

FM 969 CORRIDOR

APPENDIX C

C

UTILITY TECHNICAL MEMORANDUM



FM 969 Transportation Corridor Development Program

Utility Technical Memorandum

Prepared for :
City of Austin and URS Corporation

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For Interim Review TX PE #107373 / 07-17-12
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Appendix A- Cost Estimates

1. Background

CAS Consulting and Services, Inc. (CAS) was tasked with providing preliminary utility engineering design services to assist URS Corporation in the preparation of the FM 969 Corridor Development Program. The program was initiated to explore anticipated future development patterns and the potential impacts on roadway capacity along FM 969 between US 183 and the town of Webberville. Ultimately, the program provides transportation-related solutions for future growth. CAS was tasked with gathering the major utility Geographical Information Systems (GIS) data for use in the program and investigating plans for utilities that may impact future development and increase traffic in the FM 969 corridor.

2. Data Collection

CAS requested and attended, in December 2011, an Austin Utility and Location Coordination Committee (AULCC) meeting to obtain private and public utilities information for the FM 969 corridor. CAS received utility systems maps and descriptions of existing utility locations at this meeting. Prior to this meeting, CAS received utility data electronically from several utility providers including: City of Austin (COA) Austin Water Utility (AWU), COA Watershed Protection Department, Capital Metropolitan Transportation Authority (Capital Metro), COA Austin Transportation Department (ATD), Time Warner (TW) Cable, TW Telecom, AT&T, Verizon, Grande Communications, Greater Austin Area Telecommunications Network (GAATN), Texas Gas Service (TGS), Enterprise Products Company, Austin Energy (AE), and Bluebonnet Electric Cooperative.

Other sources for existing utility information were the COA GIS website and record drawings. CAS obtained GIS trunk line information for COA sanitary sewer and water, and information for railroad networks from the COA GIS website in January 2012. CAS requested and obtained stormwater infrastructure data, as well as Drainage Infrastructure GIS (DIG) data from the COA in August 2012. CAS received and reviewed several Texas Department of Transportation (TxDOT) roadway record drawings within the FM 969 corridor and incorporated their utility information into the CAS utility GIS database.

CAS performed a site visit in January 2012 to verify existing visible utilities, such as the private water and wastewater suppliers east of State Highway (SH) 130, storm drain infrastructure, and utility poles. CAS also documented utility relocation challenges such as limited right-of-way and steep roadway drops and creek crossings.

CAS attended the Utility Stakeholder meeting for the FM 969 Corridor Development Program held in January 2012 by URS Corporation and COA. Utility companies discussed existing utilities, constraints to relocating, and future utility installation and expansion plans. Utility companies present included: COA AWU, TW Cable, AT&T, TGS, and Bluebonnet Electric Cooperative.

CAS investigated plans for new water, wastewater, and power utility lines along the regional network that may increase the rate of future development and increase traffic for the FM 969 corridor. CAS contacted representatives from AE (David Lambert), COA AWU (Randy Alexis),

and Bluebonnet Electric Cooperative (Tish Winston) to obtain future plans for their respective utilities in this area. CAS also contacted George Resendez at COA AWU for design and relocation constraints for water and wastewater utilities.

CAS incorporated the gathered data into a single GIS database which contains all major utility data for the study influence area. The GIS was provided to the City of Austin separately.

3. Existing Conditions

Several utilities are present within the FM 969 right-of-way between US Highway (US) 183 and the town of Webberville. A brief description of each utility and location follows.

3.1 Water and Wastewater

COA water lines run parallel with FM 969 between US 183 and Farm-to-Market (FM) 973 predominately within the northern right-of-way. Existing water lines typically vary in diameter, with sizes of 2.5-inch, 6-inch, 8-inch, 12-inch, and 24-inch. COA water lines extend along the northern right-of-way of FM 969 from US 183 to approximately 2,000 feet west of FM 973. Small segments of water lines run parallel with FM 969 within the southern right-of-way near Johnny Morris Road, Nixon Lane, FM 3177, and Imperial Drive. GIS shapefiles for the water lines and fire hydrants have been provided as: *Main.shp* and *Hydrant.shp*. The entire COA water database *WaterShapefiles* has been provided for identification of water-related appurtenances, such as flow meters, etc.

COA wastewater lines and manholes run parallel along the FM 969 between US 183 and FM 3177 predominately within the southern right-of-way. The Walnut Creek Wastewater Treatment (WC WWTP) is located on the south side of FM 969 at the intersection with Johnny Morris Road. Several in service gravity lines, with diameters of 12-inch, 18-inch, 30-inch, and 54-inch, are present within the southern right-of-way between FM 3177 and just west of the WC WWTP. Two 12-inch gravity lines within the northern right-of-way are present between Sendero Hills Parkway and Rogers Lane. A 96-inch gravity main extends from US 183 to a junction box just west of WC WWTP within the southern right-of-way. Several wastewater lines are present within the southern right-of-way between the end of the 96-inch line and the WC WWTP. These lines direct flow to the WC WWTP from the 42-inch line, a line that crosses FM 969 near east end of the 96-inch gravity main.

A 12-inch sludge line is present within the southern FM 969 right-of-way, extending from the WC WWTP to FM 973, which proceeds along FM 973 to the Hornsby Bend Biosolid Management Plant to the south.

An existing 36-inch reclaimed water line is present within the southern FM 969 right-of-way between Johnny Morris Road and the WC WWTP. The line originates from the north along the old railroad track bed near Walnut Creek and crosses FM 969 approximately 880 feet west of Johnny Morris Road and extends to the east side of the WC WWTP. An abandoned 12-inch gravity wastewater line is present within the paved FM 969 roadway between FM 3177 to just west of FM 377. GIS shapefiles for these utility lines are provided as: *Sludgeline.shp*, *ReuseMain.shp*, *WVManhole.shp*, and *WVMain.shp*. The entire COA wastewater database

WastewaterShapefiles has been provided for identification of wastewater-related appurtenances, such as manholes.

Water and wastewater services are provided by private services in the areas along FM 969 between SH 130 and the town of Webberville. Hornsby Bend Utility Company currently provides water to Austin's Colony, Forest Bluff, and Hornsby Bend subdivisions in Travis County. Manville Water Supply serves the rest of the FM 969 corridor east of SH 130. Hornsby Bend Utility Company provides wastewater services along FM 969 east of SH 130. The COA water database *WaterShapefiles* includes some of their private waterlines in their waterline shapefile, *Main.shp*, and can be identified in the GIS shapefile field OWNER as PRIV. Manville Water Supply provided a paper copy of their systems map for water lines within the FM 969 corridor, and this linework was digitized and saved as GIS shapefile *Manville_Water.shp*. A systems map for the Hornsby Bend Utility's private water and wastewater lines in the study influence area were not obtained.

3.2 Storm Drain

Storm drain infrastructure varies along FM 969. Curb and gutter with ditches and storm drain grate inlets are present along the FM 969 right-of-way between US 183 and FM 3177. These structures are improvements made with the 2005 FM 969 road widening. From FM 3177 to the town of Webberville, stormwater is conveyed by roadside ditches and culvert pipes (no curb and gutter). Grate inlets, ponds, ditches, and culverts within the FM 969 right-of-way is identified within their stormwater GIS database *COA_STORM_DIG_DATA* as the GIS shapefiles: *Field_Grate_Inlet.shp*, *Field_Pond_Point.shp*, *Field_Ditch_Point.shp*, and *Field_Culvert_Point.shp*.

3.3 Transportation

Utilities associated with traffic signals exist along FM 969 within the right-of-way at the following intersections: Johnny Morris Road, FM 3177, and Craigwood Drive, Imperial Drive, FM 973, Hunters Bend Road, and Hound Dog Trail. These utilities, which vary at intersections, may include underground conduits and pull boxes and aerial lines on AE poles. The utility is presented in the GIS shapefile *Traffic_Signals.shp*.

A railroad line, owned by Capital Metro, crosses FM 969 approximately 1,500 feet east of Johnny Morris Road, east of WC WWTP. The railroad crossing has a railroad signal house and signal equipment at-grade and underground signal cables. A timber pile open deck trestle railroad bridge is located 30 feet from the edge of the roadway on the north side of FM 969 at the railroad crossing. The railroad right-of-way on the eastern side of WC WWTP is owned by several groups, including Capital Metro, TxDOT, and the COA. The traffic signal utilities are presented in the GIS shapefiles *railroads.shp* and *Railroad_Signal_Equipment.shp*.

3.4 Telecommunications

GAATN has aerial fiber optic cables (on AE poles) from US 183 to Johnny Morris Road on the south side of FM 969, from FM 3177 to Dunlap Road on the north side, and from Dunlap Road

to Burleson Manor Road on the south side. GAATN does not have utilities between Johnny Morris Road and FM 3177. GAATN facilities are presented in the GIS shapefile *GAATN.shp*.

AT&T has numerous facilities along FM 969. AT&T provides copper wire service to existing, older businesses and residential users. Fiber optic lines have been installed to address anticipated future development needs. The Walnut Central Office and Webberville Central office provide service for the area with the study influence area. AT&T recently replaced underground facilities and structures between US 183 to FM 3177, including a manhole and a run of fiber optic line and copper wire on the north side of FM 969. Fiber optic line is present on the north side of FM 969 from FM 3177 to FM 973, and is present on the south side beginning at FM 973 and extending eastward. AT&T has some aerial (i.e., overhead) lines at the intersection of Gilbert Road and along FM 969 from Hunters Bend Road to Burleson Manor Road. AT&T facilities are presented in the GIS shapefiles *ATT_OH.shp* and *ATT_UG.shp*.

TW Cable has aerial (i.e., overhead) service lines (fiber optic and coaxial lines) on both sides of FM 969 from US 183 to Cadillac Drive, just east of Hunters Bend Road, on AE poles. TW Cable facilities are presented in the GIS shapefile *Timewarner_Cable.shp*.

TW Telcom has aerial (i.e., overhead) service lines on AE poles for approximately 1,000 feet along the south side of FM 969 east of US 183. TW Telecom facilities are presented in the GIS shapefile *Timewarner_Telcom.shp*.

3.5 Energy

AE is present within the study influence area predominately as aerial (i.e., overhead) service lines along on both sides of FM 969. The AE poles carry several other utilities, including TW Cable, TW Telecom, GAATN, and traffic signal utilities. AE's facilities are presented in the GIS shapefile *Austin_Energy.shp*.

TGS is present as underground pipes within the northern right-of-way of FM 969 between US 183 to Imperial Drive, and within the southern right-of-way between Imperial Drive and Delta Post Drive. TGS facilities are presented in the GIS shapefile *TGS.shp*.

Enterprise Products Company has a natural gas line crossing FM 969 approximately 300 feet west of Johnny Morris Road. The size and depth was not provided by the owner. Enterprise Products facilities are presented in the GIS shapefile *Enterprise.shp*.

Atlas Energy Limited Partnership produces, transports, and processes natural gas and oil and is present at an undisclosed location(s) within the study influence area. The company will provide information in the design phase as required. A GIS shapefile of the Atlas Energy facility is not provided.

Bluebonnet Electric Cooperative, a private, independent electric-service provider, is not present within the FM 969 right-of-way. However, the utility company provides service just outside the study influence area. A GIS shapefile of the Bluebonnet Electric facilities is not provided.

An Atmos Energy petroleum pipeline was identified on the COA-Water Distribution System Map Sheet Q21, and verified during the January 2012 site visit. The pipeline crosses FM 969 between FM 973 and SH 130. The Atmos Energy facility is presented as GIS shapefile *Atmos_Energy.shp*.

4. Future Utility Plans

Several utility projects within the FM 969 corridor have been proposed or are currently in the planning/design stages. The following future projects have been identified.

The City of Austin BAE Reclaimed Water Line project proposes an 8-inch reuse water line that will extend from BAE Systems along Tracor Lane, Marcel Gres Drive, McBee Drive, the southern right-of-way of FM 969, and connect to the 36-inch existing reclaimed waterline near Walnut Creek.

According to AWU representatives, the 12-inch sludge main (from Walnut Creek WWTP to Hornsby Bend) is currently slated to enter design for upgrade in Fiscal Year 2014 (FY14) and will be completed by Fiscal Year 2019 (FY19). AWU will reevaluate the sludge main project's start date once more is known about the scope and schedule of any improvements that result from the FM 969 Corridor Development Program.

Permanent regional wastewater treatment facilities outside of the town of Webberville are planned to serve the City's northeast region. This Northeast Regional WWTP is planned to generally serve Austin's wastewater areas that are serviced under Certificates of Convenience and Necessity (CCN) including Harris Branch, Gilliland Creek, Wilbarger, Decker, Lockwood, and Colorado River basins. Flexibility exists in the timing and phasing for this and other northeast wastewater facilities that will allow AWU to adapt to and accommodate potential growth of this area.

AE has no major plans for the FM 969 study influence area that would increase future development or traffic. AE currently does not have plans to build any major transmission poles along FM 969, but notes that the area has been underserved. A solar farm was energized in December 2011 just north of Webberville. AE has plans to build a 20 acre substation off Taylor Lane, north of FM 969 in 2014, which will be called the Dunlap substation. The initial feeders out of the new substation will pick up the existing overhead lines in the area and will serve the future Whisper Valley subdivision. As the FM 969 study influence area develops, new feeders are expected to be routed along Taylor Lane and FM 969. Due to the proximity of the proposed new substation, provisions should be made to accommodate feeders on both sides of FM 969.

5. Relocation and Future Utility Considerations

5.1 Study Specific Considerations

Relocation of utilities can be costly in terms of money and time. Utilities prefer advance notification to budget money and plan the utility adjustment and relocation. Several utilities requested at least an advance notice of a year for budgeting purposes at the January 2012 Utility Stakeholder meeting for the FM 969 development program.

As a TxDOT roadway, utilities are prohibited from running parallel under the FM 969 pavement. Existing utilities within the existing right-of-way will be required to relocate to accommodate any widening of FM 969 if the additional pavement or ditch conflicts with a utility. Limited right-of-way and steep topography may pose as challenges for the relocation process. Horizontal and vertical clearances with other utilities and existing structures are major considerations with utility placement and relocation. In some areas, the existing shoulders of FM 969 drop off sharply, which may make meeting depth of cover requirements for underground utilities difficult. Several existing businesses along FM 969, particularly between US 183 to FM 3177 are situated close to the roadway, leaving little space for horizontal relocation.

Limited space within the roadway right-of-way may prevent or limit sidewalk and curb ramp construction along FM 969. Sidewalks provide an accessible route to all people, a requirement under the Americans with Disabilities Act (ADA) to offer public services, such as bus transportation.

Between US 183 and the Village of Webberville, FM 969 is crossed approximately twelve times by Walnut Creek, Elm Creek, Decker Creek, Gilleland Creek and their tributaries as the creeks drain to the Colorado River. In several sections of FM 969, including most of FM 969 between Gilbert Road and Taylor Lane, creeks run parallel and within the FM 969 right-of-way. Approximately twelve separate segments of FM 969 are within the COA-defined critical water quality zones and water quality transition zones. These zones are sensitive environmental areas, with development regulations set by the COA. COA Environmental Criteria Section 1.7.7.4 states that utility connections and new utilities are permitted within floodplains or critical water quality zones, "... when they cannot be located outside of the Critical Water Quality Zone due to location of nearby structures or where it can be demonstrated that greater environmental damage would result by locating the utility outside of the Critical Water Quality Zone. Where maintenance of gravity flow is the primary reason for the location in the Critical Water Quality Zone, the highest elevation within the Critical Water Quality Zone which meets all requirements of this ordinance shall be preferred. The location of utilities permitted within the Critical Water Quality Zone shall be based primarily on the environmental impacts of the alternatives. In the event it is concluded that the utility line should be located within the Critical Water Quality Zone, it shall be located outside the limits of the two (2) year floodplain except for waterway crossings demonstrated to be necessary."

5.2 General Considerations

Guidance for utility design and location are provided by Texas Commission on Environmental Quality (TCEQ) and within the COA Utilities Criteria Manual (UCM).

AE requires a vertical and horizontal clearance of aerial (i.e., overhead) primary voltage lines of 12.5 feet and 7.5 feet, respectively. AE requires a horizontal clearance of 5 feet from overhead AE distribution facilities. AE requires a one foot minimum clearance horizontally and vertically from underground facilities (except gas and fuel lines). Joint trench is permitted with other utilities only by AE agreement. AE requires a 1 foot vertical separation where other underground utilities cross AE underground facilities. Refer to UCM Sections 1.10.3 and 1.10.5 for additional details regarding utility clearances.

Water and wastewater design and location criteria are set forth by TCEQ and COA. Several requirements have been identified for consideration, including:

- TCEQ and COA requires a 9 foot separation (in all directions, outer diameter to outer diameter) of water and wastewater mains.
- Water and wastewater lines running parallel require separate trenches.
- COA directs the location of mains to be outside the pavement, curbs, etc. When outside the right-of-way, mains should be placed within a dedicated utility easement. Water mains are assigned distances from right-of-way depending on right-of-way widths. Refer to UCM Section 2.9.2.B.2.
- Water piping installed in existing streets, roads, or other traffic areas must be laid with at least 48 inches of cover below finished grade.
- Fire hydrants are required at the intersection of two streets and between intersections at distances not in excess of 300 feet in commercial or high density areas and at distances less than 600 feet in residential areas.
- Reclaimed waterlines must have easements a minimum of 15 feet wide or twice the depth of the main.
- Wastewater systems must contain slope sufficient to allow for a minimum velocity of 2 feet per second.
- Wastewater piping installed in natural ground in easements or other undeveloped areas, which are not within existing or planned streets, roads or other traffic areas, must have a depth of cover of at least 42 inches and wastewater piping installed in existing streets, roads or other traffic areas must have at least 66 inches of cover.
- Manhole spacing for lines smaller than 24 inches should not exceed 500 feet. For larger mains, spacing may be increased, subject to approval by the AWU. Other spacing requirements are provided in UCM Section 2.9.4.D.
- COA allows sidewalks over water and wastewater lines where easement is limited. However, water meter boxes, valve boxes, manholes nor clean outs are not allowed within sidewalks.
- Utility lines may not be located within 10 feet from the top of a wet pond side slopes .

6. Cost Estimate

A summary for each proposed FM 969 improvement project, and its associated cost are provided below. Cost estimates assume only the cost for utility relocations and adjustments associated with the COA, including AE and AWU,. Relocation of other utilities are assumed to be at the cost of the utility provider. Unit prices are based on current costs, which may increase in the future. A summary of the cost estimates can be found in Appendix A to this technical memorandum.

- **Short Term Improvement No. 1: The addition of a southbound right turn lane at FM 3177 approaching FM 969**

This improvement widens the west side of FM 3177 at the intersection of FM 969, approximately 300 linear feet, to create a right turn lane. Utility adjustments will be required along FM 3177

and at the northwest corner of FM 969 and FM 3177. The cost estimate includes costs to relocate two COA water lines and appurtenances along FM 3177, to relocate AE poles and overhead lines, and to reconstruct storm drain infrastructure (roadside ditches with pipes) along FM 3177. The estimated cost is \$72,500.

- **Short Term Improvement No. 2: The extension of the middle turn lane between FM 3177 and Park at Woodland Drive**

This improvement modifies the lane striping along FM 969 between FM 3177 and Park at Woodland Drive. It will not require utility relocation or adjustment. The estimated cost is \$0.

- **Short Term Improvement No. 3: The extension of a second westbound through lane from Hunters Bend Road to Gilbert Road**

This improvement widens the north side of FM 969, approximately 4,500 linear feet, to create a second westbound lane. Utility adjustments will be required along the north side of FM 969. The cost estimate includes costs to relocate AE poles and overhead lines, and to reconstruct the storm drain infrastructure (roadside ditches). Water and wastewater are provided by private companies along this segment of FM 969. The estimated cost is \$108,000.

- **Short Term Improvement No. 4: The extension of a second westbound as a right turn only lane through lane from Hunters Bend Road to Gilbert Road**

This improvement widens the north side of FM 969 to create a second westbound lane for approximately 4,500 linear feet. Utility adjustment and relocations are identical to those required for short term improvement No. 3. The estimated cost is \$108,000.

The total estimated short term improvement costs total \$288,500.

- **Long Term Improvement No. 1: The widening of FM 969 between US 183 and SH 130**

This improvement widens the north side and south side of FM 969, a length of approximately 23,000 linear feet, between US 183 and SH 130 to create additional travel lanes. Utility adjustments will be required along the north and south sides of FM 969. The cost estimate includes costs to relocate AE poles and overhead lines, to install storm drain infrastructure (curb and gutter from US 183 to FM 973 and roadside ditches from FM 973 to SH 130), to install several culverts crossing FM 969, and to relocate existing COA water and wastewater infrastructure. Cost estimates assume culvert replacement for the nine culverts crossings. Culvert lengths are assumed as 104 feet to 124 feet in segments of roadway with curb and gutter segments, and 80 feet in segments of roadway with roadside ditches. The estimated cost is \$11,026,700.

- **Long Term Improvement No. 2 Superstreet Option: The widening of FM 969 between US 183 and SH 130**

This improvement widens the north side and south side of FM 969, for approximately 23,000 linear feet, between US 183 and SH 130 to create additional travel lanes. Proposed vehicle, bicycle, and pedestrian travel lanes and roadway medians will span a total width of approximately 180 feet. Utility adjustments will be required along the north and south sides of FM 969. The cost estimate includes costs to relocate AE poles and overhead lines, to install storm drain infrastructure (curb and gutter from US 183 to SH 130), to install several culverts crossing FM 969, and to relocate existing COA water and wastewater infrastructure. Costs assume culvert replacement for the nine culverts crossings. Culvert lengths are assumed to be 180 feet. The estimated cost is \$11,566,000

- **Long Term Improvement No. 3: The widening of FM 969 between Hunters Bend Road and Webberville**

This improvement widens the north side and south side of FM 969, approximately 26,700 linear feet, between Hunters Bend Road and Webberville to create additional travel lanes. This improvement also reconfigures the roadway between Taylor Lane and Webberville. Utility adjustments will be required along north and south sides of FM 969. The cost estimate includes costs to relocate AE poles and overhead lines, to install storm drain infrastructure (curb and gutter between Hunters Bend Road to Dunlap Road and road side ditches from Dunlap Road to Webberville), and to install several culverts crossing FM 969. Costs assume culvert replacement for the seven culverts crossings. Culvert lengths are assumed to be 95 feet. Water and wastewater are provided by private companies along this segment of FM 969. The estimated cost is \$3,769,100.

The total estimated long term improvement costs total \$26,361,800.

Technical Memorandum Appendix A
Utility Cost Estimates