

Capitol Campus Utility Renewal Plan Improvement Projects with High Priority for the Next 10 Years

Project Number 2016-919B(2)



December 2016



PROJECT OVERVIEW

Background

Construction of the Capitol Campus utility systems occurred over several decades. Many of the utilities have served well beyond their design life. Some original systems installed with the campus's construction in the early 1900's are still in service. Although many improvements have been completed, these utility systems are still in various levels of service conditions. Some still operate at a level of effectiveness, while others need immediate improvement or replacement.

Section 1105 of the 2015-2017 Capital Budget directed the Department of Enterprise Services (DES) to assess the existing condition of underground utilities at the Capitol Campus and to develop a utility renewal plan that will support the Capitol Campus into the future by gradually and systematically replacing or repairing utility segments at high risk of failure in an approach that is most cost effective.

In addition to completing the specific tasks identified in Section 1105, DES determined that:

1. An accurate underground utilities map was essential to developing an effective and on-going implementation plan to replace or repair the utilities deemed at risk.
2. Updating the Storm Water Management Plan would be critical for maintaining a functioning drainage system at the Capitol Campus while remaining in compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements.
3. Transitioning the centralized steam heating system to hot water is another major Capitol Campus effort that will have impacts on the Campus utility systems and must be considered in the context of this Plan.

This submittal document identifies specific high-priority improvement projects and their estimated costs for the next 10 years, as required by Section 1105. The next step is the development of an addendum to this document to describe in more detail the existing utility conditions and the necessary steps to implement the identified improvements.

Methodology

Numerous field investigations and studies were completed on the Capitol Campus utility systems. For this assessment, the methodology included:

1. Locating, mapping, and surveying underground utilities.
2. Reviewing available investigation and assessment reports.
3. Performing field observations to collect supplemental information.
4. Visiting the Campus with DES Operations staff for first-hand information regarding the utility systems.

Due to the available budget, the assessment was limited to stormwater, sanitary sewer, water, irrigation, and electrical systems. Other utility systems, such as natural gas and telecommunication, were not included.

Future developments planned for the Capitol Campus were also included in these considerations. Section 1100 and Section 1101 required DES to evaluate four opportunity sites on Capitol Campus and identify other potential development sites. As part of this work, the four sites were evaluated for development feasibility, including capacity analysis. For the Capitol Campus Utility Renewal Plan project, it is important to understand the impacts of these potential developments in order to develop an effective plan to accommodate the present and to plan for the future.

Prioritization

The attached table summarizes and prioritizes the proposed utility projects and their estimated costs for the next 10 years. Generally, those utility projects with the highest risk management priorities are included in the more near-term budget biennium. However, many listed projects are more urgent than their planned implementation. Fiscal reality indicates that even critical improvements must be phased over time. This plan is presented as a balance between what must be done and how much funding can be reasonably expected.

Impacts

The utility improvement projects will have impacts beyond just the utility systems. Utility improvements will prompt the need to bring stormwater management up to date with the current code within the project areas. In some cases, an entire street segment will need to be repaved in order to replace several utility systems. Reconstruction of these vital utility systems will often damage street pavement beyond what regular patching can restore. The full cost of the utility improvement, including street restoration or repaving, is included in the project estimate.

Conceptual Designs

Some projects require conceptual designs to best depict their scope. These conceptual designs offer detailed project descriptions, sketches, and cost estimates. Appendix A includes these conceptual designs.

Project: Capitol Campus Utility Renewal Plan

Project #: 21-2016-012

Created: 9/2/2016

Updated: 9/30/2016

by: DCY

by: DCY

UTILITY IMPROVEMENT PROJECTS FOR THE NEXT 10 YEARS

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BIENNIUM	PROJECT	ESTIMATED TOTAL COST*
2017 - 2019	Scope/Description	
	Plaza Electrical Room Upgrades (1) Replace primary electrical switches, distribution switch gear, transformer, primary conductors, and outdated 480V & 208V electrical panels in Plaza Parking Garage electrical room. This equipment is either broken, undersized, or obsolete. (2) Address drainage issues in the electrical room. Place new equipment on pads or raise the equipment off the floor to avoid the frequent water intrusion problem.	\$2,019,000
	12th Ave Sewer Main Reroute (1) Construct new sanitary sewer extending from the intersection of 12th and Cherry Lane eastward to the North Diagonal. This work will address crushed and broken sanitary sewer from several west campus buildings by diverting sewage effluent away from unstable hillside areas to other intact conveyance systems. (2) Replace Temple of Justice services by connecting to existing 8" main on 12th. (3) Replace constricted exit to steam tunnel system at 12th and Cherry Lane. The current 24' manhole opening is too small, resulting in a dead-end trap in the event of steam pipe rupture.	\$283,900
	Sewer Service Replacement at Insurance Building Replace broken sanitary sewer line serving Insurance Building. Unless this service line is replaced, sewer service to the Insurance Building will be degraded and will result in sewer leakage outside the building.	\$72,500
	South Diagonal Storm Drain (1) Replace crushed stormwater conveyance on the South Diagonal and across the WW I Memorial circle. This 15" corrugated plastic pipe has deformed, resulting in broken joints and eventual total failure. Replace the pipe with an 18" diameter main. (2) Provide stormwater treatment for run off from some parts of the South Diagonal as planned in the West Capitol Campus Drainage Master Plan. (3) The project also provides an opportunity to implement the Historic Landscaping Preservation Master Plan within project limits.	\$740,500
	Irrigation Main Replacement near 14th Ave and Capitol Way Replace a section of the main and provide surface restoration resulting from irrigation line break within grass area east Capitol Way (directly across from Tivoli Fountain).	\$152,700
	Irrigation Main Replacement near Jefferson and Maple Park Ave Replace section of the main and provide surface restoration resulting from irrigation line break within the general area of the parking lot east of the WSDOT Building.	\$320,900
	New Fire Hydrant at Governor's Mansion (1) Extend a new 8" water main from Pleasant Lane to the Governor's Mansion for fire protection. (2) Install a fire hydrant. Currently, there is no fire hydrant inside the Governor's Mansion area. It could be a safety issue.	\$132,100
	Removal of Unused Electrical Cable at Newhouse Remove or provide with proper terminations for the incoming primary electrical cables labeled to be from vault 'PJ' in the Newhouse Building electrical room. Presently these cables are unused and are hanging by a rope.	\$26,500

	<p>Primary Electrical Cable Labeling and Ground Check</p> <p>(1) Provide consistent labeling for primary electrical system cables throughout the campus.</p> <p>(2) Verify solid ground connections to all primary electrical system equipment.</p> <p>(3) Replace split bolt ground connections with compression type connections throughout.</p>	\$171,800
	<p>Electrical Room Egress Hardware</p> <p>Provide crash bars and out-swinging doors for proper egress for electrical vaults/rooms throughout campus .</p>	\$658,400
	<p>Primary Electrical Vault HH3 Improvements</p> <p>(1) Provide drainage from vault 'HH3' to nearby catch basin located to the southeast of O'Brien Building. Vault 'HH3' is frequently filled with water and a drainage system would extend the life expectancy of the primary electrical system cables and simplify regular maintenance and testing.</p> <p>(2) Remove the adjacent unlabeled handhole next to vault 'HH3'. This unlabeled handhole does not appear to be needed and does not have a lock. The lid is poorly designed and could easily fall in and damage the MV cables if accessed.</p>	\$273,000
	<p>New Water Main in 15th Ave SW</p> <p>Install new 12" water main at 15th Avenue from Capitol Way to Water Street. The new water supply main will strengthen the fire flow to the West Campus water system. Installation of the new water main is also needed for providing fire protection flow for future developments along the south edge of the West Campus.</p>	\$747,900
	<p>Sid Snyder Way Bioretention</p> <p>(1) Raise the largest bioretention cell berms on the north and east sides.</p> <p>(2) Verify the overflow structure elevation.</p> <p>The original earth berm has settled over the years and is lower than the design elevation. Water in the bioretention cell could overflow to the adjacent sidewalks in major storm events.</p>	\$8,400
	Total of Biennium 2017-2019	\$5,607,600
2019 - 2021	Scope/Description	
	<p>South Capitol Building Parking Lot</p> <p>(1) Reconstruct utilities underlying the parking lot south of the Legislative Building and the north lawns of the Cherberg and O'Brien Buildings. This work will address failing stormwater systems, failing clay sanitary sewer lines, water and irrigation mains (circa 1920), a segment of the campus steam tunnel that has significant water intrusion, and other utilities.</p> <p>(2) Remove vertical bends from sanitary sewer below steam tunnel southwest of the Legislative Building.</p> <p>(3) Improve drainage and provide water quality treatment for storm runoff from the parking lot.</p> <p>(4) Reconstruct the parking lot pavement and lighting.</p> <p>(5) Provide opportunity to implement the Historic Landscaping Preservation Master Plan.</p>	\$2,876,100
	<p>Washington Street Drainage and Utility Improvements</p> <p>(1) Reconstruct utilities under Washington Street on the East Campus, between 11th Avenue and the Highway License Building and beneath the plaza lying north of the Highway License Building. This work will address failing combined sewer lines. This condition sends septic sewage to the ground and undermines the structural integrity of the road.</p> <p>(2) Repair a 36" corrugated steel storm line that has been breached and is carrying soil away from the site in the plaza area.</p> <p>(3) Separate the storm drainage from the combined sewer main.</p> <p>(4) Replace the aged water main.</p> <p>(5) Reconstruct the broken sidewalks.</p>	\$1,550,700
	<p>Old Capitol Building Fuel Tank Replacement</p> <p>(1) Replace forty-year-old underground fuel tank at the Old Capitol Building. This tank is at the end of its useful life and cannot meet current code requirements.</p> <p>(2) Repave the concrete loading areas.</p>	\$124,200

	<p>Replacement of Insurance Building Foundation and Roof Drains - (1) Repair and replace foundation drains and roof drains serving the Insurance Building. The foundation drains are filled with debris and no longer convey water away from the building. Similarly, breaks in the roof drain lines load moisture into the ground near the foundation. (2) The project will also provide the opportunity to implement the Historic Landscaping Preservation Master Plan.</p>	\$438,600
	Total of Biennium 2019-2021	\$4,989,600
2021 - 2023	Scope/Description	
	<p>West Campus Irrigation System Replacement Replace original West Campus cast iron irrigation mains (circa 1920). These lines have become brittle and have served well beyond their design life.</p>	\$3,721,500
	<p>Sewer Service Replacement at Cherberg Building Replace failing sanitary sewer service to Cherberg building. Failure of this line will result in loss of sanitary sewer service to this building</p>	\$65,500
	<p>New Water Loop around O'Brien Building Install a new 12" water main from Water Street through 15th Ave and around the O'Brien building to strengthen the fire flow to the West Campus water system.</p>	\$771,700
	<p>New Water Main and Service to Powerhouse (1) Install a fire hydrant and a new 8" water main from the 16" City main in Powerhouse Road to the powerhouse for fire protection. Branch out a 4" main from the new 8" main to the power plant for stream/chilled water refilling. (2) Retire and abandon the existing 4" steel main in the utility tunnel. Currently there is no water available for fire protection at the powerhouse area. And the existing 4" steel pipe in the tunnel is aged and experienced leakages.</p>	\$697,500
	<p>General Admin Building Primary Circuit Selectivity Provide primary electrical circuit selectivity similar to other critical buildings throughout the campus.</p>	\$386,000
	<p>Replacement of Sewer Main from Powerhouse Replace the failing steel sewer force main from the powerhouse pump station to the parking lot on top of the hillside. The steel line has reached its service lifetime.</p>	\$163,800
	<p>Powerhouse MV Cable Modifications Revise the MV cable installation in two places. The existing MV cable installation is unsafe and needs to be revised.</p>	\$76,000
	Total of Biennium 2021-2023	\$5,882,000
2023 - 2025	Scope/Description	
	<p>Replacement of Failed Storm Line at Office Building 2 (OB2) Replace 12" diameter storm main east of OB2 within the lawn area. The main extends from MH-O22-01 to CB-O23-01. The existing pipe has a separated joint and shows signs of infiltration problem.</p>	\$68,000
	<p>East Campus Irrigation System Update Repair and replace failed East Campus irrigation dripline system (circa 1970). Modern drip systems have addressed the failings of the vintage integrated drip valves, which easily clog and do not allow water to flow.</p>	\$2,001,100
	<p>Mapping and Improvement of Existing Fiber Network . (1) Inventory and map the existing fiber optic system. The campus fiber network is unmapped, largely unknown, and generally unmanaged. State fiber shares conduit with private service providers without documentation. (2) Identify routing, design, and construction of an additional link between East and West Campuses. (3) Install a redundant fiber leg to create a West Campus fiber loop.</p>	\$2,650,000
	<p>Replacement of Damaged Storm Line at Natural Resource Building Replace storm main in the parking lot northeast of the Natural Resource Building. The main extends from the detention tank to CB-L23-01. There are multiple joint offsets and sags within this section of main. The existing pipe is 12" diameter PVC.</p>	\$84,900

	<p>Legislative Building Primary Circuit Selectivity Provide primary electrical circuit selectivity similar to other critical buildings at the campus. It also removes a single source of failure for primary Circuit 25 within the Legislative Building and allows for isolation of Legislative Building electrical equipment with a single switching event.</p>	\$430,300
	Total of Biennium 2023-2025	\$5,234,300
2025 - 2027	Scope/Description	
	<p>Cherry Lane Drainage and Utility Improvements (2) Replace and repair water, stormwater, and other utilities in Cherry Lane between Sid Snyder and 12th Avenue. This area holds a density of utilities, including some of the oldest on the campus. Periodic utility repairs have been performed, but continuing incidents of failure can be expected. It is far more cost effective to perform a wholesale replacement and upgrade than to make piece-meal repairs. (2) Bring stormwater management to current code requirements. (3) Implement the Historic Landscaping Preservation Master Plan.</p>	\$3,538,900
	<p>Upgrade Electrical Vault Lids Life/safety campus-wide replacement of electrical vault lids, converting from manholes to lifting lids. This task will bring utility access into compliance with current standards. Improved access to electrical vaults will significantly improve safety and reduce the cost of future service and repair. All new vault lids should have labels welded on.</p>	\$616,600
	<p>Water Meter Replacements Replace and upgrade existing water meters at West Capitol Campus. Many of the existing meters are old and not equipped with remote radio reading system.</p>	\$2,232,300
	Total of Biennium 2025-2027	\$6,387,800

12th Ave Sewer Main Reroute

Project Description

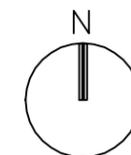
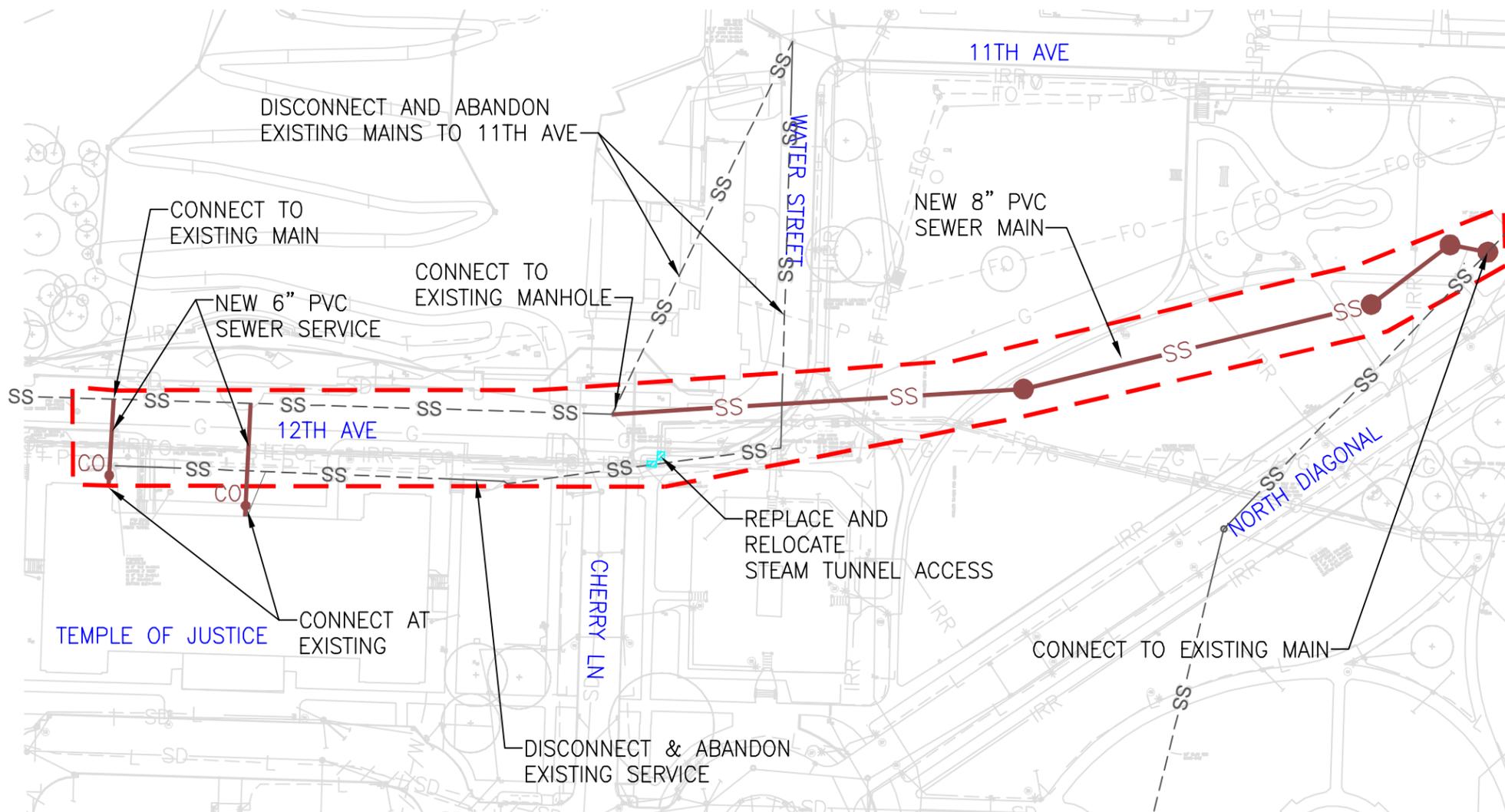
- Construct new sanitary sewer main from the intersection of 12th Avenue and Cherry Lane east to the North Diagonal.
- Abandon existing mains from 12th Avenue northeast to 11th Ave.
- Disconnect and abandon existing Temple of Justice sanitary service.
- Construct new sanitary sewer service for the Temple of Justice to the existing main on 12th Street.
- Restore disturbed surface and landscaping
- Replace and relocate existing steam tunnel manhole with locking hatch and remove wood bench over steam tunnel fan.

Cost Summary

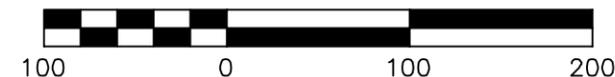
Current Construction Total without Sales Tax	\$168,800
Consultant Service Fee	\$42,200
Permit Fee - Allowance	\$6,000
DES Project Management and Support	\$12,700
Project Contingency	\$23,000
Escalation (3% / year for 2 years)	\$15,400
Sales Tax (8.8% of escalated construction cost)	\$15,800
Escalated Project Total(Year 2018)	\$283,900

Legend

- Project Boundary
- Sewer Manhole
- CO Sewer Cleanout
- SS Sewer Line
- Existing Sewer Line
- Steam Tunnel Access



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Sewer Service Replacement at Insurance Building

Project Description

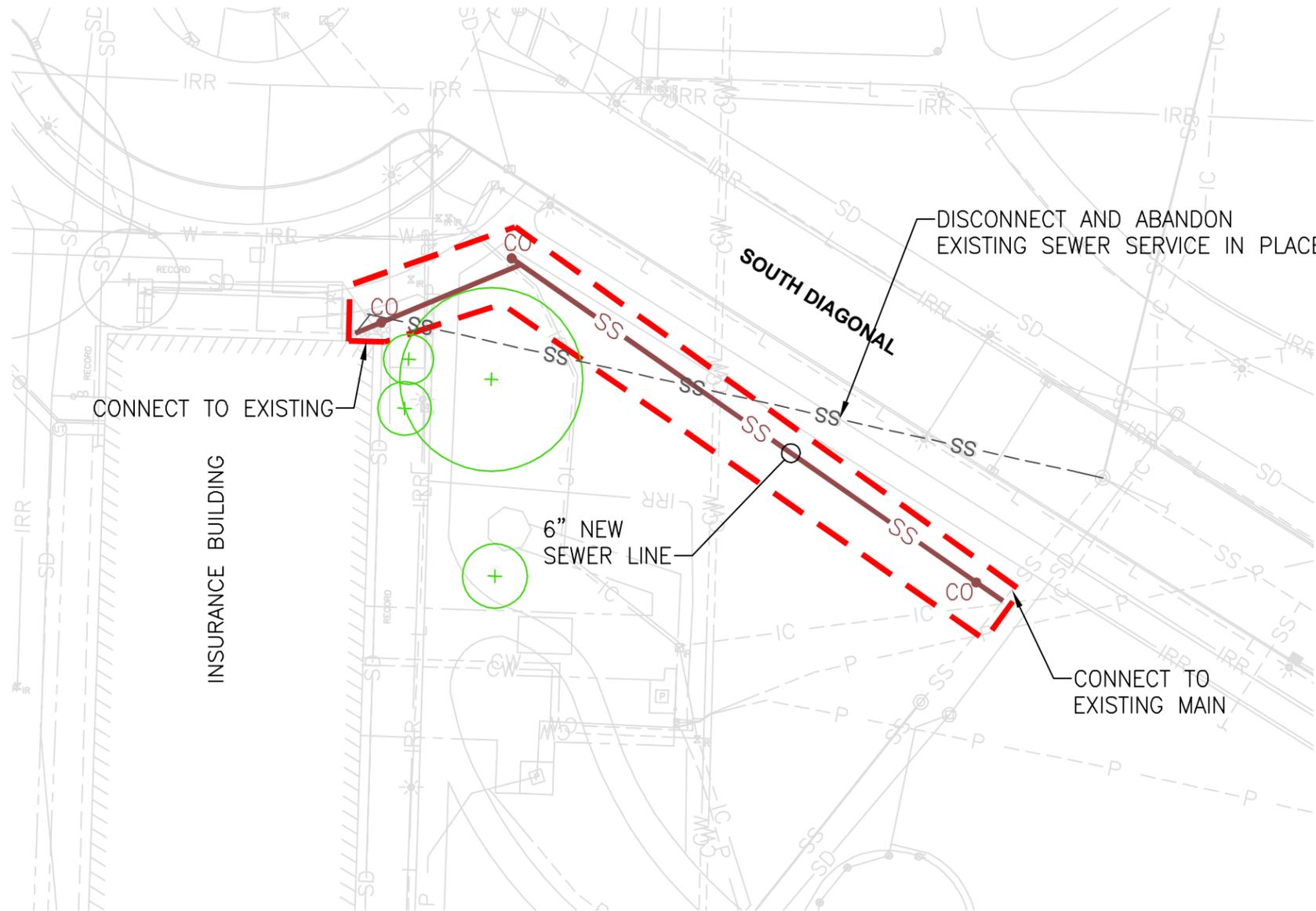
- Disconnect and abandon existing 6" side sewer
- Install new 6" service line
- Restore disturbed surface and landscaping

Cost Summary

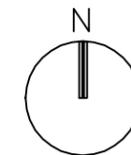
Current Construction Total without Sales Tax	\$42,800
Consultant Service Fee	\$10,700
Permit Fee - Allowance	\$2,000
DES Project Management and Support	\$3,200
Project Contingency	\$5,900
Escalation (3% / year for 2 years)	\$3,900
Sales Tax (8.8% of escalated construction cost)	\$4,000
Escalated Project Total (Year 2018)	\$72,500

Legend

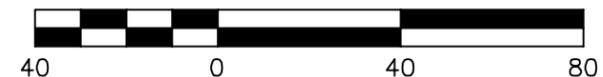
- Project Boundary
- CO Sewer Clean Out
- SS Sewer Line
- Existing Sewer Line
- ⊕ Existing Tree



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South Diagonal Storm Drain

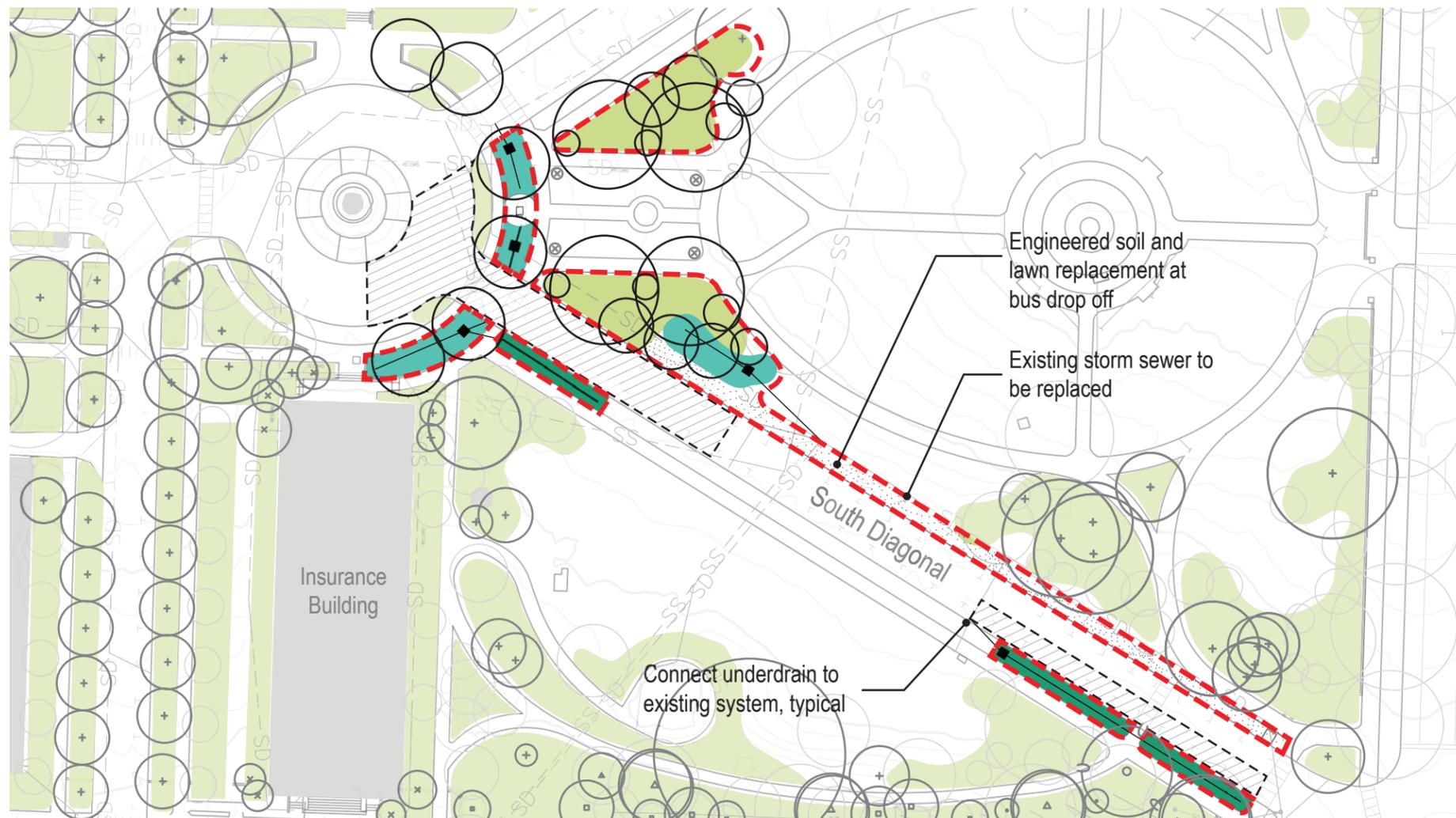
Project Description

- Abandon and replace existing storm sewer pipeline north of South Diagonal Way. Increase size to accommodate current standards for capacity.
- Utilize existing roadway and planter strip topography to provide water quality treatment. A combination of bioretention planters and cells will provide treatment to sections of the roadway.
- Reconstruct sections of the curb and gutter to accommodate surface water flow to the water quality treatment areas.

Pollution-generating Surface Area Treated: 9,200 SF
 Bioretention Area Required: 920 SF
 Bioretention Capacity: 3,000 SF

Cost Summary

Current Construction Total without Sales Tax	\$448,100
Consultant Service Fee	\$112,000
Permit Fee — Allowance	\$5,000
DES Project Management	\$33,600
Project Contingency	\$59,900
Escalation (3% / year for 2 years)	\$40,100
Sales Tax (8.8% of escalated construction cost)	\$41,800
Escalated Project Total (Year 2018)	\$740,500



- Project Boundary
- Pollution-Generating Surface to be Treated
- Catch Basin Type 1
- Proposed Piping
- Shrub Layer - Historic Landscape Preservation Plan
- Proposed Bioretention Cell
- Proposed Bioretention Planter
- Proposed Tree / Restoration
- Existing Tree

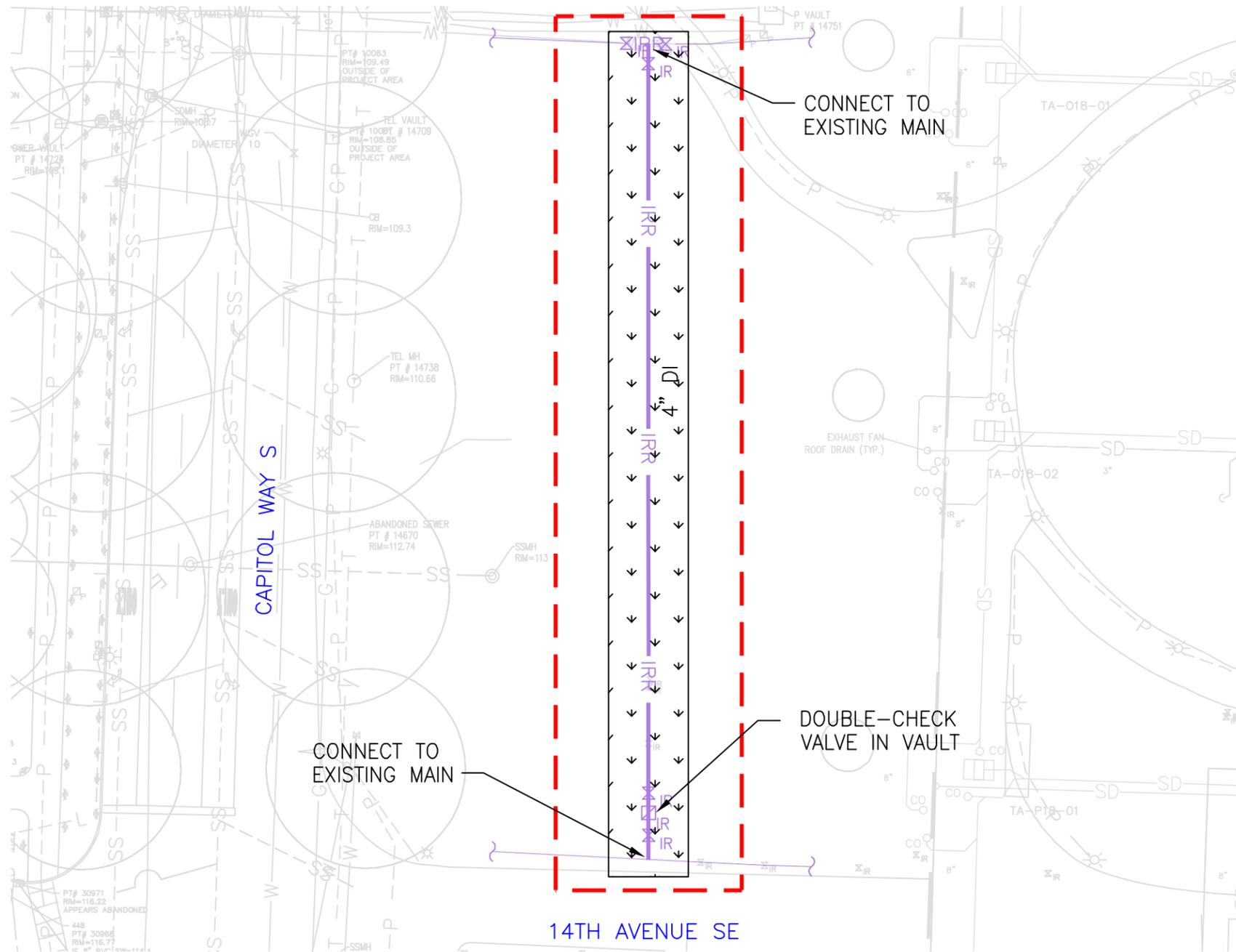
Irrigation Main Replacement near 14th Ave and Capitol Way

Project Description

- Abandon existing irrigation main. This section has a line break.
- Install new irrigation main and isolation valves.
- Convert existing controllers and install new valves as needed.
- Reconnect irrigation lateral system to main. Restore controllers and electrical feeds.

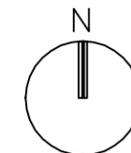
Cost Summary

Current Construction Total without Sales Tax	\$92,700
Consultant Service Fee	\$23,200
Permit Fee - Allowance	\$500
DES Project Management	\$7,000
Project Contingency	\$12,300
Escalation (3% / year for 2 year)	\$8,300
Sales Tax (8.7% of escalated construction cost)	\$8,700
Escalated Project Total (Year 2018)	\$152,700

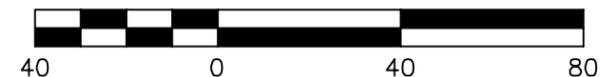


Legend

- - - Project Boundary
- X_{IR} Irrigation Symbols
- Irrigation
- ↓ ↓ ↓ Landscape Restoration



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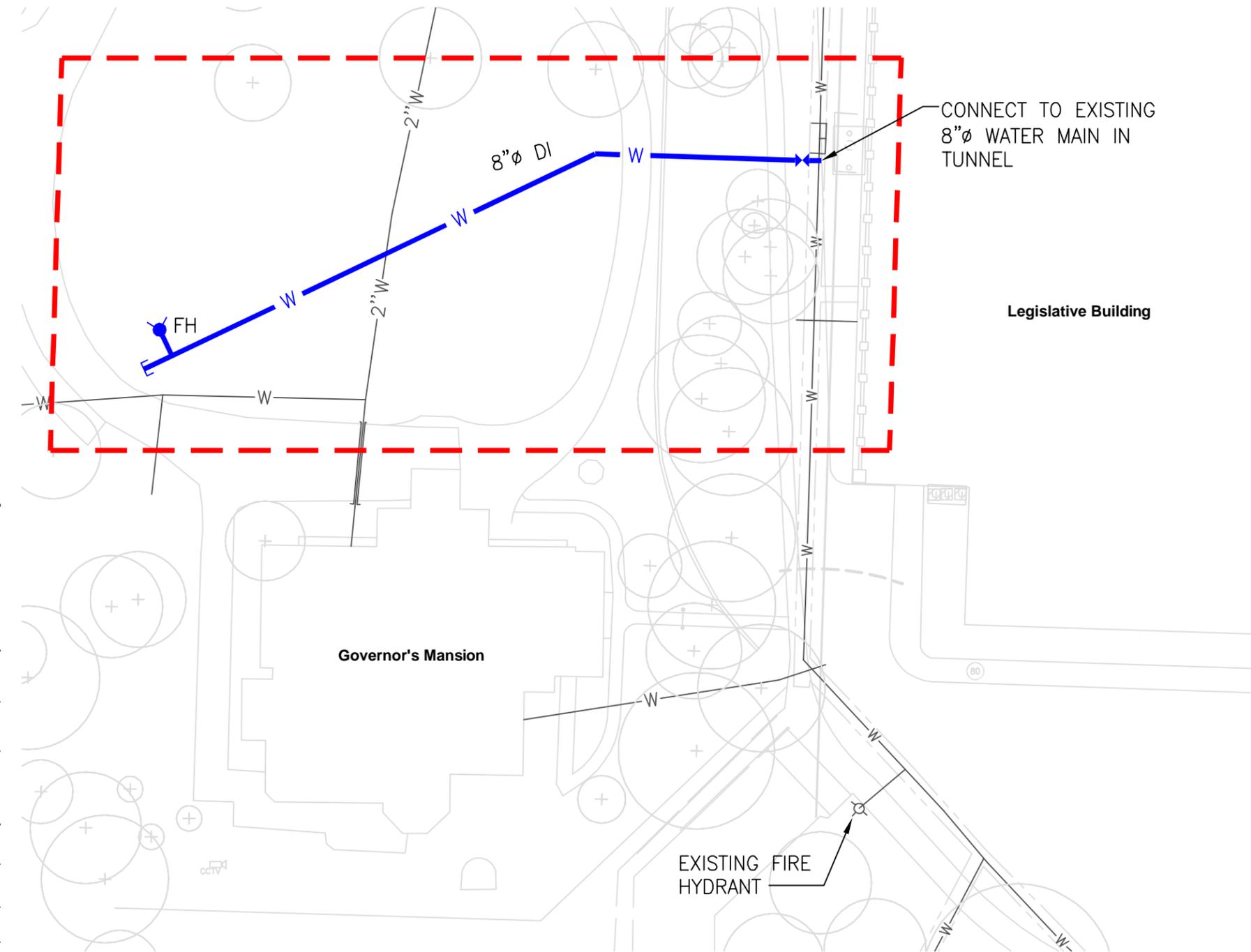


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NEW FIRE HYDRANT AT GOVERNOR'S MANSION

Project Description

- Extend a new 8-inch water main from Pleasant Lane to Governor's mansion.
- Install a new fire hydrant.



Cost Summary

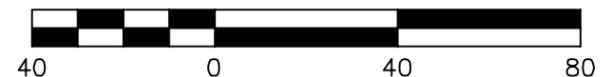
Current Construction Total without Sales Tax	\$81,900
Consultant Service Fee	\$16,400
Permit Fee - Allowance	\$2,500
DES Project Management & Support	\$5,900
Project Contingency	\$10,700
Escalation (3% / year for 2 years)	\$7,100
Sales Tax (8.8% of escalated construction cost)	\$7,600
Escalated Project Total (year 2018)	\$132,100

Legend

- - - Project Boundary
- W — Water Line
- W — Existing Water Line
- FH ● Fire Hydrant
- X Valve
- Cap



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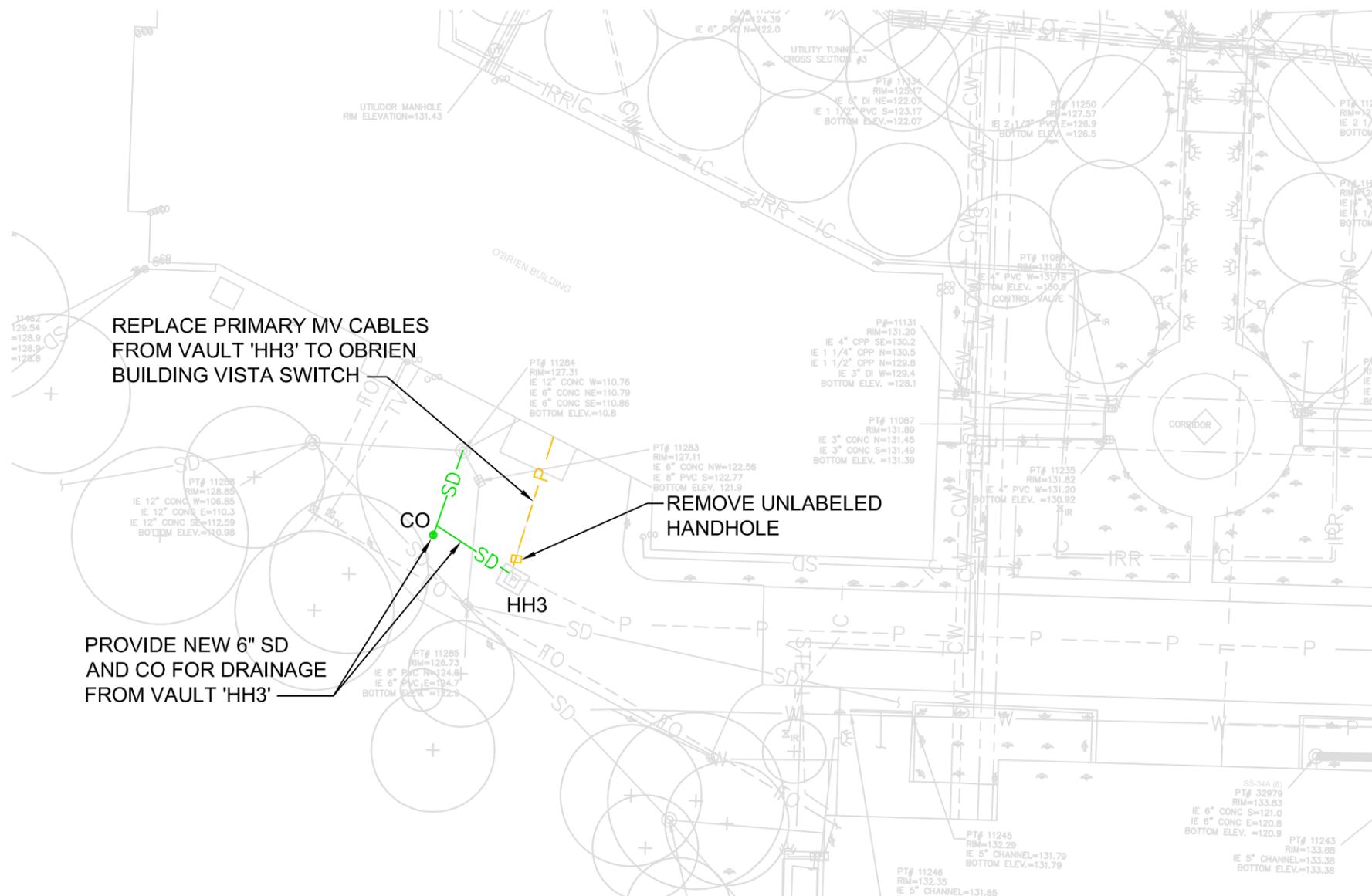
PRIMARY ELECTRICAL VAULT 'HH3' IMPROVEMENTS

Project Description

- Provide drainage system for vault 'HH3'.
- Remove adjacent unlabeled handhole. This is a legacy system handhole which is not required and it has a non-lockable heavy square lid which could easily fall in and damage the primary system cables.
- Provide splice in vault 'HH3' and replace primary cables from vault 'HH3' to Vista switch within the O'Brien Building.

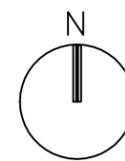
Cost Summary

Current Construction Total without Sales Tax	\$160,200
Consultant Service Fee	\$40,100
Permit Fee - Allowance	\$2,000
DES Project Management	\$12,000
Project Contingency	\$21,400
Escalation (3% / year) for 3 years	\$21,900
Sales Tax (8.8% of escalated construction cost)	\$15,400
Escalated Project Total for 2019	\$273,000



Legend

- Project Boundary
- Water Symbols
- Water
- Sewer Symbols
- Sewer
- Catch Basin Type 1
- Catch Basin Type 2
- Storm Drainage Symbols
- Storm Drainage
- Irrigation Symbols
- Irrigation
- Power Symbols
- Power
- Natural Gas Symbols
- Natural Gas
- Asphalt Paving
- Concrete Paving
- Landscape Restoration
- Existing Tree
- Future Tree - Historic landscape preservation plan



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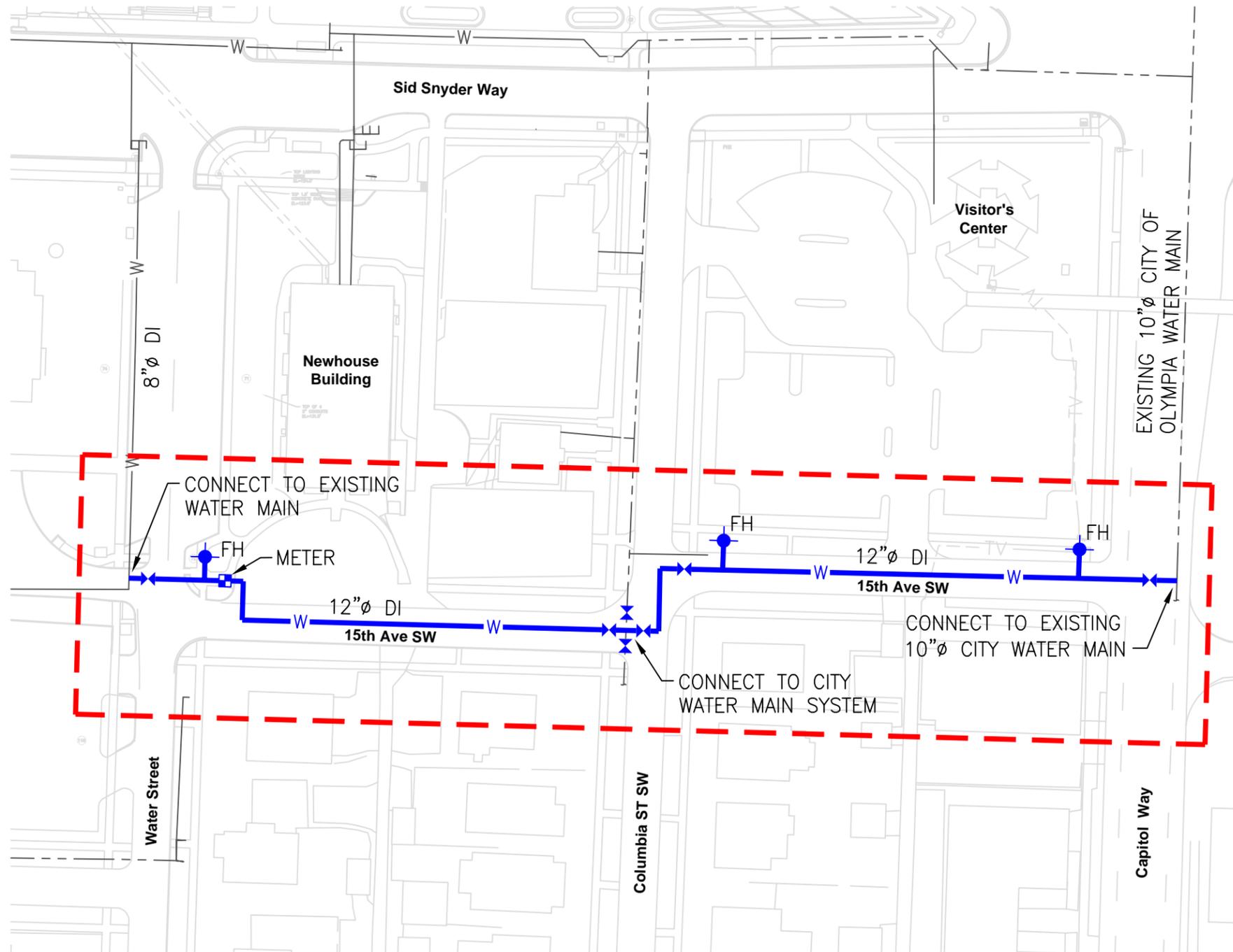
New Water Main in 15th Ave SW

Project Description

- Install new 12-inch water main from Capitol Way to Water Street to increase fire flow from the city system to state system.
- Install a new water meter.
- Install new fire hydrants.
- Restore street surface curb to curb.

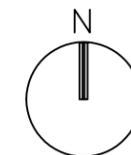
Cost Summary

Current Construction Total without Sales Tax	\$449,000
Consultant Service Fee	\$112,300
Permit Fee - Allowance	\$10,000
DES Project Management & Support	\$33,700
Project Contingency	\$60,500
Escalation (3% / year for 2 years)	\$40,500
Sales Tax (8.8% of escalated construction cost)	\$41,900
Escalated Project Total (year 2018)	\$747,900

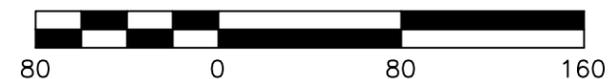


Legend

- Project Boundary
- Water Line
- Existing Water Line
- FH ● Fire Hydrant
- Meter
- ✕ Valve



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South Capitol Building Parking Lot

Project Description

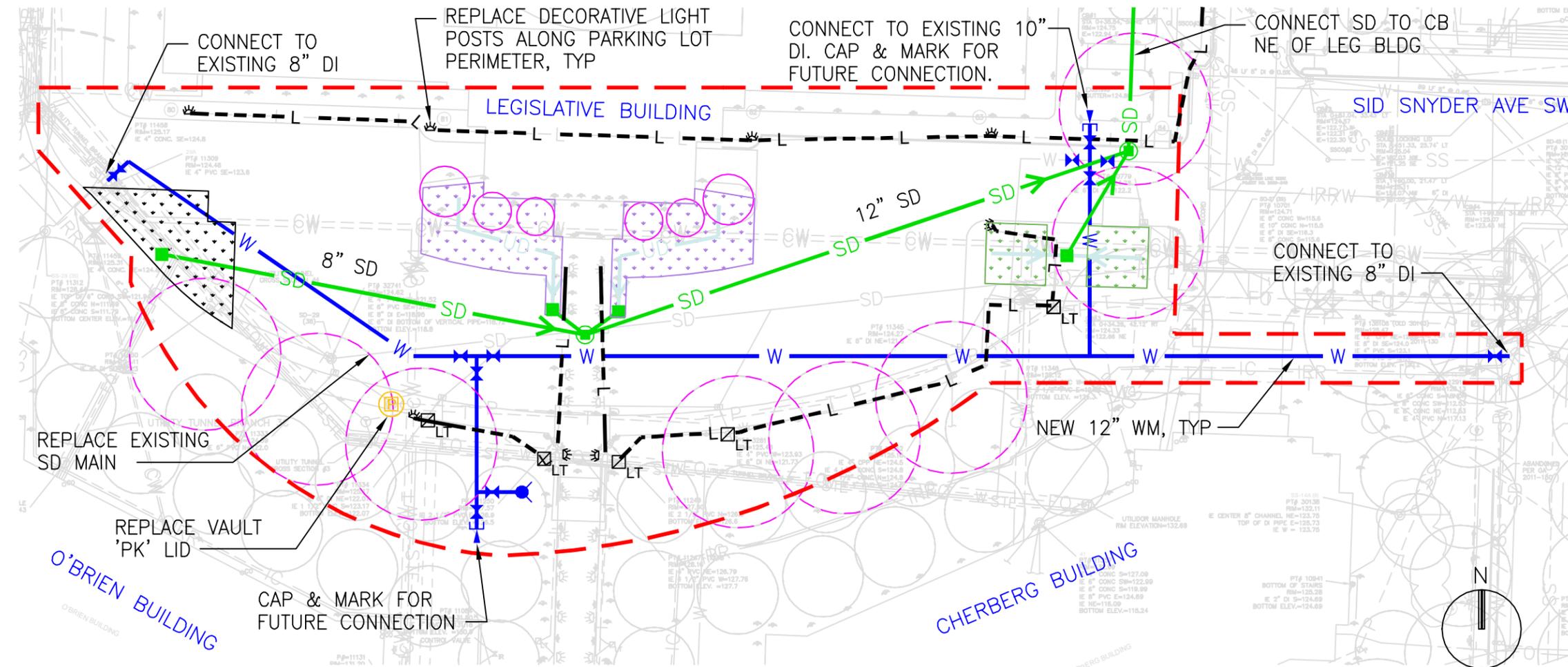
- Replace existing pavement surface with new concrete pavement
- Replace existing SD and roof drain connections to Cherberg & O'Brien
- Proposed storm water treatment:
 - Center: Regrade pavement to direct flow to north. Use bioretention planters south of the Legislative Building
 - West: Regrade pavement to direct flow west. Install CB Insert to treat surface water.
 - East: Regrade pavement to direct flow east. Redevelop grass area at the intersection of Cherry Ln & Sid Snyder Ave. Install bioretention cells.
- Import or amend soils to provide soils consistent with the requirements of bioretention, tree, and planting areas. Replace irrigation as needed.
- Restore understory and tree plantings
- Provide underdrains for bioretention, tree, and plantings areas
- Expose tunnel and wrap with waterproof barrier. Install footing drains, CBs, and sump pumps.
- Install parallel water main. Provide connections for future water main project service to the Pritchard redevelopment.
- Remove bends from SS below trench. Reroute line as needed.
- Vault 'PK': Convert lid from manhole type to steel, lockable, hinged, double-door, traffic rated access hatch
- Lighting: Replace decorative light posts throughout project area. Replace all underground lighting raceway and conductors throughout the project area. Upgrade lighting to provide standard light levels in parking spaces and driving lanes.

Cost Summary

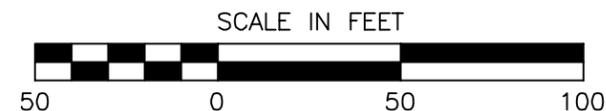
Current Construction Total without Sales Tax	\$1,639,200
Consultant Service Fee	\$409,800
Permit Fee - Allowance	\$20,000
DES Project Management	\$122,900
Project Contingency	\$219,200
Escalation (3% / year for 4 years)	\$302,600
Sales Tax (8.8% of escalated construction cost)	\$162,400
Escalated Project Total (Year 2020)	\$2,876,100

Legend

- Project Boundary
- W Water Symbols
- W Water
- Catch Basin Type 1
- Catch Basin Type 2
- SD Storm Drainage
- UD Under Drain
- P Power Symbols
- L Lighting
- LT Light Symbols
- Landscape Restoration
- Bioretention Planter
- Bioretention Cell
- Future Tree/Tree Restoration



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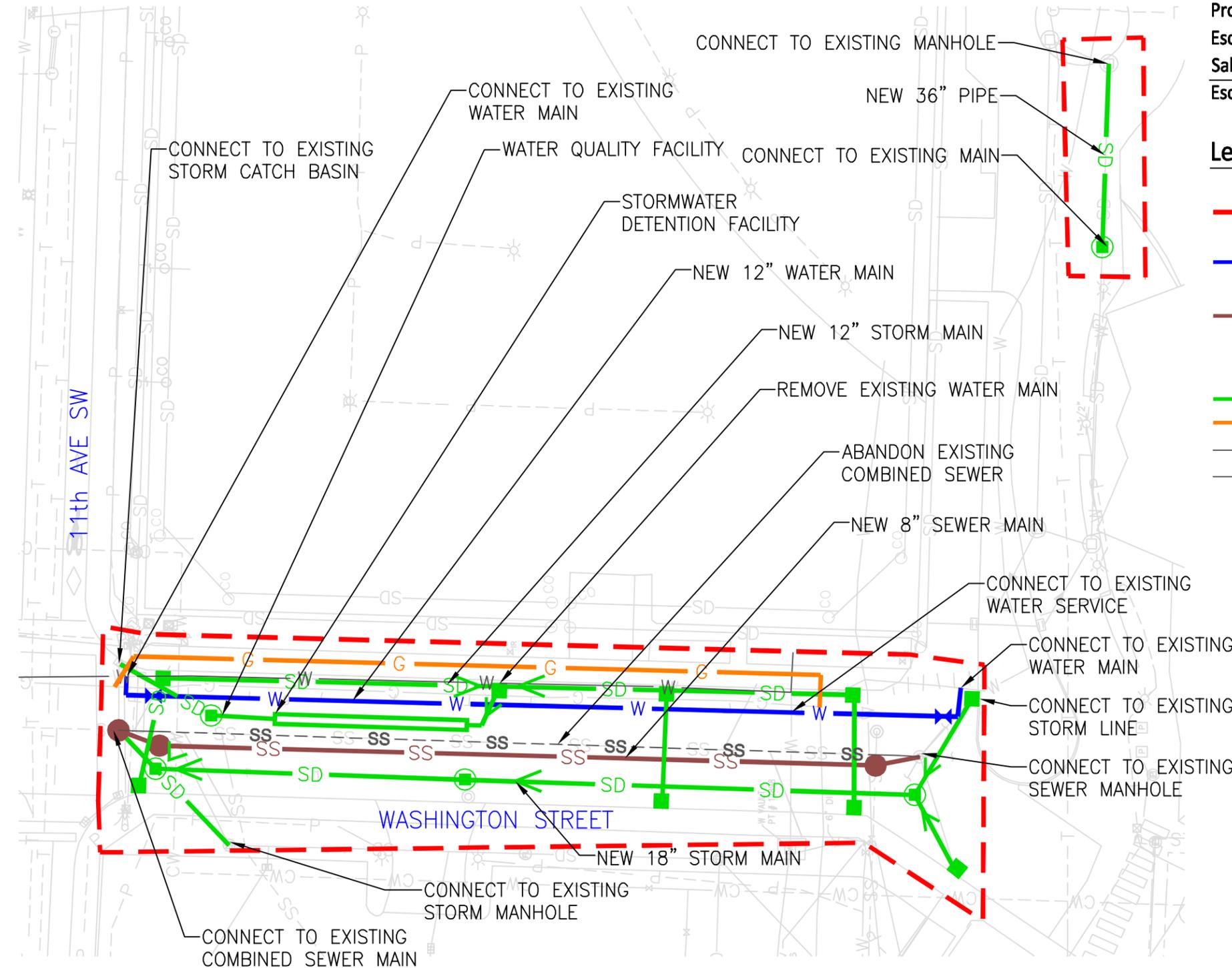
Washington Street Drainage & Utility Improvements

Project Description

- Separate sewer and storm mains
- Replace sewer main and abandon existing main in place
- Install dedicated storm sewer main & provide stormwater management facilities and LID facilities
- Replace water main and remove existing main in place
- Replace damaged section of 36" storm pipe in Highway License Building Plaza
- Replace existing gas line
- Install new street lighting
- Replace street pavement, curb&gutter, and sidewalk

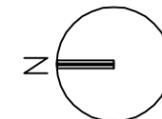
Cost Summary

Current Construction Total without Sales Tax	\$877,300
Consultant Service Fee	\$219,300
Permit Fee - Allowance	\$20,000
DES Project Management & Support	\$65,800
Project Contingency	\$118,200
Escalation (3% / year for 4 years)	\$163,200
Sales Tax (8.8% of escalated construction cost)	\$86,900
Escalated Project Total (Year 2020)	\$1,550,700

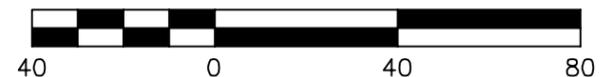


Legend

- Project Boundary
- ✕ Water Valve
- W — Water Line
- Sewer Manhole
- SS — Sewer Line
- Catch Basin Type 1
- Catch Basin Type 2
- SD — Storm Drainage Line
- G — Gas Line
- SS — Existing Sanitary Sewer Line
- W — Existing Water Line



SCALE IN FEET



09/30/2016 1:28pm I:\21\2016\012 Capitol Campus Utility Renewal Plan\DESIGN\Washington Street.dwg

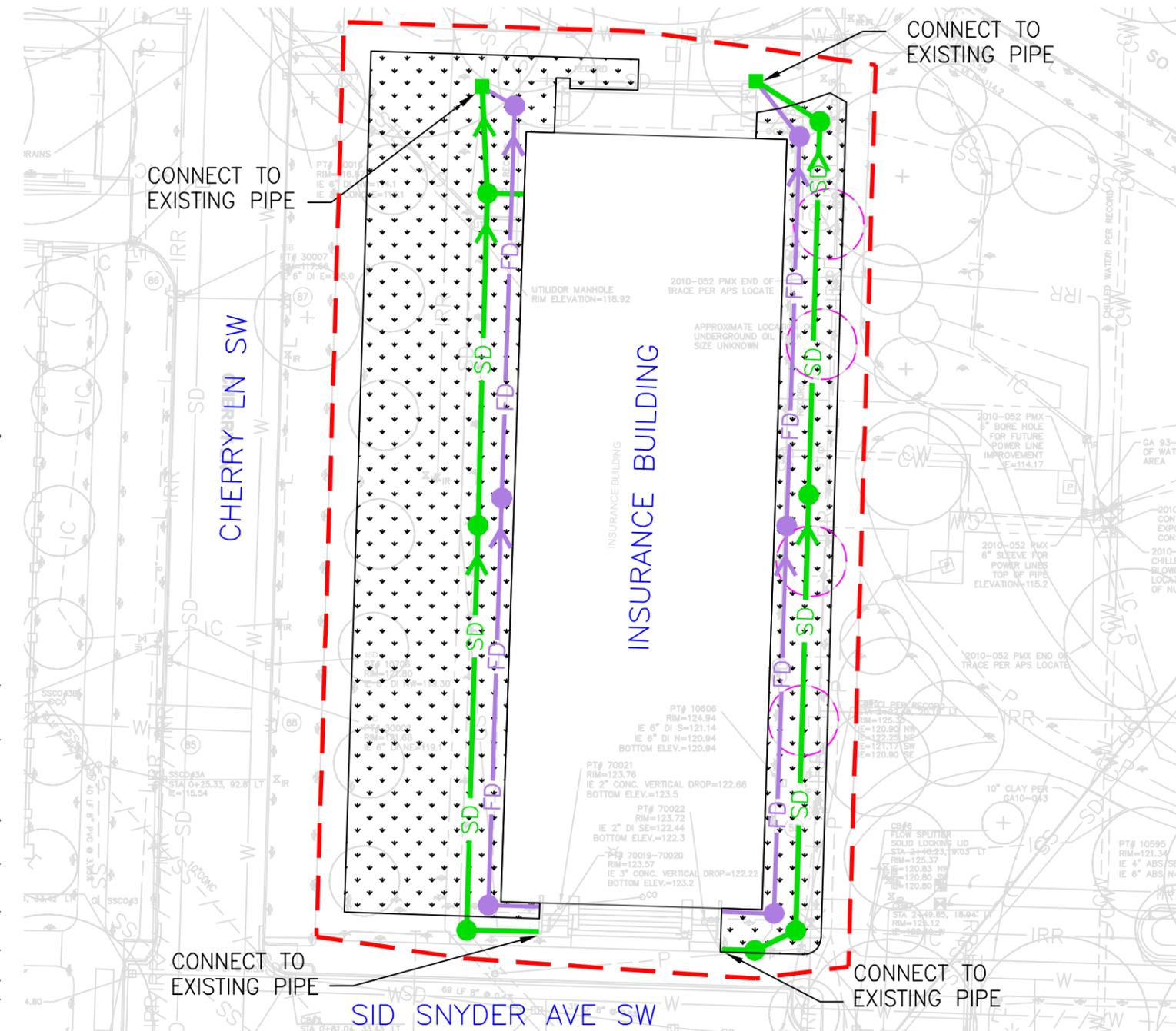
Replacement of Insurance Building Foundation and Roof Drains

Project Description

- The foundation and roof drains are failing. These failing systems load moisture around the foundation of the building.
- Replace existing foundation drains. Install new piping, backfill material, waterproof barrier, cleanouts, and catch basins. Reconnect to existing storm drainage system.
- Replace existing roof drain. Install scrubbers, downspouts, below grade piping, cleanouts, and catch basins. Reconnect to existing storm drainage system.
- Restore understory and tree plantings.

Cost Summary

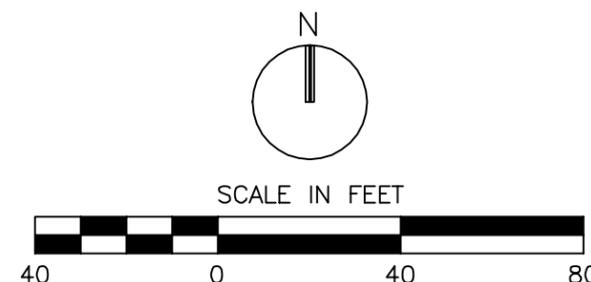
Current Construction Total without Sales Tax	\$250,800
Consultant Service Fee	\$62,700
Permit Fee - Allowance	\$2,000
DES Project Management	\$18,800
Project Contingency	\$33,400
Escalation (3% / year for 4 years)	\$46,100
Sales Tax (8.7% of escalated construction cost)	\$24,800
Escalated Project Total (Year 2020)	\$438,600



Legend

- Project Boundary
- Cleanout
- Catch Basin Type 1
- Catch Basin Type 2
- SD Storm Drainage
- FD Footing Drain
- ↓ ↓ ↓ ↓ Landscape Restoration
- Future Tree/ Tree Restoration

12/06/2016 9:34am I:\21\2016\012 Capitol Campus Utility Renewal Plan\Work-CAD\1612-WEST CAMPUS - SKETCHES-CD UPDATES.dwg



West Campus Irrigation System Update (1 of 2)

Project Description

- Replace existing irrigation mains with new ductile iron pipe system
- Replace and connect irrigation lateral systems to the new mains. Replace controllers and lateral valves as needed.
- Restore disturbed landscape areas
- Abandon existing irrigation system in-place
- Provide connection point for future reclaimed water service

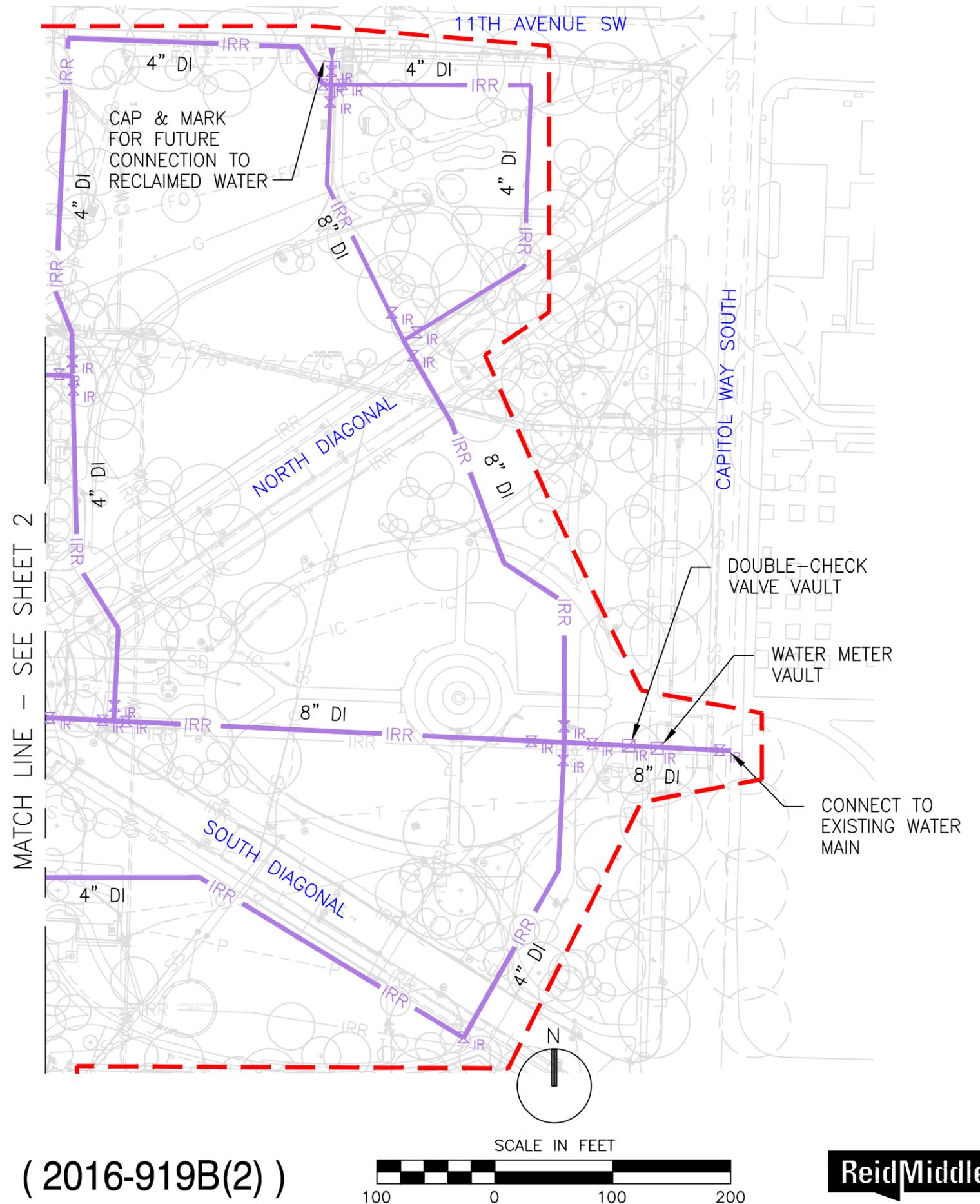
Cost Summary

Current Construction Total without Sales Tax	\$2,013,100
Consultant Service Fee	\$503,300
Permit Fee - Allowance	\$5,000
DES Project Management	\$151,000
Project Contingency	\$267,200
Escalation (3% / year for 6 years)	\$570,400
Sales Tax (8.8% of escalated construction cost)	\$211,500
Escalated Project Total (Year 2022)	\$3,721,500

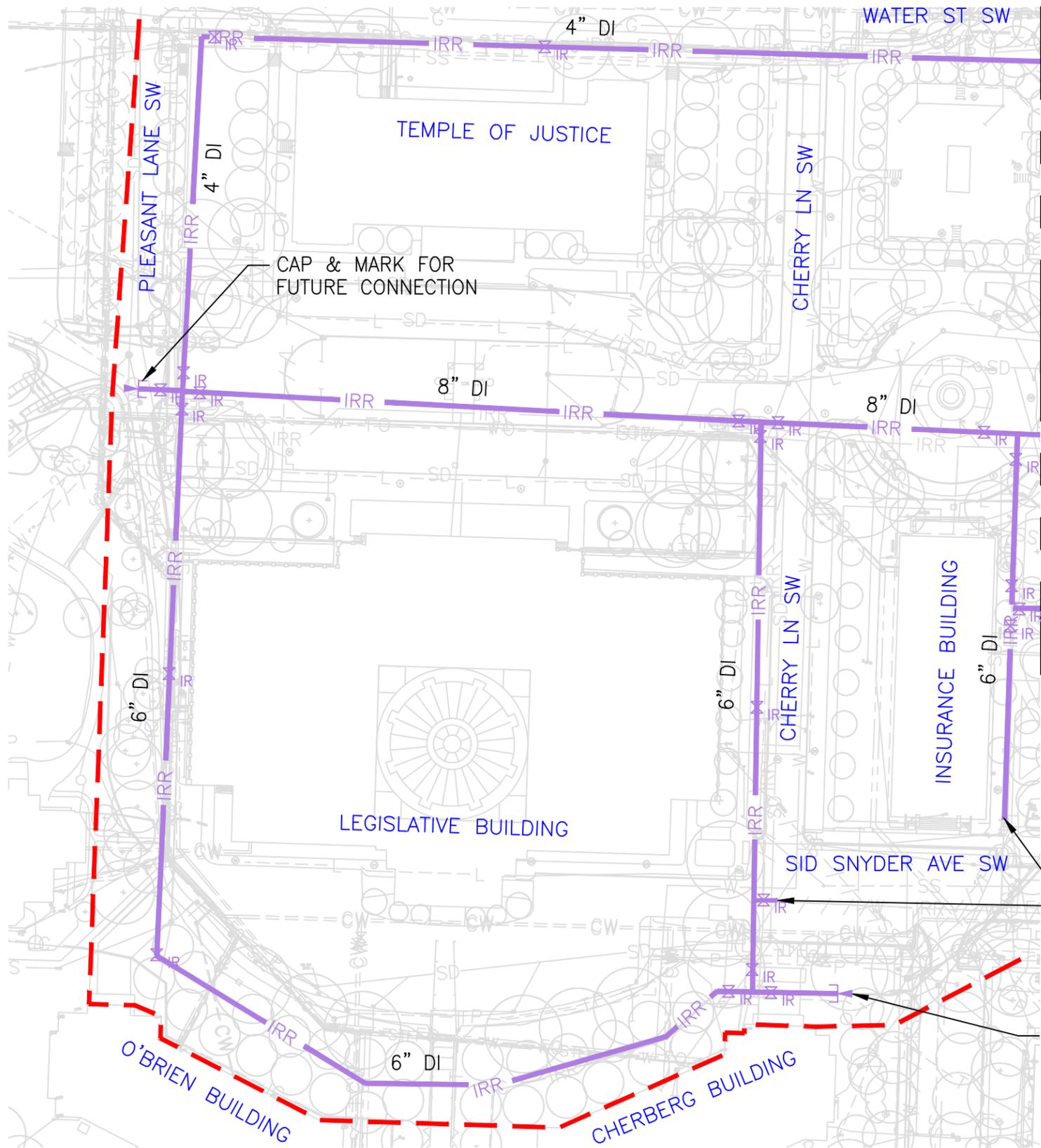
Legend

- Project Boundary
- IRR Irrigation Symbols
- IRR Irrigation

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West Campus Irrigation System Update (2 of 2)



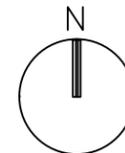
Legend

-  Project Boundary
-  Irrigation Symbols
-  Irrigation

09/30/2016 1:06pm I:\21\2016\012 Capitol Campus Utility Renewal Plan\DESIGN\1612-WEST CAMPUS - SKETCHES.dwg

CONNECT TO EXISTING 6" DI
INSTALLED WITH SID SNYDER
WAY PROJECT

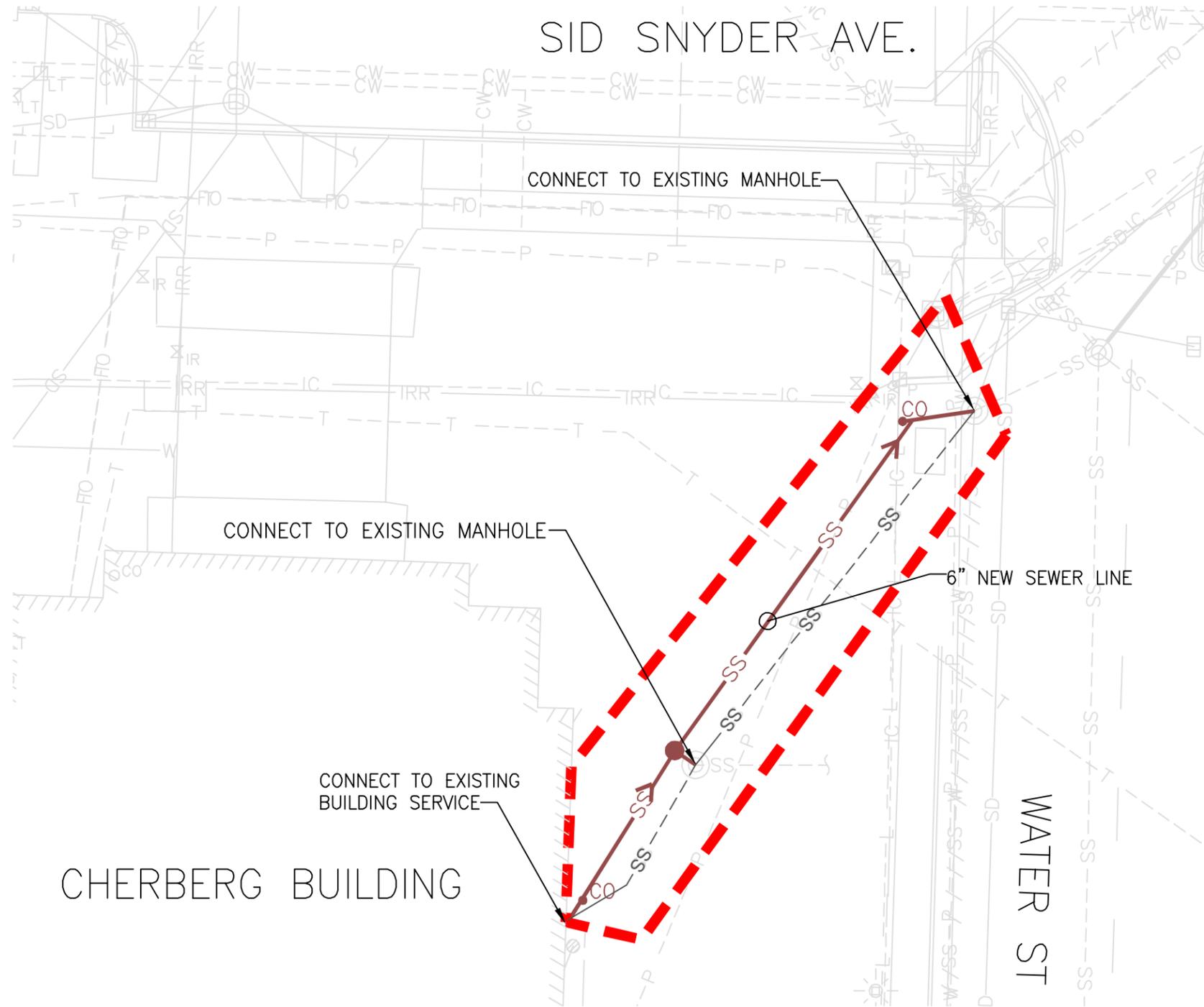
CAP & MARK FOR
FUTURE CONNECTION



Sewer Service Replacement at Cherberg Building

Project Description

- Disconnect and abandon existing 6" side sewer and 8" sewer main
- Install new main and service to Cherberg Building
- Restore disturbed surface and landscaping

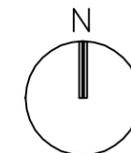


Cost Summary

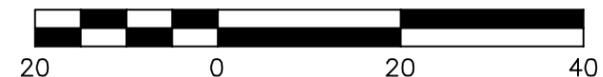
Current Construction Total without Sales Tax	\$34,000
Consultant Service Fee	\$8,500
Permit Fee - Allowance	\$2,000
DES Project Management and Support	\$2,600
Project Contingency	\$4,700
Escalation (3% / year for 6 years)	\$10,100
Sales Tax (8.8% of escalated construction cost)	\$3,600
Escalated Project Total (Year 2022)	\$65,500

Legend

- - - - Project Boundary
- Sewer Manhole
- CO Sewer Cleanout
- SS — Sewer Line
- - - - SS - - - - Existing Sewer Line



SCALE IN FEET



09/30/2016 1:11pm I:\21\2016\012 Capitol Campus Utility Renewal Plan\DESIGN\Sanitary Sewer Service at Cherberg Bldg.dwg

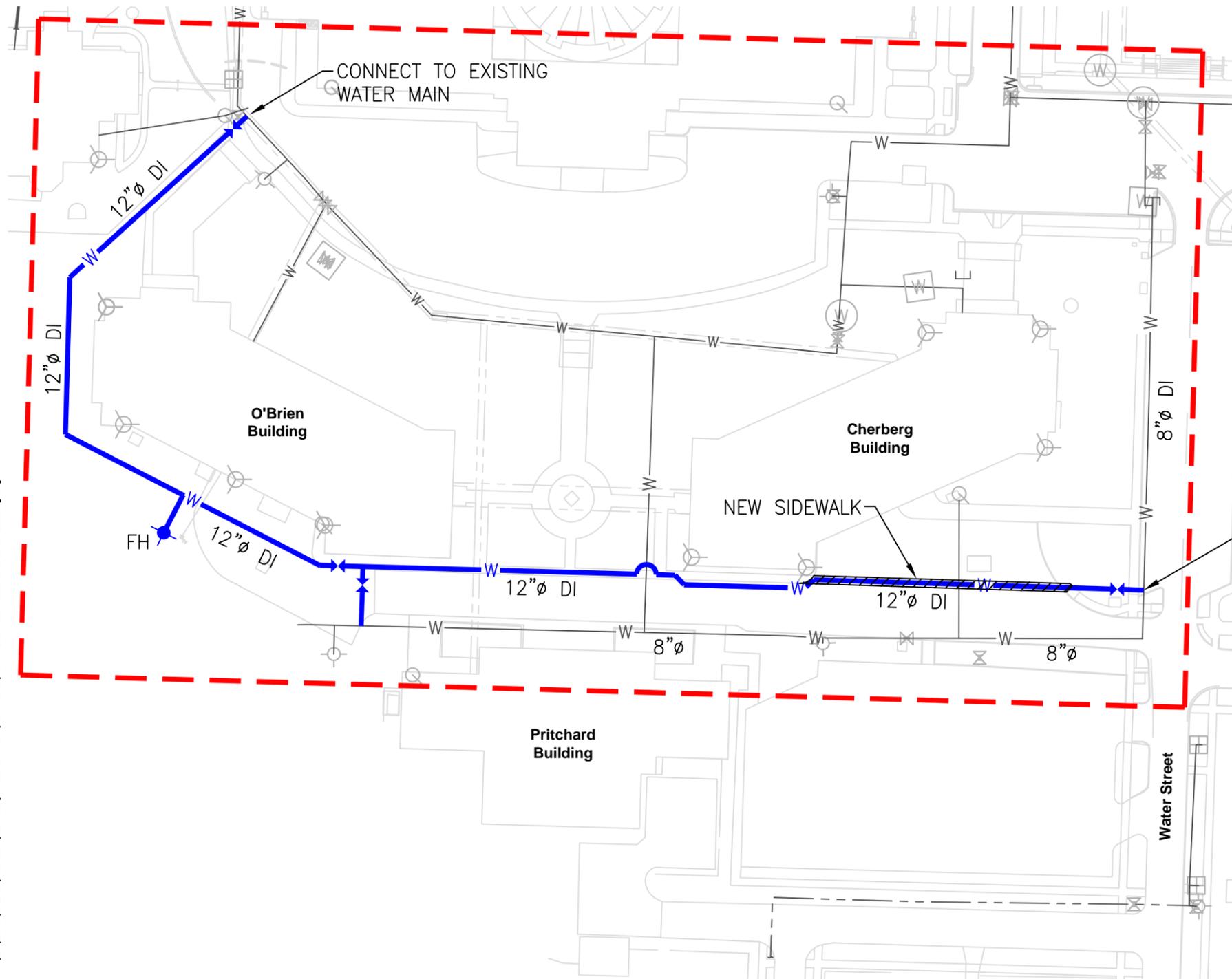
New Water Main around O'Brien Building

Project Description

- Extend a 12-inch water main to through 15th Ave and around O'Brien Building.
- Install a fire hydrant.
- Install new sidewalk along parking lot south of Cherberg Building.

Cost Summary

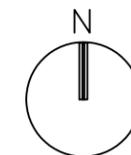
Current Construction Total without Sales Tax	\$411,000
Consultant Service Fee	\$102,800
Permit Fee - Allowance	\$10,000
DES Project Management & Support	\$30,800
Project Contingency	\$55,500
Escalation (3% / year for 6 years)	\$118,400
Sales Tax (8.8% of escalated construction cost)	\$43,200
Escalated Project Total (year 2022)	\$771,700



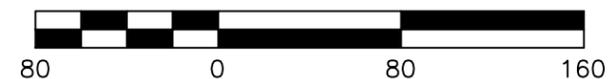
Legend

- - - Project Boundary
- W — Water Line
- W — Existing Water Line
- FH ● Fire Hydrant
- ✕ Valve
- Cap
- ▲ REDUCER

CONNECT TO EXISTING WATER MAIN



SCALE IN FEET



09/30/2016 3:43pm I:\21\2016\012 Capitol Campus Utility Renewal Plan\Work-DWG\New Water Main around O'Brien Building.dwg

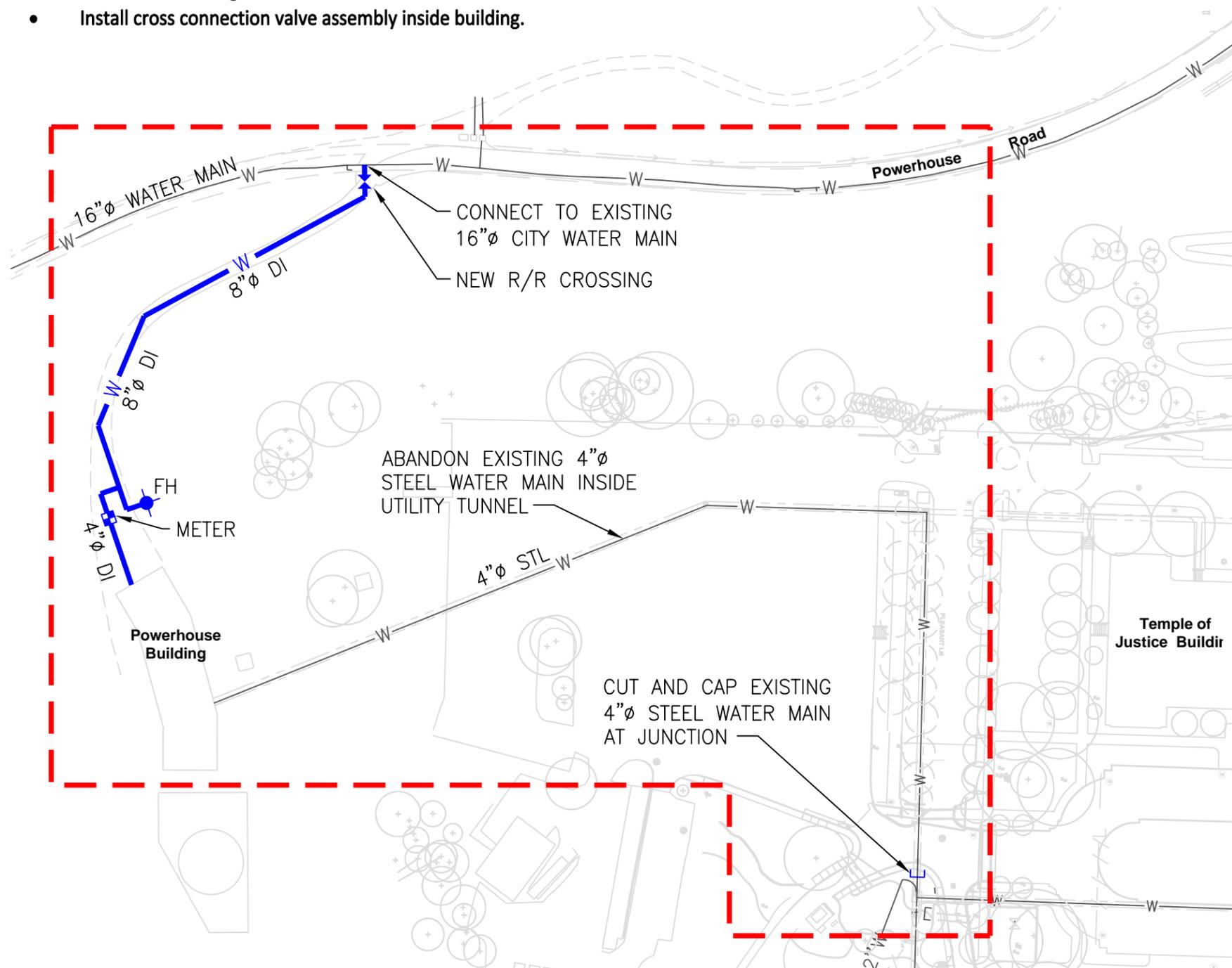
NEW WATER MAIN & SERVICE TO POWERHOUSE

Project Description

- Bring in a new 8-inch water main from Powerhouse Road and install new fire hydrant for fire protection.
- Install a 4-inch water service from the new 8-inch water main to the Powerhouse Building for domestic and refilling use.
- Retire and abandon the existing aged 4-inch steel water main in utility tunnel.
- Bore under existing railroad for the new 8-inch water main installation.
- Install cross connection valve assembly inside building.

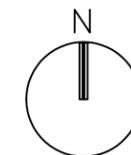
Cost Summary

Current Construction Total without Sales Tax	\$389,100
Consultant Service Fee	\$77,800
Permit Fee - Allowance	\$5,000
DES Project Management & Support	\$28,000
Project Contingency	\$50,000
Escalation (3% / year for 6 years)	\$106,700
Sales Tax (8.8% of escalated construction cost)	\$40,900
Escalated Project Total (year 2022)	\$697,500



Legend

- - - Project Boundary
- W — Water Line
- W — Existing Water Line
- Fire Hydrant
- Meter
- X Valve
-] Cap



SCALE IN FEET



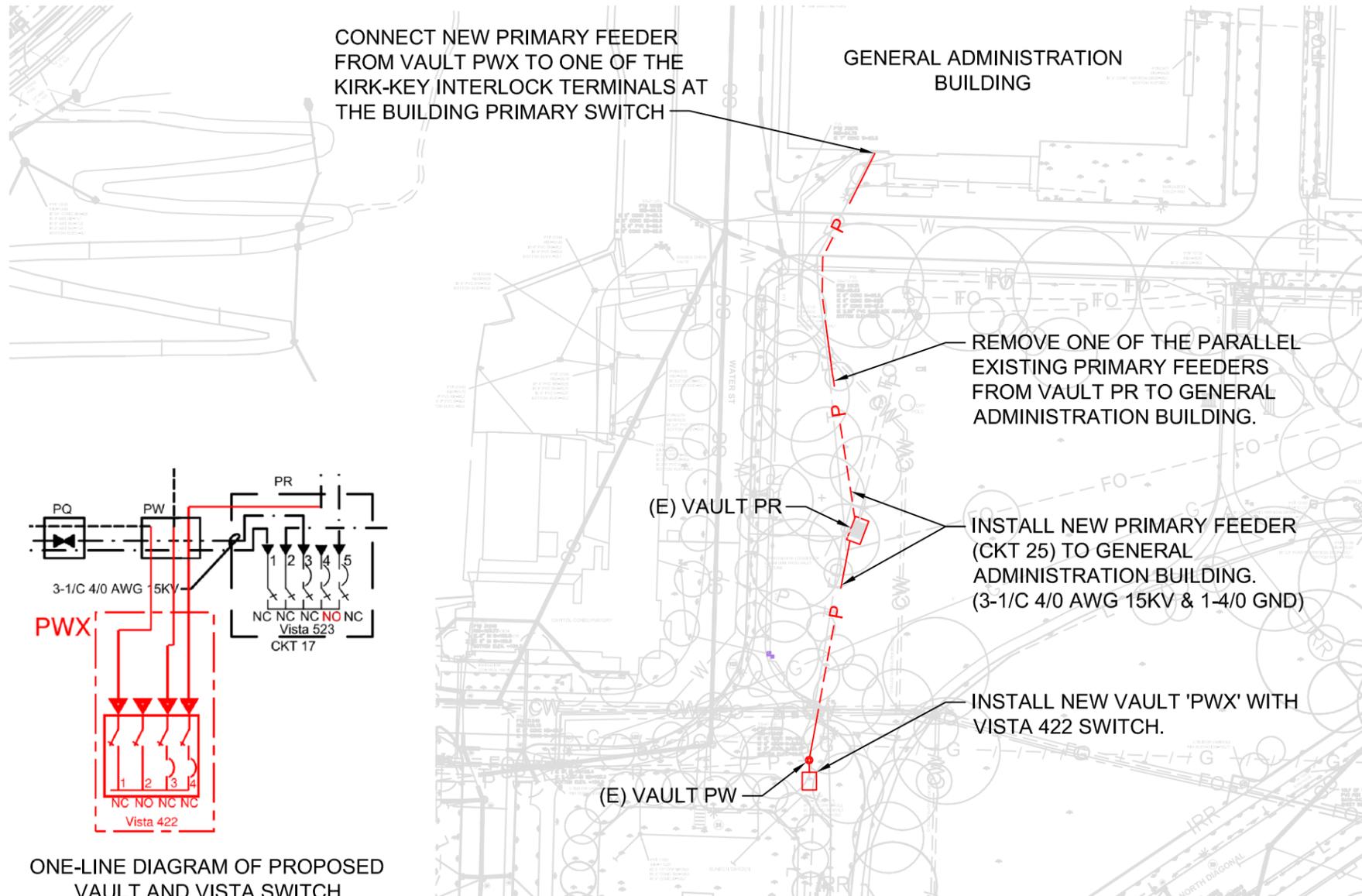
GENERAL ADMIN BUILDING PRIMARY CIRCUIT SELECTIVITY

Project Description

- This project will provide primary circuit selectivity in the General Administration Building similar to many other critical buildings throughout the campus.
- Install new vault 'PWX' with new Vista 422 switch. Switch will have a load break connection in from primary circuit 25 (from vault PW), a spare load break switch for future expansion, and fault protected outputs to both the Greenhouse Building and the General Administration Building.
- Provide new primary feeder from new vault PWX Vista switch to General Administration Building switch. One of the existing parallel primary feeds to the kirk-key interlock terminals in the General Administration Building will be removed and replaced with this new feed.

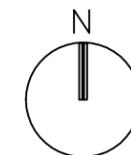
Cost Summary

Current Construction Total without Sales Tax	\$201,700
Consultant Service Fee	\$50,400
Permit Fee - Allowance	\$2,000
DES Project Management	\$15,100
Project Contingency	\$26,900
Escalation (3% / year) for 7 years	\$68,100
Sales Tax (8.8% of escalated construction cost)	\$21,800
Escalated Project Total for 2023	\$386,000



Legend

- Project Boundary
- Water Symbols
- Water
- Sewer Symbols
- Sewer
- Catch Basin Type 1
- Catch Basin Type 2
- Storm Drainage Symbols
- Storm Drainage
- Irrigation Symbols
- Irrigation
- Power Symbols
- Power
- Natural Gas Symbols
- Natural Gas
- Asphalt Paving
- Concrete Paving
- Landscape Restoration
- Existing Tree
- Future Tree - Historic landscape preservation plan



SCALE IN FEET



09/28/2016 4:07pm M:\JOBS\16\1611\CAD\09_General Admin Bldg Primary Circuit Selectivity.dwg

Replace Sewer Main from Powerhouse

Project Description

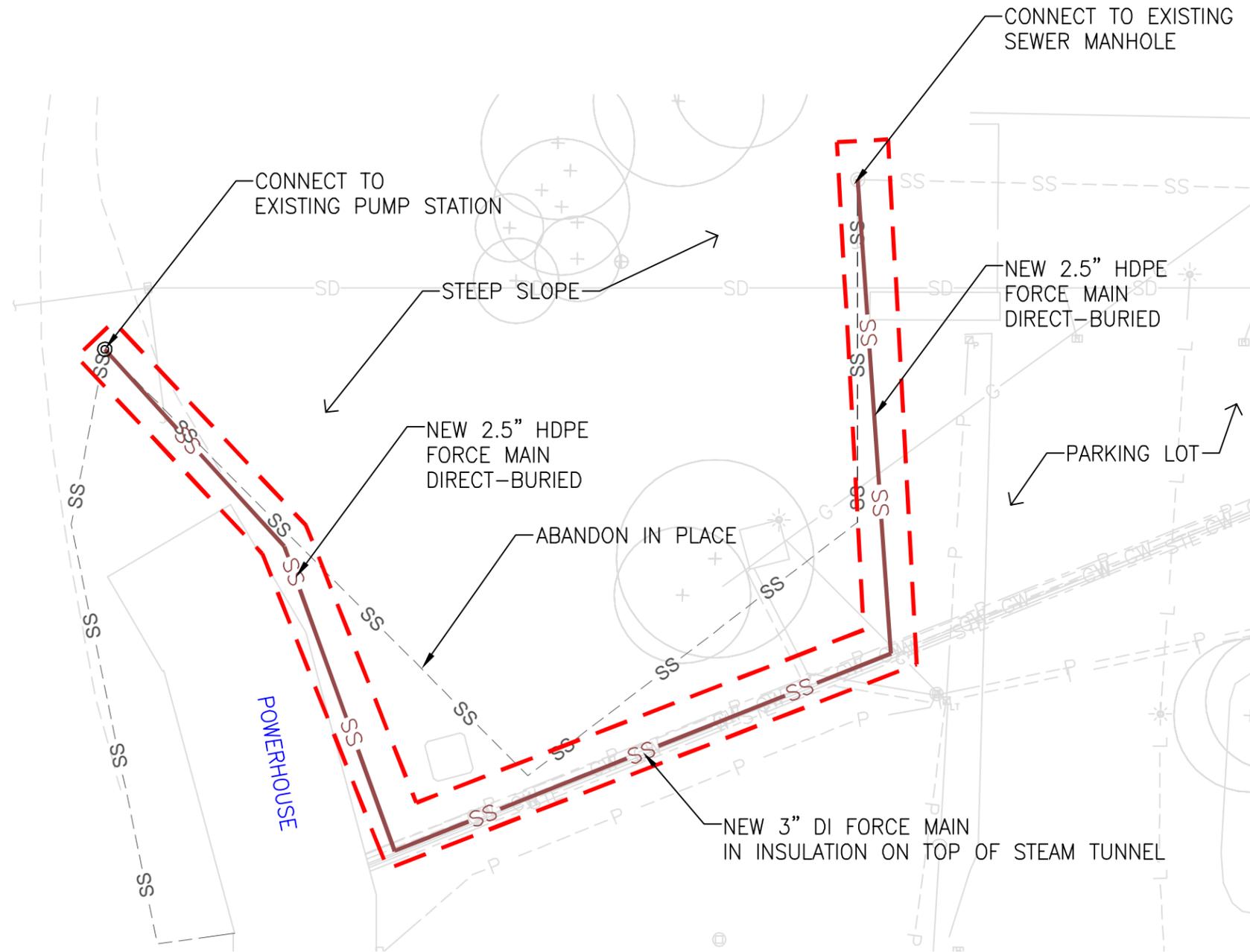
- Abandon existing sewer force main
- Install new force main on top of the existing utility tunnel

Cost Summary

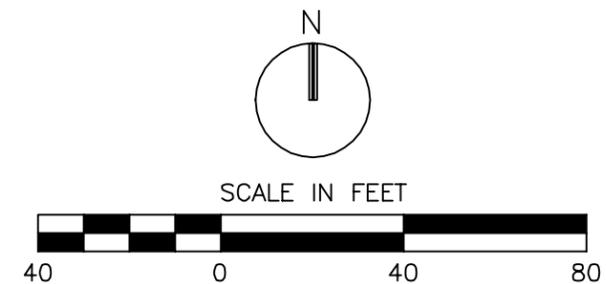
Current Construction Total without Sales Tax	\$86,600
Consultant Service Fee	\$21,700
Permit Fee - Allowance	\$3,000
DES Project Management & Support	\$6,500
Project Contingency	\$11,800
Escalation (3% / year for 6 years)	\$25,100
Sales Tax (8.8% of escalated construction cost)	\$9,100
Escalated Project Total (Year 2022)	\$163,800

Legend

- Project Boundary
- SS— Sewer Force Main
- -SS- - Existing Sewer Force Main



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Replacement of Failed Storm Line at Office Building 2 (OB2)

Project Description

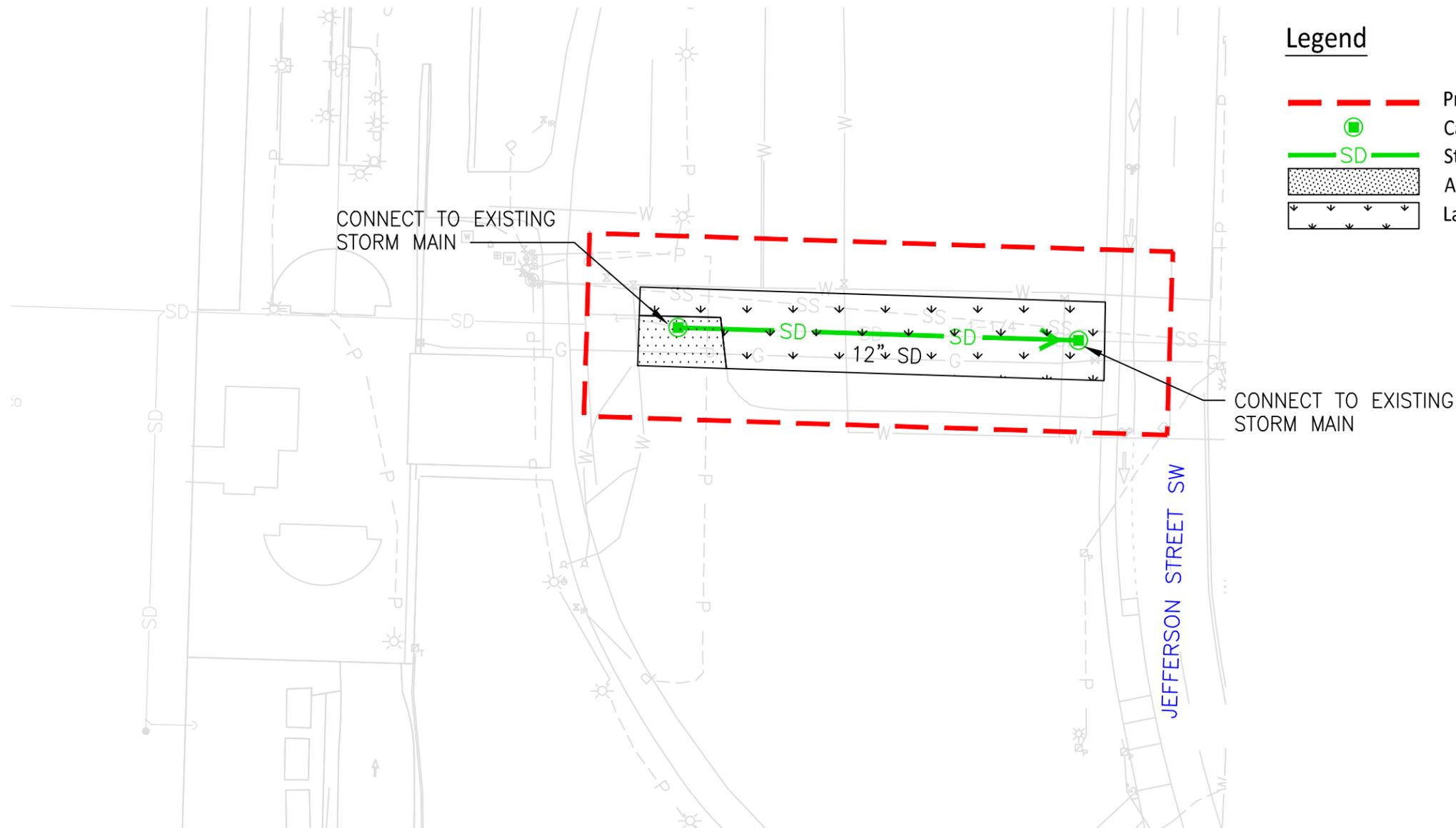
- Remove and replace existing storm main. The existing pipe has a separated joint and signs of infiltration.
- Restore asphalt paving and landscaping disturbed during construction

Cost Summary

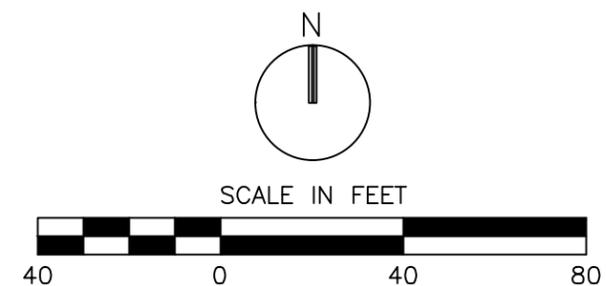
Current Construction Total without Sales Tax	\$34,000
Consultant Service Fee	\$8,500
Permit Fee - Allowance	\$1,000
DES Project Management	\$2,600
Project Contingency	\$4,600
Escalation (3% / year for 8 years)	\$13,500
Sales Tax (8.8% of escalated construction cost)	\$3,800
Escalated Project Total (Year 2024)	\$68,000

Legend

-  Project Boundary
-  Catch Basin Type 2
-  Storm Drainage
-  Asphalt Paving
-  Landscape Restoration



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Replacement of Damaged Storm Line at Natural Resource Building

Project Description

- Remove and replace existing storm main. There are multiple joint offsets and sags within this section of main.
- Reconnect new main to the detention facility
- Restore asphalt paving and landscaping disturbed during construction

Cost Summary

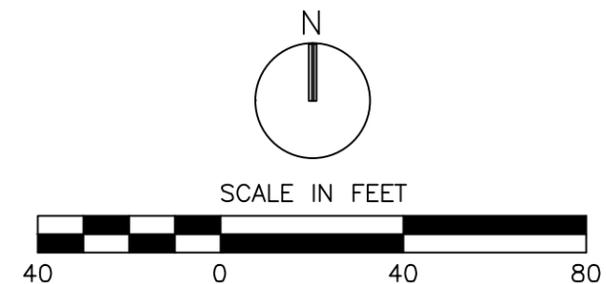
Current Construction Total without Sales Tax	\$38,300
Consultant Service Fee	\$15,300
Permit Fee - Allowance	\$1,000
DES Project Management	\$3,200
Project Contingency	\$5,800
Escalation (3% / year for 8 years)	\$17,000
Sales Tax (8.8% of escalated construction cost)	\$4,300
Escalated Project Total (Year 2024)	\$84,900



Legend

- - - - Project Boundary
- Catch Basin Type 1
- SD — Storm Drainage
- Asphalt Paving
- Landscape Restoration

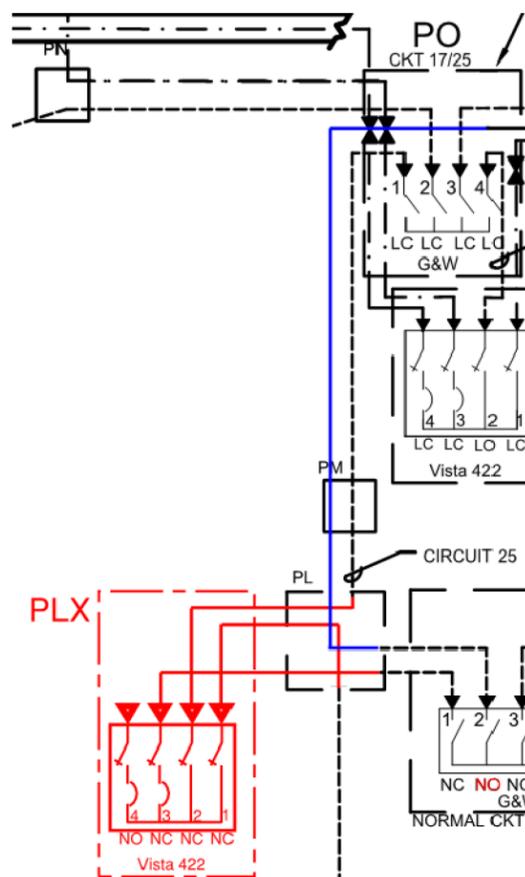
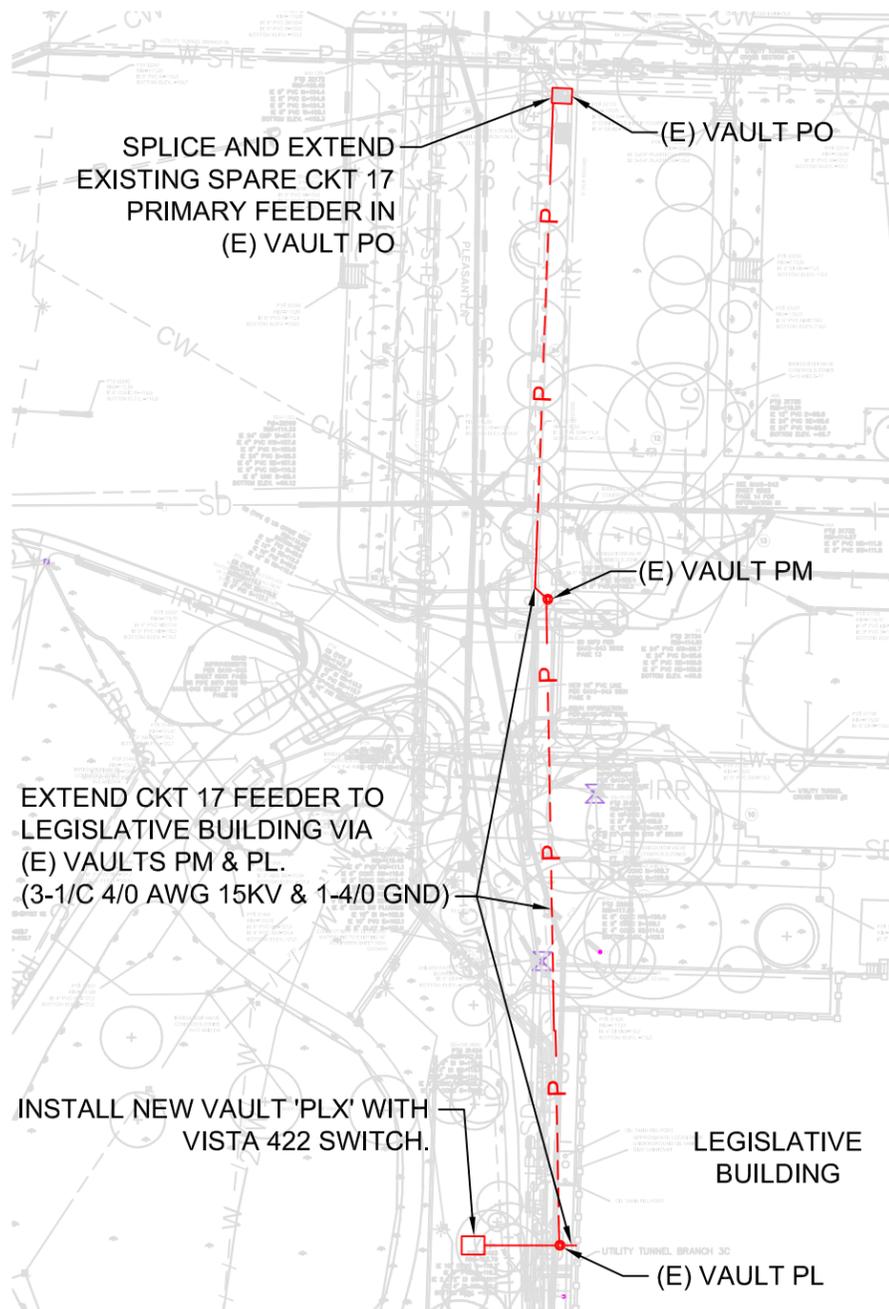
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LEGISLATIVE BUILDING PRIMARY CIRCUIT SELECTIVITY

Project Description

- This project will allow primary circuit selectivity in the Legislative Building similar to many other critical buildings throughout the campus. It also removes a single source of failure for primary circuit 25 within the Legislation Building and allows for isolation of Legislation Building electrical equipment with a single switching event.
- Install new vault 'PLX' with new Vista 422 switch. Switch will have a load break connection from primary circuit 25 (from vaults PO, PM, PL), a load break connection from primary circuit 25 (from vaults PK, PJ, PJX), a fault protected switch with output to the Legislative Building, and a spare fault protected switch for future expansion.
- Remove the extra circuit 25 primary feed into the building (remove in/out feed into building, only a single feed to switch position 1 in Legislative Building will remain.)
- Extend existing circuit 17 spare feeder from vault PO through vaults PM and PL and into the Legislative Building Primary Switch, position 2. Switch position 2 shall be padlocked 'normally open'. Switch position 1 shall be padlocked 'normally closed'.



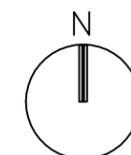
ONE-LINE DIAGRAM OF PROPOSED INSTALLATION

Cost Summary

Current Construction Total without Sales Tax	\$212,000
Consultant Service Fee	\$53,000
Permit Fee - Allowance	\$2,000
DES Project Management	\$15,900
Project Contingency	\$28,300
Escalation (3% / year) for 9 years	\$94,800
Sales Tax (8.8% of escalated construction cost)	\$24,300
Escalated Project Total for 2025	\$430,300

Legend

- — — Project Boundary
- ▶ ● ◀ ◻ Water Symbols
- W — Water
- ● Sewer Symbols
- SS — Sewer
- Catch Basin Type 1
- Catch Basin Type 2
- SD — Storm Drainage Symbols
- SD — Storm Drainage
- Σ_{IR} ◻_{IR} Irrigation Symbols
- IRR — Irrigation
- ← ● ◻ Power Symbols
- P — Power
- ◻ ◻ Natural Gas Symbols
- G — Natural Gas
- Asphalt Paving
- Concrete Paving
- Landscape Restoration
- + Existing Tree
- Future Tree - Historic landscape preservation plan



SCALE IN FEET



09/28/2016 4:16pm M:\JOBS\16\16114\CAD\08_Legislative Bldg Primary Circuit Selectivity.dwg

Cherry Lane Drainage & Utility Improvements

Project Description

- Install new 12" Water Main and connect to existing main
- Replace stormwater main and abandon existing main in place
- Improve drainage and install water quality treatment facility
- Remove existing trees and replace with new trees
- Replace irrigation mains and abandon existing in place
- Restore disturbed landscaping
- Replace existing street concrete pavement, curb and gutter, and sidewalks
- Convert power vault lid from manhole type to hinged steel access hatch

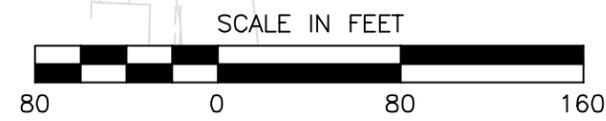
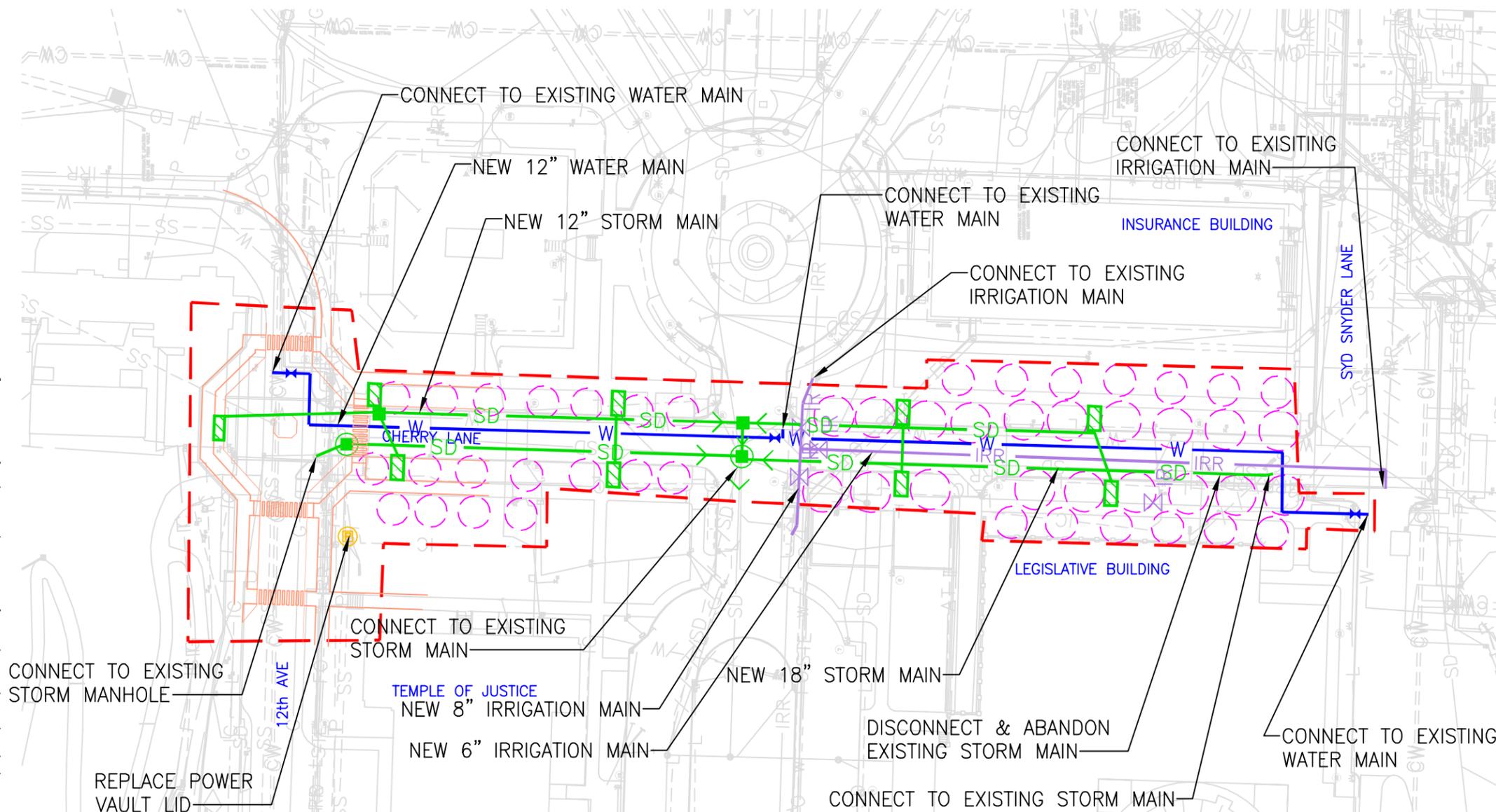
- Protect existing street lighting poles and luminaries in place. Replace all existing underground lighting raceway, conductors and pullboxes within the project area
- Install underdrain system to mitigate soil saturation in planting areas
- Improve the intersection at 12th Ave and Cherry Lane

Cost Summary

Current Construction Total without Sales Tax	\$1,689,600
Consultant Service Fee	\$422,400
Permit Fee - Allowance	\$20,000
DES Project Management and Support	\$126,700
Project Contingency	\$225,900
Escalation (3% / year for 10 years)	\$854,500
Sales Tax (8.8% of escalated construction cost)	\$199,800
Escalated Project Total (Year 2026)	\$3,538,900

Legend

- Project Boundary
- ▶ Water Valve
- W Water Line
- Catch Basin
- SD Storm Drainage Line
- ⊗ IRR Irrigation Valve
- IRR Irrigation Line
- P Power Vault
- / / / / Bioretention Planter with Overflow
- Edge of Concrete
- Future Tree/ Tree Restoration



12/06/2016 10:00am I:\21\2016\012 Capitol Campus Utility Renewal Plan\Work-CAD\Cherry Lane Utilities.dwg



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