

Fiber Deployment Strategy

Executive overview of Fiber and Conduit
deployment strategy

Final Recommendation for the City of Gahanna Fiber Deployment Strategy

JUNE, 2002

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The Technology Maze

What is the Purpose of Fiber Optic Technology

Fiber optic technology has been actively embraced and deployed by all of the major telephone companies and inter-exchange carriers for over twenty years and it plays a primary role in transporting voice, data, and video information to users around the world.

This technology has been maturing and a number of non-traditional users have adopted it as the method of choice for the construction of private, service bearing, revenue producing and non-revenue producing networks.

In 1998 the city of Gahanna completed the reconstruction of the Mill and Granville street intersection. During this reconstruction period there was a decision to employ fiber based technology to control the traffic management system and cameras installed as part of the project.

There were two key elements associated with this deployment:

1. An analog fiber camera that transmits a video signal from the controlled intersections back to video monitors at city hall. Engineering and other departments had access to the system for monitoring of traffic conditions, and also the operation of features built into one camera equipped with pan, zoom, and tilt.
2. The second function allowed remote diagnosis and management of the traffic control system allowing more beneficial use of employees time and resources.

Since this initial project, Gahanna has had the opportunity to use this same technology in other traffic management projects with huge success.

What's to Gain by Leveraging this Technology

In late 1999 Applied Innovation (AI) approached Gahanna with a proposal to provide, at no charge, fiber technology that could be used to extend the city voice, video and data network to remote city locations. These sites were originally being serviced by slow dialup service or did not have the full compliment of services. The proposal provided the necessary fiber optic, power and management equipment in exchange for interviews and review data captured by the city personnel during a 12-month period after the initial installation. This data is being used in trade publications as case study material for marketing purposes.

At the same time AI offered this new technology to the city, both business and residential users throughout the country including central Ohio were seeing an enormous hunger for broadband connectivity to the Internet.

As a means to capitalize on the technology phenomenon Gahanna officials felt it necessary to leverage the newly found technology in the city's industrial area as a marketing tool to attract high wage technology related business. The Development Department commissioned the T.I.D.E. program to bring a number of parties, government, school, and business together under a partnership to entice positive economic development through different paths. This program focused on several newly developed industrial parks. Through the partnerships with developers, builders, private business, State and local officials they kicked off T.I.D.E., geared towards creating "Next Step" incubators for technology based business in Gahanna area industrial areas.

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The Next Steps

How can this Technology be Harnessed

After the first successful city fiber project involving the traffic management system it seemed trivial to deploy similar technology to be used as the intra-city cabling and distribution facility for voice, video and data.

At this same time Gahanna was also in the midst of the surge and push to "Get Connected" being felt across the country. This time-period seemed to be the next substantial, sustaining technology wave.

To capitalize on the consumer's love of technology, Gahanna hired Fishel Inc. to review and prepare a detailed study quantifying opportunities and options available to the city for a fiber infrastructure program both in the industrial area and in residential neighborhoods.

City officials and administrators saw this program as a potential benefit in economic development allowing Gahanna to promote the established industrial area and also planning for future technology needs in other areas of the city.

How is the Need for Technology Quantified

Fishel representatives visited Gahanna on a number of occasions to capture adequate information for development of the report and spent time composing and developing legislation to manage the public rights of way.

During reviews of options available to the city, Fishel seemed to have a pre-determined outcome calculated. They were eager to present several options to the city that favored large and complex undertakings that would require individual city departments to manage a fiber optic infrastructure. This approach would have also placed the city in a position as a service provider to non-city customers.

Savings

During the first several years of service Gahanna was able to eliminate the need for costly communication connections that produced monthly recurring charges for these services. Typical charges for dedicated communication links servicing high speed networks can cost as much as \$800.00 per month not including installation and equipment charges.

The city currently has two employee locations and four traffic signal management complexes and would normally would require dedicated telephone facilities to each location. The city owned fiber facility will eliminate monthly charges of up to \$1800.00 per month for these locations and additional city locations added to the network will produce similar results in monthly and expense dollar savings.

Recommendations

The administrative staff reviewed the report by the Fishel Company. The options in the report were evaluated for total cost of ownership, recurrent costs, staff requirements, insurance requirements and true customer base. Based on current economic conditions, staff requirements, and general business cost models the following recommendations are being made.

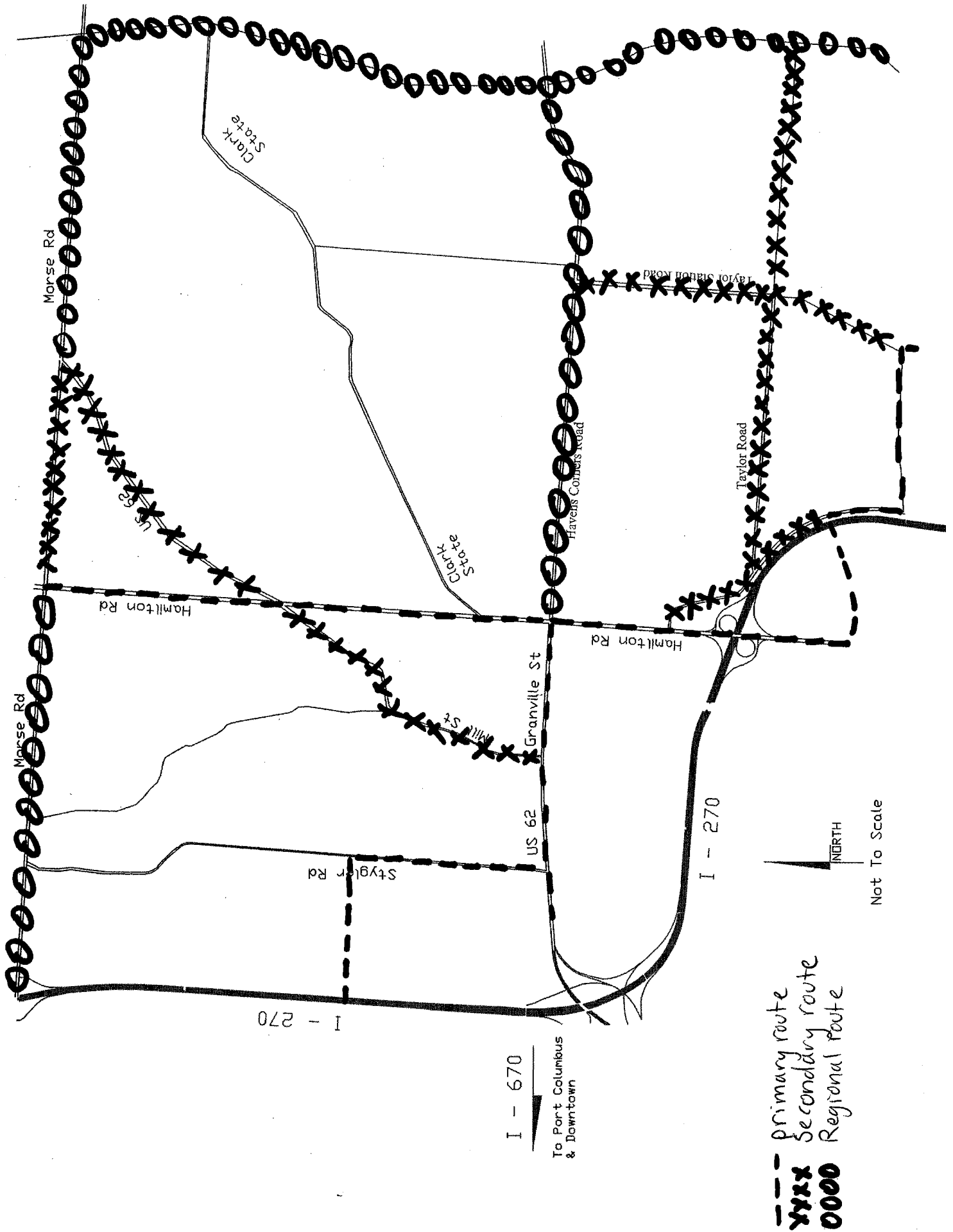
The City of Gahanna should continue to build-out the intra-city fiber backbone as indicated in the attached city map. The routes should be built in the phases recommended on the modified backbone map to leverage any synergies associated with fees in exchange for services that would be part of ROW management fees collected for ROW occupation. This approach will help to prioritize fiber routes are provided that favor the industrial area of the city to help promote economic growth. Additional recommendations include:

- Continued appropriate build-out of fiber to all municipal locations including city buildings, parks, and other facilities used by city employees and the public.
- Leverage other projects such as water, sewer, roadway or any other project that would allow for easy underground access and placement of fiber conduit facilities for city fiber routes identified in the strategic planning process.
- Evaluate and address dual entrances to the city fiber facilities for disaster recovery planning by 2004 to create redundancy to the mission critical facilities for system failure rerouting.
- Leverage access to state owned and publicly funded fiber networks that will allow direct access to the State of Ohio Emergency Management network and other crucial government owned facilities in the future.
- Continued pressure on state and federal sources to provide financial assistance in building technology based infrastructure that will help positively influence development efforts in the City of Gahanna.

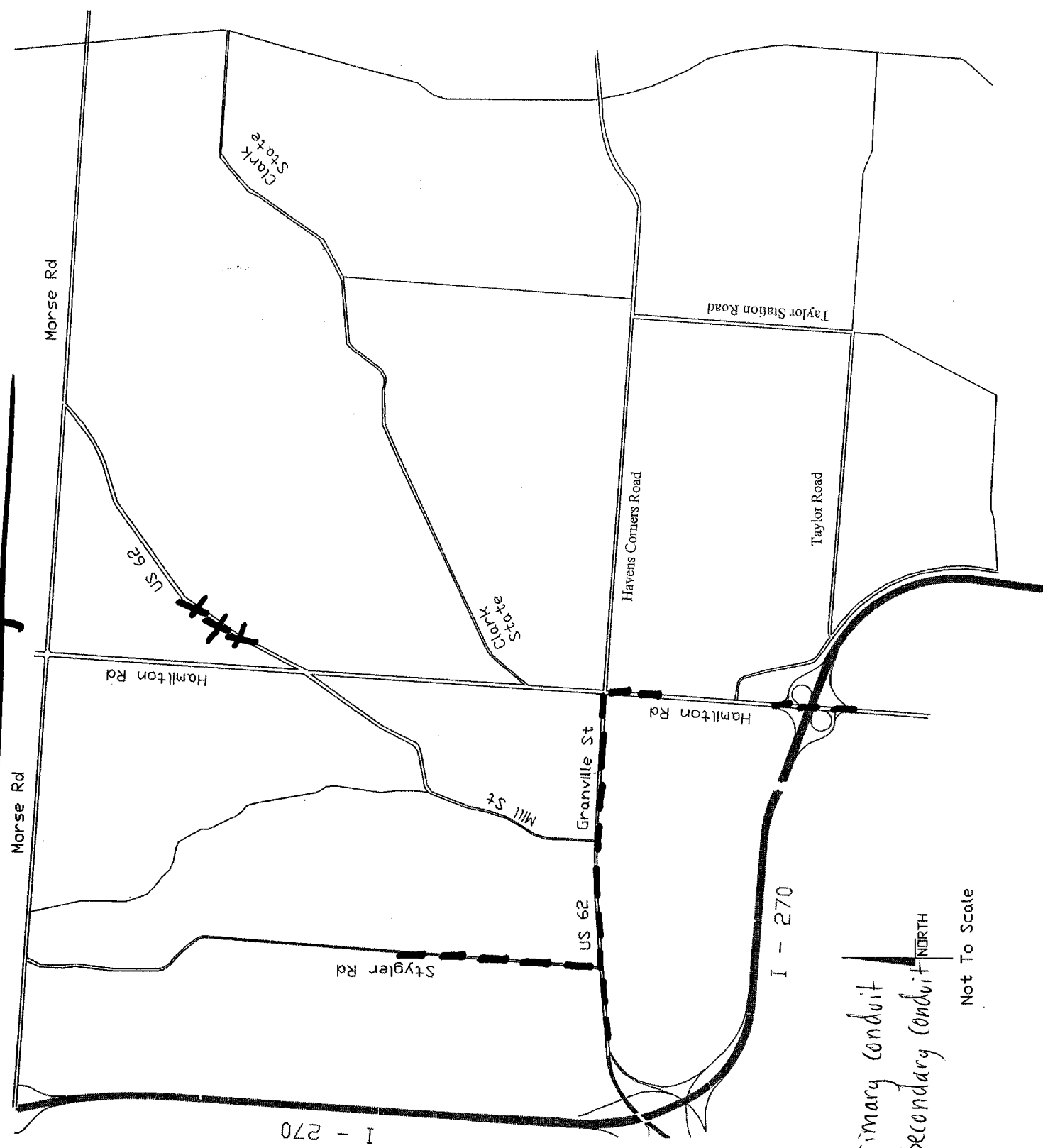
- Partner with other agencies and neighboring communities to jointly apply for grant financing to build additional facilities to all municipal locations.
- Adopt the assessment plan as modified, strategically changing the backbone fiber route and facilities.

Additionally, a separate map outlining routes recommended for servicing the technology park area (T.I.D.E area) of the industrial area is attached. The purpose of the of the additional map is to identify redundant and survivable routes that are key elements of interest to business partners locating in this area. The City of Gahanna must also encourage service providers that are T.I.D.E. partners to design to these recommended routes thereby creating an overall strategic plan for the T.I.D.E. area.

Fiber route



Existi, Conduit



--- Existing Primary conduit
XXX Existing Secondary Conduit
Not To Scale

TiDF Route

