

Drainage & Utilities

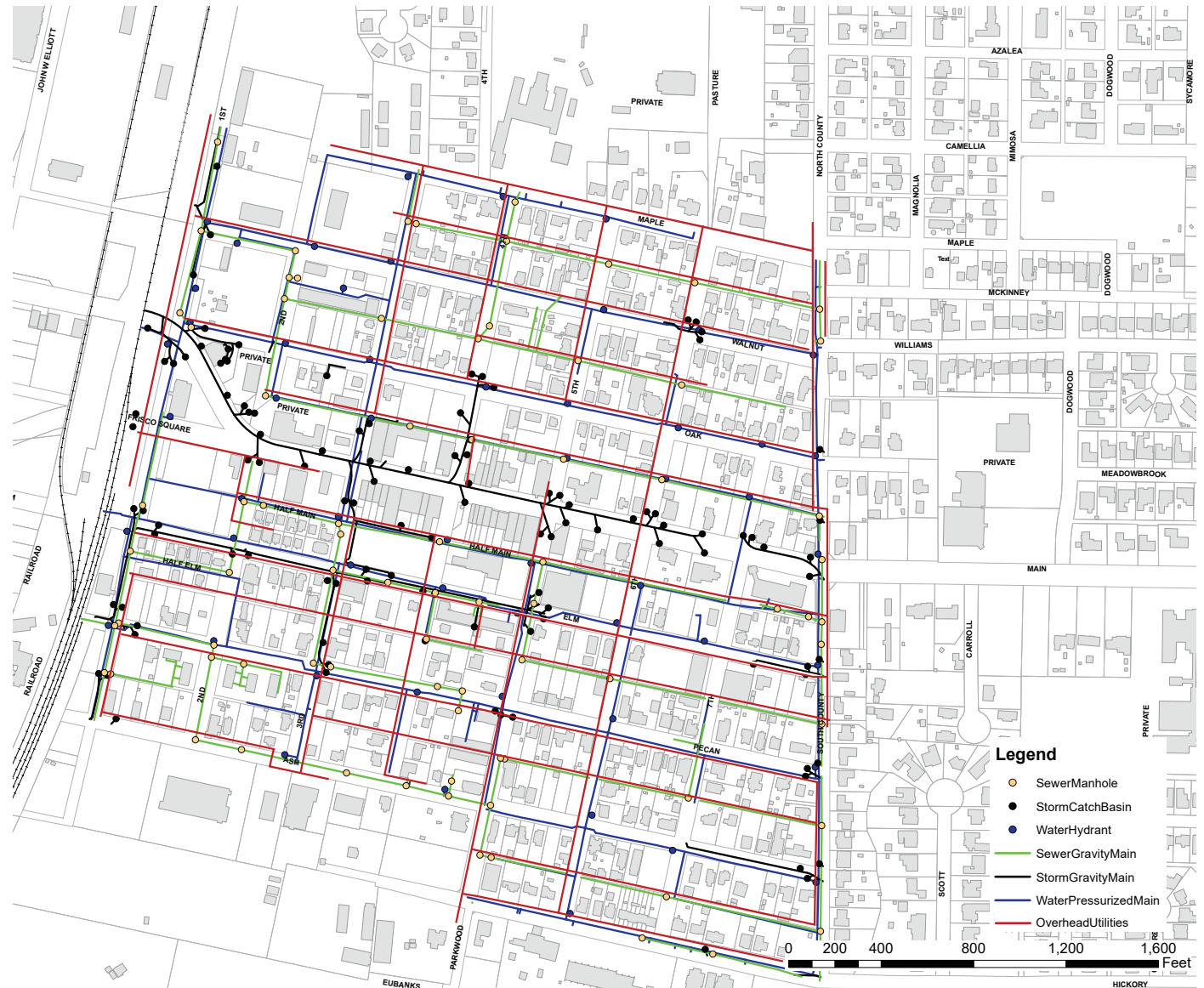
Existing Conditions

The downtown area has both public City owned utilities - water, sewer and drainage - and franchise utilities such as electric, gas and telecommunication (see Figure 21). Information on the existing public utilities was obtained from the City's GIS. Information on existing franchise utilities was obtained by utilizing the City's Utility Coordination list where we solicited information from each franchise owner on the location of their facilities. Most of the public utilities are located underground either under the street or under the utility easements. The majority of the sanitary sewer lines flow east to west in the alleys with service lines entering from the back of the buildings. Water mains are located in the streets except for the first alley north and south of Main Street. Storm drainage is collected in inlets and flows west via a trunk line in Main Street. Some franchise utilities are aerial while others are underground.

Desired Outcomes

In order for development and infill to continue in Downtown, public utilities

Figure 21: Utilities Map





will be reviewed to see if enhancements are needed to support new development/redevelopment. Where feasible, it is recommended that the aerial utilities be buried or relocated in order to improve aesthetics of the public realm without impeding pedestrians.

PUBLIC UTILITIES

The City's current water and sanitary sewer infrastructure has been modeled and meets current engineering design standards. As the vision of the downtown is adopted and the area developments/redevelopments, things to consider could include, but not limited to, upgrading or enhancing water and/or sanitary sewer for ongoing/future development. The City may consider public utility enhancements ahead of development/redevelopment as a catalyst for future growth. It is also recommended that existing sanitary lines in utility easements be maintained at that location due to problems associated with relocating sewer services.

The storm drainage area for the Downtown area has an easterly boundary that begins around North County Road (north of Main Street) and 7th Street (south of Main Street). The stormwater flows generally from the east to the west. The City's current GIS system shows a major storm sewer under Main Street (see Figure 21). GIS also shows an existing major storm sewer under Elm Street. There is a small section of storm sewer in both alleys north and south of Main Street, between 3rd and 4th Street. These systems were designed to current City Standards at the time. The runoff coefficients would need to be reviewed and compared to the future development zones shown in this document and current City standards. We recommend that the storm sewer system be sized for the 100-year storm. We do not recommend detention for this area since the redevelopment areas are small and detention would not be effective, and it would be cost prohibitive.

SOLID WASTE MANAGEMENT

The aesthetic environment, small lots and tight spaces in downtown areas do not lend themselves well to individual dumpsters and collection containers. Shared collection and compaction facilities like the one implemented in downtown Plano can help with this by



Existing service connections along Downtown Frisco alleys (Source: Garver)



Existing overhead wire conditions in Downtown (Source: Garver)

reducing the number of collection points and routes. Where possible, collection facilities should be located off the primary streets and building frontages and screened with a combination of decorative walls and vegetation. We recommend that the City work with the business owners and waste management vendor to identify locations where these facilities can be located. Additionally, we recommend implementing a collection schedule where garbage and recycling is picked up more frequently in order to reduce the number and size of collection facilities required to service the area.

FRANCHISE UTILITIES

Utilizing the City's Utility Coordination List, the design team contacted the following utility companies and requested information regarding their existing facilities in Downtown: AT&T, Atmos Energy, Capco, CoServ Electric, CoServ Gas, Frisco ISD, Granda, Level 3, Oncor Transmission, Oncor Delivery, Cyient, Verizon, Frontier, Spectrum, Charter, Time Warner Cable, Zavo Fiber Solutions, and Logix. Many of these utilities, excluding gas, are located on both overhead poles and underground along the streets and alleys.

Relocating any utility, whether overhead or underground, from an alley

to a street (or vice versa) will require the utility service connection to the provider (business or home owner) to be relocated. This is problematic for building renovations since it would require rewiring inside the building to account for the new service connection on the opposite side of that building (see images on previous page). This will be less problematic on full block renewals where the existing buildings are removed or all of the owners are in agreement to the change.

Where there are existing power poles along the right-of-way, careful consideration needs to be given to the clearance between the electrical power wire and the height/edge of a new building. There are offset requirements (10 feet or greater) between aerial electric power lines and a building (see images on the previous page) as an example of conditions in Downtown Frisco. The developer/City reviewer will need to coordinate this offset requirement with the utility owner. In some cases, the distance could be a vertical separation (example the wire is 10 feet above the top of the building, but not over the building).

There are several things to consider when relocating electric power and other franchise utilities below ground (see Figure 22 on next page). An existing power pole may also contain three or four other utilities (telephone, fiber optic, cable, etc.) attached to the pole. When they are

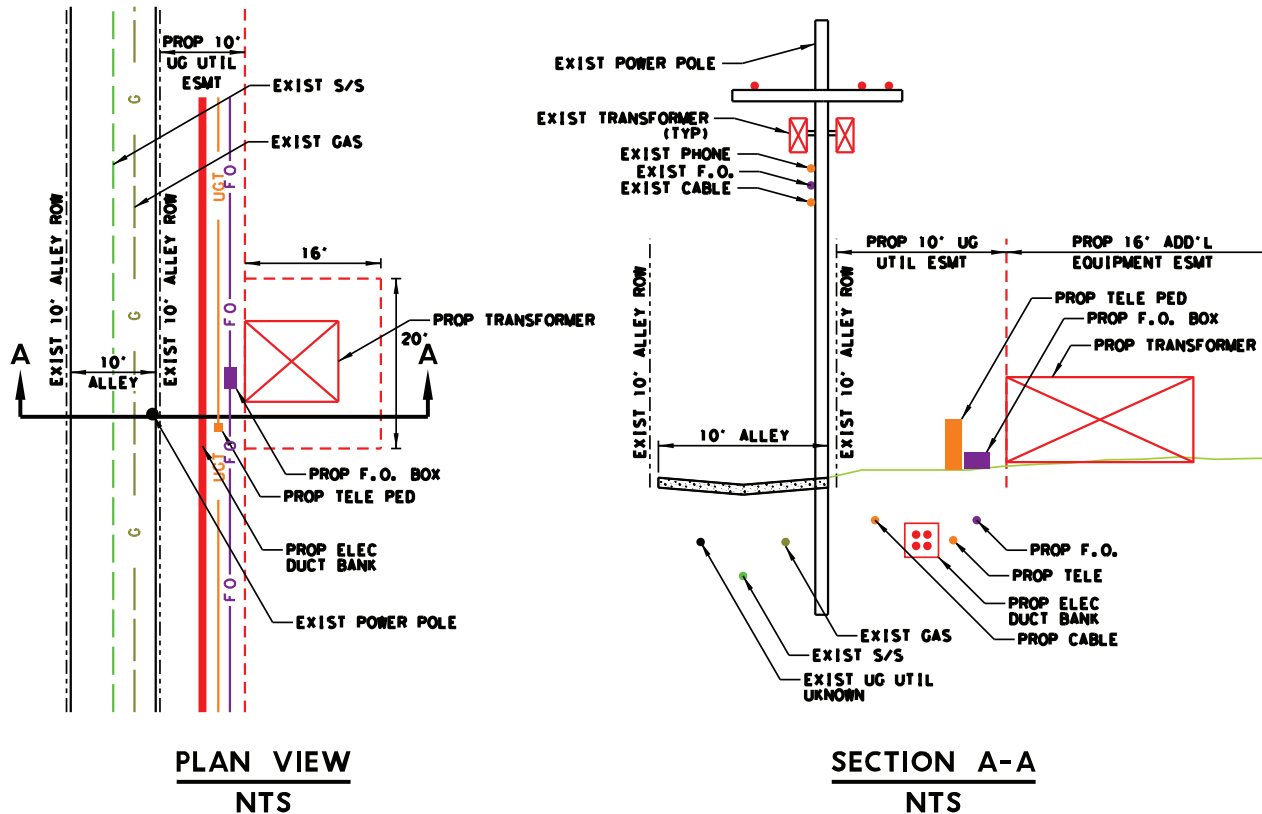


Sample underground utility hardware needed to bury utilities (Source: Garver)





Figure 22: Aerial to Underground Utility Conversion

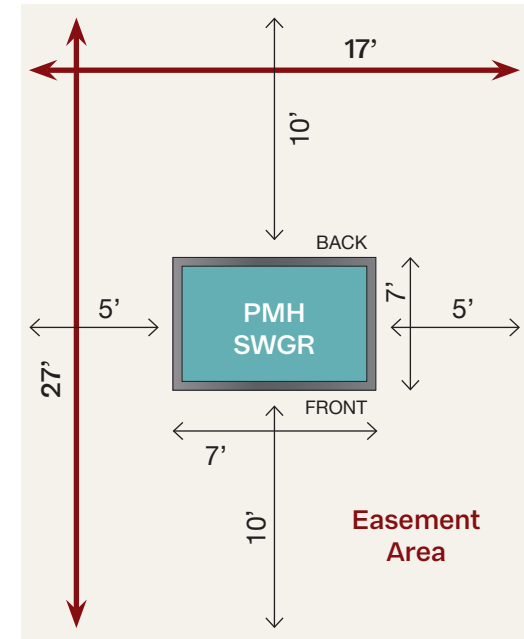
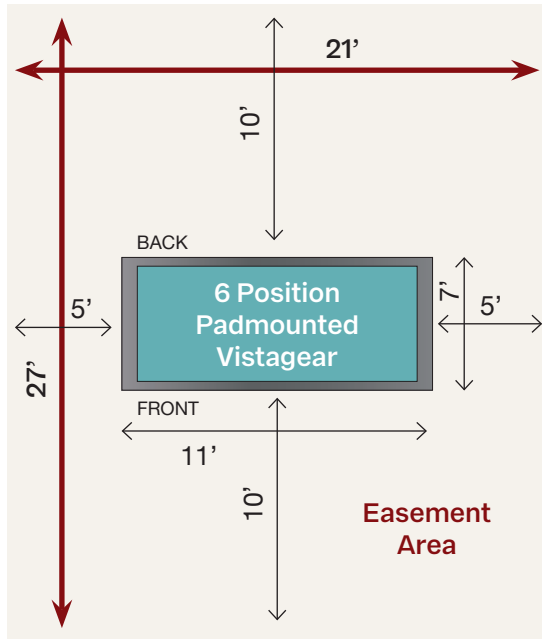


placed underground, these utilities will need a horizontal space to be installed since they are all independently owned and do not always share ground conduits. Once the utility is placed underground, they have to be able to connect a business or property owner to that underground line via a pedestal or ground box, which also needs to be installed on the ground. Any existing aerial franchise utility connection to a building will have to be reconnected by installing an underground conduit (verses an overhead connection) back to the original entry point into the building.

When relocating electric power, there are several things to consider.

In discussions with ONCOR, the power lines must be encased underground in a duct bank in a 10-foot to 15-foot utility easement (see Figure 22). The number of conduits depend on the electrical power provider's engineering. A 15-foot easement would be needed if an electrical manhole (12' x 12' by 8') was needed in the easement. The switchgears (Vistagear or PMH-SWGR) and transformers (three phase or one phase) must be installed in an easement off of the right-of-way and on private property. The switchgear easement is 21 feet x 27 feet (see Figure 24) and the transformer easement ranges from 20 feet x 14 feet to 26 feet x 20 feet (see Figure 25). Once the main power

Figure 23: Padmounted Switchgear Easement Requirements



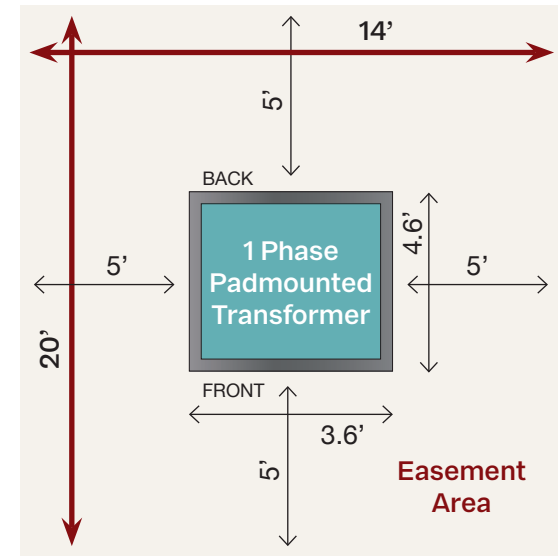
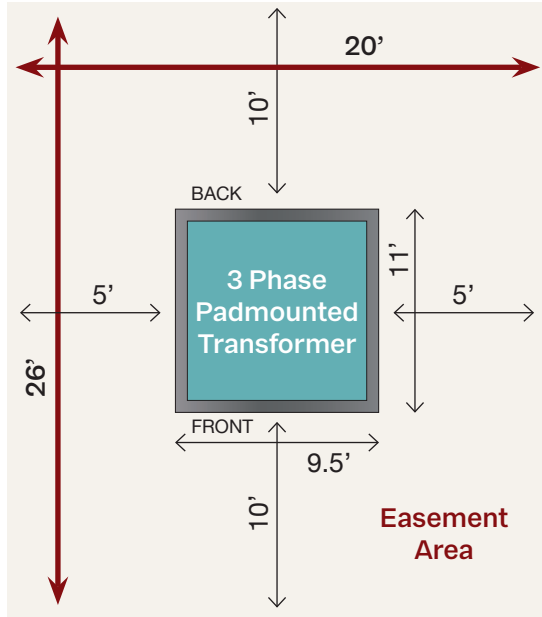
**Not to Scale - Dimensions rounded to next foot*



CLEARANCE TABLE				
Transf. Type	Building Construction		Windows Doors & Vents	Fire Escapes
	Fire Resistive Note 3	Non-Fire Resistive		
1 PHASE	5' - 0"	10' - 0"	10' - 0"	20' - 0"
3 PHASE	5' - 0"	15' - 0"	15' - 0"	20' - 0"



Figure 24: Padmounted Transformer Easement Requirements



**Not to Scale - Dimensions rounded to next foot*



CLEARANCE TABLE				
Transf. Type	Building Construction		Windows Doors & Vents	Fire Escapes
	Fire Resistive Note 3	Non-Fire Resistive		
1 PHASE	5' - 0"	10' - 0"	10' - 0"	20' - 0"
3 PHASE	5' - 0"	15' - 0"	15' - 0"	20' - 0"

has been installed underground, the electrical service into the building must be converted from the aerial connection to a buried connection by a private electrician. It is important to make sure that the electrical duct bank installation it is not installed at an elevation underground where it will interfere with the sanitary sewer lateral connections to the sewer main.

In discussions with ONCOR and reviewing recent bids the following are some equipment and installation costs (see Figure 26):

- Vistagear - \$80,000,
- 3-Phase Transformer - \$50,000,
- Duct Bank - \$300/Linear Foot,
- 12 feet x 12 feet x 8 foot manhole - \$60,000,
- Fiber Optic Manhole - \$3,000.

During discussions with ONCOR, they said that it is very hard to “estimate” the cost of going underground without conducting a full

Figure 25: Approximate Cost Estimations

	No Relocation	Relocate Aerial	Relocate Underground
Additional ROW Needed	-	-	\$\$\$
Easement Needed	-	\$	\$\$\$
Relocate Private Service	-	\$\$\$	\$\$
Visual Aesthetics	-	\$\$	\$\$\$\$

\$ = \$1,000's
 \$\$ = \$10,000's
 \$\$\$ = \$100,000's
 \$\$\$\$ = \$1,000,000's

engineering design. One ONCOR staff member stated that in past discussions with other Cities and developers about placing utilities underground in old downtown areas, one cost was estimated to be \$1M for three blocks. Also ONCOR staff stated that most developers stop considering going underground after realizing the cost of providing a 10 or 15-foot easement plus vistagear and transformer easements.

One other major item to consider when placing franchise utilities underground is not only the cost of the underground installation, but also the cost to the developer/City for providing a 10-foot wide easement for the duct bank plus the easement for transformers and switchgears, which is difficult in downtown where lots are narrow. Using an average downtown land cost between \$25-\$35 per square foot; a 10-foot easement would cost the \$2,500-\$3,500 per linear foot of property and a switchgear easement would cost \$15,000 to \$20,000.

If the City’s long-term plan is to reduce overhead utilities in the downtown area in the public realm, we suggest that the City work with the franchise utility owners and developers on an “Overhead/Underground Utility Master Plan.” This plan would determine which side of the road to install the utilities and may allow for installing the 12 feet x 12 feet x 8 feet manhole in street right of way with an agreement. If the utilities are to be placed in an alley, not only would the location of a 10-foot easement need to be determined, but existing sanitary sewer and/or water would need to be reviewed for adjustments.

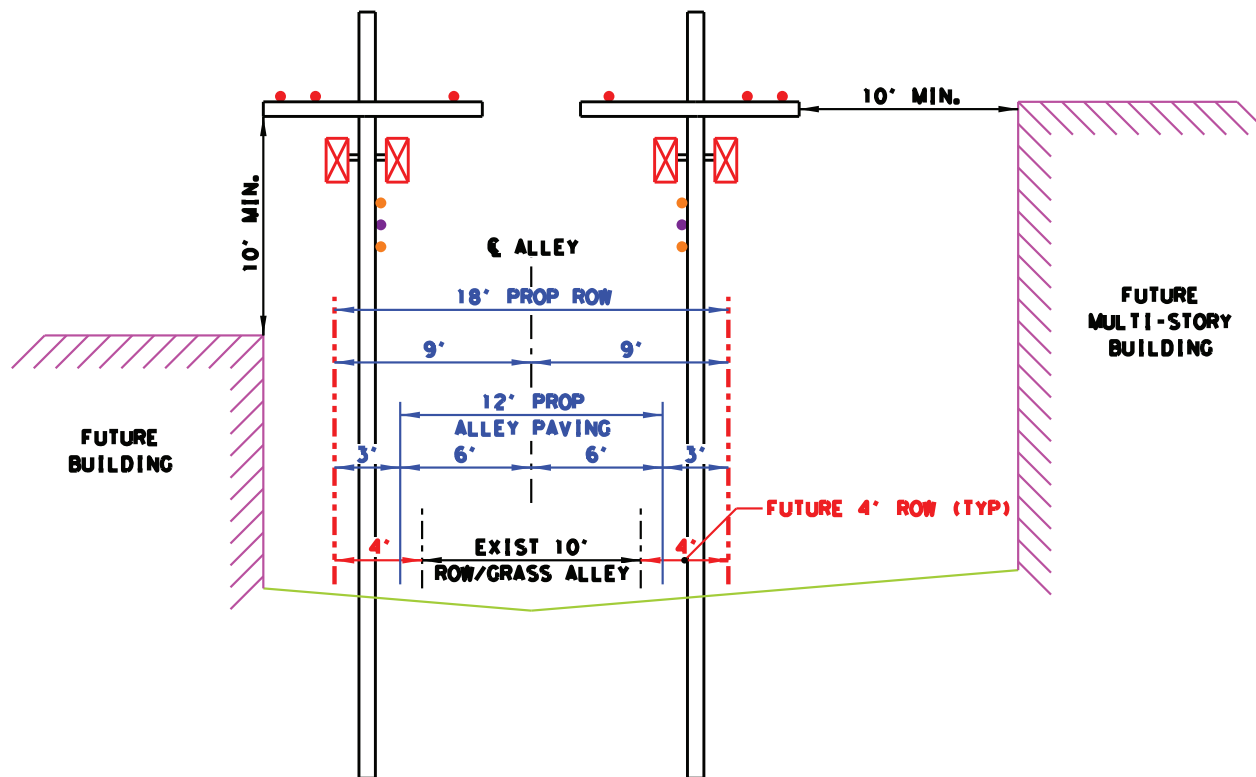
City officials and ONCOR continue to discuss options for service access to buildings and appropriate location for service lines that may be included in this document by the time it reaches City Council. Otherwise these issues will be decided at a later date. Once ONCOR provides a response, there may be the need for additional discussion with property owners and the development community.

EXISTING GRASS ALLEYS

Existing alleyways within the downtown area are generally within 10 foot wide right of way. As the vision of the downtown is adopted and the areas around these alleyways develop/redevelop, things to consider could include, but are not limited to, increasing the overall



Figure 26: Aerial to Underground Utility Conversion



alley right of way width to the current standard of 18 feet. As individual parcels are developed along the alley, it is suggested that an additional four feet of right of way be required on each side of the alley from the developing parcels. As partial block development continues, the City can continue to require alley right away until the entire alley area is acquired along the full block. The City may also consider requiring escrow for the future alley construction, however the alley could not be built until the entire 18 foot of right of way is acquired for the entire

block. If a partial block is developed along an alley containing existing electric utilities, they will need to plan for maintaining a minimum building setback of 10 feet from the edge of the new alley property line for future power pole relocations (see Figure 26) .

If a developer acquires an entire block, the City may work with the developer to eliminate the alley as long as they relocate any public and/or private utilities in the current alleyway.