

**New Trail Phase One Development – Eureka, MO**  
**1 Coffey Park Lane, Eureka, MO 63025**  
**SURVEYING SCOPE OF SERVICES**  
**August 19, 2016**

## **OVERVIEW OF WORK**

The City of Eureka Department of Parks and Recreation is pursuing the expansion of their citywide trail system with a new trail east of highway 109. This trail will link residential neighborhoods to the recently opened Timbers recreation center in Coffey Park, Kircher Park, Flat Creek Trail, and Route 66 State Park. This first phase of the trail development is approximately 0.75 miles in length and will include trail sections within the city-owned Timbers property, along and within the right-of-way of Eureka Road and Augustine Road, and a pedestrian bridge crossing of Flat Creek.

The scope of work for this project is to provide the site boundary and topographic survey information required to understand the existing site conditions along this proposed trail route and provide a base for phase one trail implementation construction documents.

## **TOPOGRAPHIC SURVEY**

The topographic survey must meet the minimum standards set by the State Board for Professional Land Surveyors. The topographic survey shall provide contours, utilities, structures, and other normal and customary topographic survey items including (but not be limited to) the following:

- Improvements to the land: Roads, curbs, sidewalks, bridges, abutments, buildings, rail roads, gardens, fences, etc. type, shape, size and limit.
- Provide contours on one foot intervals. Contours shall accurately present the undulation, nuances and variations in existing grade throughout the topographic survey limits. Provide spot elevations where appropriate.
- All individual trees within the survey boundary, tree lines, and trees within woodlands with trunk diameter of 6” or greater.
- Channels – Shall include but not be limited to –
  - Top of bank
  - Toe of slope
  - Breaks in grade on slope
  - Gullies and local undulations in the banks
  - Slumping areas
  - Rip rap, gabions, concrete, grout, etc.
  - Shelves, major rubble, exposed utilities, and undulations in channel bed.
- Utilities - above and below ground – shall include but not be limited to -

- Storm Structures: Indicate top and flow line of manholes. Include pipe size, type, length, slope, upstream and downstream top and flow line for all storm sewer pipes.
- Sanitary Structures: Indicated top and flow line for all sanitary manholes. Indicate pipe size, type, length, slope, upstream and downstream top and flow line for all sanitary pipes.
- Utility poles and towers: Indicate electric, telephone, cable, etc. locate wires, poles and pole guy wires, towers and other structures.
- Water, Cable, Gas, Electric, Fiber Optic, and Other: Locate all other utility boxes, panels, valves, junctions, risers, and other appurtenances.
- Swales, lakes, and depressions with flow line and water's edge indicated.
- Surfaces (rock, concrete, gravel, asphalt, etc.)
- Provide elevation and locations of low opening of adjacent homes (basement doors, windows, etc.) and adjacent grades.
- Locate and define flood hazard zones as shown on the FEMA/NFIP FIRMs within the area.
- Gardens, Fountains, Swing sets, Tree Houses, Sheds, Pools, Patios, Decks, and other appurtenances and improvements.
- Grave sites and cemeteries.
- Other items typically included in topographic surveying.

### **Benchmarks, Control Points and Reference Ties**

- Survey shall use Project Coordinate System.
- Survey shall tie to Project Datum.
- Survey shall use existing site or local established BM's as applicable.
- Control points shall be set for use during construction.
- Reference ties to the control points shall be provided on drawings for ease of location during field work and construction.

### **Deliverables for Topographic Surveys**

The following deliverables are due on a future date to be determined and agreed upon.

1. One reproducible sealed copy of the survey shall be provided on bond.
2. Three dimensional electronic Triangular Irregular Network (TIN) in AutoCAD 2015 or compatible format saved on a separate and unique layer entitled "TIN"
3. Space Delimited Text File of survey points.
4. Electronic drawing file of the survey in plan view in AutoCAD 2015 or compatible format. Text and line types shall be scaled to 1"=20' horizontal.
5. A table of BMs including location by station, left or right bank and description of form (whether chiseled mark or spike) for each BM. The list shall include the State Plane Coordinates and elevation for each BM.

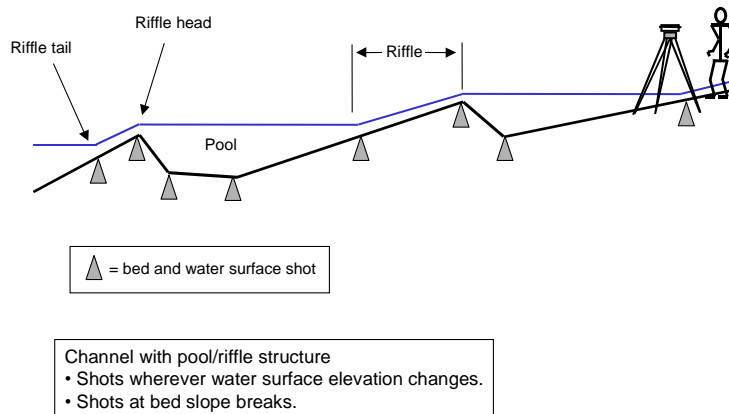
6. A list of codes used for the survey points electronically or on 8½”X11” bond.
7. Stake ROW line along Eureka Road and Augustine Road for visual location of ROW limits.

## LONGITUDINAL PROFILE SURVEY (PROPOSED FLAT CREEK BRIDGE CROSSING LOCATION)

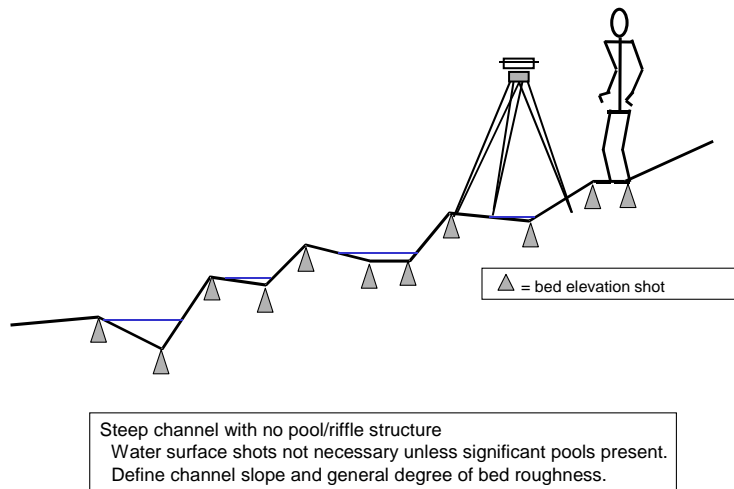
The Long Profile Survey shall provide plan and profile views of the channel thalweg, the deepest part of the channel. The elevations shall be tied to the project Datum and shall be in the project coordinate system. Profile survey should include areas illustrated in Exhibit A. In addition, channel cross sections should be provided every 50 feet along the profile above and below the pond.

**Thalweg:** Take as many shots as necessary to define any slope breaks in the long profile, pools, and riffles. In segments where the channel is flat and without pools, riffles, or other undulations in channel slope, a minimum of one shot shall be taken every twenty (20) feet. See Figures 1 and 2. Other required survey shots include:

- Bed elevation in deepest part of the channel (thalweg) at the selected station
- Water surface elevation (if applicable) at each bed elevation point



**Figure 1.** Channel bed and water surface elevation points for a channel with pool riffle structure. This covers most channels with slopes of 1% or less. The points should be taken at minimum 20-foot horizontal intervals and should accurately define breaks in bed slope and abrupt breaks in water



**Figure 2.** Long profile elevation shots for a high-slope channel with no pool-riffle structure. Water surface elevations are not taken unless significant pools exist.

**Minor Tributaries:** Should a minor tributary be discovered that discharges into the main channel being surveyed, the surveyor shall long profile survey 100 feet of the minor tributary beginning at the confluence tie into the main stem. The station of the confluence of the minor tributary must be noted and described on the survey in plan and profile.

**Structures:** As encountered, record station and elevation of:

- Flared End Sections: Locate and define the floor of flared end sections on stream culverts. Use a minimum of three shots each for the front edge (sill) and the culvert/flared end section edge. Use additional shots as necessary.
- Culverts: Locate and define the upstream and downstream edges of each culvert box, call out the culvert size, length and type (example: Double 10'x12' – 120' - Concrete Culvert),
- Bridges: Locate and define the bridge opening by shooting a section at the upstream and downstream face to define the channel section, the support structure and the lower cord of the bridge. Set a BM on all bridge abutments or convenient location.
- Roadway and foot path crossings: Locate and define the centerline of the roadway or footbridge, the lower cord of the roadway or foot bridge.
- Storm water structures (i.e. outlet pipes, etc.): Locate and define flow line elevation at the outfall and at the next upstream juncture, pipe diameter and type for all structures that empty into the channel.

- Locate and define elevations, limits, size and type of all permanent structure in or along the channel (i.e. retaining walls, sanitary sewer crossings or other utility crossings or bridges).
- Locate and define prominent landmarks convenient for location on aerial photographs and maps. Entry of gullies and tributaries, major utilities, bridges, etc.
- Note other structures as encountered.

Provide stations and elevations for the thalweg and existing structures (i.e. storm water outlets, utility crossings, retaining walls or bridges)

### **Deliverables for Long Profiles**

The following deliverables are due on a future date to be determined and agreed upon.

1. One sealed copy of the long profile survey shall be provided on bond suitable for reproduction.
2. Space Delimited Text File of survey points.
3. Electronic drawing file of the survey in plan view in AutoCAD 2014 or compatible format. This can be combined with the topographic survey submittal drawing if appropriate. Text and line types shall be scaled to a 1"=20' scale.
4. Electronic drawing file of the thalweg survey in profile view in AutoCAD 2014 or compatible format. The electronic profile drawing may be combined with the plan view drawing. Profile text and line types shall be scaled to 1"=20' horizontal and 1"=5' vertical.
5. A table of BMs including location by station, left or right bank and description of form (whether chiseled mark or spike) for each BM. The list shall include the State Plane Coordinates for each BM.

### **SURVEY LIMITS**

Limits of the survey are identified on the aerial photos included on pages #7 and #8. Please provide pricing for survey work within the limits defined. Proposals should be submitted by 4:00PM Friday, October 7, 2016.


## **SURVEY PROPOSALS**

Please address your proposal to:  
City of Eureka Department of Parks and Recreation  
Attn: Missy Myers, Director  
1 Coffey Park Lane  
Eureka, MO 63025

Please return your proposal and direct all questions to:  
SWT Design  
Attn: Jay Wohlschlaeger  
7722 Big Bend Blvd.  
St. Louis, MO 63109  
Ph.316.644.5700  
[jayw@swtdesign.com](mailto:jayw@swtdesign.com)




Thank you for your review of this RFP and consideration of this project.

Sincerely,

A handwritten signature in black ink that reads "Jay Wohlschlaeger". The signature is written in a cursive style with a large, looping flourish at the end of the name.

Jay Wohlschlaeger, PLA  
Partner  
SWT Design



-  Roadway ROW (survey limits 30' beyond ROW each side)
-  Additional Survey Area (area extends beyond ROW survey limits and includes area north of Flat Creek to the existing trail. Include trail in survey)
-  Section of Flat Creek for bridge crossing (approx. 200')

