Project Approach

Schaaf & Wheeler has prepared a flexible scope and approach to the design of the water and sewer improvements that advances the work previously performed by the City. Previous basemapping, utility investigation and soil sampling will be supplemented with field investigations our team requires to move the design forward with modified alignments and adequate detail to produce a constructible project. Project challenges have been investigated as part of the development of the proposal and we have assembled a team of professionals that have relevant local knowledge and experience to ensure the project is successful for both Schaaf & Wheeler and the City. Schaaf & Wheeler and our team are eager to start working on the project and can begin work immediately if the City is able to issue a contract prior to the projected February 2017 start date. Additional time for design and coordination with the various stakeholder Agencies will allow the project greater flexibility to meet the City's scheduling goals. The schedule included in this proposal reflects an aggressive but realistic timeline with float embedded throughout the project design phase.

Project Understanding

Schaaf & Wheeler's project manager and principal-in-charge, Leif M. Coponen, has experience with the project on several fronts including the Moffett Gateway land development technical impact studies for wet infrastructure as part of the City's CEQA process, preliminary feasibility and hydraulics study for the sewer system reconfiguration, and water and sewer hydraulics analysis for serving the Moffett Gateway land development with City water and sewer utilities. Our preliminary studies also included field surveying gravity infrastructure to verify depths of existing sanitary and storm sewers in the area in order to update the hydraulic computer models and ensure the feasibility analysis was based on accurate data. Our team is comprised of professionals, which have a long history of collaboration with Schaaf & Wheeler, which have specific knowledge of project conditions based on work performed for projects in the vicinity of Leong Drive.

The City's water and sewer main replacement project provides increased conveyance capacity to allow the City to better serve local customers, as well as address existing system constraints and maintenance concerns. Upsizing the water main along Leong Drive provides increased conveyance for fire flows to Moffett Gateway as well as multifamily parcels along Fairchild Drive within Pressure Zone 1. The sewer main improvements along Leong Drive provide increased capacity to serve Moffett Gateway to the east, as well as reroute existing flow towards the East Trunk. Rerouting the sewer towards the East Trunk has many advantages including allowing the City to abandon the problematic sewer crossing Stevens Creek and CA-85 (with additional improvement projects along Middlefield Road), diverting flow from the Terra Bella neighborhood and Central Trunk which are under-capacity, and reducing the amount of deep sewers within easements across private property (assuming Alternative 1 is selected). Project timing is important as multiple parcels in the Leong/Fairchild area are either in the planning phase or construction phase currently. The planned improvements are best constructed prior to construction and occupancy occurring along the busy corridor to minimize impacts to traffic and the neighborhood.

Challenges and Solutions

Several challenges are present for the project, including soil and groundwater contamination within the project boundaries, Caltrans jurisdiction of Moffett Boulevard, proximity of critical utilities to the planned improvements, depth of planned improvements, and management of traffic during construction in a busy traffic corridor with mixed commercial and residential land uses. Schaaf & Wheeler will use experience gained from previous projects, as well as relevant experience from our sub-consultants to identify project challenges and develop solutions that are constructible and mitigate risks for the City.

The project boundaries are within an area that is currently being managed by the USEPA, which is the lead agency for the Middlefield-Ellis-Whisman (MEW) Superfund Study Area. The project is not within the vapor intrusion study area, which is the main focus of the USEPA, but there are corridors within the project boundaries that the USEPA has identified contamination hot-spots from groundwater grab samples. Our sub-consultant Cornerstone Earth Group (CEG) is currently working on a project that is in the immediate area and is coordinating with the USEPA for development of Site Management Plans and Health and Safety

Plans. CEG's current work with the USEPA enables our project the ability to submit similar SMP's and HASP's that we know are consistent with previously approved plans.

Crossing Moffett Boulevard with sewer infrastructure will require obtaining an encroachment permit from Caltrans, which has jurisdiction over the street right-of-way. Caltrans requires several supporting documents as part of their permit application including record of CEQA compliance, design plans with Caltrans ROW shown, open-cut or trenchless construction method design and specifications (requires casing), geotechnical investigation report, and structural design calculations if shoring or structures are to be built within the ROW. Schaaf & Wheeler has obtained Caltrans encroachment permits for many infrastructure projects in the recent past and has solid strategies to engage the agency early and often in the design process in order to minimize the permit process duration.

The project corridor is comprised of both commercial and residential land uses and provides a transit connection between tech company campuses, as well as serving as a busy utility corridor. Schaaf & Wheeler has considerable experience locating new underground infrastructure within busy traffic and utility corridors. Our engineers appreciate the importance of locating existing utilities early in the design process in order to develop the routing of proposed utilities with the least amount of traffic impact and need for utility relocation. We also bring attention to detail and creativity to our designs that allows projects to meet their goals, including investigating alternative construction methods and determining realistic contractor operations space requirements during design. Schaaf & Wheeler also anticipates working with the SWRCB-DDW to obtain project-specific approval for pipe separation less than ten feet, in case the standard separation requirements cannot be met.

The downstream portion of the new sewer main within Leong Drive will need to be considerably deep to cross the existing large diameter storm sewer at Evandale Avenue. Trenchless construction methods may be beneficial in this area, compared with traditional open-cut construction, due to the amount of excavated material and probability of contaminated soil and groundwater (trenchless design is provided as optional scope). The geotechnical investigation will determine soil and groundwater conditions that our engineers can use to evaluate the feasibility of different trenchless construction methods as well as shaft/pit shoring methods. Trenchless construction methods and shoring methods vary greatly in cost and footprint, which will affect the cost-benefit ratio for the project.

Scope of Work

Phase 1 – Preliminary Investigation and Project Coordination

A. Project Management and Coordination

- Prepare project schedule and maintain throughout project with minimum submittal dates as: project kick-off, submittal milestones during Phase 2&3
- Coordination with City, Agencies (Caltrans, USEPA, SCVWD, County, SWRCB-DDW), and sub-consultants
- Coordination with utility companies, NASA, and City Public Services Department
- Coordination with the private development project at 750 Moffett Boulevard and their civil engineer
- Attend progress meetings as needed to facilitate coordination between project stakeholders

B. Project Kick-off Meeting and Information Gathering

- Prepare for and attend project kick-off meeting with City staff, meeting agenda and minutes will be prepared and distributed
- Conduct a site visit to gather current field information and identify constraints; the site visit will correspond with the beginning of field surveying so S&W engineers can identify specific items the surveyors need to capture with their work; City staff will also be invited to attend the site visit if desired
- Perform background data review pertinent to the project, provided by the City; the data review will be the basis for beginning our work, as we are proposing to use the existing prepared basemapping, potholing, and reports as a starting point for our design in order to minimize duplicated efforts

C. Field Surveying and Basemapping

- Perform topographic field survey of northern project area not previously surveyed by City (btw Evandale and Fairchild, along Leong Dr); the surveying effort will also collect field data not previously available from the City survey; Caltrans Right-of-Way maps will be requested to determine property boundaries; utility company maps will be requested to determine presence and location of utilities
- A comprehensive topographic survey of the complete project boundary is provided as an optional task, in case the City prefers new survey and basemapping

D. Geotechnical Investigation and Report

- Conduct geotechnical investigation and report to determine engineering properties of the soil along the project alignment; the report will provide data to be used by our structural engineer for design of temporary excavation support (shoring and shafts/pits), recommended structure and pipe trench foundation and bedding, provide groundwater levels, and provide data to be used by our trenchless engineer to determine trenchless installation methods suitable for the project (at a minimum for Moffett Blvd crossing and sewer btw Evandale and Fairchild)
- Field work will include HASP preparation, four (4) exploratory borings by hollow-stem auger drilling machine to depths of 20-35 feet (field personnel will be 40-hour certified and equipped with environmental monitoring and safety equipment), traffic control plans and devices, utility clearance (USA and private utility locator), obtain drilling permits, testing and disposal of spools (assumes Class II disposal facility)

E. Environmental Conditions Reports

- Prepare Soil Management Plan and Air Monitoring Plan (SMP), the SMP will be prepared to establish management practices for handling contaminated soil, soil vapor, groundwater, or other materials; the SMP will be submitted to the USEPA for review and comment; the SMP will be applicable to both design and construction work; the SMP measures will be incorporated into the project bid documents
- Prepare Health and Safety Plan (HASP), the HASP will be prepared by a Certified Industrial Hygienist (CIH) and be included as an appendix to the SMP; the HASP will provide protocols for site-specific training, personal protective equipment, VOC monitoring, and decontamination measures; the bid documents will require the contractor to incorporate the provisions of the HASP into their site health and safety program
- SMP and HASP scope assumes generous use of existing work prepared for the project area.

F. Environmental Soil Characterization

- Soil characterization for northern portion of alignment not previously covered by GEOCON work
- Nine (9) soil sampling locations will be performed using limited access direct push technology, during a one (1) day field operation
- Sampling will occur at varying depths below ground surface based on anticipated utility installation/excavation depths
- Collected soil samples will be analyzed at a state-certified laboratory for CAM 17 Metals, PCBs, OCPs, TPH as diesel and motor oil, low level PAHs, as well as Core N One capsules in triplicate for TPH as gasoline and Volatile Organic Compounds
- A report will be generated that provides results of the investigation, conclusions, and recommendations; comparing field sampling results with current screening levels from DTSC-SLs, EPA RSLs, and SFRWQCB-ESLs

G. Buried Utility Locating

- Conduct utility locating potholing to determine buried utility locations and depths at critical locations; six (6) potholes will be performed by air-vacuum excavation methods; a report will be prepared that includes utility data, coordinates, and photos
- Field work will include City excavation permit, traffic control plan and devices, adherence to HASP prepared under Task D/E above, adherence to City backfill detail (CDF and hot mix asphalt); spoils will be collected in drums to be tested and disposed of with geotechnical drilling spoils

H. Site Soil Corrosivity Evaluation

- Measure in-situ soil resistivity; conduct soil chemical analysis including chlorides, pH, Resistivity at saturation, sulfates, and redox potential
- Conduct corrosivity evaluation to determine the corrosivity of the soils at the project site in regards to buried utilities and associated appurtenances (ductile iron pipe and fittings)
- Prepare engineering report to provide summary of field data collected and analysis conducted; potential for corrosion of buried utilities and recommendations for long-term corrosion prevention will be included; work will be in conformance with National Association of Corrosion Engineers (NACE) and City Standards

I. Arborist Investigation and Report

- Assess up to 120 existing trees (tagged and mapped by field surveyors) along project alignment; prepare tree data charts in excel format;
- Prepare arborist report including references to protection standards and maintenance recommendations based on visual findings; discussions to include existing conditions, tree species desirability in landscape, relative construction tolerance of tree species in study, and expected impacts to trees based on trench excavation distances/depths

J. CEQA Compliance

- Prepare and process Initial Study / Mitigated Negative Declaration in connection with the project to achieve CEQA compliance
- Initial Study to include project description; environmental setting, impacts, and mitigation measures
- CEQA compliance process includes preparation of the Administrative Draft Initial Study; Mitigated Negative Declaration and Noticing; completion of the IS/MND and printing for public distribution; prepare response to public comments; preparation of a Mitigation and Monitoring or Reporting Program (MMRP); meetings and hearings are not included in the scope, but can be added on a time and materials basis

K. Caltrans Encroachment Permit

- Prepare and submit Caltrans encroachment permit application for transverse utility encroachment at Moffett Boulevard; an encroachment permit at Fairchild and Leong is not anticipated but will be included if required by Caltrans; consultation with Caltrans will be included for Fairchild work if preferred by City
- Encroachment permit submittal package will include the project geotechnical report, project plans and specifications, trenchless design technical reports, construction cost estimate for work within Caltrans ROW, and CEQA compliance documents
- Submittals are anticipated at 65% Design level, 95% Design level, and Final Design; the 65% Design submittal will be a cursory review, as Caltrans typically does not complete a full review until project plans are at 95% or Complete level; an encroachment permit will not be issued until final plans are submitted and reviewed
- Two design review meetings are anticipated at Caltrans District 4 offices in Oakland

L. Storm Water Pollution Prevention Plan Evaluation

- Conduct an evaluation for the need to require Storm Water Pollution Prevention Plan or Water Pollution Control Plan in accordance with the latest provisions in the NPDES Construction General Permit
- Evaluation will be conducted by a Qualified SWPP Developer / Certified Professional in Stormwater Quality; written documentation of findings and recommendations will be provided

Phase 2 – Schematic Design

A. Alternatives Assessment and 35% Plans – The design team will evaluate the proposed water and sewer alignments along Leong Drive and crossing Moffett Boulevard to determine feasibility and allow the City to provide valuable input early in the design process. Impacts to the County Inn hotel will be evaluated, as well as construction phasing for fast-tracking portions of the work and existing utility impacts along the project corridor. Pipe sizing will be confirmed with S&W maintained water and sewer hydraulic computer models. Specific tasks are included below.

- Evaluate pipe alignment and construction method for water and sewer mains on Leong Drive, including size and material; based on pipe alignment, recommend handling of existing water and sewer mains (removal or abandonment)
- Evaluate pipe alignment and construction method for sewer main connections for 750 Moffett Boulevard (Alternative 1 and 2) crossing Moffett Boulevard from Leong Drive, including size and material
- Evaluate impacts to County Inn hotel property during construction and recommend potential mitigation measures (especially for Alternative 2 alignment)
- Evaluate construction phasing to allow fast-tracking of 750 Moffett Boulevard sewer connection
- Trenchless construction methods will be evaluated and a technical memorandum prepared, in addition to traditional open-cut construction methods, for Moffett Boulevard crossings
- Prepare 35 percent engineering plans for the project alignments including plan and profile of existing and proposed utilities, utility clearances to verify SWRCB-DDW requirements are met, and typical cross-sections
- Prepare six (6) hard copy and PDF submittal sets for the Draft Alternatives Assessment Report and 35% Plans
- Meet with City to review City comments and S&W responses
- Prepare Final Alternatives Assessment Report and 35% Plans

Phase 3 – Design Development / Construction Documents

A. 65% Plans, Specifications, and Estimate

- Prepare 65% Design level plans, specifications, and engineer's estimate based on direction given by City at the conclusion of Phase 2 work; final alignments will be determined prior to starting design drawings and specifications
- Design drawings will include City standard notes and details; project specific notes and details; plan/profile/cross-sections; tree protection, removal and mitigation; traffic control plans; construction phasing / temporary bypass / temporary water service; and construction haul routes
- Temporary excavation support / shoring for construction will be provided
- Traffic control plans will correspond to construction phasing plan and conform to CA MUTCD requirements
- Technical specifications will reference City standard specifications to the extent practical, project specific specifications will be provided for non-standard construction methods and materials
- Submit six (6) hard copies and PDF of the 65% PS&E
- Attend meeting with City to review comments and discuss S&W responses

B. 95% Plans, Specifications, and Estimate

- Prepare 95% Design level plans, specifications, and engineer's estimate based on direction given by City during the 65% PS&E work. Design drawings will include all items listed for 65% PS&E as well as cathodic protection plans and specifications.

- Submit six (6) hard copies and PDF of the 95% PS&E; submittal will include responses to 65% PS&E comments and direction given at review meeting
- Attend meeting with City to review comments and discuss S&W responses

C. Draft 100% Plans, Specifications, and Estimate

- Prepare Draft 100% Design level plans, specifications, and engineer's estimate based on direction given by City during the 95% PS&E work
- Submit six (6) hard copies and PDF of the Draft 100% PS&E; submittal will include responses to 95% PS&E comments and direction given at review meeting
- Attend meeting with City to review comments and discuss S&W responses

D. Final 100% Plans, Specifications, and Estimate (Bid Documents)

- Prepare Final100% Design level plans, specifications, and engineer's estimate based on direction given by City during the Draft 100% PS&E work
- Submit one (1) wet-signed plan set, six (6) hard copies and soft-copy AutoCAD/Word/Excel/PDF of the Final 100% PS&E; submittal will include responses to Draft 100% PS&E comments and direction given at review meeting

Phase 4 – Bid Support

A. Attend Pre-bid Conference

B. Assist City in response to bidders' requests for clarifications

C. Prepare and issue addenda

Phase 5 – Construction Support

A. Attend Pre-construction Conference

B. Provide Construction Staking

- Assumes initial staking and one re-staking

C. Review Contractor Submittals and Shop Drawings

D. Respond to Requests for Information (RFIs)

E. Assist City with resolving issues during construction

F. Review post-construction logs / videos to determine acceptability of installation/rehab

G. Assist City with evaluating Contract Change Orders and claims

Phase 6 – Post-Construction Support

A. Prepare Record Drawings

- Assumes City provides Contractor As-Builts and City inspector revisions
- Provide one (1) signed, stamped set of Record Drawings on Mylar
- Provide AutoCAD and PDF files of Record Drawings

Optional Services

A. Additional Land Surveying Services

- Complete new basemapping with photogrammetry
- Plat and Legal Descriptions for new easements (per description)
- Title Reports and review for new easements (per location)

B. Additional CEQA Services

- Toxic Air Contaminant (TAC) modeling if stationary equipment is located within 300 feet of a residence, this applies if trenchless construction is staged on the east side of Moffett Blvd

C. Additional Utility Locating

- Per pothole

D. Additional Trenchless Engineering Services

- Trenchless engineering services are not provided for Phase 3-6 under the base scope, as traditional open-cut construction is anticipated
- Trenchless design and construction support including plans and specifications for Moffett Boulevard if Caltrans will not allow open-cut construction within State ROW
- Additional services for trenchless construction design support for gravity sewer between County Inn Hotel and Fairchild Drive along Leong Drive; includes trenchless installation method and design for un-cased gravity sewer pipe
- The Cal/OSHA Mining and Tunneling Unit Underground Classification for each shaft and tunnel will be obtained as required by CA Code Title 8, Tunnel Safety Orders, for conduits 30-inches and larger

E. SCVWD Encroachment Permit

- Prepare and submit SCVWD encroachment permit application and supporting documentation

F. Design of Alternative Sewer Alignment

- Prepare revised PS&E for Phase 3 of Project if alignment alternative selected during Phase 2 is not feasible

City of Mountain View
Public Works Department
Engineering Services for
Leong Drive Water and Sewer Main Replacements
Schaaf & Wheeler
Fee Proposal - January 3, 2017

	Hourly Rate	*Project Manager* $225	*Senior Engineer* $200	*Associate Engineer* $180	*Designer (drafting)* $140	*Schaaf & Wheeler Subtotal*	*Bennett Trenchless Trenchless Engineering Subconsultant*	*Biggs Cardosa Structural &Engineering Subconsultant*	*Cornerstone Earth Group Geotechnical Engineering Subconsultant*	*JDH Corrosion Consultants Corrosion Engineering Subconsultant*	*Kier & Wright Land Survey Subconsultant*	*David J. Powers & Associates Environmental Subconsultant*	*Bess TestLabs Potholing/Utility Location Subconsultant*	*Walter Levison Arborist Subconsultant*	*Subsonsultant Markup (5%)*	*Total*	
Phase 1	**Preliminary Investigation / Project Coordination**	**178**	**84**	**100**	**32**	**$ 79,330**	**$ 6,800**	**$ 2,052**	**$ 101,107**	**$ 3,500**	**$ 30,000**	**$ 23,200**	**$ 9,725**	**$ 9,600**	**$ 9,300**	**$ 274,614**	**Phase 1**
A	Project Management / Coordination	144				$ 32,400									$ -	$ 32,400	A
B	Project Kick-off Meeting and Information Gathering	8	16	16		$ 7,880	$ 4,720	$ 2,052							$ 339	$ 14,991	B
C	Field Surveying and Basemapping	2	4	16	8	$ 5,250					$ 30,000				$ 1,500	$ 36,750	C
D	Geotechnical Investigation and Report	2	8	8		$ 3,490			$ 39,900						$ 1,995	$ 45,385	D
E	Environmental Conditions Reports	2	4	8		$ 2,690	$ 2,080		$ 12,795						$ 744	$ 18,309	E
F	Environmental Soil Characterization	4	8			$ 2,500			$ 42,712						$ 2,136	$ 47,348	F
G	Buried Utility Locating	2	4	4	8	$ 3,090			$ 5,700				$ 9,725		$ 771	$ 19,286	G
H	Site Soil Corrosivity Evaluation	2	4	8		$ 2,690				$ 3,500					$ 175	$ 6,365	H
I	Arborist Investigation and Report		4	8		$ 2,240								$ 9,600	$ 480	$ 12,320	I
J	CEQA Compliance	4	8	8	8	$ 5,060						$ 23,200			$ 1,160	$ 29,420	J
K	Caltrans Encroachment Permit	8	16	24	8	$ 10,440									$ -	$ 10,440	K
L	SWPPP Evaluation		8			$ 1,600									$ -	$ 1,600	L
Phase 2	**Schematic Design**	**44**	**60**	**76**	**32**	**$ 40,060**	**$ 22,160**	**$ 5,142**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,365**	**$ 68,727**	**Phase 2**
A	Alternatives Assessment / 35% Plans	20	36	60	24	$ 25,860	$ 22,160	$ 5,142							$ 1,365	$ 54,527	A
	City Review Coordination	12	8			$ 4,300									$ -	$ 4,300	
	Meet with City for 35% Design Review	8	8			$ 3,400									$ -	$ 3,400	
	Revise Report and Plans	4	8	16	8	$ 6,500									$ -	$ 6,500	
Phase 3	**Design Development/Construction Documents**	**136**	**136**	**228**	**124**	**$ 116,200**	**$ -**	**$ 25,410**	**$ 4,000**	**$ 6,500**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,796**	**$ 153,906**	**Phase 3**
A	65% Design and Construction Documents	24	40	80	60	$ 36,200		$ 15,110	$ 4,000	$ 6,500					$ 1,281	$ 63,091	A
	City Review Coordination	16				$ 3,600									$ -	$ 3,600	
	Meet with City for 65% Design Review	8	8			$ 3,400									$ -	$ 3,400	
B	95% Design and Construction Documents	24	32	72	32	$ 29,240		$ 5,300							$ 265	$ 34,805	B
	City Review Coordination	12				$ 2,700									$ -	$ 2,700	
	Meet with City for 95% Design Review	8	8			$ 3,400									$ -	$ 3,400	
C	Draft 100% Design and Construction Documents	16	24	60	24	$ 22,560		$ 3,000							$ 150	$ 25,710	C
	City Review Coordination	8				$ 1,800									$ -	$ 1,800	
	Meet with City for Draft 100% Design Review	8	8			$ 3,400									$ -	$ 3,400	
D	Final 100% Design and Construction Documents	12	16	16	8	$ 9,900		$ 2,000							$ 100	$ 12,000	D
Phase 4	**BidSupport**	**20**	**20**	**32**	**0**	**$ 14,260**	**$ -**	**$ 1,122**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 56**	**$ 15,438**	**Phase 4**
A	Attend Pre-Bid Meeting	8				$ 1,800									$ -	$ 1,800	A
B	Respond to Bidders' RFC	8	12	16		$ 7,080		$ 1,122							$ 56	$ 8,258	B
C	Prepare Addenda	4	8	16		$ 5,380									$ -	$ 5,380	C
	SUBTOTAL DESIGN	**378**	**300**	**436**	**188**	**$ 249,850**	**$ 28,960**	**$ 33,726**	**$ 105,107**	**$ 10,000**	**$ 30,000**	**$ 23,200**	**$ 9,725**	**$ 9,600**	**$ 12,517**	**$ 512,685**	
Phase 5	**Construction Support**	**48**	**108**	**104**	**0**	**$ 51,120**	**$ -**	**$ 7,268**	**$ -**	**$ 3,500**	**$ 12,000**	**$ -**	**$ -**	**$ -**	**$ 1,138**	**$ 75,026**	**Phase 5**
A	Attend Pre-Construction Meeting	8	4			$ 2,600									$ -	$ 2,600	A
B	Provide Construction Staking		4	4		$ 1,520					$ 12,000				$ 600	$ 14,120	B
C	Review Contractor Submittals	8	32	60		$ 19,000		$ 5,800							$ 290	$ 25,090	C
D	Respond to RFIs	8	24	32		$ 12,360		$ 1,468							$ 73	$ 13,901	D
E	Assist Resolving Construction Issues	16	24			$ 8,400				$ 3,500					$ 175	$ 12,075	E
F	Review Logs for Acceptability		8			$ 1,600									$ -	$ 1,600	F
G	Assist with CCOs and Claims	8	12	8		$ 5,640									$ -	$ 5,640	G
Phase 6	**Post-Construction Support**	**8**	**12**	**0**	**24**	**$ 7,560**	**$ -**	**$ 1,030**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 52**	**$ 8,642**	**Phase 6**
A	Prepare Record Drawings	8	12		24	$ 7,560		$ 1,030							$ 52	$ 8,642	A
	SUBTOTAL CONSTRUCTION SUPPORT	**56**	**120**	**104**	**24**	**$ 58,680**	**$ -**	**$ 8,298**	**$ -**	**$ 3,500**	**$ 12,000**	**$ -**	**$ -**	**$ -**	**$ 1,190**	**$ 83,668**	
	TOTAL FEE W/O OPTIONAL TASKS	**434**	**420**	**540**	**212**	**$ 308,530**	**$ 28,960**	**$ 42,024**	**$ 105,107**	**$ 13,500**	**$ 42,000**	**$ 23,200**	**$ 9,725**	**$ 9,600**	**$ 13,707**	**$ 596,353**	
Optional Task		**28**	**50**	**56**	**32**	**$ 30,860**	**$ 108,824**	**$ 24,418**	**$ -**	**$ -**	**$ 18,600**	**$ 4,140**	**$ 2,000**	**$ -**	**$ 7,899**	**$ 196,741**	**Optional Task**
A	Additional Land Surveying Services														$ -	$ -	A
	New Basemapping	4				$ 900					$ 12,000				$ 600	$ 13,500	
	Plat and Legal Descriptions (per desc)					$ -					$ 2,800				$ 140	$ 2,940	
	Title Reports (per location)					$ -					$ 3,800				$ 190	$ 3,990	
B	Additional CEQA (TAC modeling)					$ -						$ 4,140			$ 207	$ 4,347	B
C	Additional Utility Locating (per pothole)		2			$ 400							$ 2,000		$ 100	$ 2,500	C
D	Additional Trenchless Eng Services	4	12			$ 3,300	$ 108,824	$ 19,098							$ 6,396	$ 137,618	D
E	SCVWD Encroachment Permit Assistance	8	12	20	8	$ 8,920									$ -	$ 8,920	E
F	Design Alt Sewer Alignment	12	24	36	24	$ 17,340		$ 5,320							$ 266	$ 22,926	F
	TOTAL FEE W/ OPTIONAL TASKS	**462**	**470**	**596**	**244**	**$ 339,390**	**$ 137,784**	**$ 66,442**	**$ 105,107**	**$ 13,500**	**$ 60,600**	**$ 27,340**	**$ 11,725**	**$ 9,600**	**$ 21,606**	**$ 793,094**	

Standard Rate Schedule

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

Hourly Charge Rate Schedule

Personnel Charges

Charges for personnel engaged in professional and/or technical work are based on the actual hours directly chargeable to the project.

Current rates by classification are listed below:

Classification	Rate/Hr	Classification	Rate/Hr
Project Manager	$225	Construction Manager	$215
Project Engineer	$215	Senior Resident Engineer	$185
Senior Engineer	$200	Resident Engineer	$165
Associate Engineer	$180	Assistant Resident Engineer	$150
Assistant Engineer	$160	Construction Inspector	$135
Junior Engineer	$150		
Designer	$140		
Technician	$135		
Engineering Trainee	$105		

Principal time is $315 per hour and is charged only for work done in preparation for litigation and other very high level-of-expertise assignments. Court or deposition time as an expert witness is charged at $420 per hour with a minimum of four hours per day.

Materials and Services

Subcontractors, special equipment, outside reproduction, data processing, computer services, etc., will be charged at 1.10 times cost.

These rates are subject to revision semi-annually.

Effective 1/1/17