

2014

# LARIMER COUNTY ROAD AND BRIDGE ANNUAL REPORT

Developing and Delivering Innovative Infrastructure  
Maintenance and Improvement Solutions Today for Tomorrow





## From the Director

It is said that variety is the spice of life, which if true, makes the Road and Bridge Department a very exciting place to be. Change is a constant at Road and Bridge. Whether it's the unexpected change that comes with reacting and responding to the effects of natural disasters as occurred in 2012 and 2013, or the expected that comes with the change of seasons, nothing stays the same for long. The exciting thing about change is the opportunities for improvement and fresh perspective.

Change being a constant at Road and Bridge, it is what makes our jobs both challenging and rewarding. When I ask our employees what they enjoy most about working at Road and Bridge, I hear things like, "everyday is something different" and "the variety". Our employees have not only learned to deal with the constant change, it's what makes them thrive. They look forward to the challenges brought on by the change.

The goal of the 2014 Annual Report is to highlight the four seasons of Road and Bridge and the changes and challenges each of these seasons bring to our organization. As the seasons change, the work we routinely perform changes as well. Additionally, each season, Mother Nature deals us a unique set of challenges. Whether it be damage from high winds, heavy rains and flooding, or large snow events, we at Road and Bridge take our responsibility to the traveling public seriously and we pride ourselves on the ability to react quickly and effectively to the changing conditions to ensure we are providing a safe and efficient transportation system.

Change has been significant in my professional life as well this past year. After spending the past 15 years as the Senior Construction Manager with Larimer County's Engineering Department, I was excited to accept a new role as the Road and Bridge Director for Larimer County in November of 2014. This change in position has afforded me the opportunity to continue my career with a great organization while learning new things from a department full of hardworking professionals. I look forward to 2015 with much anticipation and expect great things to continue at Road and Bridge.



## Spring

Typical springtime operations include:

- Crack sealing of paved roads
- Hiring seasonal employees for summer projects
- Gravel road maintenance (grading and treating with dust suppressant)
- Producing aggregate base course at our quarry
- Snow removal during spring storms
- Switching our equipment fleet from winter readiness to summer readiness

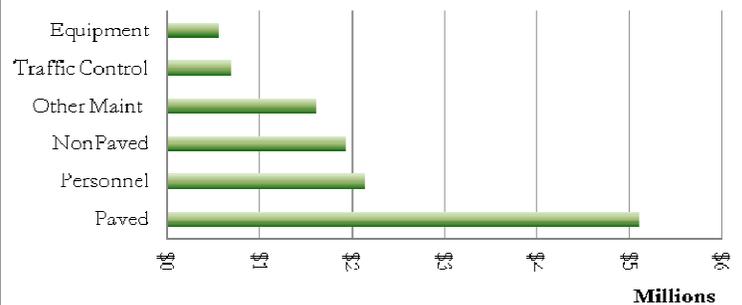
The winter of 2013/2014 blessed Larimer County with large volumes of snow in the mountains providing plenty of water for the Front Range. Unfortunately for the Road and Bridge Department, the snow melt is carried from the mountains in streams, that in many cases, run immediately adjacent to county roads and even in normal years, can cause damage to these adjacent roads. The complicating factor in the spring of 2014 was that many of the roads we historically experience high water issues had been severely damaged during the 2013 flood. The roads had yet to be reconstructed to a permanent condition leaving them more susceptible to damage from spring runoff flows.

For several weeks during the peak runoff our crews were busy monitoring roadway embankments, shoring up weak

spots with rip rap and clearing debris as the water continued to rise. We were very concerned with the real possibility that we could lose sections of road that had recently been re-opened on temporary platforms, again stranding citizens and cutting off emergency services. Significant attention was focused on CR 44H and CR 27 along Buckhorn Creek, Fish Creek Road in Estes Park, CR 43 adjacent to the North Fork of the Big Thompson, several temporary crossings of the Big Thompson along HWY 34, and CR 52E along Rist Creek.

Through a lot of hard work from very dedicated Road and Bridge employees, we were able to stay one washout ahead of Mother Nature's best attempt to once again show us who is boss.

**Maintenance Expenses from Apr 1 - Sep 30**  
(79% of total maintenance expenses)  
**\$12,060,959**





## Summer

Typical summertime operations include:

- Mowing roadside slopes and ditches
- Striping of paved roads
- Chip seal and sealcoat application on paved roads
- Gravel road maintenance (grading and treating with dust suppressant)
- Culvert installation and cleaning
- Roadside drainage maintenance
- Asphalt patching
- Vegetation control (brush and trees)

Summer rains are usually a welcome relief from the hot dry days we typically experience but as with anything, too much of a good thing can create issues. Large thunderstorms in June and July caused damage to county roads requiring us to respond quickly to repair and re-open roads.

In June we had a minor timber bridge (a bridge with a span of less than 20 feet) on CR 92 wash out and collapse during a heavy thunderstorm. The road was closed for about 2 weeks until we were able to replace the bridge with three 48 inch culverts. The same storm that destroyed the bridge on CR 92 also washed out the approaches of the first bridge south of CR 92. Our fix for this bridge was similar to CR 92; we installed two 60 inch culverts and lowered the crossing creating a low water crossing.

A July storm brought flooding to CR 23 and 2<sup>nd</sup> Street in

Bellvue. Due to the High Park Fire, we are still experiencing flooding from relatively minor storms. With the flooding also comes silt and debris from the fire. There was about three feet of water over CR 23 and approximately two feet of deposited material on 2<sup>nd</sup> Street. It took us one day with a loader and tandem trucks to remove approximately 200 cubic yards of deposited material from 2<sup>nd</sup> Street. CR 23, where Mill Canyon Creek crosses, was significantly damaged in the September 2013 flood. The Larimer County Engineering Department is designing a new crossing that will have a significantly higher capacity. This project will allow the road to stay open and remain safe through more of the summer storms.





## Summer—Road & Bridge Chip seal

During the summer of 2014, our chip seal program took place on paved roads in the northern reaches of the county. We had a very productive season, chip sealing a little more than 800,000 square yards (over 100 lane miles) of road surface, beginning south of the Waverly area and working our way north towards the Rawhide Energy Plant. We then worked our way to the west, chip sealing CR 74E between the communities of Livermore and Red Feather Lakes. Our work area was varying in terrains and we all welcomed the chance to work on some of the more "wide-open" paved roads in Larimer County. Due to the fact that this year's chip seal was spread over a large area, logistics were paramount as it required over 320,000 gallons of emulsified asphalt and just over 10,000 ton of aggregate. The men and women of the Placing and Hauling Teams came together to perform the work and, since has become the norm, were able to produce a high quality and cost-effective chip seal - one which will provide a much needed armor to help protect our paved roads, regardless of the season.



Our chip seal program is typically performed during the heart of the summer; a chip seal can be compromised or even ruined should wet weather interfere with its construction. Therefore, hot and dry weather help lend to a successful process and a quality chip-seal.

## Summer of 2014

### Striping Program



- 9,286 gallons of white paint
- 12,998 gallons of yellow paint
- 114,049 lbs of glass beads





## Fall

Typical fall operations include:

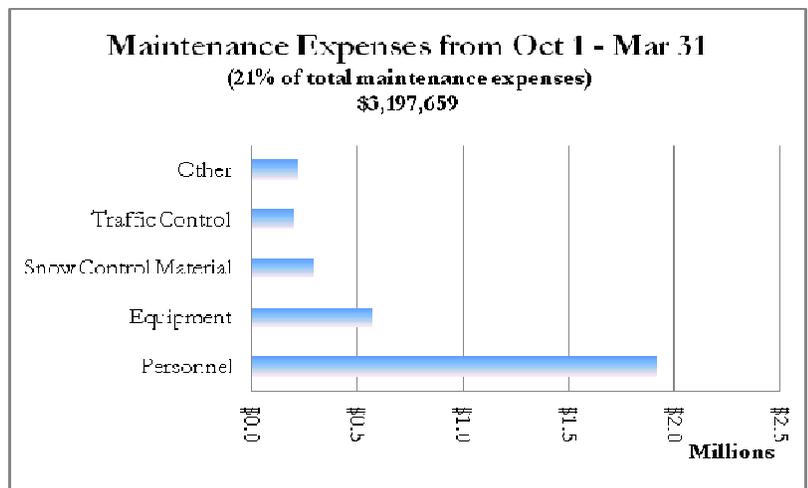
- Crack sealing of paved roads
- Gravel road maintenance (grading and treating with dust suppressant)
- Producing aggregate base course at our quarry
- Snow removal during fall storms
- Snow removal training
- Filling salt sheds with de-icing salts
- Switching our equipment fleet from summer readiness to winter readiness

As summer winds down and fall is in full swing, our grading crews are busy preparing the gravel and native surfaced roads for winter. We try to go into winter with our roads in good condition - shaped and smooth - just prior to the hard frost setting in. This allows for easier snow removal and provides for good drainage during the many freeze thaw cycles they will experience through the winter months.

In the fall of 2014, as we were preparing the roads for winter, we experimented with a new process on CR 72 (Owl Canyon Road) between HWY 287 and CR 21. This segment of road carries approximately 1300 vehicles per day and has long been a challenge to maintain as a gravel road.

Working with our partners at Envirotech Services, Inc.

we blended a roadway stabilizer called “SLR” into the top four inches of the gravel surfacing. This four inch layer was then shaped and compacted across the roadway and then capped with an application of our standard dust suppressant, “Durablend”. This procedure called “compact and cap” has so far proven to be very successful. At this point we estimate that it will reduce the number of times we are required to perform maintenance on this road from six per year to four per year more than offsetting the additional cost of the treatment while providing a better product to the citizens of Larimer County. As with all new technologies we explore, we will continue to monitor the performance before making a final judgment as to the success of the product, but the initial results are promising.





## Road & Bridge Fall Project

The fall of 2014 found the Road and Bridge Department beginning a project that had been in the queue for some time - reconditioning and graveling the "lower" portion of County Road 80C, also known as the Cherokee Park Road. We began work at Highway 287 and worked west, the goal being to recondition the road to the top of Calloway Hill, which is about 4.5 miles. This portion of road had become increasingly harder to maintain due to a combination of higher traffic and deteriorating surface

materials. By constructing a proper template on the road sub-grade and reconditioning the roadside drainage, we were able to help ensure that the road and the gravel we place on the road surface will perform optimally. These projects help create a valuable, safe road for all - and one that will be able to be maintained as such for years to come.



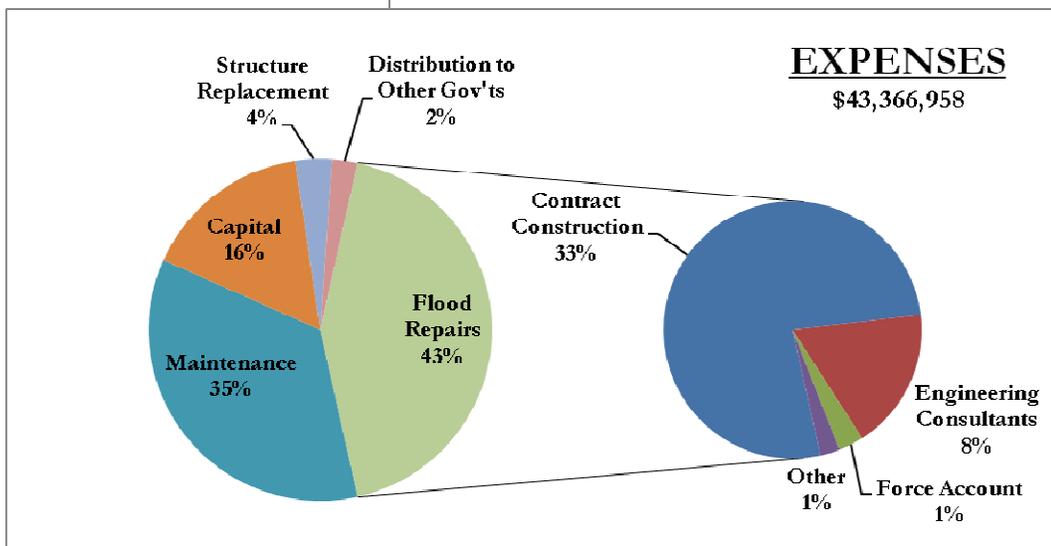
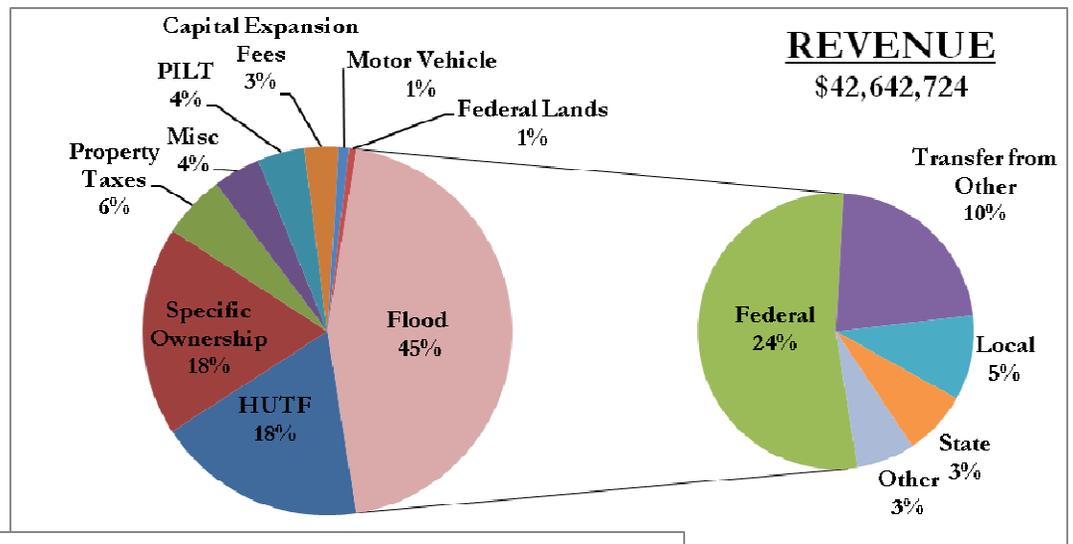
## One Year after the Flood

It is hard to believe that more than a year has gone by since the September 2013 flood. It has been busy. In addition to our regular responsibilities for maintenance, we have been aiding in the flood recovery. It has proven to be very challenging as we learn the rules of the various federal agencies to help guide our work so that we are eligible for as much reimbursement as possible. We have done permanent repairs on 29 projects, this includes minor bridge repairs in the Big Thompson Canyon and road and embankment and private accesses within the right-of-way on the Rist Canyon Road (CR 52E), to name a few. Timing our work is another challenge, whether it is so that the flow of the rivers is at a manageable level or working with other agencies or contractors who have projects in the same area. We have supported contractors by helping to haul material for permanent repairs to bridges and roads and have made repairs that will be incorporated into the permanent repair projects on CR 21 south of CR 4, the Redstone Canyon Road (CR 25E) and the Buckhorn Road including portions of CR 44H among others. In addition, the Road and Bridge Department removed silt from the right-of-way county wide and we have also completed emergency repairs to FHWA projects like the Namaqua Bridge south of US. Highway 34 and Mall Road in Estes Park. Overall, 2015 is shaping up to be another busy year as we continue to aid in the flood recovery with projects on Boise Avenue, the Cherokee Park Road and many others.



## Finances

In order to complete and fund large projects, the Road & Bridge budget often, as was the case in 2014, has budgeted expenses that exceed revenue. In these cases, we use our fund balance savings to fund these activities.



*These figures are unaudited. Audit to be completed mid 2015*



## **FLOOD**

- During 2014, infrastructure repairs resulting from the 2013 flood had a significant impact on our financial picture as well as on our day to day work. Flood revenue represents 45% or \$19.1 million of our total revenue, which includes a \$4.2 million dollar cash flow loan from other funds to be repaid in 2015 when reimbursements occur.
- Flood repairs make up 43% or \$18.6 million of our total expenses. Of the total \$18.6 million in flood repairs, \$14.2 million was in construction, \$3.2 million in engineering consultants, \$583k in Road and Bridge labor, equipment and materials and \$457k in other expenses.
- There were over 500 invoices processed to pay contractors and consultants related to the flood and over 150 request for reimbursements (RFRs) submitted to the State.
- There are over 80 individual projects with hundreds of locations with which to track costs.
- Over \$17 million in RFR's have been submitted to the state for expenses incurred in 2013 and 2014. We have received approximately \$11.6 million in federal and state reimbursements.

## **MAINTENANCE**

- We received our highest ever annual revenue from Specific Ownership, which was approximately \$1 million higher than 2013.
- We had staff vacancy savings of approximately \$650,000.
- We had savings in operating material expenses of \$200k for pipe, riprap and other materials, since a large portion of these activities were on flood repair projects and reimbursable from the federal government.

## **CAPITAL**

Construction was completed on the following projects:

- Intersection improvements at CR 30/CR11 and CR30/CR 11C, including construction of modern roundabouts
- New northern extension of Owl Canyon Road, including construction of new roadway from CR 19/CR 70 to CR 21/CR 72 intersection and construction of a roundabout at CR 19 and CR 70

## **STRUCTURES**

- Construction was complete on the project to replace bridge 11C-0.7-24E over the Horseshoe Reservoir Spillway



## Winter

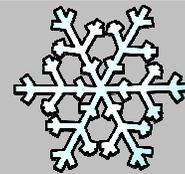
Typical winter time operations include:

- Gravel road maintenance (hauling and placing gravel)
- Pothole patching
- Snow removal
- Staff training

As winter approaches, our Road and Bridge employees work hard at their secondary employment as weather forecast interpreters. It takes a lot of conversations and planning and the moving of our resources (people, equipment and material) to be prepared for the storms and ensure the roads are safe for the travelling public. Road and Bridge removed snow from Larimer County roads on 123 days last year with the first snow on January 1<sup>st</sup> and the last snow on December 31<sup>st</sup> and 121 days in between.

During 2014, it was a typical year we would say for snow, if typical means unpredictable and unscheduled. On May 20<sup>th</sup> - as tends to happen in Colorado - and just when we think summer is finally here, we received a late, spring snowstorm. On October 2, 2014, we received a unique storm system that was short in duration, but caused very slick conditions, thus

requiring more resources to respond accordingly. There were no extraordinary accumulations of snow or long durations of snow. There were a lot of one to three day storms that we had to respond to. However - as is often heard in the Road and Bridge Department - it doesn't matter if it's one inch or one foot, we must be prepared and respond accordingly, no matter the day, time of day, or location within the County.



### Winter 2014

- Last Spring Day Plowed—5/20/2014
- Total Hours Plowed in 2014—11,606
- Busiest Snow Plow Day— 1/27/2014
- Busiest Snow Plow Day Labor Hours—334



## Focusing on the Future

In Road and Bridge, where there are so many different operations and responsibilities being addressed on a daily basis, it is easy to become distracted by today and fail to plan for tomorrow. While our management team is focused on assuring that we are meeting the current needs of the transportation system, we are also looking 5, 10 and 20 years down the road to position the department as such that we can continue to be successful and meet our obligations for decades to come.

The following are a few of the long-range planning items we are working on:

- **Water** - We are looking for opportunities to purchase raw water rights in the southern part of the county. Currently, we purchase treated drinking water for use in our gravel road maintenance program. Not only is the water expensive, we can only access it at specific locations, requiring us to transport the water long distances. In 2014, we purchased 2.4 million gallons at a cost of \$17,918. Securing the legal right to access raw water at locations near our work will be instrumental in our ability to cost effectively maintain the gravel roads in the southern part of the county.
- **Gravel Resources** – Larimer County currently owns and operates one active gravel quarry, the Strang Pit, located at CR 7 and CR 40. We have operated this quarry since the mid 1970's, producing well over 1.5 million tons of high quality aggregate base-course for use on the county's gravel roads. Current estimates are that we will exhaust the gravel resource in this quarry by 2023. With approximately 350 miles of gravel roads in the county, it would take in excess of 2 million tons to surface each road one time and we typically re-surface gravel roads every 10 to 12 years. Therefore, having high quality gravel resources is critical to our ability to maintain the roads and having those resources spread out around the county helps to reduce our cost of transporting the gravel. The majority of the cost to produce and place gravel is in the transportation. For a road that is 50 miles from the quarry, the transportation amounts to 80% of the total cost to produce and place a ton of gravel to the road. Acquiring and permitting gravel quarries is an arduous process, so we need to begin planning now.
- **Satellite Shop Facilities** - In order to provide the level of service expected of us, Road and Bridge field crews currently operate out of seven satellite facilities. We currently have shop sites in Livermore, Waverly, Stove Prairie, Loveland, Estes Park, Fort Collins and Laramie River. We maintain these shop sites so that we have equipment, tools, materials and people close to the areas that we are responsible for. It allows us to be able to respond more quickly to storm events and emergency situations. Many of these facilities were constructed and sized for a completely different fleet of equipment than we employ today. It is critical that each facility remain in good repair to meet our current and future needs. The average age of our satellite facilities is 48 years. We will be completing a facilities master plan to ensure we are located in the right locations and will be looking for opportunities to consolidate, upgrade or replace several of these facilities in the coming years.

While these issues present challenges, they also present opportunities. We will work to overcome the challenges and take advantage of the opportunities as we develop plans for the future

