

2018

LSJE Network Upgrade Proposal



Project Management:

**Dean Holness**  
Cloud Services, Inc.  
SME - Technician

**Earl Thomas**  
2Guys & Tools, LLC  
SME - Technician

November 20, 2018

Project Phase - Cost Summary		Total Cost
Fiber Backhaul Redundancy Redesign Upgrade (6-8 mo.) (pricing not complete)	*****	\$83,841.05
LSJ Network Redesign & Equipment Upgrade (6-8 mo.)	*****	\$303,795.19
GSJ Network Redesign & Equipment Upgrade (3-4 mo.)	*****	\$168,713.04
LSJ Tower Replacement Upgrade (Stealth Concealment) (TBD)	*****	TBD
Inter-Island Backhaul Upgrades & Redesign (TBD)	*****	TBD
Data Center APC Battery Backup UPS (TBD)	*****	TBD
<b>Total Estimated Cost (Bottom-line)</b>		<b>\$556,349.28</b>

NEED TO SHORTEN  
DONT THINK SE WILL agree



-REVISE TO SEE NEW DIRECTION

# GSI CURRENT FIBER ROUTES

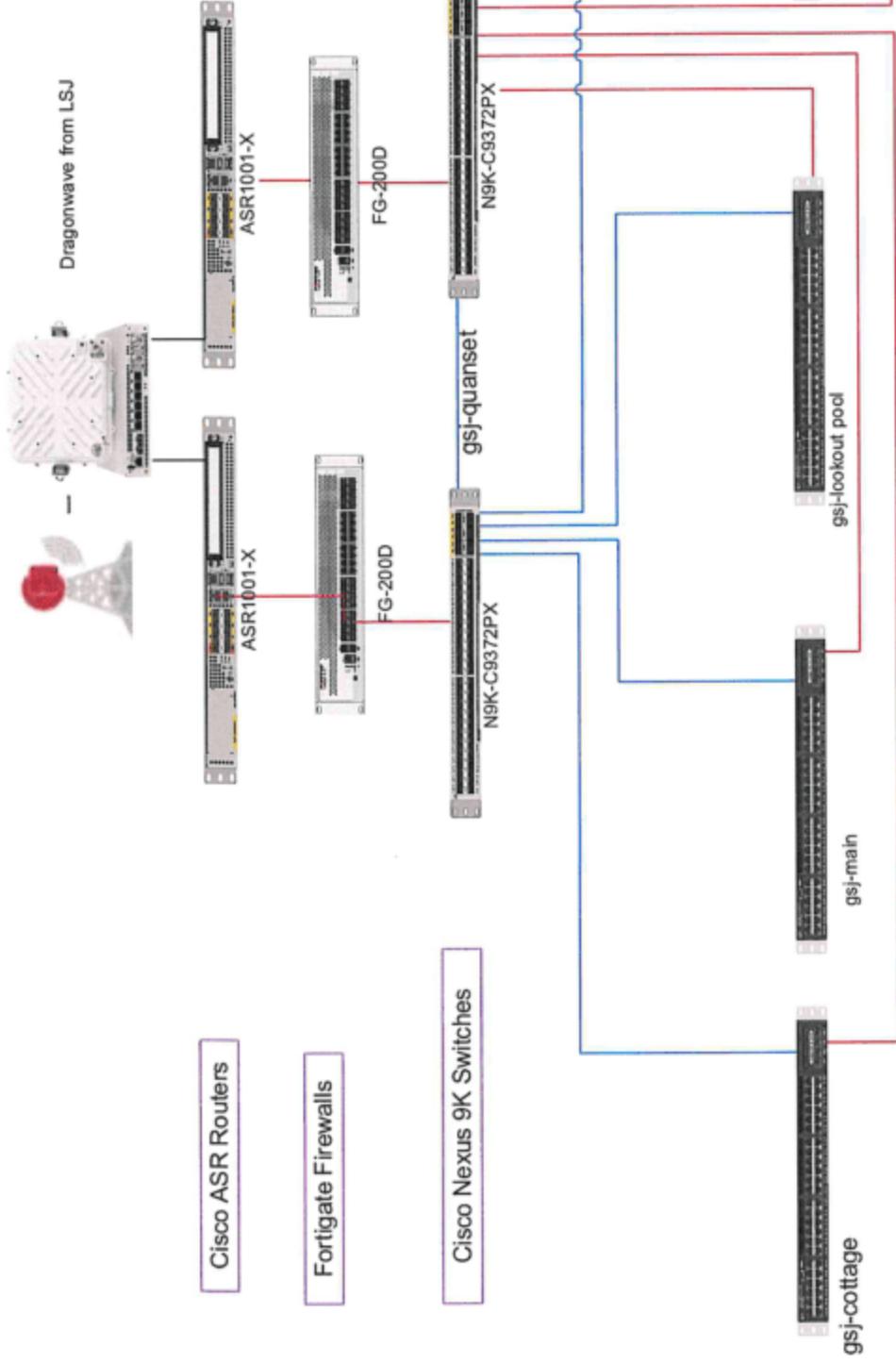


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GSJ Proposed Network Architecture

\* Possible under-wire  
 Fiber - Is this  
 still a project?



Cisco ASR Routers

Fortigate Firewalls

Cisco Nexus 9K Switches

Cisco 3650 48 Port Switches

# GSI PROPOSED NETWORK EQUIPMENT UPGRADE

Hardware	Per Unit Cost	Quantity	Total Cost
Cisco Nexus 9372 TXE	\$28,755.09	2	\$57,510.18
Cisco Catalyst 3650-48-PQ-L Switches	\$4,225.47	4	\$16,901.88
Cisco ASR 1001x Integrated Services Router	\$6,180.99	2	\$12,361.98
Fortigate 200D Firewall - Security appliance	\$2,669.99	2	\$5,339.98
Cisco 10Gig SFPs	\$37.99	16	\$607.84
RJ 45 Plugs *Pack of 50	\$49.99	6	\$299.94
EnTurbo Outdoor 5 GHz 11ac Wave 2 Long-Range PtP Wireless Bridge Enstation5-AC	\$131.25	10	\$1,312.50
Neutron EWS 24-Port Managed Gigabit 410W PoE+ Switch EWS1200-28TFP	\$1,670.00	2	\$3,340.00
EnTurbo™ Outdoor Wireless Access Point, Dual-Band AC1300 ENS620EXT	\$198.79	6	\$1,192.74
EnGenius EnTurbo Tri-Band 11ac Wave 2 Indoor Wireless Access Point	\$334.60	10	\$3,346.00
Network Analysis and Design	\$10,000.00	1	\$10,000.00
Network implementation	\$7,500.00	1	\$7,500.00
Labor (@ \$75 per hr)	\$75.00	500	\$37,500.00
Ongoing Network Support and Maintenance: Renewable every 6-months	\$5,000.00	1	\$5,000.00
Other necessary labor	\$5,000.00	1	\$5,000.00
<b>TOTAL COST (Network Equipment)</b>			<b>\$167,213.04</b>

# LSJ MANHOLES



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These routes are existing

# LSJ CURRENT FIBER ROUTES



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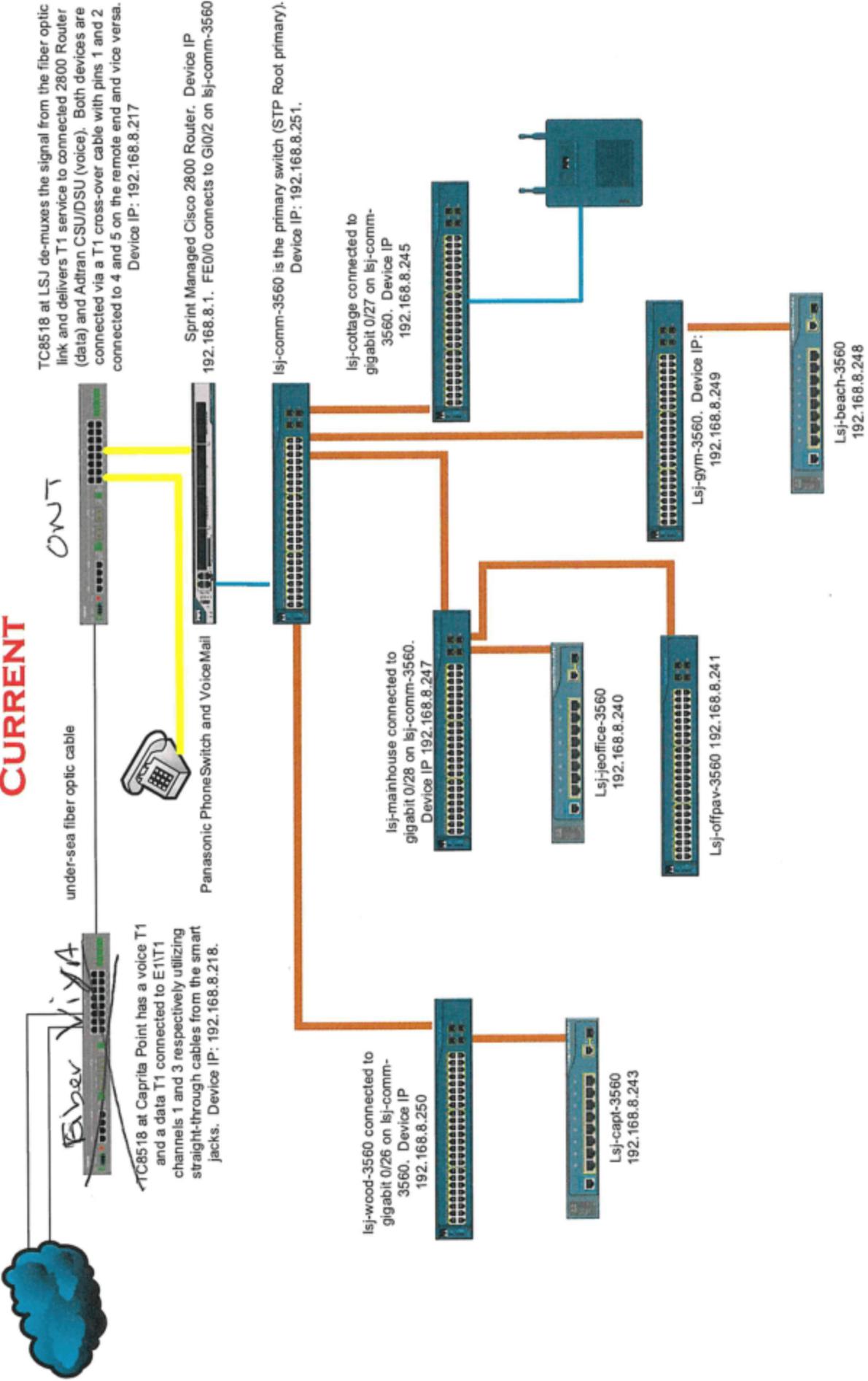
# LSJ PROPOSED MANHOLES



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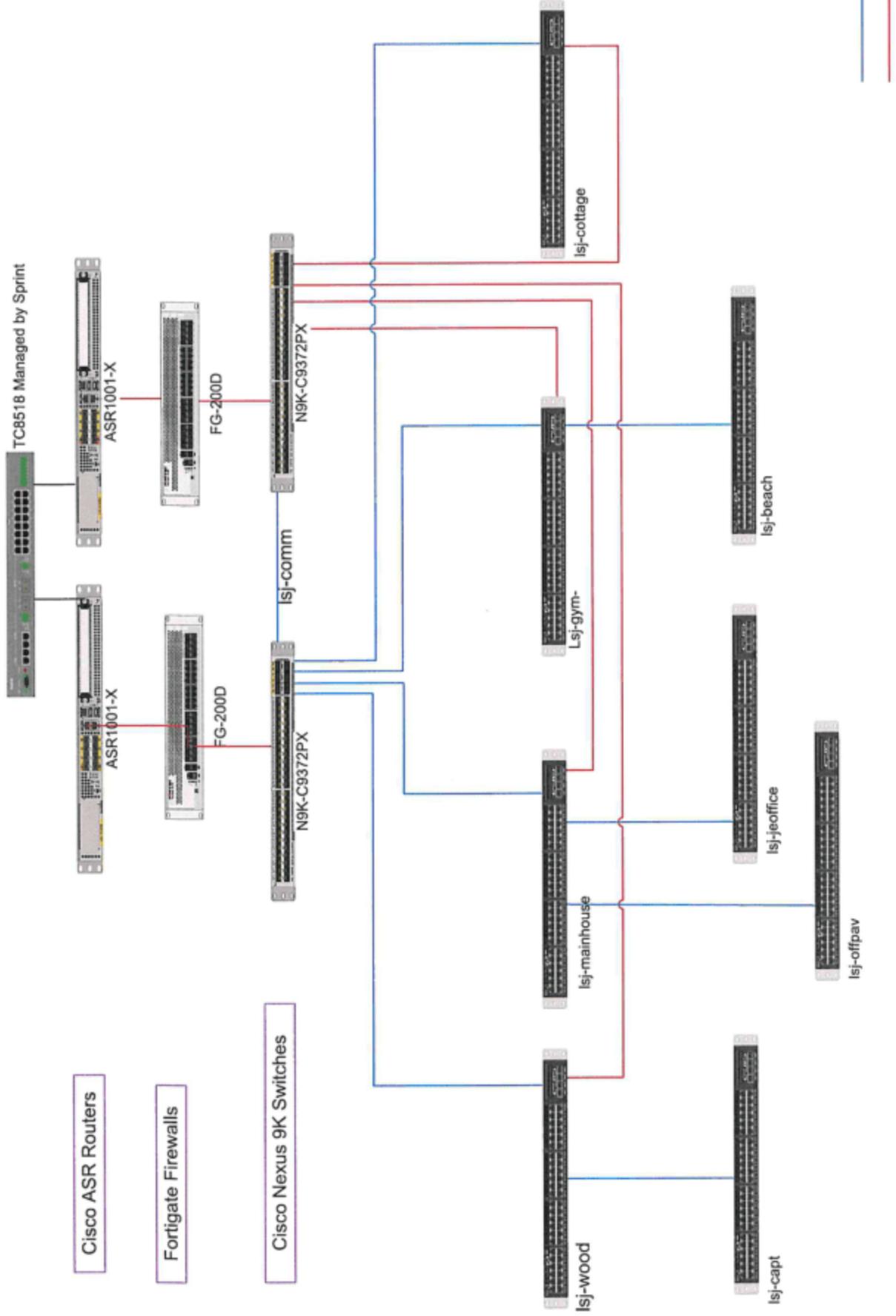
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# CURRENT



## LSJ Switched Infrastructure

# LSJ Proposed Network Architecture



Cisco ASR Routers

Fortigate Firewalls

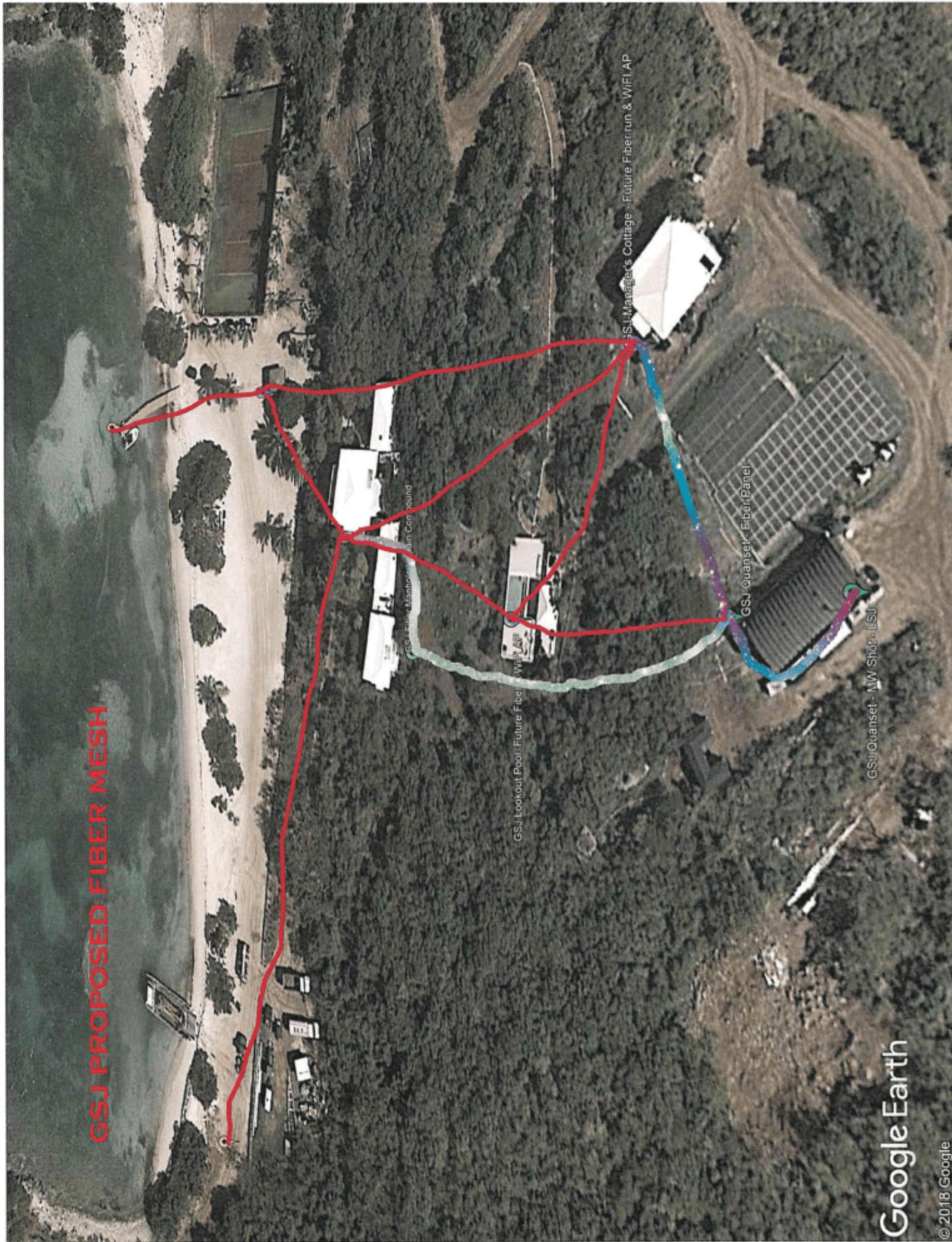
Cisco Nexus 9K Switches

Cisco 3650 48 Port Switches

# LSJ PROPOSED NETWORK EQUIPMENT UPGRADE

Hardware	Per Unit Cost	Quantity	Total Cost
Cisco Nexus 9372 TXE	\$28,755.09	2	\$57,510.18
Cisco Catalyst 3650-48-PQ-L Switches	\$4,225.47	14	\$59,156.58
Cisco ASR 1001x Integrated Services Router	\$6,180.99	2	\$12,361.98
Fortigate 200D Firewall - Security appliance	\$2,669.99	2	\$5,339.98
Cisco 10Gig SFPs	\$37.99	50	\$1,899.50
RJ 45 Plugs *Pack of 50	\$49.99	20	\$999.80
EnTurbo Outdoor 5 GHz 11ac Wave 2 Long-Range PtP Wireless Bridge Enstation5-AC	\$131.25	40	\$5,250.00
Neutron EWS 24-Port Managed Gigabit 410W PoE+ Switch EWS1200-28TTP	\$1,670.00	2	\$3,340.00
EnTurbo™ Outdoor Wireless Access Point, Dual-Band AC1300 ENS620EXT	\$198.79	23	\$4,572.17
EnGenius EnTurbo Tri-Band 11ac Wave 2 Indoor Wireless Access Point	\$334.60	25	\$8,365.00
Network Analysis and Design	\$15,000.00	1	\$15,000.00
Network implementation	\$15,000.00	1	\$15,000.00
Training	\$10,000.00	1	\$10,000.00
Ongoing Network Support and Maintenance: Renewable every 6-months	\$10,000.00	1	\$10,000.00
Other necessary labor	\$5,000.00	1	\$5,000.00
Labor (@ \$75 per hr)	\$75.00	1200	\$90,000.00
<b>TOTAL COST</b>			<b>\$303,795.19</b>

**GSJ PROPOSED FIBER MESH**



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# LSJ PROPOSED FIBER MESH



**Fiber Optic BOM-GS1**

Item Description	Product Number	Rate	Quantity	Total
Outdoor APC Splice (6-12 fiber strands)			2	0
6-8 strand SM Armored Fiber optic cable 9 or50/125µm			5000	0
6-8 strand MM Armored Fiber optic cable 62/125µm			5000	0
APC Connector Housing 2RU (24 fiber)			5	0
APC Connector Housing 4RU (48 fiber)			2	0
Unicam Connectors (SC-APC) 25-pk	390.7355		4	1562.942
Unicam Connectors (LC-UPC) 25-pk	494.4885		2	988.977
Fiber Patch Cables (SC-APC to LC-UPC)			40	0
Corning Unicam TK2	2500		2	5000
Fiber OTDR	17182.44		1	17182.44
2" Conduit (2000-ft)	17.24		200	3448
Labor (Splicing & Terminating)		45	75	3375
<b>Total</b>				<b>\$31,557.36</b>

**Fiber Optic BOM-LS1**

Item Description	Product Number	Rate	Quantity	Total
Outdoor APC Splice (6-12 fiber strands)			5	0
6-8 strand SM Armored Fiber optic cable 9 or50/125µm			25000	0
6-8 strand MM Armored Fiber optic cable 62/125µm			25000	0
SC-APC Connector Housing 1-2RU (24 fiber)			8	0
SC-APC Connector Housing 2-4RU (48 fiber)			6	0
Unicam Connectors (SC-APC) 25-pk	390.7355		20	7814.71
Unicam Connectors (LC-UPC) 25-pk	494.4885		2	988.977
Fiber Patch Cables (SC-APC to LC-UPC)			60	0
2" Conduit	17.24		2000	34480
Labor (Splicing & Terminating)		45	200	9000
<b>Total</b>				<b>\$52,283.69</b>