

2015

# Larimer County Engineering Department Annual Report

Engineering A Better Future For Larimer County

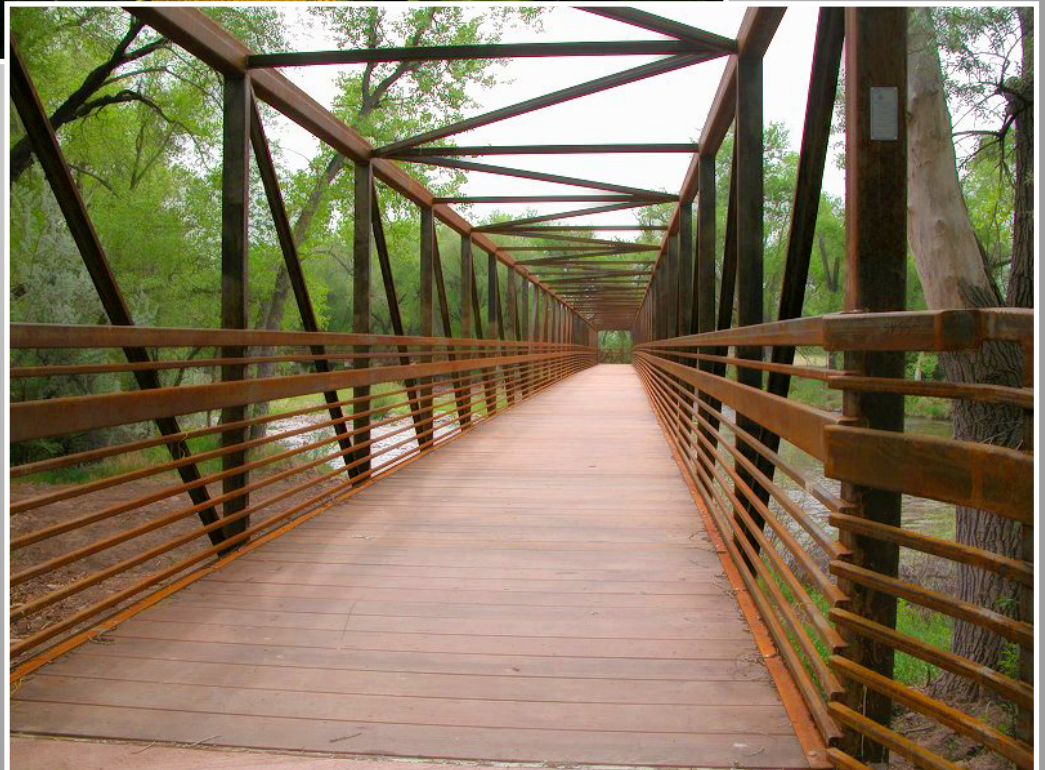




Glacier View Meadows, by Kenneth MacKay



Sunflowers near Wellington



LaPorte, by Sharon Veit



Mt. Evans Mountain goat kids, by Tom Foster



Owl, South Loveland, by Glen Cox



Horsetooth Reservoir, by Jacquie Hadwick

# COUNTY ENGINEER

Both during 2015 and looking ahead through this upcoming year, considerable time and effort from Engineering staff continues to be devoted to flood recovery projects.

There are more than a dozen major projects to repair our road and bridge infrastructure after the 2013 flood and we estimate that it will take more than \$120 million to address our needs. Three projects – Pinewood Springs bridges, CR 27 (Stove Prairie), and CR 27 (Buckhorn) are fully complete. During 2016 we expect to see two more finished up – CR 43 (Glen Ha-

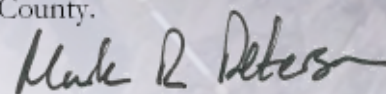
ven), and the CR 29 bridge over the Big Thompson River. The remaining projects are all in various stages of the design, permitting and construction process.

We are also moving forward with four strategic objectives related to transportation infrastructure. One of the objectives that's highlighted in this newsletter involves repairing or replacing all structurally deficient bridges on our mainline county road system where the traffic counts exceed 200 vehicles per day by the year 2020. We have the funding available and are pushing forward to accomplish this objective.

We're going to highlight the CR 27 (Buckhorn) road reconstruction work in this newsletter since it is a great ex-

ample of how so many of the technical disciplines in the engineering department work together as a cohesive team to complete a project.

I continue to be thankful to get to work each day with an amazing group of professionals who truly want to Engineer a Better Future for Larimer County.



Mark Peterson, PE  
Engineering Department Head



***“By the end of 2020, 100% of the publicly-owned and maintained bridges, on mainline collector or arterial roads over 200 ADT, in unincorporated Larimer County will be structurally sufficient.”***

Larimer County Strategic Plan 2013– 2018



New bridge over the Poudre River LCR 17

# Progress on Flood Repair Projects

**CR 43:** Reconstruct 10.5 miles of roadway between Drake and Glen Haven, including 8 new structures. Construction in 2014-2016 with a budget of \$38 million.



*Fish Creek*

**CR 44H:** Reconstruct close to 10.3 miles of roadway from CR 27 west to Ballard Road including replacing 12 structures. Construction anticipated for 2016/2017 with a preliminary budget of \$8 million.

**Fish Creek:** Reconstruct 4.5 miles of roadway from US 36 to SH 7 that includes major utility relocation, installation of large culverts, extensive embankment armoring, reconstruction of the bike/pedestrian trail, and reconstruction of significant roadway sections. Construction in 2014-2017 with a budget of \$10 million.

**CR 19E, Namaqua Bridge:** Replace the bridge over the Big Thompson River. Construction scheduled for 2018 with an anticipated budget of \$3.2million

**CR 15 Bridge:** Replace the bridge over the Little Thompson River. Construction scheduled for 2017 with an anticipated cost of \$4 million.

**CR 29/22H:** Construct concrete retaining walls and embankment protection. Construction underway at a cost of approximately \$7 million.



*LCR 29*



*LCR 43—Glenhaven Rd*

**CR 25E :** Replace several culverts and stabilize roadway embankment. Construction in 2016 at an anticipated cost of \$1.5 million.

**CR 47:** Reconstruct approximately 2.5 miles of roadway including several new bridges. Construction is scheduled for 2016/2017 at an anticipated cost of \$10 million.

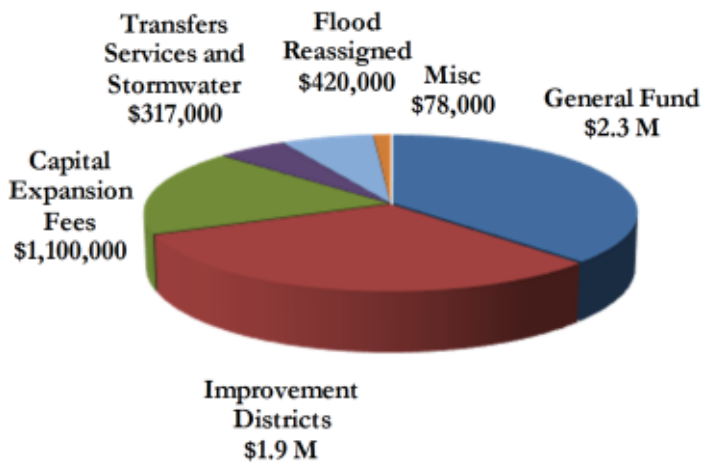
**West Creek Structures:** Three new structures will be built across West Creek along West Creek Drive. Construction is scheduled for 2016 at an anticipated cost of \$ 2.7 million.

# SUMMARY OF FINANCES NON FLOOD

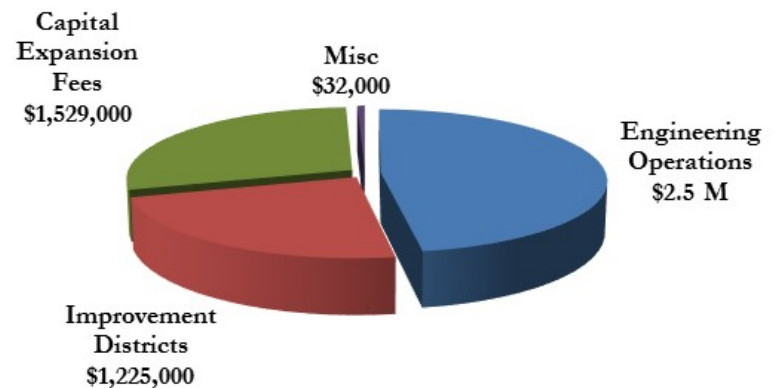
Engineering Department funding comes primarily from the County's general fund and Capital Expansion Fees. During 2015, the Engineering Department designed and managed the construction of approximately \$9 million of non-flood related improvements for roadways and bridges. This is in addition to the flood repair projects which are managed by Engineering but budgeted in other County accounts.

Improvement Districts, a significant portion of the budget, are voter approved assessment districts that tax themselves for improvements in specific areas. There were 55 active improvement districts in 2015. Improvement Districts are managed by Road Boards, with oversight from the County, that have discretion over improvements and spending in their area.

## 2015 Revenue \$6,126,000



## 2015 Expenses \$5,305,000

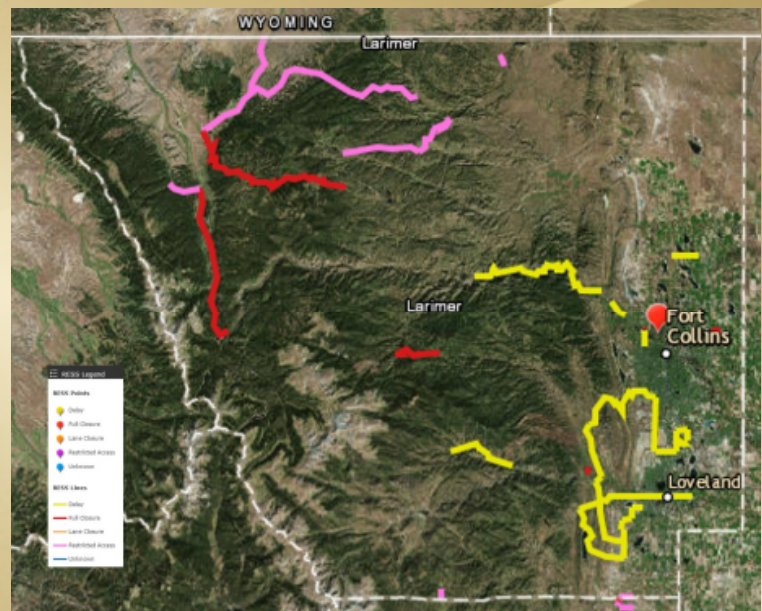


These figures are unaudited. Audit to be completed mid 2015.

## Road Event Status System released by Larimer County

Larimer County has released the **Road Event Status System, RESS**, an application to provide our customers access to information about activities that may affect their ability to travel on County roadways. In RESS, near real time information is available on web pages, interactive maps, emails and social media posts. RESS was developed through a partnership between Engineering, Road & Bridge, and Facilities and Information Technology. Customers can subscribe to have scheduled weekly summaries and near real time notifications of delay-causing events, detours, and/or road closures sent directly to their email. The RESS application can be found on the Larimer County Website, [http://www.larimer.org/roads/road\\_closures/](http://www.larimer.org/roads/road_closures/)

~Drew Davis, Senior Business Analyst



# The Buckhorn Road

## Environmental Restoration Project

involved several environmental oversight components. The entire Buckhorn Creek watershed is classified as Preble's Meadow Jumping Mouse designated critical habitat.

Bridges and culverts were designed to have natural gravel floors, which provides continuity of riparian habitat for all wildlife throughout the crossing. Hard armoring (rip rap) at the bridge abutments was filled with small diameter fines, covered with soil, and then seeded with native grasses. This process not

only restores native habitat for the Preble's mouse and other wildlife, but the reseeded reduces soil erosion and the establishment of noxious weeds. Lastly, an important habitat component for the Preble's mouse are willow thickets along the creek's corridor.

To restore that habitat component, native willow species were identified and planted along the entire length of the project.

The environmental coordination specialist oversees the habitat restoration activities, and will continue to monitor the success of the habitat restoration along the Buckhorn Road project over the next several years. These monitoring activities will include quantifying the establishment of grasses, willows, and noxious weeds. Percent cover of these plants will be measured to determine whether growth meets the restoration success criteria required by the US Fish and Wildlife Service.



~Shelley Bayard de Volo,  
Environmental Coordination Specialist



Willow poles planted along embankment



River restoration work on Buckhorn Road

# County Road (CR) 27

Repairs include 10 miles of road, 4 large box culverts, 3 new bridges and extensive repairs to 1 existing bridge. Construction was completed in 2015 at a budget of \$17 million



Rock scaling after blasting to improve road alignment

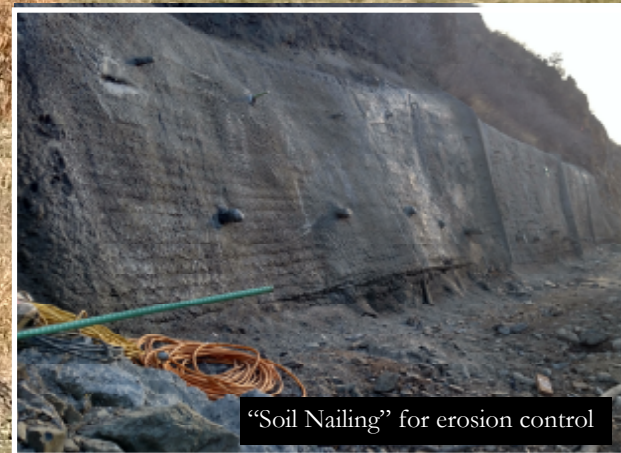


The **Land Agent Group** is responsible for getting all right-of-way acquisitions signed and secured after the engineering design is complete but prior to construction. The County's permanent flood repairs have involved redesigning our roads and structures to be safer and more resilient. These improvements often require a widening of the County's right-of-way to accommodate larger structures or relocations of roadways. Land agents take the new designs and plans and work with landowners affected by the additional right-of-way need.

CR 27 required 17 new right-of-way acquisitions. A typical non-flood year has 15 to 20 acquisitions total. The same level of acquisition effort is underway on other flood recovery projects like Fish Creek (50 acquisitions), CR 44H (20 acquisitions) and CR47 projects going forward this year.. Larimer County Road 43 required 49 acquisitions from different landowners to allow the more resilient road to be constructed.

The success of the land agents work is the result of a team effort. We work with the engineers to understand the designs and plans and the surveyors provide the exhibits for the acquisitions. We also assist the construction group during the construction phase to address any concerns or questions.

~Charlie Johnson, Tim Meyer, Alex Castino



"Soil Nailing" for erosion control





The **Project Management Group** consists of six engineers that oversee and manage several different areas and programs within the engineering department. While there is a lot of crossover in duties for all of the groups in the Engineering Department, the main groups that the project managers work with are the surveyors, land agents, CADD, and construction management group.

The main focus of the group is to oversee the design and construction of capacity, safety and maintenance projects for the roughly 1,000 miles of the county's mainline roads, 200 major bridge structures and 482 minor structures

~Rusty McDaniel, Assistant County Engineer



The **Construction Management Group** is responsible for implementing the Engineer's vision of a project through the construction phase. This includes contract management, site coordination, and quality control/inspection. These are the people in the field on a construction site on a regular basis.

The County Road 27 project was huge for the Construction Group. The complexity and speed of delivery for this job were challenges. In order to deliver the road back to the public as quickly as possible many aspects of the design were determined or revised during construction. This elevated the need for strong management/coordination with the contractor.

~Erich Purcell, Construction Manager



The **Development Review Group** of the Engineering Department works closely with the County Planning and Building Departments, providing detailed technical review of all new land use applications submitted to the Community Development Division. This review includes assuring that all new development meets the County adequate public facilities requirements for our transportation and stormwater systems.



Reviews are also provided on most building permits received by the Building Department. The intent of the engineering review is to confirm that all new structures are in compliance with County access and floodplain requirements and to assess appropriate transportation fees. Requiring new development to meet minimum standards protects the County infrastructure and the general public.

~Traci Shambo, Senior Engineer Development Review Services



(left to right) Mike Oberlander, Chris Carlson, Greg Koch, Elisabeth Ervin-Blankenheim, John Hunt, Chris Thornton

## The **Stormwater Quality Program**

was created to assure compliance with state and federal water quality regulations. The program consists of public education, detecting and eliminating illicit discharges, monitoring and minimizing runoff from construction sites, and requiring permanent water quality protective features as development occurs. This program coordinates with the Colorado Department of Health for illicit discharges and the County's Household Hazardous Waste Program helps with education and outreach and reduces the dumping of pollutants into our waterways and roadside ditches.

~Traci Shambo, Senior Engineer



## Larimer County's **Floodplain Management Program**

started when the County joined the National Flood Insurance Program in 1974 and has been active in floodplain management since that time. Larimer County has over 300 miles of floodplain. Floodplain maps and County regulations provide the foundation for the program, which is primarily intended to identify potential risk during times of flood, increase the safety of citizens, and minimize the threat to life and property.

Staff relies on the technically qualified County Flood Review Board, a six member board who's members have extensive knowledge of local and federal flood plain regulations and generally have expertise in river hydrology, hydraulics and geomorphology.

~Traci Shambo, Floodplain Administrator



Engineering staff February 2016

## Contact Information

### Larimer County Engineering Department

**Address**

200 West Oak Street  
 Suite 3000  
 Fort Collins, CO 80521

**Mailing Address**

PO Box 1190  
 Fort Collins, CO 80522-1190

**Phone / Fax**

(970) 498-5700  
 (970) 498-7986

**Office Hours**

8:00 a.m. - 4:30 p.m.  
 Monday - Friday

**On The Web At:**

[www.larimer.org/engineering](http://www.larimer.org/engineering)

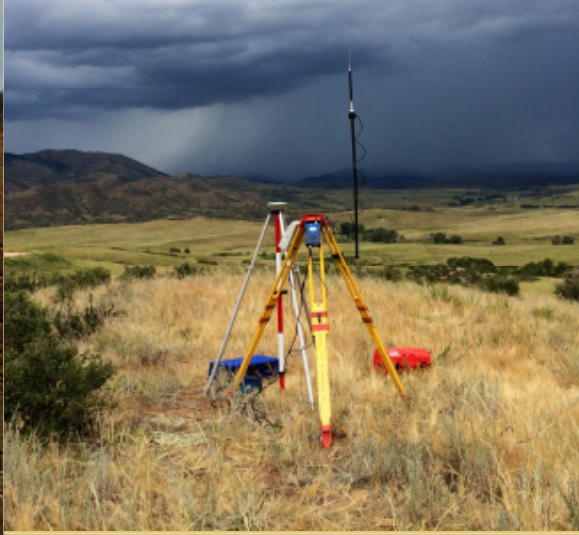


**Public Works Division**

- Engineering
- Natural Resources
- Road and Bridge
- Solid Waste
- The Ranch



**Land Surveying** is the art and science of measuring land and retracing and/or creating boundaries for a multitude of purposes. A majority of our work involves supporting our engineering staff with topographical data used for the design and rehabilitation of County Roads and structures (bridges). The surveying team is also responsible for laying out (construction staking) of the Engineering designs so the construction contractors can build the projects as designed.

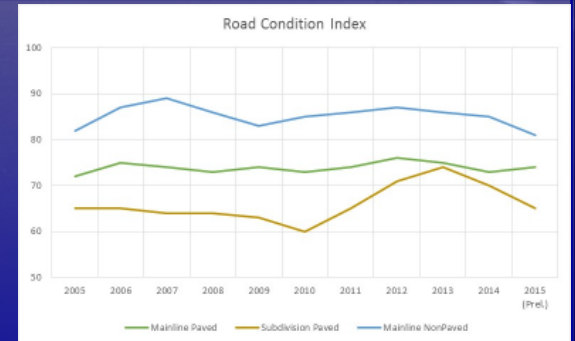


In addition to the regular survey field work, the survey group is tasked with reviewing plat submittals that are processed through the Community Development Division and working alongside our Land Agents in the capacity of writing legal descriptions and drafting exhibits used for the acquisition of rights of way and easements in support of capital projects. Surveying is also performed at the request of the Department of Natural Resources.

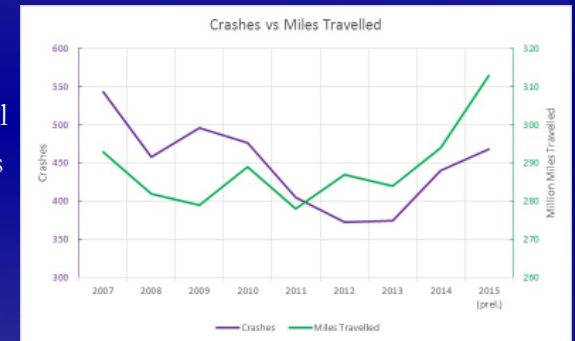
Keep Calm and Measure On!

~Brian Helminiak, Surveyor

The **Traffic and Data Group** provides information used throughout the Engineering Department. Traffic data including traffic counts and crash records are used in reviewing land development proposals, in capital project selection and scoping, in various grant funding applications, and in identifying safety improvement opportunities. This data goes into the Road Information Locator (RIL) available to the public on the County website.



This group does the signing plans for construction projects laying out the location and types of sign. Speed, sight distance, curve, and sign studies are used to improve safety on roadways and intersections as well as improving traffic operations for better traffic guidance and flow.



Transportation Planning includes the development of long range plans. Coordination with local, regional, state and federal agencies help to bring resources to the County and region for transportation projects.

~Brian Fraaken, Senior Civil Engineer