

## Fiber Optic Connectivity for the Town of Friday Harbor

**Project:** Establish fiber connectivity between Town Hall, Wastewater Treatment Plant (WWTP) and Public Works (Main Office, Water Office, and Streets). *[possible new streets dept location at SJCPW property)*

The following locations are what we hope to connect via fiber optics.

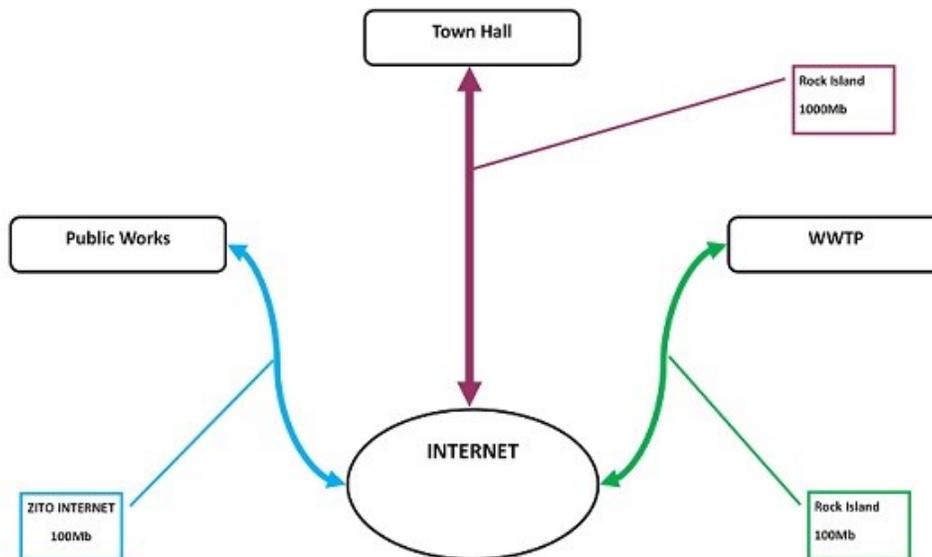
Public Works site: Delivered via Zito cable and has been marginal regarding service quality and reliability. Speed varies from 50Mb to just around 100Mb and outages are common. Monthly cost is approximately \$200 and there is a data cap.

Waste Water Treatment Plant: Delivered via Rock Island over fiber optic. We have a “Business” level service at 100Mb, Monthly cost is approximately \$200. There have been a few outages but overall, the service has been reliable.

Town Hall: Delivered via Rock Island over fiber optic. We have a 1000Mb service and a single static IP address for \$225 a month.

By directly connecting these three key town locations we can vastly expand our IT capabilities in sharing infrastructure, such as Servers, Storage, Telephone services, data protection not to mention off-site disaster recovery and operations resumption.

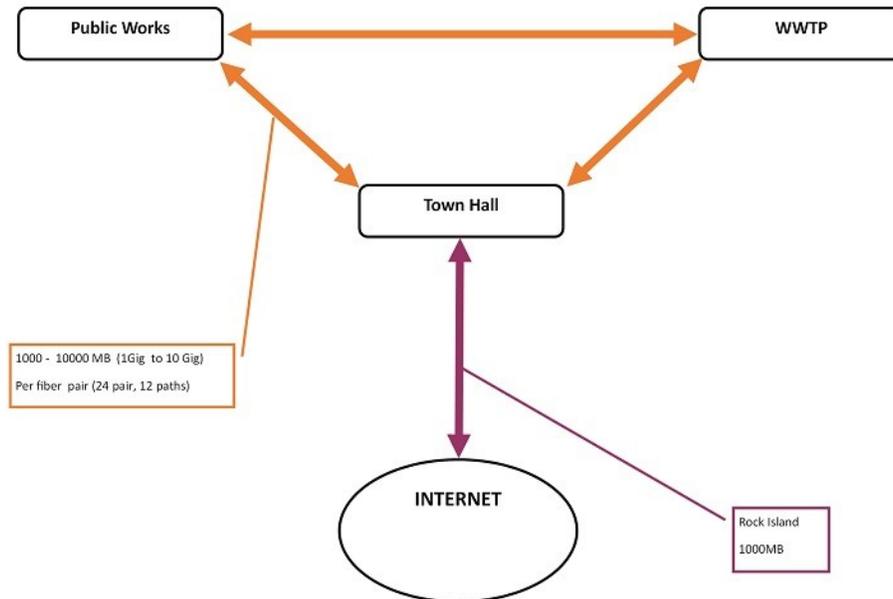
The following is a block network diagram showing these key sites and how they are presently networked together.



Each site has their own Internet connection, firewall and associated monthly cost. Speed and reliability of service is highly variable and currently represents the lowest tier or only available service plan offered by the ISP. Additionally, all Town of Friday Harbor data would traverse 3<sup>rd</sup> party equipment and, in most

cases, leaves the county and because of that is dependent on mainland connectivity to allow various inter-site operations to function.

If we were to proceed with the completion of the conduit to each site, the block diagram changes to look like the following:



The above diagram represents how each site would be linked to another in a “Ring” format, this provides resiliency to our inter-site communications. With the above configuration we can start to realize significant cost savings for services and IT equipment upgrades, not to mention increased efficiencies on a day to day basis by sharing IT resources (telephone, storage, Internet, etc)

### **Upfront costs and short/long term savings.**

This type of project does have its upfront costs, primarily due to the cost of installing underground utilities. Several technologies were investigated, traditional trenching (which is what was done during the 2<sup>nd</sup> street resurfacing project), micro-trenching (up to 2” wide by 16” deep, slot trench) and directional drilling.

We solicited three contractors for cost estimates for roughly 4000’ of installation of conduit, a fourth contractor had already provided pricing per foot for the 2<sup>nd</sup> street portion which was using traditional trench method.

#### ***This is how the costs stacked up,***

- *Traditional Trench: \$20 to \$24 per foot (+ total road closure and surface restoration)*
- *Micro-Trench: \$30 to \$34 per foot (+ total road closure and surface restoration)*
- *Directional Drilling: \$10 to \$12 per foot (no road closures, traffic control at drill pit entrance and exit, minimal restoration required)*

The most attractive from a cost and disruption perspective was directional drilling.

At a rate of \$10 a foot with a “rock” clause at \$12 per foot this was less than half the cost of traditional trenching and a approximately third the cost of micro-trenching. The project budget used the higher figure of \$12 as a worst case per foot cost.

From a disruption and restoration perspective directional drilling has major advantages over other underground installation methods. Road closures are not required and only flagging at the drilling equipment and at the far end exit locations (up to 400’ distance) this keeps traffic flowing.

The entrance and exit “pits” are generally very small and in most cases where the pull boxes are installed. Road surface restoration is minimal, and, in some cases, there is no road disturbance at all depending on placement of the pull box.

A project estimate was provided by a local contractor that specializes in directional drilling, the estimate was between **\$40,000 and \$48,000** depending on ground conditions and services the town can provide or not (flaggers, road restoration)

900’ of the overall approximate 5000’ of conduit has been installed during the 2<sup>nd</sup> street resurfacing project. That section was from the Town Hall building to the Guard and Blair Street intersection.

A significant portion of the project cost is getting the conduit in the ground. The remainder of the expense is the conduit, fiber, pull-boxes and associated bits and pieces to tie it all together and represents approximately 12% of the overall project cost.

***Short- and long-term cost savings are identified below.***

- Reduction/Consolidation of IT equipment
- Reduction in monthly ISP fees
- Reduction in monthly telephone costs

Increased capability and reach of IT services to key sites

- Telephone services (extend current phone system to remote sites)
- Off/Cross-site data storage (cross site backup and restoration)
- Security Centralization (cameras, access to network resources, etc)
- Cross-site Disaster and business resumption for core services

Conservative estimates show an annual savings of almost \$18,000 and at 5 years deferred equipment upgrades (servers, storage, licensing) of \$44,000. Combined this represents approximately \$132,000 in direct cost savings at 5 years.

**Future Streets Dept location at SJC PW location on Guard Street**

With the possible purchase of the SJC PW property on Guard Street the cost savings by extending the proposed fiber route from the intersection of Guard and Marguerite, additional savings would be realized with minimal increase in material costs. The increased cost of construction would be the additional 1000’ feet of directional drilling.

Adding this site to the town IT infrastructure will incur IT expenditures regardless if this fiber project is approved, however if this fiber project is approved and this site becomes a reality the start up and ongoing IT costs would be significantly reduced.

## **Summary**

Installing any significant infrastructure carries upfront cost and careful consideration for the viability of the project and to weigh the cost against the return on that investment. It is estimated that the physical lifespan of this fiber infrastructure is very long term (50+ years) and the fiber itself will meet the needs of the town for generations to come.