

MEMORANDUM

March 21, 2019

To: Broadband Advisory Task Force (BATF)

From: BATF Subcommittee (Lorenzo Kristov, Jeff Mischkinsky, Matt Williams)

Subject: Recommendation regarding Staff's proposed Astound contract

After reviewing the February 5, 2019 Staff Report and proposed Astound contract, which was discussed at the February 27 BATF meeting (where this BATF Subcommittee was formed), we believe that the BATF should advise the City Council not to approve that contract at this time. Rather, the City should perform further due diligence, including a financial analysis of the proposed Astound contract and an assessment of its potential impacts on the viability of and support for a municipal network that would provide high-speed broadband Internet service to all Davis residents and businesses. The City should also assess alternatives to the Astound contract that could align better with the creation of a municipal fiber network while meeting those City government needs the proposed Astound contract is intended to address.

On that basis the BATF Subcommittee recommends that the BATF adopt the following or a similar motion to the City Council at its March 27, 2019 meeting:

"The BATF recommends that the City Council defer action on Staff's proposed Astound contract and direct Staff to work with the BATF or a designated subcommittee thereof to, at a minimum:

"(1) Have the City Finance Director perform a detailed financial analysis of the proposed Astound contract;

"(2) Assess the potential impacts of the proposed Astound contract on the viability of and support for a City-owned broadband network that can serve all Davis residents and businesses;

"(3) Identify and comparatively assess alternatives, including an option whereby the City owns and controls all fiber capacity in City conduit and leases shares of capacity on an open-access basis to third-party ISPs and content providers;

"(4) Since the Comcast contract has expired, determine the amount of costs or fees the City could face for continuing to use the existing Comcast fiber until an alternative can be implemented; and

"(5) Examine the terms of the recently expired Comcast contract to determine what legal rights Comcast has to continue to use the City conduit and what fair-market fees the City could be receiving from Comcast for such use.

“The BATF also recommends that the City Council direct Staff to consult with the BATF and provide an opportunity for a BATF recommendation to City Council prior to bringing the proposed or a revised Astound contract or an alternative to City Council for approval.”

The BATF Subcommittee also recommends that the BATF extend the charge of this subcommittee for the purpose of collaborating with City Staff on the above items.

Attachments

Attached to this memorandum are some initial analyses suggesting areas to be investigated in the further due diligence recommended by the Subcommittee.

Attachment 1: Description and high-level cost estimate of a wholly City-owned fiber-optic “backbone” ring and sub-rings as designed and presented in the City of Davis Broadband Feasibility Study Report

Attachment 2: Map of Proposed Network Design and Fiber Ring

Attachment 3: Spreadsheet of cost data supporting cost estimates in Attachment 1.

Attachment 4: Questions, Comments and Issues Identified by the BATF Subcommittee Regarding the Proposed Astound Contract

Attachment 5: Relevant Section of 2005 Comcast Contract

Community Owned Fiber Optic Ring

*High Level Cost Estimate
Prepared by BATF Subcommittee*

OVERVIEW & PURPOSE

Cost estimate, Bill of Materials, for wholly owned self-healing Fiber Optic “backbone” ring connecting City well sites and a Network Operations Center. From each of these well sites on the main ring there are multiple self-healing “subrings” connecting anchor tenants, and cabinet facilities for deployment to neighborhoods. These cost estimates derive from the City of Davis Broadband Feasibility Study and estimates and research by BATF Subcommittee.

OBJECTIVES

1. A permanent community owned fiber ring to serve current and future IP needs (video/voice/data) of City, DJUSD, UCD, DMA, other Institutional buildings for a one-time cost.
2. City wide backbone ring allows further deployment of community owned fiber into residential and business neighborhoods.
3. Lease Dark and Lit Fiber facilities to ISPs, telecommunications providers for forthcoming 5G Mobile Data services. entrepreneurs creating new businesses, UCD projects, institutions, smart city initiatives, etc.
4. Ensure complete network coverage with competitive choice and ensure solution for the digital divide.

FIBER RINGS

1. This portion of the estimate is for construction and materials costs, which includes all “Outside Plant”; conduit, vaults, splice cases and handholes, fiber optic cable, direct burial, resurfacing: **\$5,158,226**
2. Please see attachment 3 table drawn the Feasibility Report.
3. Engineering and Construction Management costs were derived by taking the total Route Miles quoted in the BATF Report for the city as a whole,² and dividing by the sum of the

Attachment 1

miles, the Core and Secondary rings would take, 34.5 miles, to get a ratio of 12.3 %. This cost is an easy estimate, and should be closely examined as this proposal proceeds:

\$1,186,932

NETWORK ELECTRONICS

1. This portion of the estimate is in support of the fiber optic network electronics present at all the locations in the preliminary engineering design of the BATF report. There are **6 Well Sites** on the core ring, plus the Network Operations Center; they are titled AON Node Electronics in the Report³: **\$968,653**
2. In addition to the 6 sites on the core ring, there are **15 AON Electronics Sites**, in each secondary ring, which connects a particular sub or secondary ring to the Distribution Fiber that goes into a particular residential neighborhood: **\$1,785,195**
3. The BATF subcommittee FTTH electronics portion of this estimate is substantially different than that provided by the consultant in the BATF Report. Costs for network electronics and distribution frames for fiber networks have seen a dramatic adjustment due to the development of the data center market.⁴
4. The BATF subcommittee did not examine the power and battery or building renovation charge components to analyze for cost savings. This analysis can be done as this proposal is developed.

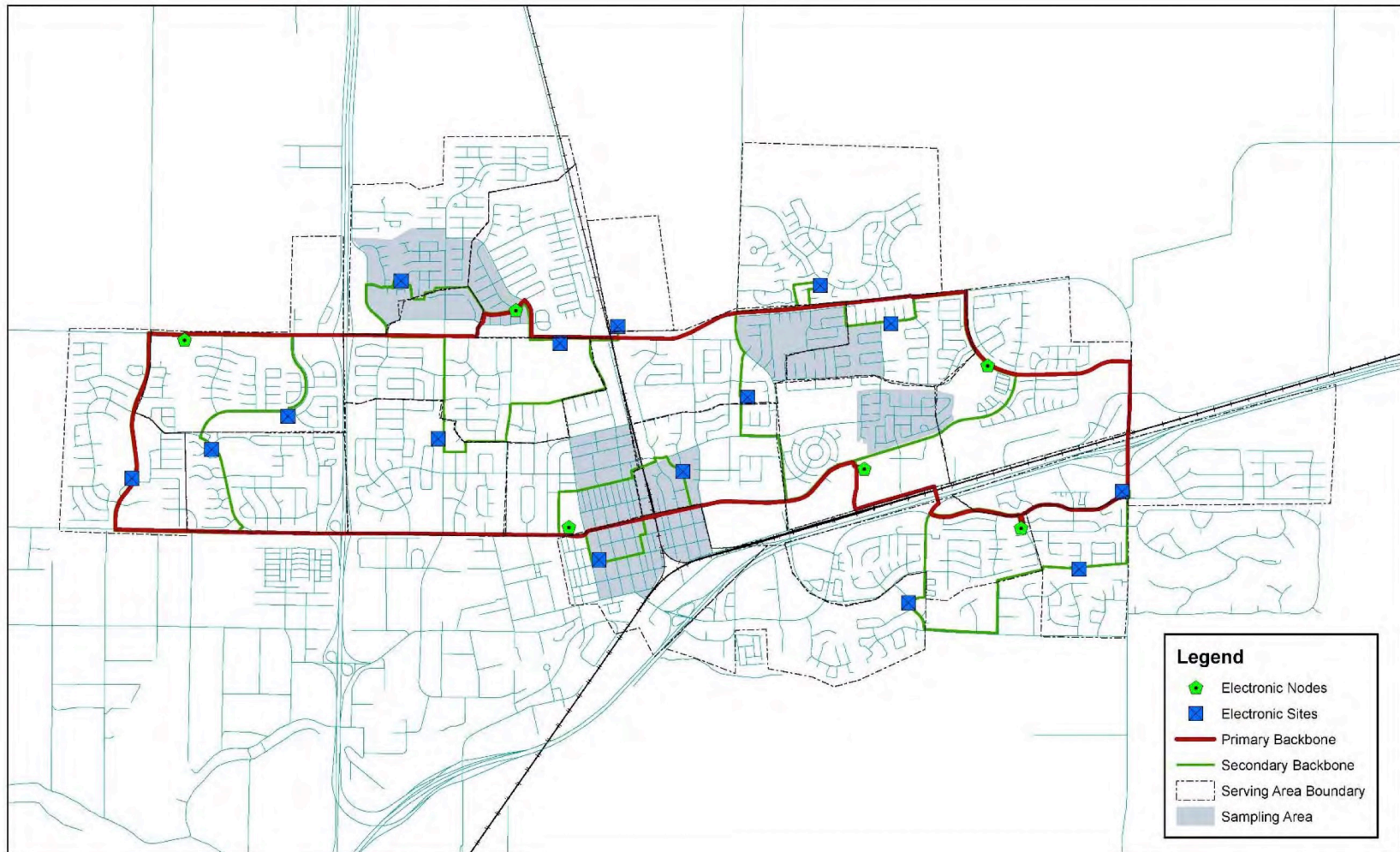
REFERENCES

A Collection of references this document was created from

1. Taken from Table 7 – Summary of Fiber Costs on page 45 Davis California Broadband Feasibility Study Final Report, April 3, 2018.
2. Taken from Table 10 – Engineering Costs on page 54 Davis California Broadband Feasibility Study Final Report, April 3, 2018.
3. Taken from Table 1 - AON Electronics Costs on page 36 Davis California Broadband Feasibility Study Final Report, April 3, 2018.
4. Dawson, Doug (2019, Mar 13th) POTs and PANs Blog - <https://bit.ly/2F5V8nL>

Appendix IV: Map of the Study Areas Showing the Proposed Network Design and Fiber Ring

Davis, CA Broadband Study



Attachment 3

Table 7 – Summary of Fiber Costs

OSP Fiber Rings	OSP Fiber Costs Cost per Mile				Extended Cost		
	RT Miles	Labor	Materials	L+M	Labor	Materials	L+M
Primary Ring	14						
Fiber and Installation		\$10,545	\$6,537	\$17,079	\$147,630	\$91,519	\$239,149
Conduit		\$132,543	\$9,615	\$142,158	\$1,855,602	\$134,610	\$1,990,212
Hard Surf. Cut & Rest.		\$142	\$38	\$180	\$1,988	\$532	\$2,520
Handholes & Splices Cases		\$447	\$750	\$1,197	\$6,258	\$10,500	\$16,758
Splicing		\$38,880	\$648	\$39,528	\$544,320	\$9,072	\$553,392
Total Primary Ring					\$2,555,798	\$246,233	\$2,802,031
Secondary Rings	20.5						
Fiber and Installation		\$25,553	\$4,118	\$29,676	\$523,831	\$84,411	\$608,242
Conduit		\$67,065	\$4,138	\$71,203	\$1,374,833	\$84,829	\$1,459,662
Hard Surf. Cut & Rest.		\$398	\$74	\$472	\$8,159	\$1,517	\$9,676
Handholes & Splice Cases		\$2,947	\$1,464	\$4,411	\$60,414	\$30,012	\$90,426
Splicing		\$8,992	\$188	\$9,180	\$184,336	\$3,854	\$188,190
Total Secondary Rings					\$2,151,572	\$204,623	\$2,356,195
TOTAL FIBER RINGS					\$4,707,370	\$450,856	\$5,158,226
Engineering							\$510,185
Construction Management							\$676,747
TOTAL ENGINEERING + CON MANAGEMENT							\$1,186,932
Total Fiber Costs					\$6,345,158		

Attachment 3

AON Node Electronics				
Description	Unit Cost	Qty	Cost Per Site	Ext. Cost
Building Renovations				
Existing Building Renovations (sf)	\$187.00	300	\$56,100.00	\$392,700.00
AC and DC Power and Battery Backups	\$60,360.00	1	\$60,360.00	\$422,520.00
FTTH Electronics*	\$21,085.00	1	\$21,085.00	\$147,595.00
Fiber Frame and Terminations*	\$834.00	1	\$834.00	\$5,838.00
Total			\$138,379.00	\$968,653.00
switching” paired with open source Internet routing software that is installed on those switches				
AON Electronics Site				
Description	Unit Cost	Qty	Cost Per Site	Ext Cost
Remote Building				
Pre -Fab Building and Transport	\$66,000.00	1	\$66,000.00	\$990,000.00
AC and DC Power and Battery Backups	\$50,360.00	1	\$50,360.00	\$755,400.00
FTTH Electronics	\$1,819.00	1	\$1,819.00	\$27,285.00
Fiber Frame and Terminations	\$89,471.38	1	\$834.00	\$12,510.00
Total			\$119,013.00	\$1,785,195.00

Attachment 3

Well Site Electronics + Frame						
Part	Description	Unit Cost	Qty	Cost Per Site	Ext Cost	
N8500-32C	(32*100gb) 100Gb Spine/Core Layer Switch	\$11,400.00	1	\$11,400.00	\$79,800.00	
QSFP28-EIR4-100G	QSFP28 Transceiver Module (Core Ring Optics)	\$549.00	7	\$3,843.00	\$26,901.00	
N5850-48S6Q	Leaf Switch (6*40Gb + 48*10GB) - 10Gb SDN Switch	\$5,800.00	1	\$5,800.00	\$40,600.00	
SFP-10GLR-31	10GBASE-LR SFP+ (sub ring optics)	\$21.00	2	\$42.00	\$294.00	
FHX-1UFSP	1U Rack Mount FHX Ultra HD Fiber Enclosure Unloaded,	\$120.00	3	\$360.00	\$2,520.00	
FHX-1MTP3LCQSMFA	MTP-12 to 3x LC Quad, Type A, 12 Fibers OS2 Single Mode	\$79.00	6	\$474.00	\$3,318.00	
Totals				\$21,919.00	\$153,433.00	
AON Electronics Site + Frame						
Part	Description	Unit Cost	Qty	Cost Per Site	Ext Cost	
SFP-10GLR-31	10GBASE-LR SFP+ (sub ring optics)	\$21.00	5	\$105.00	\$1,575.00	
S5800-48F4S	48-Port Gigabit SFP L2/L3 Switch with 4 10Gb SFP+ Up	\$1,700.00	1	\$1,700.00	\$25,500.00	
SFP1G-LX-31	Cisco SFP-GE-L Compatible 1000BASE-LX/LH SFP	\$7.00	2	\$14.00	\$210.00	
FHX-1UFSP	1U Rack Mount FHX Ultra HD Fiber Enclosure Unloaded,	\$120.00	3	\$360.00	\$5,400.00	
FHX-1MTP3LCQSMFA	MTP-12 to 3x LC Quad, Type A, 12 Fibers OS2 Single Mode	\$79.00	6	\$474.00	\$7,110.00	
Totals				\$2,653.00	\$39,795.00	

Attachment 4

Questions, Comments and Issues Identified by the BATF Subcommittee Regarding the Proposed Astound Contract

The following questions/issues are based on a review of February 5, 2019 Staff report and the proposed Astound/Wave contract contained therein.

Staff Report Questions/Issues

- The Fiscal Impact section asserts conclusions but does not provide any support for those conclusions in the form of a fiscal analysis including, but not limited to, a description of value received and value surrendered, as well as a capital equipment budget for connecting the new City fiber to the City facilities.
- The Fiscal Impact section asserts future cost savings, but based on the current contract status, there are no demonstrable costs that are either due and payable or currently savable.
- The Background and Analysis section provides no information regarding any City plans for expansion of existing City conduit during the next five years. A disclosure of such plans is important input to any fiscal analysis since Sections 4.2 and 5.4 of the proposed contract grant Astound/Wave monopoly rights to that conduit, excluding all other commercial competitors.
- Section 3.3 of the contract references City Equipment. Does the fiscal analysis of this proposed agreement include a capital budget for the referenced City Equipment?
- In staff's preparation of the Fiscal Impact section conclusion, how was the value determined of the monopoly being granted to Wave in the existing conduit and future conduit?
- Section 6.2 of the contract appears to be saying that the 12% clause is a baseline and that the City can choose to have Wave install additional City Fiber beyond the 12% for an additional cost. What analysis has City staff performed to determine the value of having Wave install additional fiber for the City?
- Section 12.2(b) *Ownership of Facilities and Removal at Termination of the Agreement* of the recently expired Comcast contract (provided herein as Attachment 5) has similar provisions as Section 7.4 *Effect of Expiration* of the Astound/Wave contract. Those respective contract provisions control the rights of ownership and use of both the conduit and fiber after the expiration of the contract term. The Staff Report does not appear to include any acknowledgement or analysis of the current and future impact of Section 12.2(b) or Section 7.4, especially as they relate to any future cost savings referenced in the Fiscal Impact section of the Staff Report. If Comcast will be charging the

City for the future use of its fiber, should the City be charging Comcast for the future use of the City's conduit?

Contract Comments

- Background section E references "substantially equal value"; a basis for that statement needs to be provided.
- Section 1.1 needs to include a map and detailed "location and length" description of the existing conduit.
- Section 1.1 ideally should include a map and description of planned City conduit additions over the next 5 years
- Section 4.4 grants Wave a 30-year monopoly in the existing conduit and future conduit, excluding all other commercial competitors. Is that in the best interests of the City and its consumers?
- Sections 5.1, 5.5 and 2.1's collective description of the fiber IRU and its control needs a plain language revision.
- Section 6.1's explanation of fee calculations needs both a plain language revision, as well as an illustrative example of how the "parity" formula will be calculated.
- Section 9.3 appears to give Wave a franchise to sell its services (both current and future) free of any Franchise Fee. Was the value of that zero-dollar Franchise Fee included in the fiscal analysis that supports the findings of the Fiscal Impact section of the Staff Report?
- Section 9.5 appears to provide for a limited Franchise Fee. How will sections 9.3 and 9.5 work together? How has the fiscal analysis valued these two interconnected provisions? How has the "relative parity" formula valued these two interconnected provisions?

Attachment 5

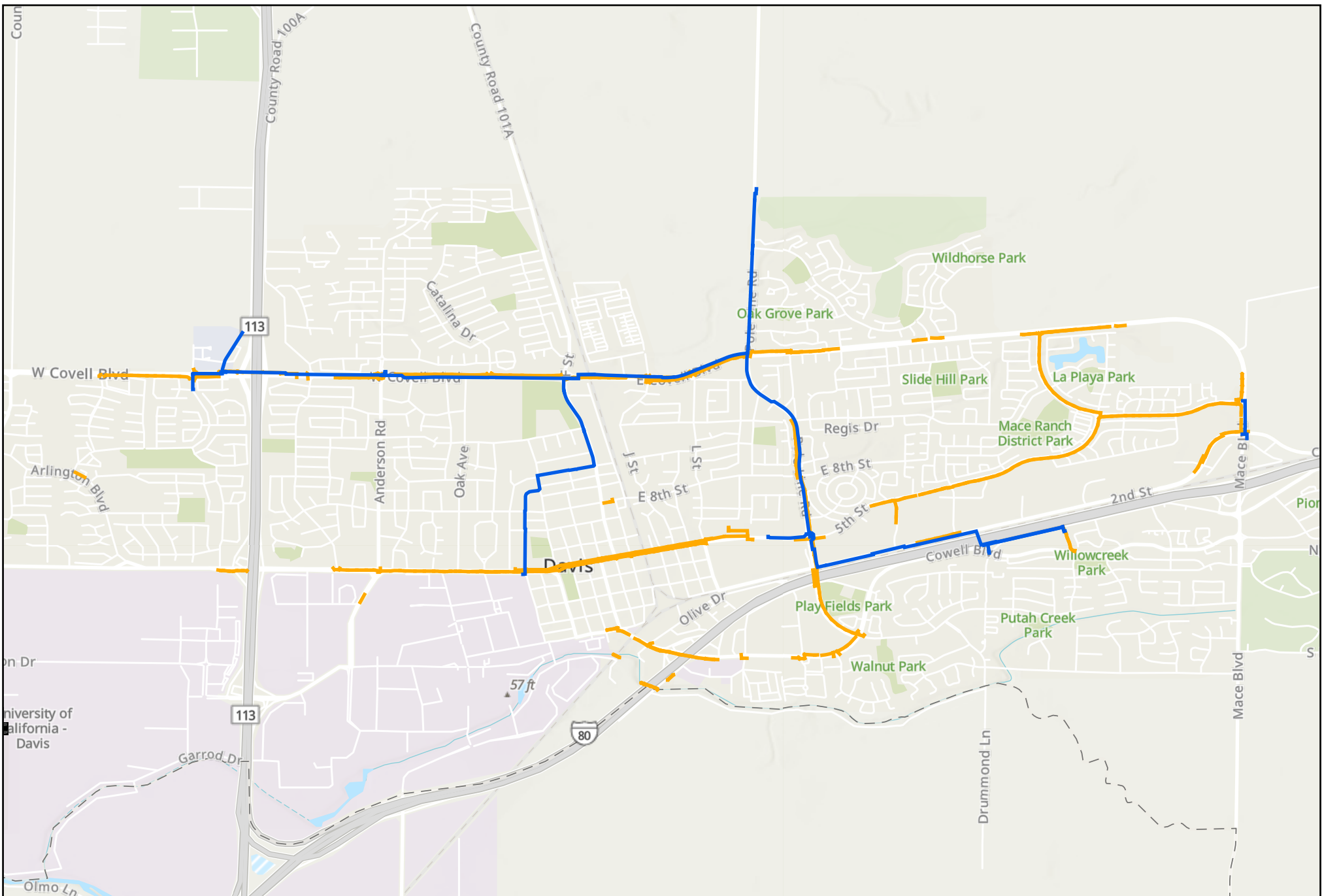
Relevant Section of 2005 Comcast Contract

12.2 City I-Net Fiber Connections To City Buildings Within Franchise Area.

Grantee agrees to provide six (6) strands of fiber optic cabling for I-Net connections to each of the public buildings identified in Exhibit "A." The City shall possess an indefeasible right of use of the I-Net for non-commercial purposes during the term of this Franchise and extensions to this Franchise. Grantee shall at all times own and maintain the aerial and underground fiber optic cable and associated facilities and equipment up to the fiber termination point at each I-Net site.

(a) Term. The term of the I-Net shall be coterminous with that of this Franchise. This Franchise constitutes an indefeasible right of continued use of the I-Net described herein for the term of this Franchise, provided such use is consistent with the City's obligations set forth in this Franchise.

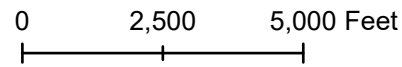
(b) Ownership of Facilities and Removal at Termination of Agreement. All of the facilities installed or employed throughout the City by Grantee pursuant to this Franchise shall at all times be and remain the personal property of Grantee and shall not be considered fixtures of any property in which they occupy space. Neither the City nor any third party shall have any rights in the facilities except as expressly agreed to in writing by Grantee and the City, including, but not limited to, this Franchise. The City and its employees, agents, contractors and Qualified I-Net Users shall not use, tamper, or interfere with the facilities and shall use reasonable care not to damage the facilities. **At the end of the term of the Franchise (if not renewed) Grantee shall remove or leave in place any or all of the facilities, in the same manner as provided for in the Franchise for other Grantee cable facilities.** Upon any renewal of the Franchise the parties shall negotiate and address the rights of the parties with respect to the I-Net on terms that are equivalent to this Franchise with respect to the then existing facilities.



- Known conduit locations
- Water project conduit

Existing Conduit

March 2019



Note: Conduit locations have not been field verified for accuracy.