County does not post bridges – they have their own internal process for approving the crossings of Hennepin County bridges (dedicated staff and resources).
- Hennepin County, Dakota County, and MnDOT do not permit vehicles over 20,000 pounds per axle.
- Limited enforcement available at the local level – mostly conducted at the state level (i.e., state patrol) – Dakota County does have a dedicated Commercial Vehicle Inspector, they are so busy the County is looking into certification of another deputy.
- Counties typically attempt to reroute the load prior to denying a permit – however, both Hennepin and Dakota County will deny a permit.

MnDOT Engineers Listening Session

DECEMBER 19, 2016 – MNDOT CENTRAL OFFICE

Attendees:

MnDOT Bridge

MnDOT OMRR

MnDOT State Aid Bridge

MnDOT OFCVO

Key Themes:

- MnDOT Bridge Office provides primary support to local jurisdictions and MnDOT for permit approval process – when crossing a MnDOT owned bridge.
- MnDOT State Aid Bridge provides a support role to the local jurisdictions.
- Route Builder – MnDOT permitting software is out of date and does not collaborate with bridge and roadway data regular updates. Will be looking for new software programs moving forward.
- MnDOT Bridge have built standard permit trucks (A, B, and C) which allows an automated approval process for bridge applications. These truck configurations have been load certified for the bridge ratings. Anything above a Truck C configuration requires individual computer analysis.
- Thirty-two percent of MnDOT OSOW permit applications are completely auto-issued.
- Limited coordination between MnDOT Permit Office and Pavement Office – more coordination with MnDOT Bridge. However, Pavement Office will be contacted for rare occurrences (one to five requests per year).
- Limited coordination between the MnDOT Permit Office and local jurisdictions. MnDOT does not know if local agency permittees are getting permits for MnDOT bridges (on local roadways crossing MnDOT roadways). Local jurisdiction permits require the hauler to contact MnDOT – no follow up to ensure they contacted MnDOT. Local jurisdictions are beginning to develop a process with the MnDOT Permit Office to notify MnDOT of a permit application across the state-owned bridges. More jurisdictions are beginning to develop this process with the MNDOT Permit Office.

MnDOT IT Listening Session

DECEMBER 19, 2016 – MNDOT CENTRAL OFFICE

Attendees:

MnDOT Maintenance

Mn.IT at MnDOT

MnDOT OFCVO

MnGEO

Key Themes:

- MnGeo and Mn.IT could help to facilitate a unified permitting software. They have the capabilities to store the data and support an application software. MnGeo currently hosts five agencies with data and applications.
- MnGeo working to build a statewide roadway centerline file from County data – not complete yet. This roadway file could have additional attributes and be used for permitting applications or require a related table.
- Mn.IT spoke about the actual permitting software – it would need to be decided whether or not the goal would be to build a unified permitting application software or buy a relevant software and expect all agencies to conform to a single system.
- A hybrid approach may be ideal for initial implementation. Allow each software program to communicate to each other – making it easier for the hauler. However, create a timeline for a single system approach, may require a subscription service.
- Mn.IT can work to set up a way to share bridge data with the roadway data and incorporate all applicable data for permitting use.
- There will be trainings held at the district level to get the CAD data to GIS – in order to build a unified roadway file that could be used for routing and approval processes.

Haulers Listening Session

DECEMBER 20, 2016 – SRF CONSULTING GROUP, INC.

Attendees:

Truck Crane Service Company	Midstate Trucking
EFS Permit Service	Perkins Specialized Transportation
Minnesota Asphalt Pavement Association	MnDOT OFCVO
Tiller Corp	Barton Sand and Gravel Co
Vic's Crane and Heavy Haul	

Key Themes:

- The most difficult hurdle for the haulers is the inconsistency between weights, time of travel, flagging provisions, etc. The hauling industry sees this as an opportunity for “quick fixes” to provide a standardization between these inconsistencies.
- An example was provided that Iowa DOT has standardized their provisions from state to county level – this is very convenient for the hauler.
- Education needs to be better incorporated into the permitting system. Haulers fear the local staff is not well educated on OSOW hauling and therefore denies a permit without taking into consideration the safety measures that have been put in place for the loads.
- Feel as though Dakota County’s automated permit service works well – but as with any permit, the haulers worry what good it does. The hauling industry would like to see the counties and state taking an interest in the routes being chosen to ensure when they hit the road – they will not meet any obstacles. Difficult to turn around once on the road.
- Turnaround time needs to be quick – the haulers will plan to move with or without a permit. However, it would be nice if the permit process could be expedited to accommodate load requests that come in at 3 p.m. and need to move at 3:30 p.m.
- Typically maximize the weights allowed on the permit – to a certain extent – to allow a cushion for weights and heights. Plus, the hauler is often times applying for a permit ahead of time and does not always know the official weights of the load configuration.
- Over-height hauling is difficult because most jurisdictions do not know what vertical clearance is on the current roadways. For smaller loads, it is not worth it to the hauler to complete a route survey – need to consider time and money.
- Limited corridors equipped to handle OSOW loads from the river ports – therefore, it makes it difficult to get goods in and out of Minnesota. Haulers will tell manufacturers “don’t build it in Minnesota, you can’t get it out of here.”
- Illinois permitting software works well – homebuilt system – which attempts eight routes before a permit is denied. Closest current software program to a unified system; however, can take up to 10 days to receive a permit.
- Haulers feel the local jurisdictions (i.e., counties) need to be more standardized with the state. If the State allows it – so should the county.

Outstate Minnesota Regional Listening Session

MARCH 8, 2017 – SRF CONSULTING GROUP, INC. / TELECONFERENCE

Attendees:

Freeborn County

McLeod County

Sherburne County

Polk County

Minnesota State Patrol

Key Themes:

- Both paper permit and software based permitting applications are accepted by outstate counties for oversize/overweight permitting.
- Very little enforcement at the local (county or city/township) level, local jurisdictions are relying on the Minnesota State Patrol to support the enforcement of OSOW permits – similar to what has been at local jurisdictions across the state.
- Largest hurdle to overcome with oversize/overweight permitting for local jurisdictions are weight restricted bridges. Typically, counties will help to work out a different route for the hauler in lieu of denying the permit application.
- Local jurisdictions are worried what overweight loads will do to pavement quality overtime. Freeborn County is suggesting to limit OSOW loads on the local county roadway network to only loads with an origin or destination in Freeborn County.
- In order to try and recoup some of the damage costs caused by repetitive oversize/overweight loads, some outstate counties (i.e., Freeborn and Jackson counties) are charging permit fees by axle weight for superloads.

Individual Interviews

JANUARY 25, 2017 – TELECONFERENCE

Attendees:

Greg Hayes, Alexandria Technical and Community College

FEBRUARY 24, 2017 – TELECONFERENCE

Attendees:

Captain Jon Olsen, Minnesota State Patrol

INVESTIGATIONS

Categories of Permits

Existing permitting software was discussed during the Listening Sessions and researched following the sessions to discover unifying characteristics for software and permitting processes. Permits were categorized by level of effort to determine if processes could be streamlined or automated by a unified permitting process approach.

There are two levels of permitting that were discussed:

- Repetitive trips over the same roads, oftentimes from the same hauler using the same equipment. Also, loads that routinely fall within acceptable standards for the road and are reviewed and issued quickly occur on a regular basis.
- OSOW permits being issued by both local government and the State.

Permit Requirements between Agencies

Local government agencies and MnDOT each use different software or paper/FAX systems to issue permits. The process of setting requirements to issue a permit is a common element between the various systems whether digital or paper. Each agency has set information requirements for issuing permits, some include vehicle registration details, weight, axle details, dimensions (width, height, length, overhang), trailer details, route description, other permits, and hauling dates.

Following the Listening Sessions, a spreadsheet was created with the data as collected from various types of permitting systems including custom built, vendor supplied, and MnDOT permit application requirements. The spreadsheet was reviewed by local government and state permitting agencies to determine if there are common permit requirements that could be set for issuing a permit across roadway authorities. Collected data, as well as those requirements that are common and could be used for issuing unified permits are listed in Appendix B.

Geospatial Data Requirements for Routing

Permit routing on a digital map using geospatial data is not being done in Minnesota, at this time. The process for acquiring, attributing, and maintaining a routable statewide dataset was investigated during the project. A list of roadway attributes needed to perform unified permitting was created based on the listening session discussion and geospatial data being used currently. The list of attributes is included in Appendix C.

Three significant geospatial data efforts are being executed or planned in the State that will be useful to develop a routable center reference line for executing a unified permitting process across jurisdictions.

- MnDOT is requesting local government agencies receiving State Aid to supply updated roadway maps annually to update MnDOT's geodatabase containing County State Aid Highways and other local government roads. In the first quarter of 2017, the Office of Transportation System

Management added a request for additional roadway attributes beneficial for unified permitting. In the future, the annual request process could be utilized to attribute a state-wide roadway dataset for use in the unified permitting process and other roadway related processes.

- The Minnesota Geospatial Office (MnGEO) is currently acquiring Next Generation 9-1-1 (NG9-1-1) road reference line data for the entire State of Minnesota. The data will be routable in the near future and a plan has been developed to house, maintain, and update the data.
- MnDOT has discussed a process with MnGEO for acquiring road centerline reference data from local government agencies, attributing data with required attributes, and running scripts to transform the data for use in MnDOT's Linear Referencing System. Future options include using Esri's Roadway Characteristics Editor to allow local government staff to update the data periodically.

Of note, a tool developed by the Upper Great Plains Transportation Institute of the North Dakota State University named Geographic Roadway Inventory Tool (GRIT) was researched to determine if the tool would be useful for attributing routable geospatial data with the attributes required for moving loads on local and state government roads.

Permitting Software

Three types of permitting software used by UPP project participants were investigated: local agency web-based vendor provided software, custom developed software (by individual agency), and the State's enterprise permitting software.

The various software was researched to determine key factors: how widespread the software was being utilized in the state, whether the software was being shared between jurisdictions, the existence of a routing capability and routable map, if the software met unified permitting input requirements, and ease of use from the permit issuer and permit requester's point of view.

Cross jurisdictional permitting software use: None of the permitting software being used in the State (discovered during Listening Sessions and through second hand knowledge) issues permits across jurisdictions. MnDOT does not have statutory authority to issue permits for another jurisdiction. At the local government level, in some instances, counties issue permits that use municipal and township roadways within their county. For cities that issue permits, the county and municipality do not share the same permitting software. The State is using a permitting software that they are planning to replace in the near future. A replacement software has not yet been decided.

Digital routable map: None of the software used by UPP project participants included a map that could provide a routing tool.

Permit requirements for unified permitting: Each software required similar information for issuing a permit. The difference in the software was the depth of the information being requested. Some counties accepted the requirements of the software, while counties that developed a custom permitting software set the exact information they needed. One particular vendor provided software included a visual

graphic tool for indicating the number of axles, weight per axle, and placement of axles instead of the hauler typing in the information.

Ease of use: The ease of use for permitting software varied depending on whether the information was provided from the hauler’s perspective or the permitting issuing agency’s perspective.

- During the hauler’s listening session, haulers remarked on the difficulty in using the State’s permitting system, although a newer version of the software (same vendor) used in another state was reportedly user friendly. The same system from various states had mixed reviews depending on the state. Local government permitting systems were favored by haulers because the systems saved the organizations fleet vehicles and the truck’s configuration, however, MnDOT’s permitting software also offers this feature. One request echoed by all industry participants was that permit requirements and provisions be standardized across jurisdictions.
- During the local government and law enforcement listening sessions, local government agencies reported that they chose to develop their own custom software or use vendor provided software based on their preferred process. Most local government agencies were comfortable with the requirements of the vendor system, both for ease of use and information provided to the permitting agency, and for the overall cost. A minority of local government agencies chose to develop their own permitting system to have more control over the process, requirements, and cost. For agencies using a paper process, the reason was cost/low demand for permits/sufficient staff to respond.

Other Processes and Data Sources

Other processes and geospatial data sources were investigated as possible permitting processes or routable data processes. These sources were reviewed to determine how they relate to and potentially impact UPP.

BDC, MnDOT’s Business Data Catalog: The BDC maintains metadata and information about services that could impact MnDOT’s business. In the future, the UPP application and data sources could become useful for other initiatives being performed within MnDOT.

LRS, MnDOT’s Linear Referencing System: In operation for several years and contains a statewide center reference line that has an accuracy of +/- 40 feet. The data being acquired for the UPP project can, in the future, be registered as an outside event and plans are being discussed with MnGeo.

MnDOT’s Road Weather Technology Group: MnDOT’s Maintenance Decisions Support System (MDSS) takes into consideration snow plow and maintenance routes. The system has a pavement history that connects to meteorological information. Although, haulers are concerned about meteorological events when transporting loads across the state, the information needed and the information being output by the MDSS did not meet the needs for data or processes on the permitting level.

District CAD to GIS data transformation: MnDOT Districts are in the process of transforming MicroStation CAD .dgn files to GIS geodatabase format for use in a GIS. The data is for MnDOT highways and does not include local government highways.

LiDAR: Several counties have acquired LiDAR generated center reference line data. MnDOT is in the process of acquiring center reference line data through a LiDAR initiative. This source of data could be used to make edits to existing statewide data within the state, although there is no coverage for the entire state and acquiring LiDAR data is costly for local governments, at this time.

County map services: Many counties have map services with geospatial highway and road data that is updated regularly for their own mapping needs. The data is not routable from one county to the next and is not available for all counties.

HPMA: (Federal Highway Administration’s Highway Pavement Management Application), **HPMS** (MnDOT’s Highway Performance Monitoring System), and **ARNOLD** (All Roads Network of Linear Referenced Data): As the UPP effort moves forward, it is important to ensure that the process and data developed are compatible with efforts on the national level.

- The HPMA was reviewed for attributes that make up Pavement Condition Indexes that could contribute to UPP’s need for routable geospatial data. It was discovered that HPMA does an extraction of lanes and updates the condition indexes that are available in the linear referencing system. The HPMA/LRS data was not directly useful for the UPP effort but should be kept in mind as a process operating in parallel.
- The HPMS has similarities for attributes to the HPMA. As with the HPMA, the HPMS information is not directly applicable to the UPP effort but should be kept in mind as a process operating in parallel.
- ARNOLD references 68 attributes that includes lane widths, pavements conditions, etc. It will be important for the UPP effort to ensure the unique ID for road segments is compatible with the ARNOLD database. MnGEO is acquiring and validating Minnesota NG9-1-1 data to ensure compatibility with the ARNOLD database.

UNIFIED PERMITTING PROCESS NEEDS AND RECOMMENDATIONS

There are several needs that have been identified throughout the course of this project. These needs can be lumped into three categories: Policy, Process, and Technology. Based on listening sessions and various investigations, these three categories serve as the basis for continuing to move UPP forward. The following section outlines the needs that have been identified, as well as potential recommendations for how these needs can be met moving into the next phase(s) of UPP. These recommendations are meant to continue to move UPP towards standardization and unification across all jurisdictions.

Policy

Common themes throughout the listening session and investigation phases of UPP indicated that through minor policy adjustments, and implementation of technology OSOW permits can move towards being more unified. These policy adjustments include unifying general provisions across all jurisdictions, and the standards or items required by the applicant to issue a permit. It was identified in project listening sessions that many of the general provisions were adopted in years prior and never updated.

There was no reason to why a certain provision exists differently across jurisdictions (i.e., State to County) for the sole fact that a jurisdiction (County) did not update with others (State).

General Provisions

Travel Hours: Travel hours vary based upon jurisdiction. With the varying hours of travel acceptable by jurisdiction, this can complicate a move dramatically. Some local jurisdictions allow travel on holidays; however, Minnesota permit applications do not allow travel during major holidays. Additionally, some loads are restricted to certain times of day. A single jurisdiction could be withholding an entire move. Unification of travel hours would help allocate acceptable travel hours statewide, limiting choke points based upon jurisdictions.

Warning Devices: These devices include flagging requirements. Throughout the interview phase of the project, haulers identified jurisdictions vary on the color and size of the flagging requirements. Realistically haulers are not going to change the size nor color of their load's flags in the middle of travel; therefore, forcing them into a violation. If jurisdictions set a standard flag and warning device requirement statewide, this would help to reduce the number of inconsistencies.

Insurance Requirements: Some jurisdictions require insurance policies with higher cost coverages. The inconsistency in required insurance policies may cause haulers to avoid a specific jurisdiction because they are one of few that do not follow the majority with a typical insurance coverage plan.

Requirements to Issue Permits

Haulers would like to ensure that all the information required to obtain a permit is being used to determine the eligibility for approval or denial of an OSOW permit. Requiring information that does not reflect the need of a permit could be adding steps to a permit application that are not necessary for either the applicant or reviewer. A standardization of these requirements would help to provide clarity between jurisdictions for the various applicants. Appendix B has a comprehensive list of requirements to issue permits by jurisdiction, also showing commonalities across each jurisdiction.

Process

Throughout the listening session and investigation phase, process recommendations were identified as potential items to reach successful implementation of UPP. These recommendations include what we learned from other agencies, how to unify OSOW application forms, steps to build a dataset that allows approximately 80 to 90 percent of permit applications to be automatically approved, and potential technology options available for a unified permit application process.

Other Agencies

Across Minnesota jurisdictions a number of different approaches are being utilized for OSOW permitting. Some counties still use paper permits by fax, some have homegrown technologies, and others use software available through permitting companies. Based on this feedback, it was determined that many of the jurisdictions (those using technologies) would like to remain in control of the software being used for permitting, as there has already been a great deal of investment in the software.

However, those using paper permitting services would need to look to upgrade to a software-based system, of some sort, to accomplish a unified permitting process.

Unified OSOW Application Form

The OSOW permit application form also varies by jurisdiction. Each county, city or state requires a different application form requiring different information from the hauler. An identified need through the investigations phase determined a unified application form would be helpful for haulers and multi-jurisdiction approval. This application would require the same information but would be approved by the jurisdiction responsible for ownership of the route's roadway.

Technology Options

Throughout the UPP project, three potential software solutions were investigated to determine the best fit for a unified system. These three software solutions include: single system, hybrid system, and portal system. Each system requires a varied level in involvement from State and local jurisdictions. During the Listening Sessions phase, it was determined many jurisdictions do not want to move away from the investments that have been made under existing permitting software. Therefore, a technology solution that allows the ability to maintain an existing software program would be desired.

Single System: All agencies managing permits on all roadways. This single system approach would require all agencies to migrate to a single permitting software which would be used across all jurisdictions, but still allow for individual approval by agency.

Hybrid System: MnDOT's system integrates information from individual county and local systems. This approach would marry the two ideas of a single system and portal system – allowing the permitting software to “speak” to one another. This would also allow for individual approval by agency.

Portal System: Integrates all permitting systems. A one-stop shop for the user to request permits from multiple jurisdictions. The portal system would function as a dashboard in which a hauler would log-in to a portal system and complete one application, but in the background that one application would be forwarded on to multiple jurisdictions for individual approval, based on the route identified. This dashboard would also integrate a way for the hauler to see which jurisdiction is pending approval, approved, or denied.

Technology

Technology in support of the Unified Permitting system falls into two types:

- Software
- Geospatial and attribute data

Software technology to support the UPP doesn't exist currently in customized applications or vendor provided software to meet all the functionality required. As the UPP project moves into the next phase, the needs of the software will revolve around interoperability with other systems, self-service ability,

cross-jurisdictional collaboration to issue permits, routing and alternate routing via a map, and accessibility to haulers, permitting agencies, and law enforcement.

Interoperability with other systems: A unified permitting process will interact with other systems, such as credentialing or vehicle registration systems to provide auto-population of information to the hauler and vehicle and load information for regulation to law enforcement.

The unified system requires geospatial data from multiple sources; such as, a statewide center reference line from a repository, bridge rating attributes and geospatial location from a separate data repository, attributes for determining road capacity from another system, and real time road updates (e.g., road construction delineation, road closures, and weather related information from disparate systems). Appendix D diagrams the structure of the UPP system and the interoperability specifications that govern process and information exchange within the system.

Cross-jurisdictional collaboration: Developing standardized requirements for issuing a permit and provisions that are accepted by all agencies will provide a base for collaboration across jurisdictions when issuing a permit. Standardized requirements also become the base for interoperability specifications that govern how current systems in multiple jurisdictions interact. The UPP system would become the “One-Stop Shop” requested in every Listening Session. A One-Stop Shop facilitates connecting agency’s individual systems, ensuring agency control over the permitting process, and requiring systems to function with interoperability.

Routing and alternate routing: Throughout the Listening Session process, haulers, government agencies, and law enforcement echoed each other in requesting a routing process for permits that did not require typing in the route or selecting a route manually. The UPP software requirement for haulers would be to click the beginning of a route and click the end of the route. The software would take into account roadway characteristics, bridge ratings, road restrictions, and closures in automatically generating a map route and route alternatives.

Self-service ability: Haulers may be requesting a permit hours, days, or weeks in advance of transporting on a roadway. A self-service permit is one that allows the entire business transaction to be completed without the assistance of a human. Listening Session attendees requested a status dashboard that will allow the haulers, permitting agencies, and law enforcement to view the status of a permit and what is required to complete the process.

- The software technology must have the ability to accept a permit request from any location, whether it be a desktop computer, hand-held tablet, or mobile phone. The request is entered into an interface, passes specifications to other systems, and returns the permit in a digital pdf, text, or email format to the hauler. Ease of accessibility to law enforcement will provide a handy tool for law enforcement in their effort to patrol with a force that is stretched thin.
- Appendix E illustrates the self-service unified permitting workflow.

Automation: It was determined that 80 percent or more of local government permits fall within the category of repetitive or within acceptable permitting standards, while approximately 39 percent of State-issued permits fall within the same category. During local government Listening Sessions, local

government and State staff welcomed automation of permitting when applicable, which would open up their time to respond to OSOW permits, and provide updates for road restrictions and roadway changes.

Geospatial and Attribute Data is needed to support UPP with data that is complete, as accurate as possible, accessible on a statewide level, maintained and updated on a nightly basis. This is not an easy requirement to fulfill, however, data acquisition and sharing processes are already in place through the Minnesota Geospatial Information Office. MnGEO is the State's repository for geospatial data and imagery relied on by government agencies of all levels, private business, non-profits and education institutions throughout Minnesota. UPP software will require a stable data source with the ability to acquire and share data across jurisdictions.

Currently, there is no statewide center reference line data that contains all the attributes required for a unified permitting system. MnGEO can acquire the attributes needed through use of their tools, the GRIT process, or the future the RCE (Roadway Characteristics Editor) process.

UPP NEXT STEPS: PHASE II

Phase II of UPP will begin immediately following Phase I. The goals of Phase II will be to develop a proof of concept for the processes and policies required to deliver a prototype of a Unified Permitting application. Phase II is focused on setting expectations, and ensuring success of Phase III full implementation of a statewide OSOW Unified Permitting System. This next phase will begin to look at how some of the needs and recommendations from Phase I can be tested and implemented across jurisdictions. The tasks outlined to occur in Phase II include five Tasks:

Task 1: Define Policy Requirements

Standardized General Provisions: This sub-task will look at how the general provisions across jurisdictions can be standardized. A subcommittee of local jurisdictions will work to test the feasibility of adopting MnDOT's current general provisions, and discuss the need to adjust any of these provisions for local jurisdictions.

Standardized Permit Request Input Items: This sub-task will work to determine a standardization of requested input items for each permit application. This will help to streamline the process for haulers and agencies working towards a unified process. Consideration will be given to existing requested input items, as well as ways to standardize the required fields across all jurisdictions.

Permit Issuing Criteria Items: This sub-task will focus on the issuing criteria for each permit. It is critical to ensure jurisdictions across Minnesota are using the same type of criteria items when issuing permits.

Task 2: Define Permitting Processes

Define Business Cases: A working group will be created during Task 2 to define business cases to guide the OSOW UPP development and testing to ensure the application meets the needs of all jurisdictions and agencies involved in permitting. Business cases will include general repeatable and OSOW permits,

any permits that are exceptions to the process, or current issues in permitting that could cause the workflow to fail.

Reference Platform Knowledge Capture: This sub-task requires the review of all collected information in Task 1 and Task 2 business cases to develop interoperability specifications and quality assurance for the application. Definitions will be documented for the interoperability specifications, routing process and fees.

Working Group Testing: Testing of the application will be conducted by the working group. To facilitate testing, the group will determine the business case testing process and success criteria.

Permitting Process to Policy Group: UPP functionality and business case success criteria will be presented to the Policy Group for confirmation prior to application development in Task 3.

Task 3: Define and Develop Core Prototype Functional Capabilities (Technology backend)

Define Interoperability Specifications: Items will be included in the specification that are most valuable for delivery of a permit. The list below could change following knowledge capture with project stakeholders.

- Develop schema based on permit issuance criterion and general provisions
- Define the process to pass information to agency permitting system and back
- Define the workflow to accept fees and permit issue notification from agency permitting system
- Define the aggregations of permitting issue notifications across a route
- Design the digital format permit

Develop prototype Reference Platform (a software library of code for implementation) to implement the Interoperability Specifications (the tests against the software library): The Reference platform may contain the following capabilities. The list could change following refined definition of the interoperability specifications.

- Capability for displaying routes to haulers
- Capability for sending permit request to various agencies
- Capability for receiving permit issuance verification from various agencies
- Capability for accessing statewide routable data for the roadways and bridges
- Permit generation via pdf files (mobile viewing or printing)

Prototype Introduction and Testing with project Working Group: Following development of the prototype Reference Platform, the consultant team will present the prototype to the Policy Group for input and testing.

Prototype Documentation: In addition to the written interoperability specification documentation, a record of the history of development of the specifications will be logged.

Task 4: Execute a Pilot with the Working Group

Select Working Group participants: Participants will include State, county, city and township agencies, haulers and law enforcement.

Build a Front-end User Interface utilizing the Reference Platform developed in Task 3: The reference platform interface will include a simple log-in, simple functional interfaces and connection with statewide data for demonstration purposes.

Training and monitoring iterative testing: The Working Group will be trained to test the interface to ensure satisfying UPP requirements. Iterative testing will be conducted in a bi-weekly cycle.

Task 5: Education and Research

Education for UPP stakeholders: Stakeholders will review the UPP and functioning policies, processes and technology to provide input on the success of the prototype, and plan for full implementation in Phase III.

Local Government and State Permit Systems Use in Minnesota: A survey will be conducted of counties within Minnesota to determine the types of permitting systems currently in use. Understanding the permitting systems in use will allow calculation for level of effort when conducting Phase III for statewide unified permitting.

All tasks within Phase II will build policies, processes and the technology for implementing unified permitting statewide across jurisdictions. Discovery during Phase II will also inform the estimated cost for a statewide permitting system.

APPENDIX A
DETAILED INTERVIEW QUESTIONS

OSOW Unified Permitting Process - Interview Questions

* = Question was included in the Cambridge study interviews

Local Government

- 1. What is your Name, Title, Organization, Email and Phone?**
- 2. What is your role within your agency for OSOW permitting?**
- 3. What is your current system for processing OSOW permit applications?***
 - Who issues permit or approval? (County Engineer, Utilities Permitting, Sheriff, etc.)*
 - What information do you require from the carrier for your permit?*
 - Do you communicate with different agencies when an OSOW permit is required between your agency and another jurisdiction (i.e., State, Township) for a truck route? *
 - If so, how?
 - Do you require information from MnDOT? *
 - If so, what information?
 - Do you communicate with enforcement agencies?
 - If so, how?
 - Who is primarily responsible for OSOW enforcement on local roads? (State Patrol, Local Officers, other)
 - What may cause an application to be denied? Are there any red flags that you look for?
 - For “Mega Loads”, do you require a route survey and what are your minimum requirements?
 - Do you allow permits over 80,000lbs?
 - Does your agency use any permitting programs or software? Are they useful/effective? *
 - How do you handle repetitive/blanket permits?
 - Do you charge an OSOW permit fee? What are your current fees for OSOW permits? How do you determine your OSOW permit fee?
 - What are your permitting fees used for?
- 4. What are your organizations’ operational requirements placed on OSOW permits for:**
 - Flagging
 - Escorts
 - Time of day
 - Time of year
 - Does a low volume and high volume roadway have the same operation requirements?
- 5. What criteria triggers an OSOW vehicle route on your agency’s roadways?**
 - Lane widths
 - Shoulder widths
 - Cross-sections (two-lane, four-lane, divided, un-divided)
 - Bridges
 - Surface type
 - Roadway geometry
 - Construction projects
 - Pavement condition/quality
 - Traffic signals

- Clearance (vertical and horizontal)
- Roundabouts
- Curves/turning radius

6. How many OSOW permit requests do you receive each year?

- Has generation of OSOW permits increased?
- Approximately what % of freight is OSOW? (if known)
- Over what period of time?
- Is it due to a specific OSOW hauling need?
- Have you assigned specific routes for OSOW?
- Are there specific truck configurations responsible for OSOW permits?
- Is there a particular manufacturer or carrier in your county or community that regularly permits OSOW loads? (example: wind turbines, oil pipes. Etc)

7. Does your organization have OSOW Corridors for specific truck configurations for a select industry? (Example: Wind turbine transport)

8. Do trucks crossing your jurisdiction carry loads across State owned bridges that cross a trunk highway? If so, how to you coordinate permits with MnDOT for bridges?

9. Have you experienced an Interstate/Trunk Highway detour across your roadways in the past that required an OSOW permit?

- Who issued the OSOW permit?
- Did you restrict the OSOW use on your roadways during the detour?

10. Does bridge and roadway data exist for your organization? *

- Who can we talk to understand your road and bridge data?
- What format is this data in?
 - Database
 - Geospatial data
 - Other
- How often is it updated?
- What attributes are contained in the data? (optional if known)
 - Speed limit
 - Road construction
 - Road restrictions
 - Functional road classification
 - Spring load restrictions

11. Are you interested in using a Unified Permitting System? If not, why? If so, which type would you prefer?

- Single system for all agencies managing permits on all roadways
- Hybrid system in which MnDOT's system integrates information from individual county systems

- Portal system that integrates all permitting system. A one-stop-shop for the user to request permits from multiple individual systems

12. Are you willing to accept a standardized application and provision?

13. What legislative solutions can be considered to mandate OSOW unified permitting process?

14. Are there areas for improvement in terms of your permitting process?

- Would you like to share any feedback that you've received from carriers, MnDOT permitting officials, or other Minnesota counties? *
- What challenges do you encounter with the current permitting process?
- Do you have other feedback you'd like to give regarding the current permitting process? *

MnDOT

1. What is your Name, Title, Organization, Email and Phone?

2. What is your role (the State's role) in OSOW permitting?

3. What is your current process for processing OSOW permit applications?

- Who issues permit or approval? (County Engineer, Utilities Permitting, Sheriff, etc.)
- What information do you require from the carrier within the application?
- How do you communicate with different agencies when an OSOW permit is required between your agency and another jurisdiction (i.e., State, Township) for a truck route?
- What information do you require from MnDOT, if any?
- What may cause an application to be denied? Are there any red flags that you look for?
- Does your agency use any permitting programs or software? Are they useful/effective?
- How do you handle repetitive/blanket permits?
- What are your current fees for OSOW permits?
- What are your permitting fees used for?
- How do OSOW permits effect your Department?

4. Does MnDOT approve permits from other jurisdictions when a route crosses a MnDOT owned facility? (Example: Trunk Highways or Bridges)

5. How do counties notify MnDOT of approved OSOW permits?

6. Who do you work with at MnDOT to acquire data?

7. Are you interested in using a Unified Permitting System? If so, which type would you prefer?

- Single system for all agencies managing permits on all roadways
- Hybrid system in which MnDOT's system integrates information from individual county systems

- Portal system that integrates all permitting system. A one-stop-shop for the user to request permits from multiple individual systems
- 8. Are there areas for improvement in terms of your permitting process?**
- Would you like to share any feedback that you've received from carriers or other Minnesota counties?
 - What challenges do you encounter with the current permitting process?
 - Do you have any other feedback you'd like to give regarding your current permitting process? Are there areas for improvement?

Hauling Industry

- 1. What is your Name, Title, Organization, Email and Phone?**
- 2. Approximately how many OSOW loads do you have annually which require permits?**
- 3. Is there an industry you serve that could use an established corridor? Would designated corridors make the hauling process more unified and streamlined?**
- 4. What challenges do you encounter with the current permitting processes:**
 - For MnDOT roadways?
 - For local agency roadways?
- 5. What are your challenges for hauling in Duluth/District 1?**
- 6. When applying for a permit do you put the maximum axel weights or the axel weights at the time of the move?**
- 7. What is the turnaround time needed for permits? Are there constraints with the current process?**
- 8. What would an ideal permitting process look like for you? Is there a need for a mobile app, or a need to edit the permit?**
- 9. What other states or agencies have a unified permitting process that works well?**
- 10. How can state and local agencies work together to work better for you? (Example: faster response time, route across jurisdictions, similar fees, etc.)**

Law Enforcement

- 1. What are the barriers to enforcing OSOW?**
- 2. What do you need so you can successfully make permit checks?**

APPENDIX B

LIST OF REQUIREMENTS TO ISSUE PERMITS BY JURISDICTION

PERMIT APPLICATION INPUT

	Dakota County	Polk County	Carlton County	MnDOT
Applicant Name	x	x	x	x
Application Date	x			x
Company Name	x	x	x	x
Company Address	x	x	x	x
Email	x	x	x	x
Phone Number	x	x	x	x
Fax Number	x	x	x	x
Cell Number			x	
Insurance Provider	x	x	x	
Insurance Policy Number	x	x	x	
Insured Amount		x	x	
Vehicle Year		x		
Vehicle Make	x		x	x
Vehicle Model		x	x	
Vehicle Type		x		x
Vehicle License Number	x		x	x
Vehicle State		x	x	x
Vehicle (Truck) Serial Number				x
USDOT Number		x		x
Vehicle Total Gross Weight	x	x	x	x
Weight per Axle	x	x	x	x
Dimension Summary		x		
Height	x	x	x	x
Width	x	x	x	x
Length	x	x	x	x
Front Overhang		x	x	x
Rear Overhang		x	x	x
Left Overhang		x	x	x
Right Overhang		x	x	x
Axle Description Summary		x	x	
Axle Count		x	x	x
Group Count		x	x	
Axle Length (axle spacing)		x	x	x
Max Axle Width		x	x	x
Max Axle Weight		x	x	
Axle Total Weight		x	x	
Truck Diagram		x	x	
Axle Group Summary		x	x	
Axle Group Tire Type		x	x	x
Axle Group Width		x	x	
Axle Group Weight		x	x	x
Axle Group Max Width		x	x	
Axle Group Total Weight		x	x	x
Trailer Description		x	x	x
Trailer Make		x	x	x

Information Requested

Permit Invoice

Trailer Model		x	x	
Trailer Type		x		x
Trailer Serial Number		x		
Trailer License Number		x		x
Trailer State		x		x
Trailer Empty Weight		x		x
Trailer Regulation Weight		x		
Empty Weight Amount		x		x
Regulation Weight Amount		x		
Hauling Dates (Start/End)		x	x	x
Load Description	x		x	x
Route Description		x	x	x
Route Description Detail	x	x	x	x
Route Length		x		x
State Highway/Permit Number		x	x	x
Final Location/Permit Number		x	x	
Permit Number	x	x	x	
Approving Signature	x			
Approve Date	x	x	x	
Total Payment Due	x	x	x	
Payment Amount Received	x			
Payment Reference Number	x			
Individual Receiving Payment	x			
Permit Expiration Date	x	x	x	
Status		x	x	
Valid Dates		x	x	
Quantity		x		
Approving Digital Signature		x	x	
Map Graphic			x	

APPENDIX C

ROADWAY ATTRIBUTES NEEDED TO PERFORM UPP

Oversize Overweight Unified Permitting Process

The Unified Permitting Process will require data containing attributes that are functional within a statewide permitting system. Not all of these attributes will be contained in the geospatial reference line (centerline) data. Draft attributes have been identified and are listed below. This is not an all-inclusive list and is in the review process with project stakeholders.

Road strength index/ratings	Maintenance impedance – construction/spring load restrictions
Surface type	Time of day restrictions
Road surface width	Road closed/open
Divided/not divided	Curve turning radius
Functional Class	Traffic count
Shoulder (type and width/paved vs unpaved)	
Speed limit – (highways only)	Bridge widths
Roundabout location	Bridge height clearance
Street name	Height of assets – signs/light/electrical overhead
Segment Length	Bridge location
Jurisdiction	Bridge deck ratings
Unique Route ID (Routable linear features)	

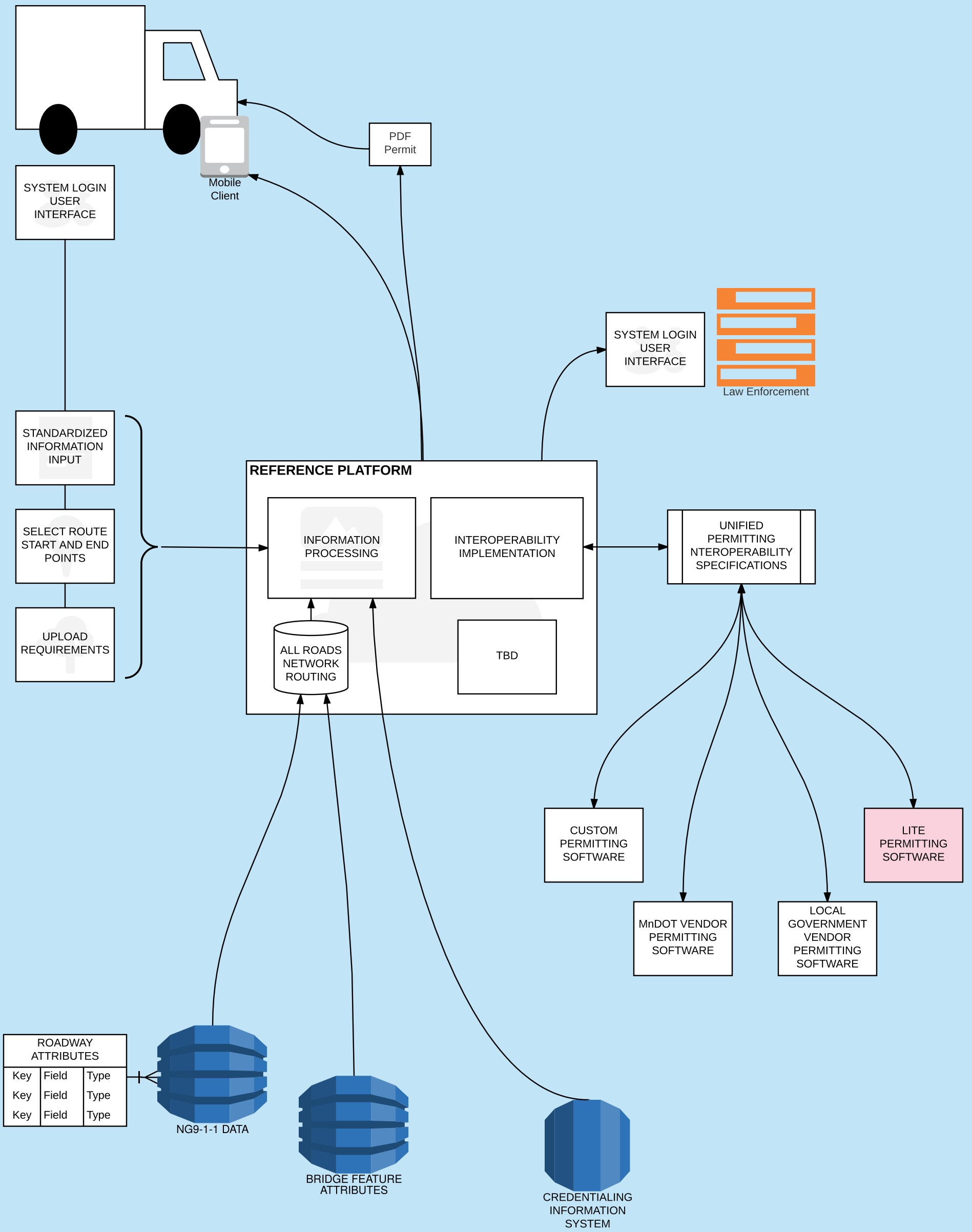
Linear Referencing System (LRS) attributes

OTSM external system attribute

MnGeo collected attributes

Bridge information from Structure Inventory Report

APPENDIX D
STRUCTURE OF THE UPP SYSTEM

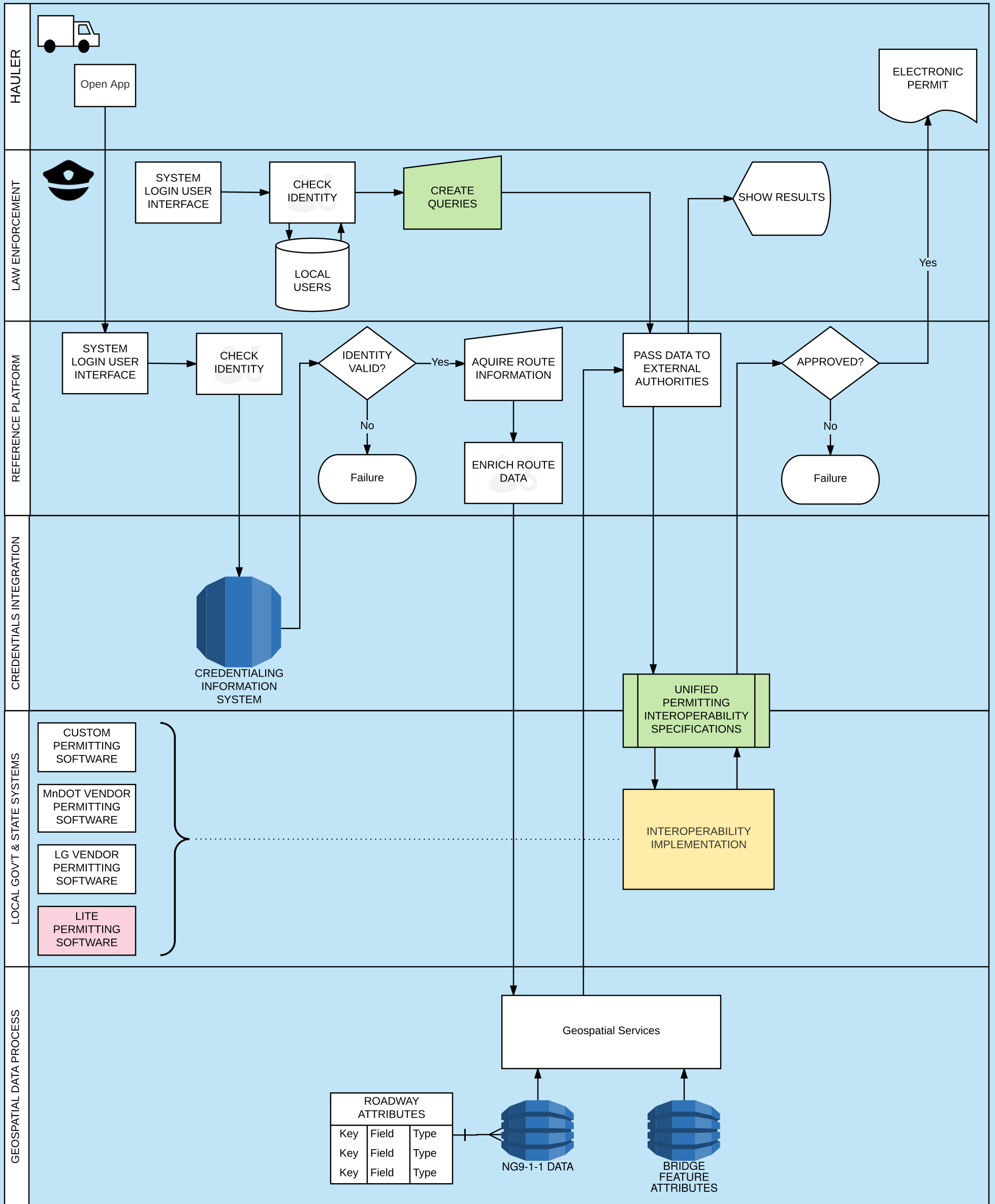


ROADWAY ATTRIBUTES		
Key	Field	Type
Key	Field	Type
Key	Field	Type

- AGENCY PERMIT REQUIREMENTS**
- Permit Fees
 - Load Restrictions
 - Alternative Routes
 - Permit Timeline
 - Provisions
 - Contact Information
 - Invoicing

- UNIFIED PERMITTING INTEROPERABILITY SPECIFICATIONS**
- Domain Data Types
 - Transactional Workflows Definitions
 - Operational Profiles
 - API Capabilities
 - Validation and Compliance Tests
- Technical Support

APPENDIX E
SELF-SERVICE UNIFIED PERMITTING WORKFLOW



- AGENCY PERMIT REQUIREMENTS**
- Permit Fees
 - Load Restrictions
 - Alternative Routes
 - Permit timeline
 - Provisions
 - Contact Information
 - Invoicing

- UNIFIED PERMITTING INTEROPERABILITY SPECIFICATIONS**
- Domain Data Types
 - Transactional Workflows Definitions
 - Operational Profiles
 - API Capabilities
 - Validation and Compliance Tests
- Technical Support