

2015

Larimer County Road & Bridge

Annual Report

Providing for a safe, efficient, effective transportation system

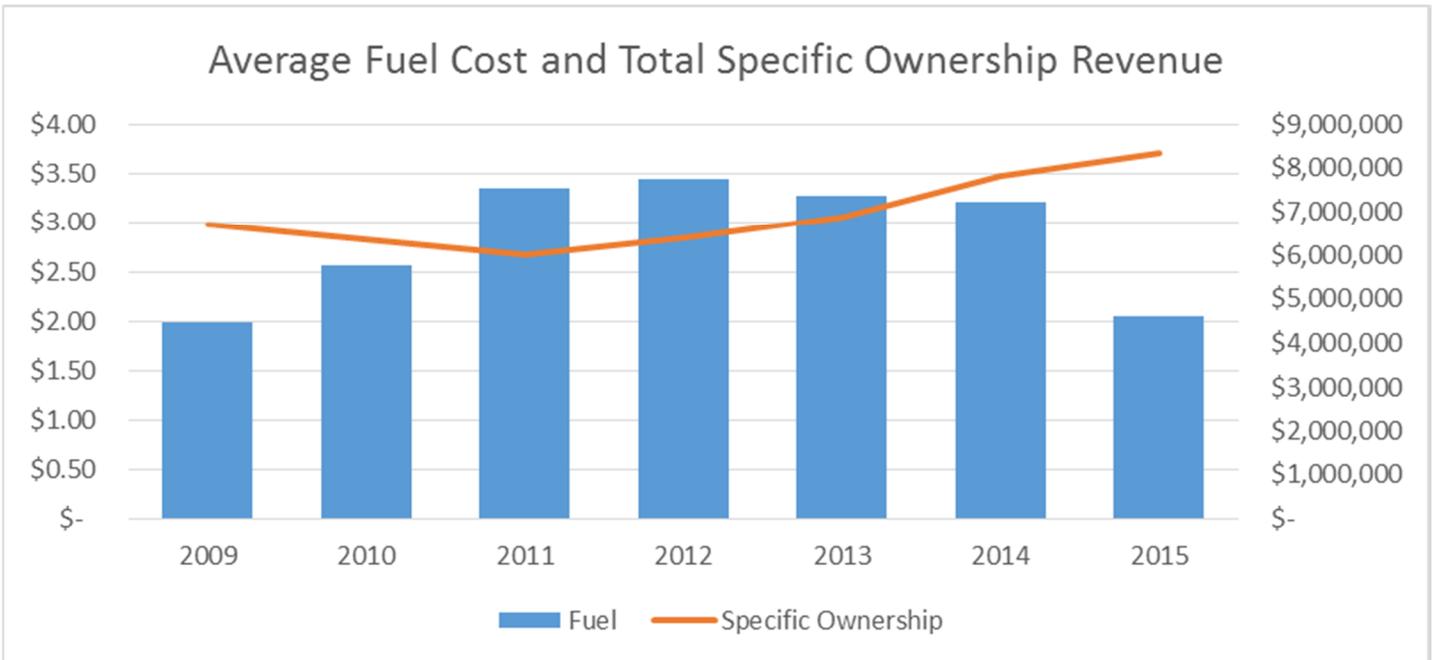


Impact of Fuel Prices

The Road and Bridge budget can fluctuate dramatically from year to year, both in revenue and expense. One of the driving forces of impact to our budget is the price of fuel. The obvious impact of fuel on our budget is on the expense side. Our maintenance operations stretch across the entire 2,640 square miles of Larimer County. We have to make decisions based on our hauling and mobilization costs on a project by project basis to ensure we are making the most cost effective decisions. During a year where fuel costs increase significantly and unexpectedly, we cannot stop or cut back on our level of response for snow or other already planned maintenance activities. We also know that contractor and material costs increase when fuel costs are high. We have to plan accordingly and know that we may have to use some reserves in those situations.

One not so obvious impact fuel price has on our budget is on the revenue side. As the cost of fuel fluctuates, so do individuals' decisions on what they drive and how often they drive. Approximately 35% of our total maintenance budget comes from the Specific Ownership Tax. Specific Ownership Taxes come from the ownership portion of fees collected when vehicles are licensed. The tax is based on the MSRP (manufacturer's suggested retail price) and the tax percentage decreases as the vehicle ages. When consumers have more buying power (not spending as much on fuel), they tend to purchase newer and more expensive vehicles and therefore a higher ownership tax is collected and distributed to Road and Bridge.

Below is a chart that shows the impact of the average price of fuel and Specific Ownership revenue.



When fuel prices are low, our expenses are generally less and our revenue for Specific Ownership increases therefore creating a larger overall budget. We have to be aware and have enough reserves to cover a year when the negative impact of higher fuel costs and lower Specific Ownership impacts our budget at Road and Bridge.

Cross Slope Changes

Each year, Road and Bridge is faced with non-paved road maintenance challenges. We are constantly trying new ideas to aid us in developing a better road system for the traveling public. In 2015, we began increasing the amount of cross slope we put into the road surface when we grade it. Cross slope is the amount of fall from the center to the edge of the road and is utilized to get water quickly off the surface before it can cause damage. While most paved roads are constructed at a 2% cross slope, we have historically maintained a 4% cross slope on our non-paved roads with the idea being that water more easily runs off a paved surface than a non-paved surface.

Last year we began putting a 5% cross slope on some non-paved roads. This 5% slope helps the water to run off sooner, resulting in fewer potholes and less wash boarding. These results have been very promising. We have observed fewer potholes appearing between grading cycles. We will continue to experiment with the cross slopes to see if this simple change to our process can extend the life of our grading operations for essentially little to no additional cost.



John Eichman, Master Equipment Operator, heads back to the shop after a graveling project on CR 66E.

Structural Asphalt Patching

In 2015 we made a decision to allocate funding to a structural patching project that would allow us to address isolated repair needs over a large area of Larimer County and stretching our maintenance dollars.

Structural patching, utilizing 4,750 tons of asphalt, was completed in 2015, 4,200 tons placed by contractors and 550 tons by Road and Bridge crews. This patching was completed on 18 different road segments



Connell Resources installs a large paver patch on CR 20.

stretching from CR 8E north to CR 70. Some may ask, “Why not just overlay a mile of road?” If we used the 4,750 tons of patching asphalt for overlay, it would cover approximately 1.5 miles of road (less than 1% of the road miles) but by spreading it throughout the County we were able to address approximately 20 miles of road (5% of the road miles).

Not all roads need to be reconstructed or overlaid. Many roads have just a few small sections that are distressed or failing. By patching these areas we will extend the life of the road and bring the road to an acceptable standard.

Killpecker Radio Tower Project

In the fall, as our crews began to prepare roads for winter, Road and Bridge was able to participate in a unique project- we built an entirely new road and building pad for the Larimer County Sheriff's Office. This new road will serve as the access road to the new Killpecker radio tower, located west of Red Feather Lakes.

The project tasks included removing vegetation, pioneering the road bed, constructing the road and associated drainage, and completing the tower pad. This was all done per a design that had been vetted and approved through the U.S. Forest Service (USFS) and the required Environmental Impact Statement process. With the steepest grade close to 20%, the road gains a little over 200 feet of elevation within 1,700 feet of travel, ending at an elevation just shy of 11,000 feet. At the summit, the road ends on a 100 foot by 80 foot pad. This pad is where the radio tower and associated building will be located. Both the road and the pad are topped with a 4 inch course of road base.

While this type of project is not typical for our department, it does combine tasks that we perform routinely. Being able to utilize these skills in concert, on a single project, is a welcome opportunity for our staff, not to mention that it's not every day that we get to enjoy our lunch at timberline!



A rented articulating dump truck moves material in the mist.

Before there was a road: Dave Rowe, IT Systems Admin (right), and Justin Hersh, R&B Group Manager (left), review the work.



Ron Nauta, R&B Team Leader (left), and Todd Pospichal, R&B Senior Operator (right), discuss the next step.



Dustin Witman, R&B Master Operator, waits for Garrett Glascott, R&B Master Operator, to load boulders that need to be hauled out.



This is how the road looked after it was completed.



Ron Nauta, R&B Team Leader, places an erosion log.

Culverts and more

Culvert Lining

Most people know what culvert replacement looks like. The road is generally closed for several days in order to remove the existing pavement, excavate and remove the failed culvert, install and backfill the new culvert and then replace the asphalt over the excavated area. In addition to the inconvenience there is a considerable cost to traditional culvert replacement.

This past spring we decided to try a new product in an attempt to rehabilitate a culvert by installing a liner inside the failed culvert section. Liners allow us to essentially slip a new High Density Polyethylene (HDPE) liner inside the old failed culvert. This eliminates the traditional costs and inconvenience of closing a road, excavating, backfilling and repairing pavement.

The product that we utilized was Snaptite HDPE pipe liner with snap together joints. The product is lightweight and yet very durable allowing us to install the liner without specialized equipment and resulting in a long lasting repair. The inside diameter of the liner is by necessity, smaller than the culvert being lined; however, the smooth wall liner results in flow capacities that meet or exceed those of the culvert being lined.

Although the cost per foot for the liner pipe is higher than the per foot cost of traditional pipe material, the costs are far outweighed by savings in labor, equipment and roadway repair costs. We were able to accomplish in a day and a half what would have taken at least 2.5 days if we would have excavated and replaced the failing culvert. Also we greatly reduced the amount of inconvenience to people who travel that road. This job was a great learning experience for Road and Bridge and saved the tax payers money along the way!



Kyle Rakoczy watches as the pipe liner is put in place for a culvert under CR 15, north of Hwy 1, where we partnered with North Poudre Irrigation and tried a new product.

Culvert Inspections

How are we identifying the drainage work that needs to be done on our road system? In the past, we had either been notified by an employee who had seen an issue or by a citizen calling in. We also inspect drainage in the areas of coming chip seal and overlay projects.

While this process had served us well in the past, we realized that in order to better budget an annual drainage program, we needed a better handle on the entire system of nearly 4,000 culverts.

After some discussion, we decided that we need a formal inspection program that occurred on a routine schedule. We worked to put together a system that could be used to identify culvert and drainage issues.

The next challenge was to choose a technology platform that was easy to use in the field and provided the information we needed.

With help from Ali Whitcomb, Public Works Business Analyst, we selected a tablet based program that can be utilized in the field without cell data or Wi-Fi. The program saves the data entered into each tablet throughout the day and then data is uploaded and sent to a central spreadsheet. This information is then used to develop annual work plans and update the Road Information Locator system (<http://maps.larimer.org/rolo/>) which provides detailed information to the public.

It may take us a few years to get through all 4,000 culverts; however, we are already using the information we have collected to determine our work schedule for 2016 and beyond. Additionally, through routine inspections, we will be able to identify trends such as life expectancy of different culvert materials throughout Larimer County.



This is some of the damage that we find. The crushed end takes capacity away and increases the chances that the culvert will fill with silt. We will schedule these types of repairs over the summer as part of our maintenance.



This is a culvert that has come to the end of its life. At this point the culvert will be replaced. The structural integrity is compromised due the holes rusted through the bottom. When we find culverts in this condition they are our first priority when the season begins.

Non-Paved Roads Maintenance

Larimer County is a very large and diverse area with many miles of non-paved roads to maintain, presenting different challenges for our maintenance teams. The county has both low volume rural and high volume urban roads, roads that are fairly flat and straight to roads in the mountains with steep grades and sharp curves. These all present different obstacles to overcome when maintaining them.

In order to provide service to all of the areas of the County, our grading crews work out of six facilities around the County including Estes Park, Loveland, Stove Prairie, Livermore, Laramie River and Waverly. While each area has the same goals and mission, to keep our non-paved roadway system safe and efficient for the public to travel along, they each have unique challenges.

Most of the non-paved roads will come out of winter in rough condition. They have been frozen, thawed, snowed on and melted many times since the last grading in the fall. As spring begins, our grading crews get started on maintenance by working through a prioritized list of roads. We generally are not applying dust suppressant to the roads this first time around because of the rainy spring weather that is to come. We reserve the dust suppressant applications and the associated costs for summer through fall.

With 443 miles of non-paved road and each of the seven crews maintaining approximately two miles of roadway per day, it takes us about eight weeks to complete a full cycle of maintenance. By the end of this first eight week phase, roads are ready for a second time through and dust suppressant is applied with this maintenance cycle. Eight weeks later we begin the process again and prepare the roads for winter.

The Road and Bridge crews take tremendous pride in their work. They do their very best to make our non-paved road system a pleasant and satisfying driving experience for the traveling public.



At County Line Road between Hwy 14 and Vine, a crew applies a road stabilization material test section of Perma-zyme, a product with enzymes that work on stabilizing the clay particles into a slate/shale type material that is environmentally friendly.

The Battle with Snow

Whether it is fall, winter or spring - and sometimes summer - snow is a large part of Road and Bridge life. The plows were out as late as May 10, 2015 and running for the first time in the fall on October 8, 2015.



Steve Johnson, R&B Master Operator, plows snow on CR 23.

The snow blower clears snow on CR 37, Red Mountain Rd.



Late spring storm, CR 74E and CR 69, April 17, 2015

Training

In the fall of 2015, a training was provided by Poudre Valley REA demonstrating the dangers associated with power lines. Our employees have the potential to come in contact with power lines during everyday construction and maintenance activities or in severe weather events. As we learned from this training, electricity can be a powerful ally and a dangerous enemy. It can get you with a bang or sneak up on you quietly.



The Changing Face of Road and Bridge

Road and Bridge changed in 2015 - more so than in any year in recent memory. While this change began in late 2014 with the appointment of a new director, 11 new employees were hired in 2015. We worked to carefully evaluate our recruitment, compensation and hiring processes in 2015. With streamlined comprehensive testing, interviews and evaluation, these 11 new employees were welcomed to our department.

While these new hires were settling in and learning the life of road maintenance, two of our longtime employees were preparing for their own life changing experiences: retirement. In late 2015, both John Krakel and Myron Smith retired— a changing of the guard, if you will.

John Krakel worked for the Road and Bridge Department for 25 years. Over the years, John held various positions within the department and worked on many road rebuilding projects, such as County Road 27 (Buckhorn Road), County Road 23 (Centennial Drive along Horsetooth Reservoir), Boy Scout Road, and Manhattan Road.

Myron Smith worked for Larimer County for over 41 years. He worked for the department for a couple years in the early 1970's, and after leaving for a short time, returned for good in 1975. Myron began working out of Larimer County's Poudre Canyon shop. At that time, Larimer County maintained Highway 14, and even rebuilt a large portion of the state highway under contract with the State of Colorado. Although Myron held a few different positions in his time here, most of that time was as a Master Operator operating our lowboy (heavy equipment transport).

It is hard to put into words- or to quantify- how the loss of our retirees' wisdom and experience will affect the Larimer County Road and Bridge Department. It is, however, very easy to exclaim the admiration and appreciation that we have for their dedicated service. We wish them all the best in their future endeavors.



Todd Juergens, R&B Director, congratulates Myron Smith on his 40+ years of dedicated service to the citizens of Larimer County.

“It snowed and snowed and we plowed and plowed” - note on the bottom of Daily Activity Report 4/17/15, Laramie River Valley received 20+” of snow

-Mike Hohnholz

**Laramie River Team
Leader, Retired 6/30/15**

2015 AT-A-GLANCE



March 2015 - Repair from 2013 Flood, bridge over Big Thompson River, CR 11H/Boise Ave.



April 2015 - 24"-36" of snow fell in Larimer County.



May 2015 - picture from cover—Rain May 18-20, Jerry Macklberg R&B Team Leader clears rock/mud slides on CR 52E.



May 2015 - Rain May 18-20 and spring run-off, washed out CR 3 between CR 20C and CR 18.



June 2015 - Tornado damage in Berthoud.



July 2015 - Our wet spring brought beautiful summer flowers. Pond at CR 67J and CR 73C.



September 2015 - Chipseal on CR 9.



October 2015 - Work wrapped up on the Killpecker Project October 6, 2015, with our first snow fall on October 22, 2015.

