

FURNEAUX 7 CHANNEL IMPROVEMENTS

The Furneaux 7 project is the upstream section of Furneaux Creek, located between Furneaux Lane to the south and Hebron Parkway to the north. The original channel alignment through the area was modified back in the early 1980s, reducing the number of meanders in the natural section and increasing the velocity. Over the last thirty years, erosion has become a problem for many sections in this reach. Steep banks as shown in Photo 1 are common along a good portion of the lower section of the channel. These banks are unstable and commonly slough off into the channel without warning.



PHOTO 1- SIGNS OF EROSION ALONG STEEP BANKS

The upstream section of this channel was stabilized as part of the development of the First Methodist Church site north of Hebron Parkway. They utilized a combination of rock filled baskets (gabions) and vegetation to stabilize the channel. To the east, the City recently stabilized an upstream tributary that flows into this channel section through the use of a series of rock berms (see Photo 2).

Photo 3 shows the section of Furneaux Creek downstream of Rosemeade a couple of months after the completion of construction of the channel improvements. Note the rock along the water line. The vegetation consists of native grasses, bushes and small trees that provide habitat for birds and other wildlife. This is a requirement of the Corps of Engineers permitting for working within 'Waters of the U.S.'. Since this is considered habitat, mowing along the creek is very restricted. This will likely be the most significant change that will be apparent after construction is completed on Furneaux 7.



PROJECT DESCRIPTION

The improvements are located between Furneaux Lane Hebron Parkway along the main stem of Furneaux Creek (see Figure 1) or view in Google Maps at <http://maps.google.com/maps?hl=en&ll=33.017984,-96.872141&spn=0.013584,0.019248&sl=33.024497,-96.881218&sspn=0.21733,0.307961&vpsrc=6&t=h&z=16>

PHASE 1

The lower section of the creek (shown as Phase 1 on the map), will be improved with the lower section rock lined and some realignment of the creek. The bottom of the channel will remain as dirt and the side slopes will be cut back. There are a few trees in this section that will be lost, but there will be numerous small trees planted.

There will be a bridge and a low water crossing located in the Phase 1 section of the project. The majority of the trail will be located on the west side of the project, due primarily to the number of large storm drains coming from the east. The trail will connect to the end of the existing trail at Furneaux Lane.

There will be three sections in Phase 1 that will require full lining of the channel with rock. This is required due to the high velocities through the section. The downstream connection to the box culverts under Furneaux Lane requires a full rock section since the section is being reduced to accommodate the culverts. About 130 feet of rock lined bottom is required at this location.

About midway along the channel, another section of rock lined channel is required since velocities are projected to be in excess of 7 feet per second (a little less than today, but too high). This extends approximately 400 feet. Lastly, a full rock channel is planned at the upstream location of Phase 1, at the confluence with



the tributary from the east, near the tennis courts. There is a significant grade change here; therefore there are two drop structures and the rock lining. This rock lining is relatively short on the main stem of Furneaux and goes about 200 feet up the tributary.

PHASE 2

Phase 2 consists of the upper section of the channel, from the confluence with the tributary to Hebron Parkway. With the significant stand of trees along the existing channel, we took a different approach to improving this section. An overflow channel is planned which will take the majority of high flows off the existing channel. Very little grading will occur along the existing channel; therefore nearly all of the trees will remain. A few small rock 'cut off walls' will be constructed in the channel to minimize erosion. These cut off walls are simply three foot wide by three foot deep trenches across the channel that are filled with rock.

The overflow channel will be located on the west side of the greenbelt, near Arbor Creek Drive. There will be significant work at the culvert headwall at Hebron Parkway. This will include extension of concrete and large stone near the headwall to reduce the current erosion problems and facilitate directing the flow into the overflow channel.

There will be no bridge structures in this segment of the project. The pedestrian bridge currently located near the tennis courts will remain.

FLOODING CONCERNS

Part of the design of this project, as with all of our channel improvement projects, includes detailed flood analysis. This allows us to determine the design velocity of the creek as well as the flood elevations. Our design criterion requires that there be no offsite impacts to flood elevations. While there may be some minor changes in flood elevations along the channel, these changes are very minor and have no impact to properties outside of the greenbelt.

As with all flood analysis, this does not guarantee that flooding will not occur. Properties located along creeks should always consider purchasing flood insurance, even though it may not be required.



PHOTO 2 - FURNEAUX 7 DURING SIGNIFICANT RAIN EVENT

SUMMARY

The City is undertaking drainage improvements along this section of Furneaux Creek in order to improve safety, reduce maintenance, provide improved mobility along and across the greenbelt, and improve habitat for wildlife. While we understand that construction can be disruptive to the

community, we will work with the contractor to try to minimize these problems. We appreciate your cooperation in working with us to achieve this.

The trails through the city, especially those associated with creek improvements, have been used extensively by the community.

Any questions concerning this project can be directed to:

Michael McKay, P.E.
Civil Engineering Manager
972-466-3200
Mike.mckay@cityofcarrollton.com