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Narrative of 2018-2021 Ernie Blake Rd and Thunderbird Rd Infrastructure Improvements

11/16/22

Subject: Public Infrastructure installed on Ernie Blake and Thunderbird Roads between 2018 and 2021

During the summers of 2018 through 2021, numerous public and private infrastructure projects were completed. This narrative explains the scope of each of the projects completed.

Ernie Blake Rd

Ernie Blake Roadway

Ernie Blake Rd was re-aligned to achieve a maximum 12% center-line slope, bringing this road into full compliance with VTSV ordinances. This realignment was the culmination of several years of negotiations, land swaps and dedications. The roadway consists of two 10 ft-wide travel lanes with an additional foot of gutter on each side for a 22 ft-wide drivable surface. The road embankment on the southeast side of the roadway was graded to a 3H:1V slope, eliminating the warrant for vehicular guardrail. Although not warranted, a vehicular guiderail was installed along the upper portion of the roadway.

A new 6 ft-wide concrete sidewalk was installed along the northwest side of the roadway, with new 6 inch-thick driveway aprons for the Cottam's Cottages, Parcel C development, Powderhorn, and Al's Run Condominiums.

Ernie Blake Rd - Sanitary Sewer

The former sanitary sewer ran under the old Ernie Blake Rd alignment and was replaced with new, 8-inch diameter HDPE DR-11 pipe with tracer wire, new concrete manholes with rubber gaskets, external joint wrap and secure pipe connections to eliminate groundwater infiltration.

The new sewer line begins under Twining Rd and connects to the Twining Rd sewer line and conveys sewage down Ernie Blake Rd. At a point even with Lake Fork Rd, the Ernie Blake sewer line picks up flows from the Lake Fork Rd sewer and increases to a 12-inch diameter HDPE DR-11 pipe. The sanitary sewer continues down Ernie Blake Rd, picking up flows from the Thunderbird sewer line and finally connects to the sewer line installed in 2017 crossing under the Ernie Blake Crossing at the Lake Fork of the Rio Hondo. All sanitary sewer pipe sizes satisfy the 1/24/2011 VTSV Schematic Sewer Master Plan prepared by McGlaughlin Water Engineers.

Ernie Blake Rd - Water

The former water line, of unknown cover and condition, ran under the old Ernie Blake alignment and connected to the water lines under Twining Rd, Ernie Blake Rd, Thunderbird Rd, Lake Fork Rd and crossed the Lake Fork of the Rio Hondo within the center of Parcel D. This water line was completely replaced under the new Ernie Blake Rd alignment and within the new Ernie Blake Rd Right of Way. The pipe material is Class 350 Ductile Iron Pipe with fully restrained joints, a minimum cover depth of 8 ft, and tracer wire.

The project also replaced the Pressure Reducing Valve and vault located at the intersection of Twining and Ernie Blake Roads, replacing the previous PRV located on private property (Al's Run). The water line is sized as an 8-inch diameter line from Twining Rd down to Lake Fork Rd where the diameter increases to 10 inches and

connects to the water infrastructure installed on the south side of the Lake Fork of the Rio Hondo. The new water line crossing is located just downstream of the Ernie Blake Roadway crossing, with the water line being installed within casing pipe should the need to remove the pipe ever become necessary. All new water main valves, thrust blocks and water service lines were installed as part of the project. One new hydrant was installed adjacent to Parcel D, one new hydrant installed at the intersection of Twining Rd and Ernie Blake Rd, and the existing hydrant at the intersection of Lake Fork Rd and Ernie Blake Rd was relocated. All installed water pipe sizes satisfy the 1/24/2011 VTSV Schematic Water Master Plan prepared by McGlaughlin Water Engineers.

Ernie Blake Rd – Storm Sewer

The entire stormwater collection system along Ernie Blake Rd was replaced from the intersection of Twining Rd to the point of discharge at the North Fork of the Rio Hondo. The storm system connects with the Twining Rd storm system, and collects stormwater from adjacent properties, Lake Fork Rd, and Thunderbird Rd and conveys these flows down to the Vortex Stormwater Treatment unit installed in 2017 and located at the Lake Fork of the Rio Hondo - just upstream from the Ernie Blake crossing. The storm system consists of gasketed HDPE (ADS) storm pipe ranging in size from 12 inch-diameter to 18 inch-diameter and is marked with tracer wire.

New storm drain curb inlets were installed as needed to capture and convey runoff along Ernie Blake Rd, with additional gutter inlets installed uphill of each driveway, intersection, and pedestrian crossing to limit curb flows from crossing these features. The drainage situation along Lake Fork Rd was improved, with the undergrounding of flows along Lake Fork Rd at the intersection with Ernie Blake Rd.

The stormwater condition at both the driveway entrance and north end of the parking lot serving Sierra Del Sol was also improved. Stormwater along Ernie Blake Rd is now being captured within curb inlets before it enters or crosses the SDS driveway. A new trench drain and a new pan inlet were installed at the north end of the SDS driveway to capture the stormwater flows originating on the driveway and parking lot.

Additional inlets were installed in the landscaping areas adjacent to Al's Run, Powderhorn, Cottam's Cottage, Sierra Del Sol, and Parcel D in order to reduce the amount of stormwater and meltwater crossing sidewalks and driveways.

Ernie Blake Rd - Dry Utilities

A 4-in diameter MDPE SDR 11 natural gas line was installed up Ernie Blake Rd connecting the gas infrastructure from the up-valley main on Thunderbird to the segments at the Ernie Blake Crossing, Lake Fork Rd, and Twining Rd. Gas service lines were installed to multiple properties along Ernie Blake Rd including Parcel D, Parcel C, Powderhorn and others.

New underground electrical infrastructure was installed connecting the up-valley primary electric feed (via Thunderbird Rd) to a new sectionalizer at the intersection of Thunderbird and Ernie Blake Rds. From there, the electrical infrastructure runs up Ernie Blake Rd via underground conduit to the new switch installed at the intersection of Ernie Blake and Twining Rds. New electrical services were installed for all properties along Ernie Blake Rd, replacing several non-code-compliant transformers and service connections. This new underground primary feed allows for the removal of some overhead power feeds along Twining Rd at the Coyote Parking lot, while also increasing reliability.

New communication conduits were installed under the entirety of Ernie Blake Rd. New communication cabinets were installed to serve Century Link (now Lumen), and fiber pedestals serving Kit Carson Fiber. A new underground communication vault was installed at the intersection of Ernie Blake and Thunderbird Rds to serve as the new communication "hub" for the core village area.

Thunderbird Rd

North Fork Crossing – New Culvert and River Restoration

The former culvert conveying the North Fork of the Rio Hondo under Thunderbird Rd was in poor condition and undersized. This project replaced the culvert with a new segmented, aluminized, corrugated steel culvert. The culvert is sized to convey the 100-year storm event.

The river channel on both the upstream and downstream ends of the culvert were improved and hardened using natural boulders, with several drop structures installed to reduce erosion and improve the hydraulic performance of the culvert.

Thunderbird Roadway

Thunderbird Rd was re-aligned both horizontally and vertically and reconstructed. Horizontally, the roadway was shifted in order to completely fit within the existing Right of Way. Previously, the west end of the roadway encroached into the Alpine Suites property and that condition was corrected with the re-alignment. Vertically, the roadway slopes were modified in order to achieve a maximum 4.12% center-line slope in order to provide for a pleasant pedestrian experience.

The south side of the roadway also saw the construction of an 11 ft-wide (+/_) concrete and heated paver sidewalk to accommodate the skier pedestrian traffic being dropped off near the end of Thunderbird Rd. Like Ernie Blake Rd, the Thunderbird roadway consists of two 10 ft-wide travel lanes with an additional foot of gutter on each side for a 22 ft-wide drivable surface. The curb and gutter is heated wherever it is adjacent to heated pavers. This allows for meltwater to flow into the curb and gutter and enter the storm system without freezing on the surface. New 6 inch-thick driveway aprons were installed for Alpine Suites and Brownell Chalet, along with a 2-stall load/unload parking zone adjacent to Parcel D.

Thunderbird Rd - Sanitary Sewer

The only parcel currently being served by the sanitary sewer line under Thunderbird Rd is the Brownell Chalet. The manholes along T-Bird remained in place during and after construction. Per request from the VTSV Public Works department, the existing sewer line connecting the two manholes along Thunderbird Rd was exposed, straightened and the vertical slope corrected to remove a pre-existing low point within the sewer line. The Thunderbird sanitary sewer continues to Ernie Blake Rd, where it connects to the new Ernie Blake Rd sewer system.

Thunderbird Rd - Water

The former water line, of unknown cover and condition, ran under the old Thunderbird alignment and connected to the water mains located under Ernie Blake Rd. This water line was completely replaced under Thunderbird Rd with Class 350 Ductile Iron Pipe with fully restrained joints and a minimum cover of 8 ft. The water line has an 8-inch diameter from the northern terminus on the north side of the North Fork to the east connection with the 10 inch-diameter water main under Ernie Blake Rd. At the north end of Thunderbird Rd, the new water line crosses under the new culvert conveying the North Fork. All new water main valves, thrust blocks and water service lines were installed as part of the project. One new hydrant was installed at the high point of the water line within Parcel C, and the existing hydrant at the plaza of Alpine Suites was relocated. All installed water pipe sizes satisfy the 1/24/2011 VTSV Schematic Water Master Plan prepared by McGlaughlin Water Engineers.

Thunderbird Rd – Storm Sewer

The entire storm system was replaced along Thunderbird Rd. Roughly half of the system flows from a high point at the pedestrian crossing between Parcels D and C and flows towards Ernie Blake Rd where it connects to that storm system. The other portion of the drainage begins at the same high point at the pedestrian crossing between Parcels D and C and flows to the west end of Thunderbird Rd where it discharges into the North Fork of the Rio Hondo. The storm system consists of gasketed HDPE (ADS) storm pipe ranging in size from 12 inch-diameter to 18 inch-diameter pipe.

New storm drain inlets were installed as needed to capture and convey runoff, with additional inlets installed uphill of each driveway, intersection, and pedestrian crossing to limit curb flows from crossing these entrances - including curb inlets on either side of and immediately adjacent to the heated plaza at Parcel D, and upstream of the Brownell Chalet driveway. Additional inlets were installed in the landscaping areas adjacent to Brownell Chalet, Parcel C, and Parcel D. The existing drainage condition of Thunderbird Rd was improved by adding 2 ft-deep sumps within the concrete curb inlets in order to allow for sediment to be captured within the inlet boxes prior to discharge into the North Fork.

Thunderbird Rd - Dry Utilities

A 4-in MDPE SDR 11 natural gas line was installed under Thunderbird Rd connecting the gas infrastructure from the up-valley gas main to the gas main installed under Ernie Rd. Gas service lines were installed to multiple properties along Ernie Blake Rd including Parcel D, Brownell Chalet, and Parcel C.

New underground electrical infrastructure was installed connecting the up-valley primary electric feed to a new sectionalizer at the intersection of Thunderbird Rd and the Coyote parking lot. From there, new electrical conduit was installed connecting to the new electrical sectionalizer at the intersection of Thunderbird and Ernie Blake Rds. New electrical services were installed for all properties along Thunderbird Rd. In conjunction with the new electrical infrastructure installed under Ernie Blake Rd, this new underground primary feed under Thunderbird allows for the removal of some overhead power feeds along Twining Rd at the Coyote Parking lot, with increased reliability.

New communication conduits were installed under the entirety of Thunderbird Rd. New communication cabinets were installed to serve Century Link (now Lumen), and fiber pedestals serving Kit Carson Fiber. A new underground communication vault was installed between the buildings on Parcel D and Alpine Village Suites. This vault serves as a secondary communication "hub" for the core village area.

Respectfully Submitted,

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Principal