

## G. TRANSPORTATION

Communities depend on well-maintained transportation systems. Accessibility to transportation is one of the primary factors in the location of businesses and residents within Cooper.

The town is a small “bedroom” community with a significant portion of Route 191 that serves as both “Main St.” and a regional collector road. Cooper is dominated by the condition of Route 191. It is considered “unbuilt” in transportation engineering terms and, before reconstruction on a small portion of Cooper Hill and some resurfacing in the summer of 2010, is in terrible condition throughout the town. This issue affects businesses, the overall safety and convenience of residents, as well as property values.



Photo point 1 – see Map 2

The goal of this section is to plan for efficient maintenance and improvement of our transportation facilities and services in order to accommodate anticipated development.

### ROADS INVENTORY

The majority of roads in Cooper originated in the early days as pathways or carriage trails. These roads followed the easiest routes and were not concerned with sight distances, sharp corners, the weight load of trucks, or intersection design. Some of our roads were improved over the years to accommodate increased traffic, higher speeds and larger vehicles. In the last decade, the Maine Department of Transportation (MDOT) through its Local Roads Assistance Program has attempted to assist municipalities in improving further these roads to meet state and national safety design standards.

Roads can be divided into three classifications by function: arterial, collector, and local.

1. Arterials are roadways that serve long distance, high-speed through-traffic between communities, and are maintained by the state. The most important travel routes in the state, state highways, are arterials. Interstate highways may function as arterials. Arterials are major roadways which serve long distance through-traffic. Access to adjacent land is often provided.
2. Collectors gather and distribute traffic to and from arterials and generally provide access to abutting properties. Collectors serve places with smaller population densities, are often some distance from main travel routes, and often are maintained in part by the

state. Collector roads are roadways which connect local streets to arterials, and generally provide access to adjacent land.

- Local roads are all roads not in the arterial or collector classification. Local roads are maintained by municipalities, provide access to adjacent land areas and usually carry low volumes of traffic.

There are no miles of arterial, 10.98 miles of collector and 13.22 miles of local public roads. A listing of all roads within Cooper with their classification, length, maintenance responsibility and overall condition can be found in Table 1, their geographic location is illustrated on Map 2: Public Facilities and Transportation.

Table G-1: ROADWAY INVENTORY

Roadway	Arterial, Collector, Local, Public Easement	Length in Miles	Jurisdiction	Surface	Condition
Cooper Hwy–Route 191	Collector	7.84	State	Paved	Poor/Abysmal
North Union–Cooper Rd.	Collector	3.14	State	Paved	Excellent
Breakneck Road	Local/Public Easement	2.16	Town	Gravel/Dirt	Good (first 1/10 mile); remainder impassable
Dodge Road	Local	0.25	Town	Dirt	Fair/Good
East Ridge Road	Local	3.64	Town	Paved/Dirt	Good
Green Hill Road	Local	3.16	Town	Gravel	Good
Grove Pond Road	Local	0.99	Town	Gravel	Good
Vining Road	Local	0.74	Town	Gravel	Good
Crowe Road	Private	2.28	Private	Dirt	Fair/Good
Arbuckle Road	Private	0.29	Private	Gravel	Good
Blueberry Hill Lane	Private	0.5	Private	Gravel	Good
Callies Way	Private	0.47	Private	Gravel	Good
Camp Road	Private	1.59	Private	Gravel	Poor
Cathance Lane	Private	0.47	Private	Gravel	Good
Chub Cove Road	Private	0.52	Private	Gravel	Fair/Good
Cove Road	Private	0.31	Private	Gravel	Poor/Fair
Day Road	Private	0.42	Private	Gravel	Poor/Fair
Dead End Road	Private	0.15	Private	Gravel	Poor/Fair
Hallowell Drive	Private	0.14	Private	Gravel	Poor/Fair
Hold Road	Private	0.04	Private	Gravel	Fair
Murphy Point Road	Private	0.55	Private	Gravel	Fair
Old Crawford Road	Private	1.33	Private	Gravel	Impassable
Old Mill Road	Private	0.22	Private	Gravel	Poor/Fair
Pine Lane	Private	0.12	Private	Gravel	Good
Race Track Road	Private	0.05	Private	Gravel	Foot path, no longer passable
Robinson Road	Private	0.86	Private	Gravel	Good
Stony Lane	Private	0.09	Private	Gravel	Fair
Story Road	Private	1.58	Private	Gravel	Poor
Tower Road	Private	0.37	Private	Gravel	Good

Source: Maine DOT, 2009; Cooper Comprehensive Plan committee

Information from the state which classifies roads as town owned or private is antiquated. Research is necessary to clarify actual road status. Town Source material has not been accessible. Since town records have been, and will continue to be transferred to a new, accessible location, we will be able to adequately conduct our research, and will update our data.

## MAINTENANCE

Overall, the public roadways in Cooper are in poor to fair condition. Route 191, the main travel way is in very poor condition. The town does not have a highway department but contracts for road services. Contracts are overseen by the Selectmen. The town works diligently with limited resources to maintain local roads.



Photo point 2 – see Map 2

The damage that does occur to our roads is largely the result of trucking activity. Harsh weather, which includes rapid changes in weather conditions, is another cause of road deterioration. Roads are most vulnerable to the weight of trucks and other heavy vehicles during the spring thaw, which is also a time of year when many natural resource-based products are transported to market.

MDOT is responsible for all the non-local roads. Their authority includes permitting of driveways and entrances, curb cuts, summer maintenance, and traffic flow and safety decisions such as traffic signals, signs, reconstruction and road widening.

The town contracts for snow plowing, salting and sanding each year for town and State roads. The cost is covered from tax appropriations. The state reimburses the town for about 45 percent of the actual costs to the town for the State Roads that the town is mandated to maintain. Total yearly payment to Cooper from DOT is \$12,984.00 (local road 13.22 miles + state aid minor collector miles 10.98 x 1200/mile = \$29,040.00). The amount from DOT does not add up exactly when calculated according to actual road lengths and the formula for reimbursement because all towns got a reduction when the legislature reduced the appropriation in fiscal year 1999. The reimbursement to each town will not drop below the amount received in 1999, which for Cooper was \$12,984.00.

The Maine DOT Local Roads Center provides a “Road Surface Management for Maine Towns” training program, including Road Surface Management System (RSMS) software to identify which road maintenance techniques should be considered for individual roads or streets in a local street network. Introduced in 1990, it is being used by many communities to inventory their road network, record road surface condition data, interpret the surface distress information gathered, and “defend” their road maintenance budgets. The system is generic and provides an objective tool that a municipality can “customize” with its own repair techniques and local costs. The Selectmen should investigate its use and adoption in Cooper. **Road Surface Management System (RSMS)** is a road network pavement management system implemented using a computer based software package. RSMS provides information on the condition, traffic, and importance of roads in a network to create a long-term maintenance program. This helps municipalities apply limited budget resources where they will provide the greatest road quality benefits.

The MDOT prepares a Six-Year Plan, updated every two years, to link their policy based Twenty-Year Plan to the project based and fiscally constrained Biennial Capital Work Plan

(BCWP). The most recent Six-Year Plan was issued in 2003 covering the period 2004-2009. The BCWP's are issued every fiscal biennium. Other state agencies and business interests use the Six-Year Plan as they develop public and private investment strategies.

MDOT has proposed no projects in Cooper in the Six-Year Transportation Improvement Plan for 2004-2009. There are 3 Cooper projects included in the FY08-09 Biennial Capital Work Plan and one project in the FY10-11 Biennial Capital Work Plan shown in the following table.

Biennial Transportation Improvement Plan	Project Type	Functional Class Route #/Road Name Length	Description	Estimated Cost/ Fund Source
FY10-11	Operational and Safety Improvements	Major Collector Route 191 0.60 miles	Beginning 1.46 miles southerly of the East Ridge Road and extending northerly 0.60 of a mile.	\$200,000. This project will be considered for funding based on the availability of Highway Fund resources.
FY08-09	Maintenance Surface Treatment	Minor Collector Cooper Road 7.58 miles	Beginning at the intersection of Route 191 and extending northerly 7.58 miles to the intersection of Route 9 in Alexander.	\$307,500 - State
FY08-09	Maintenance Surface Treatment	Minor Collector Cooper Road 7.58 miles	Beginning at the intersection of Route 191 and extending northerly 7.58 miles to the intersection of Route 9 in Alexander.	\$256,200 - State
FY08-09	Highway Rehabilitation	Minor Collector Cooper Road 7.58 miles	Beginning at the intersection of Route 191 and extending northerly 7.58 miles to the intersection of Route 9 in Alexander.	\$351,000 - State
FY08-09	Crack Sealing	Major Collector Route 191 4.2 miles	Beginning 0.23 of a mile southerly of East Ridge Road and extending northerly 4.20 miles to 0.02 of a mile southerly of Green Hill Road in Meddybemps.	\$16,277 - Federal \$3,998 - State \$20,275 - Total

The capital improvements proposed in the FY10-11 BCWP sought to address the abysmal condition of Route 191 in Cooper. The section of 191 in photo point 3 is part of the section of Cooper Hill that was resurfaced in July, 2010. There were dozens of long stretches of multiple longitudinal fissures in the



Photo Point 3 – see Map 2

road surface that were 4-8 inches wide and, in some cases, 3-4 inches deep. These are unlikely to reappear where the road was fully reconstructed. Residents anticipate that the areas that were only resurfaced will very quickly return to their former condition due to heavy truck traffic and winter weather conditions.

There are also several areas where the never-paved shoulders are crumbling into the travelled way and



Photo points 4 and 5, see Map 2

where they wash out every year. Most of the shoulders are very soft and many are steeply graded creating very dangerous conditions if a tire goes off the road surface. Large trucks often cross the center line to avoid the shoulders creating additional hazards for smaller vehicles. The portion of Route 191 in photo points 4 and 5 was not repaired in the summer of 2010.

The CD containing the final Comprehensive Plan contains a windshield video of the road conditions during May of 2009 and March of 2010.

**TRAFFIC VOLUMES AND PATTERNS**

Transportation linkages in Cooper consist primarily of State Route 191 which runs in a north-south direction in the southwestern corner of town before bending and running in an east-west direction to the eastern boundary with Meddybemps. Although the population of Washington County has decreased modestly during the 1990s, MDOT states that the total number of vehicle miles traveled in our County has increased by over 13 percent. MDOT estimates the average annual daily traffic volume (AADT) of most state and state aid roadways.

Table 2 shows AADT counts for the most recent year (2004) for which data is available (see Map 2 – Public Facilities and Transportation for location of traffic counts). Traffic counts are also available on the East Ridge Road. The volumes shown below represent both through traffic and local activity.

Table G-2 TRAFFIC VOLUMES (average annual daily traffic volume – AADT)

Roadway	Location	AADT04
Cooper Hwy – Route 191	SR 191 @ NUMBER 14 PLANTATION	1,100
Cooper Hwy – Route 191	SR 191 NE/O IR 473 @ BR# 3855	1,070
Cooper Hwy – Route 191	SR 191 NE/O IR 336 (E RIDGE RD)	1,050
Cooper Hwy – Route 191	SR 191 W/O IR 336	990
North Union – Cooper Road	IR 473 W/O SR 191 @ BR# 3755	450
East Ridge Rd	IR 336 SE/O SR 191	210

Source: Maine Department of Transportation, 2004

Traffic counts taken every few years help the state calculate changes in traffic volume so that road improvements can be designed and built accordingly to handle those changes. AADT volumes do not reflect seasonal variations in traffic or daily peak traffic volume. Instead, AADT volumes help us understand the overall growth or decline of traffic on a roadway and the pattern of traffic on our road networks. The AADT figures do not distinguish between types of vehicles. Thus the volume of truck traffic is not being measured.

Route 191 serves as the primary arterial between the two most populated centers of the county, Machias and Calais, and between the international border and coastal Washington County (also 4 trips/day of trash from Marion Transfer Station to border). The volume of heavy truck traffic is enormous and it is traversing a road that was never designed or constructed to accommodate their volume or their weight.

The result is unsafe conditions particularly at night and in severe weather. The road surface has



Photo point #6, see Map 2

deteriorated as described above (multiple longitudinal cracks, eroding shoulders and road surface) and is nearly impossible to maintain in winter weather because of extensive longitudinal tire ruts that create an undulating road profile from shoulder to shoulder. Photo point 6 is in an area that was only resurfaced in July, 2010.

## LEVEL OF SERVICE

Traffic congestion can lower a roadway's level of service (LOS). There are six levels of service, given letter designations from A to F. LOS A represents the best operating conditions, while LOS F represents the worst. LOS E is defined as the maximum flow or capacity of a system. For most purposes, however, a level of C or D is usually used as the maximum acceptable volume. As an annual average, however, LOS does not reveal the increased congestion during the tourist season. And so, for planning purposes, a seasonally adjusted LOS should be used when analyzing the need for local traffic management improvements.

In Cooper traffic volumes are low relative to the capacity of most roadways and so the LOS has not been affected. Accordingly, MDOT has noted an LOS of A on Route 191 and LOS of A on all other collector roads within the town (see Map 2 Public Facilities and Transportation).

## ACCESS MANAGEMENT

Access Management is the planned location and design of driveways and entrances to public roads to help reduce accidents and prolong the useful life of an arterial. While arterial highways represent only 12% of the state-maintained highway system, they carry 62% of the statewide traffic volume. Maintaining posted speeds on this system means helping people and products move faster, which enhances productivity, reduces congestion-related delays and environmental degradation. By preserving the capacity of the system we have now, we reduce the need to build costly new highway capacity such as new travel lanes and bypasses in the future.

MDOT has established standards, including greater sight distance requirements for the permitting of driveways and entrances for three categories of roadways: mobility arterial corridors<sup>1</sup>, retrograde arterials<sup>2</sup>, and all other state and state-aid roads. Due to the low volume of traffic on our roadways, our town has no roads in the retrograde or mobility corridor categories of roadways, which come under stricter access management standards.

To maintain and improve traffic flows, the Land Use section of this plan and future Land Use Ordinances should include access management performance standards that are in accordance with current law.

## DANGEROUS INTERSECTIONS AND STRETCHES OF ROADS

MDOT provides data on the number and type of crashes. MDOT classifies a “high crash location” as one where at least 8 crashes have occurred in the most recent complete three-year period. The most data of such locations from Maine DOT covers the period 2004–2006. According to Maine DOT there are no high crash locations in Cooper in 2006. The individual crash locations are shown on Map 2 according to type of collision. Residents have pointed out several other areas as dangerous. These areas are described in the following two tables with suggestions for how to address the problem.

**Table G-3 Cooper Dangerous Intersections and Stretches of Road**

Intersection/Road	Safety Issue	Possible Solutions
Route 191	Lack of shoulders; soft shoulders; crumbling shoulders; steep shoulders and deep ditches; reduction in road width with repeated resurfacing	Add 4 foot shoulders with road reconstruction
Route 191	high road crown necessitating truck travel that straddles the center line	Road reconstruction
Route 191	Cyclists travelling on paved road sometimes 2 abreast; truck and vehicle traffic too fast, too many hills;	Need shoulders for bicycles to be safe

<sup>1</sup> A Mobility Arterial is a non-compact arterial that has a posted speed limit of 40 mph or more and is part of an arterial corridor located between Urban compact Areas or Service Centers that carries an average annual daily traffic of at least 5,000 vehicles per day of at least 50% of its length or is part of a Retrograde Arterial Corridor located between Mobility Arterials.

<sup>2</sup> A Retrograde Arterial is a Mobility Arterial where the access related crash-per-mile rate exceeds the 1999 statewide average for Arterials of the same-posted speed limit.

<b>Intersection/Road</b>	<b>Safety Issue</b>	<b>Possible Solutions</b>
Route 191 and North Union Road (AKA Cooper Road)	Posted speeds too high for when intersection is visible given steep downhill terrain and inadequate warning	Add yellow warning on North Union Road light to warn of STOP ahead

**TRAFFIC CONTROL DEVICES**

There are no traffic control devices in Cooper and none are anticipated as necessary in the foreseeable future except a yellow warning light at the intersection of the North Union Road and Route 191 (see Table G-3).

**SHOULDERS**

Route 191 has no paved shoulders on either side of the road for the vast majority of its length in the town of Cooper. The shoulders are unpaved and very soft, the ditches are deep and the edge of road surface is crumbling in several locations. Map 2A depicts the vehicles that have ran off the road in summer and winter conditions. One resident flipped their car when they ran off the road due to the soft shoulders.



Photo point 7, see Map 2

Paved shoulders make the road safer, allow an area that is more useful for temporary maintenance of vehicles, provide increased opportunities for faster vehicles to pass slow-moving vehicles, offer safer opportunities for pedestrian travel, and allow easier and safer travel for the increased numbers of bicyclists touring the town. Cooper will have an increased need for paved shoulders as the community grows and as traffic on these regional collector roads increases. Indeed, respondents to the survey were very much in favor of adding or including shoulders in future re-paving projects.

**BRIDGES**

Cooper has two bridges for which the State is responsible. The bridges in town are in good condition. Many culverts, on the other hand, are in very poor condition and on Route 191 result in significant frost heave action for long stretches of road from February to April. During this time every year State maintenance personnel fill in hollows with sand before the frost is out of the ground. Cold patch is then use to fill the longitudinal cracks that can be as deep as 6-8 inches.

<b>Bridge Name</b>	<b>Location</b>	<b>Capital Responsibility/</b>	<b>Feature Under</b>
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		<b>Maintenance Responsibility</b>	
Leland	North Union	State	Leland Stream
Dead Stream	Route 191	State	Dead Stream

The town’s road commissioners (Selectmen) are responsible for inspecting, maintaining the town’s culverts/bridges and inspecting its roadways.

**PARKING FACILITIES**

There are no parking structures in town. Present parking needs are met by existing on-street parking along roadways and within driveways. The Cathance Grange has a parking lot but there are no municipal lots. At current rates of growth, it is anticipated that current parking facilities will meet town needs for the next ten-year period.

There is a small parking lot (~6 vehicles) at Town Beach. There is more parking along the road leading to the beach. Additional parking is needed and could be provided at the beach access and through brush removal and the addition of gravel along the access road.

**PEDESTRIAN FACILITIES**

Presently, there are no sidewalks in Cooper and none are needed in the near future. However the addition of shoulders as noted several times above would significantly improve pedestrian safety along Route 191.

**REGIONAL TRANSPORTATION ISSUES – see Chapter L – Regional Coordination**

**PUBLIC SURVEY**

In the Public Opinion Survey there are several questions that relate to local roads and transportation. Respondents are generally satisfied with summer road conditions though they are less satisfied with winter road conditions. Opinions on investments for road improvements were varied. Adding shoulders was strongly supported as were improvements for stormwater run-off from town roads into Cooper Lakes. Again, while discontinuance of winter maintenance on unpaved road was supported (first as a study and secondarily as an action) there was also a fair amount of strong disagreement on this option.

Support for coordination among towns to seek ways to improve Route 191 was significant. Participation in a regional airport authority was polarized with many expressing no opinion perhaps because they did not understand what it means for the town.

**SUMMARY**

The transportation linkages in Cooper consist primarily of State Route 191. Our town is reliant on its road network as the primary means of transportation movement. Overall, the public roadways in Cooper are in poor to fair condition. Route 191, the main travel way is in very poor condition. The shoulders are unpaved and very soft, the ditches are deep and the edge of road surface is crumbling in several locations. Route 191 serves as the primary arterial between the two most populated centers of the county, Machias and Calais, and between the international border and coastal Washington County. The volume of heavy truck traffic is enormous and it is traversing a road that was never designed or constructed to accommodate their volume or their weight. The result is unsafe conditions particularly at night and in severe weather.

The road surface has deteriorated (multiple longitudinal cracks, eroding shoulders and road surface) and is nearly impossible to maintain in winter weather because of extensive longitudinal tire ruts that create an undulating road profile from shoulder to shoulder. A very short stretch of Route 191 on Cooper Hill was reconstructed (with 4 foot shoulders) in the summer of 2010 and a significantly longer area was only resurfaced (no shoulders). Many of the portions that were resurfaced will return very quickly to their previous condition with the weight of trucks and winter weather.

Information from the state which classifies roads as town owned or private is antiquated. Research is necessary to clarify actual road status. Town Source material has not been accessible. Since town records have been, and will continue to be transferred to a new, accessible location, we will be able to adequately conduct our research, and will update our data.

Since MDOT has jurisdiction over most main roads and one bridge within Cooper, the town will continue to communicate and cooperate with the department. The town requires all new roads to be constructed to specific municipal standards.