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May 23, 2023

County of Monterey Planning Commissioners

Via Phil Angelo, Associate Planner

1441 Schilling Place, South 2nd Floor

Salinas, CA 93901-4527

AngeloP@co.monterey.ca.us

**RE: CARMEL MEADOWS LIFT STATION & SEWER
REPLACEMENT PROJECT**

Dear Planning Commissioners, Associate Planner Phil Angelo, & Members of the CAWD Board:

I live at 2955 Ribera Road, Carmel, CA with my wife, two boys (ages 2 and 5), and mother (age 74). My property is adjacent to the site of the proposed sewage lift pump in Carmel Area Wastewater District's ("CAWD") proposed Lift Station and Sewer Replacement Project (the "Project"). This Project has caused significant stress for me and my family as well as for our neighbors. It is unfair for CAWD to burden residents for its benefit, given that there is a better feasible alternative that was recommended by CAWD's own consultant engineers, Kennedy/Jenks Consultants—simply replacing the current gravity line with a new gravity sewer line (the "Replacement Option").

The Project would negatively and unfairly impact Carmel Meadows residents because it requires grinder pumps on four properties ("Grinder Pump Properties") and a sewer lift pump near two properties ("Sewer Pump Properties"). Since CAWD has not yet issued a grinder pump policy, there is no plan for the maintenance and replacement of old or defective pumps. Yet, it appears that the residents would be responsible for maintenance and replacement of the pumps after an undetermined period of time. Furthermore, residents would be forced to pay for the costs of electrical service required to run the pumps. In addition, the residents would effectively be without sewer service during the frequent and extended outages in our neighborhood. Finally, the grinder pumps may restrict the way in which the residents use their appliances, and residents would be forced to flush the pumps with water prior to extended absences. Similarly, the sewer lift pump would impose noxious odor, noise, and visual impacts on the Sewer Pump Property residents. Therefore, the Project would diminish the property value of our homes as well as our ability to enjoy them.

CAWD has asserted that the Project is the only feasible alternative. Yet, there is a better alternative—the Replacement Option—which is less expensive, more environmentally friendly, and avoids negative impacts on residents. In fact, in a 2013 study, Kennedy/Jenks Consultants, concluded that an early iteration of the Project was "*fatally flawed*" and that the Replacement

Option was the *best* alternative. (Exhibit A.) And, CAWD has invested in this plan by having Kennedy/Jenks Consultants produce a 281-page a “Bid Set, Project Manual Including Specifications” with 11 additional pages of drawings in 2016. (Exhibit B.) Finally, the Carmel Highlands Land Use Advisory Committee (“LUAC”) recommended that CAWD reconsider the Replacement Option. (Exhibit C.)

Yet, despite repeated requests from Carmel Meadows residents and LUAC, CAWD has not provided a definitive bona fide justification to the valid inquiries as to why it abandoned the Replacement Option. During a conversation with attorney Krista Ostoich, CAWD’s General Manager refused to explain its reasoning without counsel present. And, most recently, the CAWD Board declined our residents’ request for a special meeting to discuss the alternatives during the March 30, 2023 CAWD Board meeting.

It is true that CAWD has attempted to portray the Project as the more environmentally friendly alternative, going so far as to orchestrate a letter for the California Water Boards that it has deployed with the media and County of Monterey. Nevertheless, the letter—which followed CAWD’s prompting with numerous calls and emails—appears to have been written primarily by CAWD and relies on false assumptions. (Exhibit D; see also *post.*) The fact that CAWD manufactured the California Water Boards letter refutes any argument that there was an objective independent review.

Indeed, the environmental argument appears to be mere pretext.

First, in contrast to the Replacement Option, which relies on gravity, the Project would have a carbon footprint because it requires the use of electricity to run the four grinder pumps and lift sewer pump. In addition, the Project would waste water due to the flushing requirement every time a Grinder Pump Property resident leaves town.

Second, while it is true that the Project would move a significant portion of the sewer line upslope from the lagoon, other portions would remain in place. In addition, the Project relies on a lift pump, which would not be any farther from the waterways than the Replacement Option line or Carmel Meadows Pump No. 2. In fact, sea level rises would affect Carmel Meadows Pump No. 2 well before the Project or Replacement Option since it is located closer to the ocean and lagoon.

CAWD argues that the Project would reduce spills. But, in providing California Water Boards information regarding the risk of spills for its letter, CAWD implied that the only alternative to the Project would be to leave the old sewer line in place; it did not consider that the Replacement Option would also reduce the risk of spills. In fact, the Replacement Option would include new, stable sewage lines lined with epoxy (as CAWD proposes to do with the line that would be left in place under the Project). Finally, in contrast to the Replacement Option, the lift pump and grinder pumps in the Project would risk costly spills due to overflow during extended outages.

The former CAWD Principal Engineer believes that CAWD’s true motivation for the Project is to make maintenance easier for CAWD. While this is a legitimate concern, it is not insurmountable and should not be prioritized over residents.

This is an important issue for our neighborhood. Therefore, we appreciate that the County denied the request of CAWD's current Principal Engineer's for a Coastal Permit Waiver and her objections to the County's legitimate "scrutiny." (Exhibit E.) The County's professionalism has ensured that our residents could participate in this conversation.

We have submitted a petition, which was signed by 118 *Carmel Meadows residents and/or property owners* (see Exhibit F); the Carmel Meadows Association Board of Directors submitted a letter (Exhibit G); attorney Krista Ostoich, Esq. submitted a letter (Exhibit H); and several Carmel Meadows residents have submitted individual letters regarding the Project. My hope is that the wishes of 118 Carmel Meadows residents and/or property owners and the Carmel Meadows Association Board of Directors are not ignored.

In conclusion, the Project unfairly burdens residents for CAWD's benefits despite there being a better feasible alternative, and our residents have not received an adequate response to their concerns. Thank you very much for your consideration on this issue that will deeply impact the lives of my neighbors as well as my family.

Sincerely,

A handwritten signature in blue ink that reads "David Scopp". The signature is written in a cursive style.

David W. Scopp

Cc: Barbara Buikema, General Manager
Supervisor Mary Adams, District 5
CAWD Board President White and Members of the Board

EXHIBIT A

16 July 2013

Final Technical Memorandum

To: Mr. Drew Lander, P.E.
Carmel Area Wastewater District

From: James Bowland, P.E. C66400

Subject: Carmel Area Wastewater District, Carmel Meadows Gravity Sewer
K/J 1399011*00



Introduction

The purpose of this technical memorandum is to provide the Carmel Area Wastewater District (District) with a gravity sewer condition assessment of the Carmel Meadows 6-inch gravity sewer and providing rehabilitation recommendations. The work is summarized as follows:

- Document both interior and exterior existing conditions of the 6-inch gravity sewer pipeline.
- Conduct a geotechnical evaluation of the pipeline footings including slope stability.
- Identify rehabilitation and/or alternative recommendations to provide a long term reliable sewer pipeline that prevents sanitary sewer overflows (SSO).

This Memorandum is divided into three sections:

1. Summary of field work,
2. Condition assessment of the gravity sewer line, and
3. An analysis of alternatives and recommendations to provide a long-term reliable sewer pipeline that prevents SSOs.

1.0 Summary of Field Work

Site Survey

The site was surveyed by Mr. Mike Sutter with Baseline Consulting. The gravity sewer was surveyed from the start of the 6-inch gravity sewer at the end of Mariposa Court to the Calle La Cruz pump station. The above grade portion of the Calle La Cruz force main was also surveyed. The surveyor used the water level marker in the lagoon as the basis of elevation control.

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The survey included a 20-foot wide topographic survey, rim and invert elevations on the manholes, exposed pipe joints, and the location of the exposed pipe support footings. A hard copy of the survey is provided in Appendix A – Carmel Gravity Sewer Survey. An electronic copy of the survey was transmitted to the District via email on 12 June 2013.

Geotechnical Investigation

The geotechnical investigation included a site walk and analysis by a Geotechnical Engineer to assess the existing conditions along the pipeline route. The geotechnical engineer investigated the existing soil, foundation conditions, and mapped the movement of the footings and pipe over the last 60 years. The geotechnical engineer's technical memorandum is attached to this TM as Appendix B – Geotechnical Investigation Technical Memorandum.

In summary, the geotechnical engineer observed misalignment in each section of aerial pipe examined. The movement of the foundations varies throughout the alignment and is dependent on the localized foundation conditions. The geotechnical engineer recommended a combination of foundation anchoring devices and slope stabilization techniques to be used if the pipe was replaced in its current alignment, including:

1. Underpinning piers,
2. Rock bolts,
3. Micro piles, and
4. Plate piles (for slope stabilization),

Of the three foundation anchoring alternatives the rock bolt option is most feasible due to the limited site access. Rock bolts up to 3-inches in diameter are feasible to be installed with hand operated drills. Micro piles would not be feasible because a track or truck mounted drill equipment is required to install them. Underpinning piers would also have questionable feasibility due to the size of the equipment needed for installation.

The only area where significant slope movement was observed was along Reach 4, between MH S622 and MH S616. To minimize slope movement, the geotechnical engineer recommended either rebuilding the slope with a properly keyed-in fill slope or installing plate piles in the existing slope.

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2.0 Condition Assessment

The condition assessment of the Carmel Meadows Gravity Sewer consisted of video taken by District staff of the interior of the 6-inch gravity sewer, and a visual inspection of the exterior of the pipeline, manholes, foundations, and pipe supports.

Exterior Corrosion

Very little exterior corrosion was found on the 6-inch ductile iron pipeline. The extent of oxidation found can be attributed to surface rust and is very typical of ductile iron pipe of this age. This surface rusting requires no remedial action.

The framing support structures composed of painted 2-inch by 3-inch c-channel that are part of the aerial portions of the pipeline were also examined. We found in general that they were in good to poor condition depending on their location and the amount of soil and plant matter over the footings. Several of the welded connections were rusted through (failure is not imminent) on the cross bracing. Anchor bolts are rusted so severely that they are no longer able to be unfastened without cutting off the anchor bolts below the nuts.

Manhole Condition

The manholes observed are the brick and mortar type with a cast iron frame and cover. While manhole condition was not part of this condition assessment, it was noted that the frames had severe corrosion that includes extensive rust flaking off the frame. This did not affect the functionality of the manholes. We also observed some softening and degradation of the grout used to line the manhole sections. A vertical crack requiring repair was observed on manhole T601.

Pipe Condition

The 6-inch sewer was cleaned prior to closed circuit television (CCTV) inspections completed by the District on the accessible portions of the pipeline. The video was coded during the CCTV investigation by District staff and also reviewed and coded by Kennedy/Jenks using NASSCO's Pipeline Assessment and Certification Program. A summary of the findings is included in Table 1 – Video Investigation Findings, and shown in Figure 1 Summary of 6-inch Gravity Sewer Condition Assessment. As summarized in Table 1 below, several portions of the pipeline were found to be fully submerged or the camera vehicle encountered blockages causing a number of portions of the pipeline not to be accessible to CCTV inspection. The camera vehicle was advanced until it was unable to proceed due to grit build-up or presence of other obstructions in the invert of the pipe.

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Table 1: Video Investigation Findings

Upstream MH	Downstream MH	Length of CCTV'd, FT	Length per Mapbook	Footage	Defect Code	Defect Description
S607	S609	230.9	240	0	AMH	Access Point Manhole
				3.4	MMC	Material Change
				17 - 63	MCU	Camera Underwater
				104.7	TFA	Factory Tap Active
				111-116.7	MCU	Camera Underwater
				148.9	RPLD	Point Repair Localized pipe liner defective
				227.6	MMC	Material Change
				229-230.9	DA	Deposits Attached
				230.9	AMH	Access Point Manhole
				S609	S615	142.3
37.9	JO	Joint Offset				
120.7	MMC	Material Change				
121-142.3	MCU	Camera Underwater				
142.3	OBZ	Obstacle/Obstruction Other				
S615	S618	144.3	185	5.1	AMH	Access Point Manhole
				72-90.4	MCU	Camera Underwater
				90.4		Corrosion
				108-116.5	MCU	Camera Underwater
				144-149.4	MCU	Camera Underwater
S622	S616	25.8	115	149.4	OBZ	Obstacle/Obstruction Other
				0	AMH	Access Point Manhole
				25.8	OBZ	Obstacle/Obstruction Other
T601	S622	116.7	Not Provided	0	AMH	Access Point Manhole
				22.5	CS	Crack Spiral
				31.9	CL	Crack Longitudinal
				116.7	AMH	Access Point Manhole
T602	T601	183.4	185	117.4	CS	Crack Spiral
				131.8	CL	Crack Longitudinal
				183.4	AMH	Access Point Manhole
T603	T648	12.3	178	10.5	AMH	Access Point Manhole
				22.8	DAZ	Deposits Attached Other

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Typical defects found in gravity sewer systems include debris build up, roots, grease, cracks (light to severe) and broken pipe. Only 622 linear feet (LF) of the total 1,300 were accessible by the camera vehicle. From the video that was obtained the sewer appeared to be in good condition with a few cracks and general grit accumulation throughout. Areas that appeared in the CCTV inspection to have cracks in the pipe wall were investigated on the exterior of the pipe. This investigation failed to locate cracks on the exterior, leading to an opinion that the pipe is sound. What appear to be cracks on the interior may be formations created by scum accumulation.

Foundation Condition

During the geotechnical engineers site visit the existing foundations were probed to determine the condition of the foundation and the underlying soil. In general we found that the existing foundations were constructed on native soil. Several of the foundations had void spaces beneath them on the down slope side. The concrete of the existing foundations appeared to be in good condition and did not show signs of deterioration that often include flaking or loss of integrity. The most severe issue with the foundations is the corrosion of the C-channel supports at the foundation connections caused from long term rusting. The saddle supports at the top of the elevated supports also exhibited signs of corrosion, although it appears to be limited to surface rust. The level of corrosion observed on the C-channels would be greatly reduced if soil and plant matter was removed from the tops of the foundations.

3.0 Alternatives Analysis

For this evaluation, four alternatives were compared for the rehabilitation or replacement of the existing 6-inch diameter pipeline to structurally stabilize the pipeline, provide reliable sewer service to the Carmel Meadows service area, and reduce the possibility of a sanitary sewer spill or overflow. Figure 2 identifies the proposed alternative alignments. A more detailed description of each alternative is provided below.

The four alternatives selected are:

1. Performance of spot repairs to the existing pipeline,
2. Removal and replacement of the existing pipe in current location,
3. Installation of a lift station and companion force main through existing streets, and
4. Construction of a new sewer using Horizontal Directional Drilling (HDD).

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Alternative 1 – Spot Repairs to the Existing Gravity Sewer

This alternative would consist of repairing the highest risk areas of the pipeline. The work would include the following:

- Removal of trees that are deflecting the sewer and realigning this pipeline to its original location,
- Repair of damaged manholes,
- Replacement of aerial crossing supports to return the sewer to horizontal line and vertical grade.

This alternative would maintain the existing sewer in its current alignment. The aerial crossing supports would be repaired and the sewer relocated to correct current line and grade problems. The foundations that exhibit the greatest movement and risk of failure would be replaced and secured with rock anchors.

Summary of spot repairs:

1. Replacement of pipe: 0 linear feet.
2. MH repair: Reline 10 existing manholes assuming 3-feet to from the lid to the invert.
3. Removal of trees: Assume 15 oak trees that would require mitigation.
4. Replacement of pipe supports and footings, including rock anchors: Assume 10 supports of the existing 21 would be replaced.

Alternative 2 – Removal and Replacement of Pipe in Place

This alternative would remove the entire section of pipe from manhole T603 to manhole S615 where the pipe transitions from aerial to buried. The pipe would be replaced with new restrained joint pipe and engineered foundation supports within the current alignment.

Summary of removal and replacement:

1. Removal and replacement of pipe: Removal and replacement of approximately 1,300 LF of ductile iron pipe. Replace with restrained joint ductile iron pipe between MH T603 and MH S615.

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2. Replacement of Manholes: Assume all eight manholes in the section between MH T603 and MH S615 would be replaced with precast manholes, approximately three feet in depth.
3. Replacement of Pipe supports: Replace all existing aerial pipe supports. Assume 20 pipe supports with footings, incorporating four rock bolts to anchor each.
4. Removal of trees: Assume 15 oak trees would be removed and require mitigation.
5. Slope stabilization: Stabilize side slopes with plate piles; assume 200 LF of slope, 20-foot in width. If easements can be acquired, a wider area of slope stabilization is recommended.

Alternative 3 – New Lift Station and Force Main

This alternative would include the installation of a lift station at the location of Manhole T608 and a force main pipeline along Ribera Road to the Calle La Cruz wet well. This alternative would re-direct the sewer line to slope downhill from manhole T604 to T608 and replace the aerial section between S618 and S615, to convey sewer from MH S617.

Summary of lift station and force main:

1. Lift station: Assume a duplex system comprised of Flyght submersibles. Two Flyght pumps would be installed in a 4-foot diameter by 15 foot deep lift station; requiring 2 horsepower pumps. Pumps would be sized for 25 gpm at 60 feet of total dynamic head.
2. Force main: Assumes a 2,230 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot wide pavement restoration.
3. Gravity Sewer: Rebuild 160 linear feet of sewer from T604 to T608, and replace the aerial sewer from MH S618 to MH S615.

Alternative 4 – Horizontal Directional Drill (HDD)

This alternative would include a 2,000 linear foot HDD from MH T608 to the Calle La Cruz wet well. The alignment would be a straight line beneath existing private property to the wet well. This alternative would include re-sloping the sewer line to drain downhill from T604 to T608 and replacement of the aerial section from S618 to S615, to convey sewer from MH S617.

Summary of HDD:

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1. HDD: Assume 2,000 LF of HDD through granitic bedrock.
2. Property acquisition: Obtain 22 subterranean utility easements for the proposed alignment.
3. Pipe Material: Assume a 6" diameter DR 9 HDPE or equivalent fusible PVC pipeline.
4. Gravity Sewer: Rebuild 160 linear feet of sewer from T604 to T608, and replace the aerial sewer from MH S618 to MH S615.

Alternatives Analysis

An alternatives analysis was conducted to help select the preferred alternative for the Carmel Meadows 6-inch sewer pipeline project. The following items were considered:

1. Cost,
2. Constructability,
3. Public Impact,
4. Environmental Impact,
5. Estimated Life Expectancy, and
6. Operation and Maintenance.

Cost

A conceptual level estimate of probable construction cost was prepared for each alternative using manufacturer's quotes, data from recent similar projects bid in the area, construction cost guides and previous experience. A standardized construction cost template was utilized to ensure each alternative was evaluated using the same metrics. A component of the cost not easily quantified is the constructability of each alternative. The constructability of each alternative was evaluated separately. The detailed cost estimate information for each individual alternative is presented in Appendix C. The estimate of probable construction costs for each alternative are summarized below in Table 2. The estimates include local sales tax on materials, contractor overhead and profit at 15%, and a 30% estimating contingency.

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Table 2: Estimated Pipeline Alternative Project Costs

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cost	\$158,603	\$427,735	\$536,941	\$2,355,823

- **Alternative 1** – Alternative 1 is the least expensive alternative because it does not require the removal and replacement of the existing pipe and manholes.
- **Alternative 2** – Alternative 2 is similar to alternative 1, but costs more since it includes the replacement of all of the manholes and replacing the existing pipe with restrained joint pipe.
- **Alternative 3** – This alternative is the third most expensive for capitol cost and is even more expensive when factoring in the annual O&M costs of approximately \$21,000 per year for operating and maintaining a pump station.
- **Alternative 4** – This alternative is the most expensive alternative due to the easement acquisition and the high cost for horizontal directional drilling through bedrock.

Due to the high capitol and O&M cost of Alternative 3 and the high cost of Alternative 4, these two alternatives are fatally flawed resulting in removal from any further analysis.

Non-Cost Related Criteria

The non-cost related evaluation criteria are compared for Alternative 1 and Alternative 2 in Table 3 – Non-Cost Related Criteria.

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Table 3: Non-Cost Related Criteria

Criteria	Alternative 1	Alternative 2
Constructability	Does not include pipe and manhole replacement therefore easier to construct than Alternative 2.	Includes pipe and manhole replacement, making it more difficult to construct.
Public Impact	Less impact due to shorter construction duration.	More impact due to longer construction duration.
Environmental Impact	Reduced construction impact, however increased risk of SSO due to non-restrained joint pipe.	More construction impact but significantly less risk of future SSO's due to restrained joint pipe.
Estimated Life Expectancy	5 to 10 years; considering the pipe and manholes are at the end of their useful life and will need to be replaced or rehabilitated.	50 Year design life (minimum).
Operation and Maintenance	Higher due to continued use of older pipe and manholes. Will require continued weekly inspections.	Less than Alternative 2, due to new restrained joint pipe and manholes.

Conclusions and Recommendations

After considering the non-cost related criteria both Alternative 1 and 2 have desirable aspects for selection. The differences between the alternatives are the use of new restrained joint pipe and new manholes for Alternative 2. To meet the District's objective to prevent future SSO's and provide a long term solution we recommend Alternative 2 for the following reasons:

1. Modern foundation stabilization and slope stabilization techniques will mitigate the risk of the pipeline moving or failing in the future.
2. Restrained joint pipe will be less susceptible to failure due to future pipe movement.
3. It will provide a long term solution and a reliable sewer pipeline.

Attachments: Figure 1 – Summary of 6-inch Gravity Sewer Condition Assessment

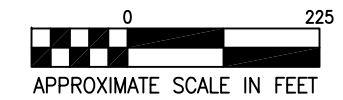
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Figure 2– Alternative Alignments
Appendix A – Carmel Gravity Sewer Survey
Appendix B – Geotechnical Investigation Technical Memorandum
Appendix C – Alternative Analysis Cost Estimate

Figures

Carmel Gravity Sewer



Kennedy/Jenks Consultants

CARMEL AREA WASTEWATER DISTRICT
CARMEL MEADOWS GRAVITY SEWER

**SUMMARY OF 6-INCH GRAVITY
SEWER CONDITION ASSESSMENT
JULY 2013**

(FWY) 1399011\FIG-01

FIGURE 1



PACIFIC OCEAN



Kennedy/Jenks Consultants

CARMEL AREA WASTEWATER DISTRICT
CARMEL MEADOWS GRAVITY SEWER

**ALTERNATIVE ALIGNMENTS
JULY 2013**

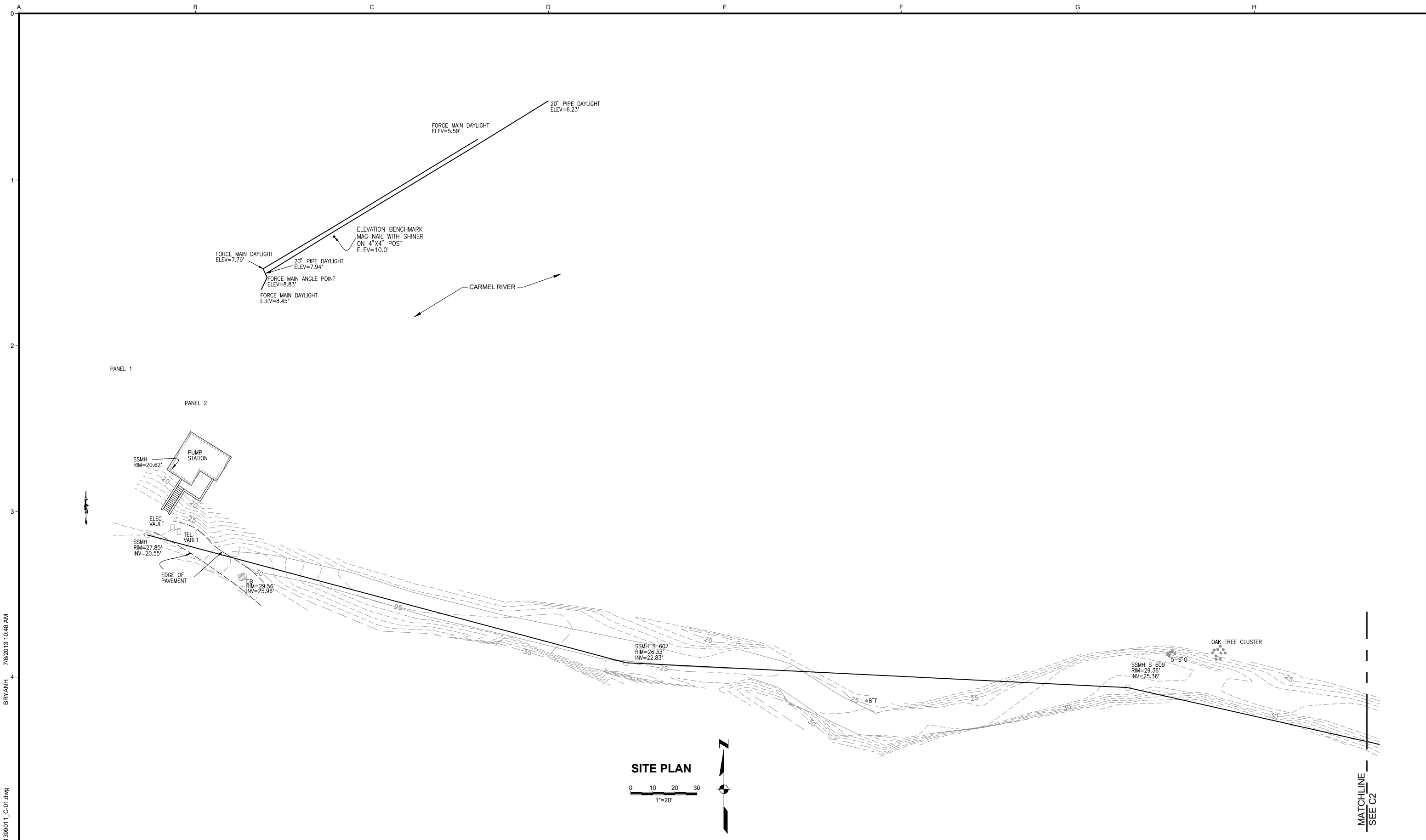
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FIGURE 2

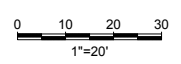


Appendix A

Carmel Gravity Sewer Survey



SITE PLAN



MATCHLINE
SEE C2

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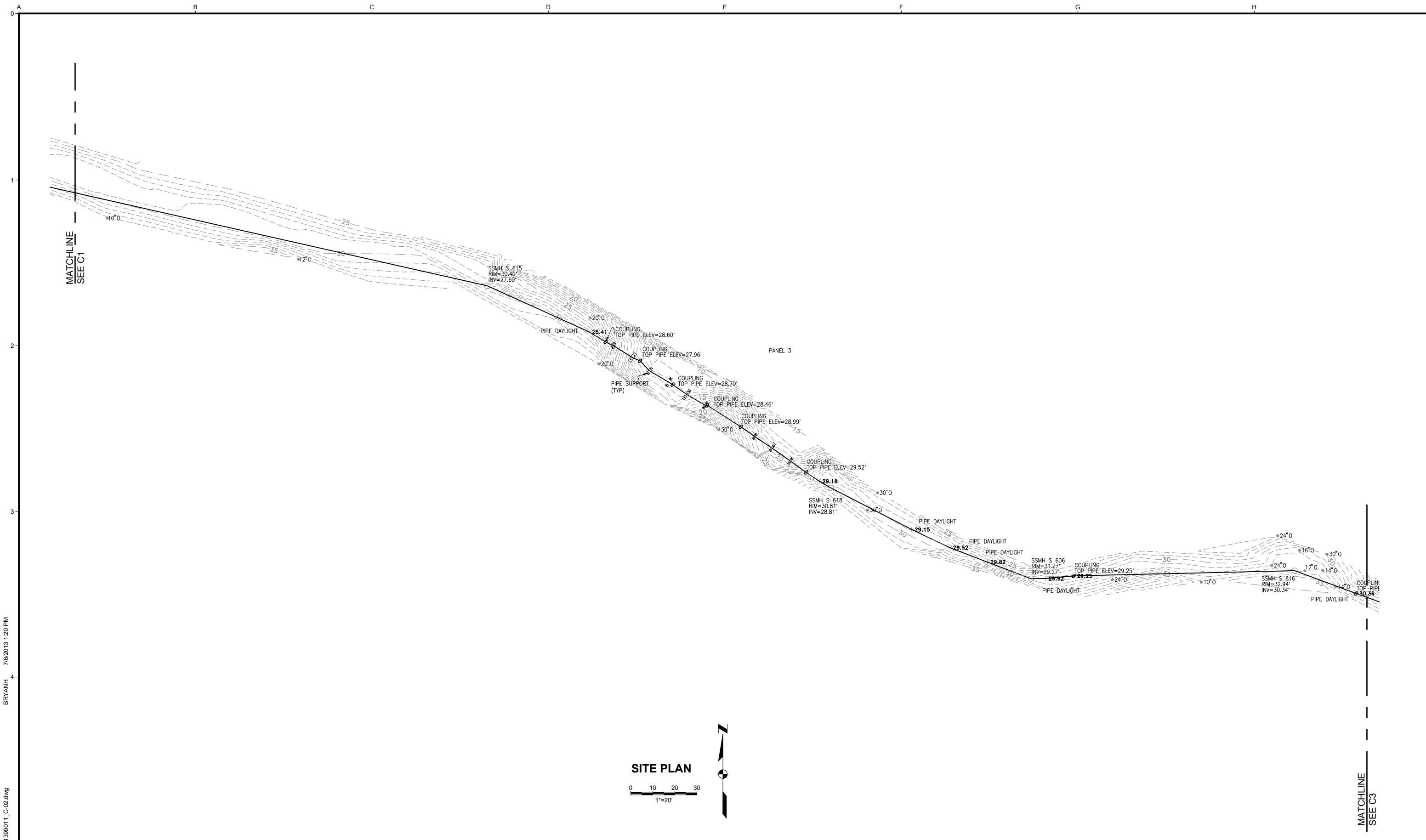
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CARMEL MEADOWS GRAVITY SEWER
**CARMEL AREA WASTEWATER DISTRICT
CARMEL, CALIFORNIA**

Kennedy/Jenks Consultants
10850 GOLD CENTER DRIVE, SUITE 350, RANCHO CORDOVA, CALIFORNIA

SITE SURVEY BY BASELINE CONSULTING

FILE NAME
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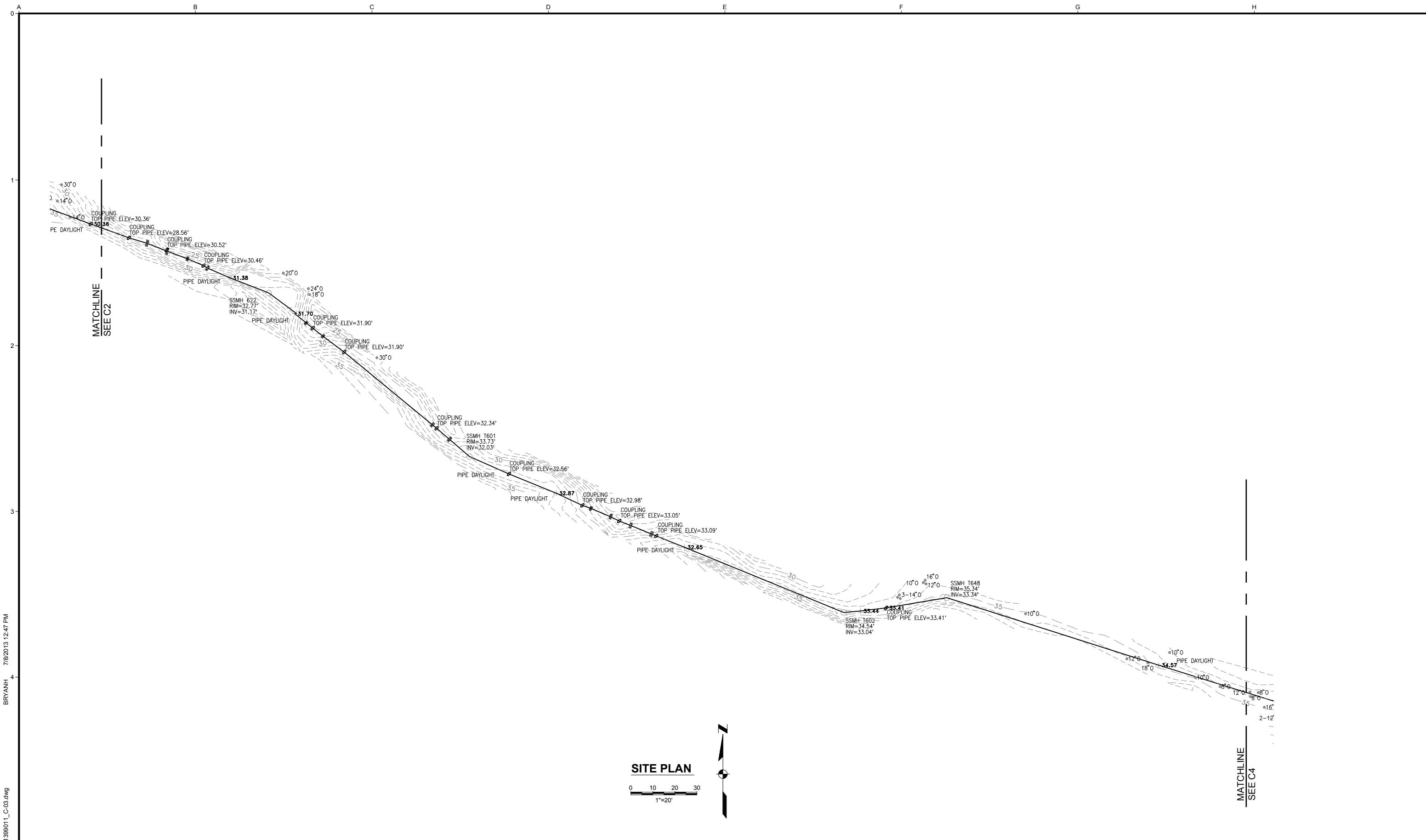
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CARMEL AREA WASTEWATER DISTRICT
CARMEL, CALIFORNIA

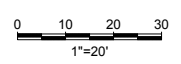
 Kennedy/Jenks Consultants
 10850 GOLD CENTER DRIVE, SUITE 350, RANCHO CORDOVA, CALIFORNIA

SITE SURVEY BY BASELINE CONSULTING

 FILE NAME
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SITE PLAN



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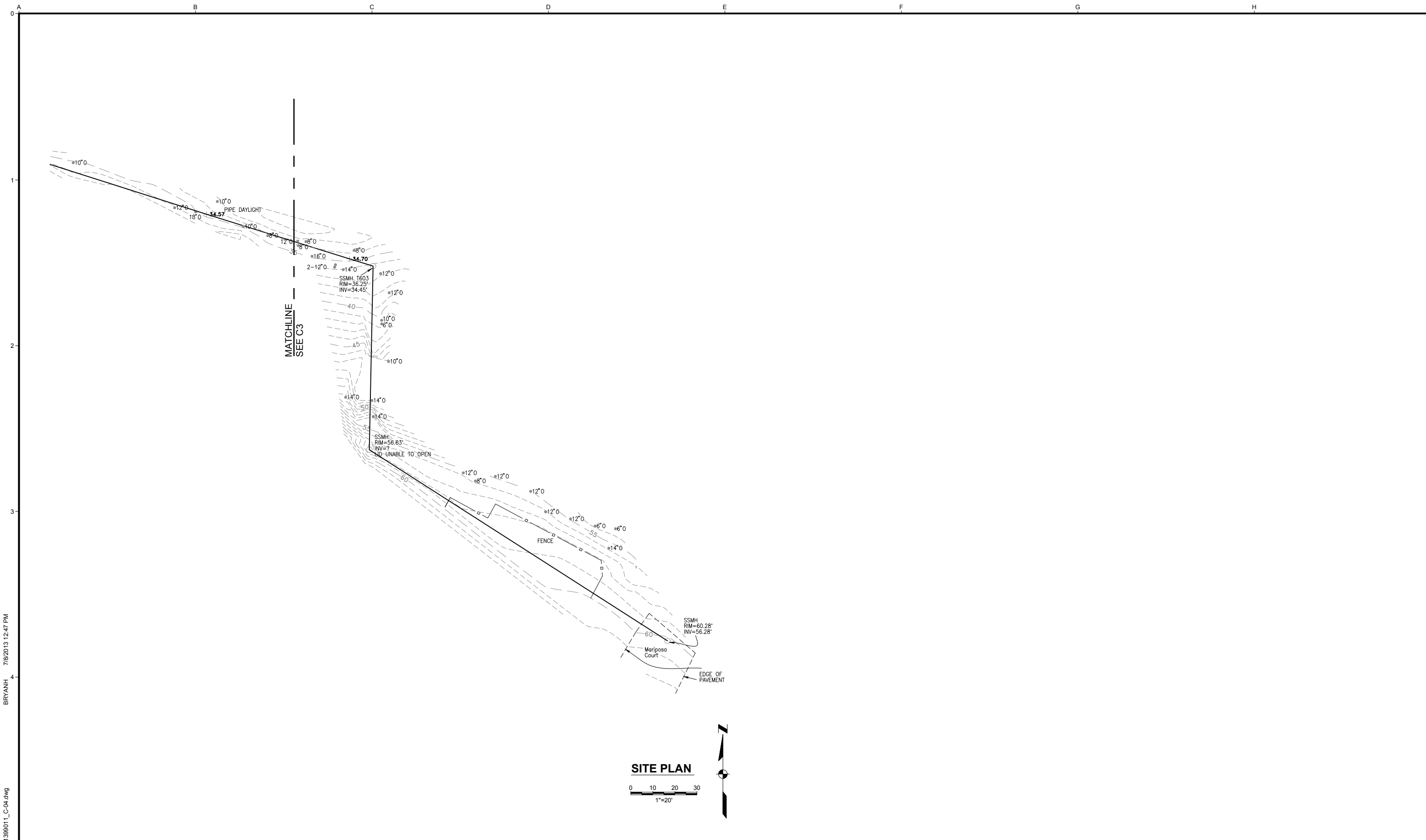
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CARMEL MEADOWS GRAVITY SEWER
CARMEL AREA WASTEWATER DISTRICT
CARMEL, CALIFORNIA

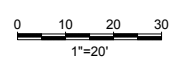
 Kennedy/Jenks Consultants
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SITE SURVEY BY BASELINE CONSULTING

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SCALES
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0" = 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

DESIGNED
-
DRAWN
BBH
CHECKED
-

CARMEL MEADOWS GRAVITY SEWER
CARMEL AREA WASTEWATER DISTRICT
CARMEL, CALIFORNIA

Kennedy/Jenks Consultants
10850 GOLD CENTER DRIVE, SUITE 350, RANCHO CORDOVA, CALIFORNIA

SITE SURVEY BY BASELINE CONSULTING

FILE NAME
1399011_C-04
JOB NO.
1399011_00
DATE
JULY 2013
SHEET OF
C4

Appendix B

Geotechnical Investigation Technical Memorandum



GEOTECHNICAL CONSULTANTS, INC.

Geotechnical Engineering • Geology • Hydrogeology

James Bowland, P.E.
Kennedy/Jenks Consultants, Inc.
116 Lupfer Avenue, Suite B
Whitefish, MT 59937

June 14, 2013
Project No. SF13013

Subject: Geotechnical Memorandum
Carmel Meadows Gravity Sewer
Carmel, California

Dear Mr. Bowland:

We performed a geotechnical evaluation of the Carmel Meadows gravity sewer located to the northeast and downslope from Ribera Road between Mariposa Drive and Calle La Cruz in Carmel, California. Our services were performed in accordance with our proposal dated February 19, 2013. Our services consisted of background review of geologic maps, geotechnical site reconnaissance and discussion of repair strategies with Mr. James Bowland of Kennedy/Jenks Consultants on May 14, 2013, discussion of repair strategies with local engineering contractors specializing in similar foundation systems, and preparation of this geotechnical memorandum. The purposes of our services were to assess the geotechnical stability of the gravity sewer pipeline, and to evaluate suitable construction techniques to rehabilitate or replace foundation supports based on site access, terrain and anticipated subsurface conditions.

SITE CONDITIONS

The existing sewer line is a 1,500-foot long, 6-inch diameter ductile iron pipe and it is routed along the sideslopes of hilly terrain. The approximately 60 to 80-foot high hill declines steeply (locally up to 1:1 slopes) toward the northeast from the rear of the properties along Ribera Road to the Carmel River. The hillslope is densely vegetated with trees, grasses and other plant undergrowth. The pipeline is predominantly buried but is elevated across five reaches where it crosses narrow, steep re-entrant valleys. The length of the elevated reaches range from approximately 34 feet to 128 feet. Through these elevated portions, the sewer line is supported on welded steel C-channel sections founded on concrete pedestal foundations. The sewer line is strapped to the C-channel sections at the support locations. Each 18.5-foot pipeline length typically has one or two support locations.

The site is underlain at shallow depths by the porphyritic granodiorite of Monterey (K_{gdp}) (Clark et al., 1997). This rock is hard and strong as evidenced at bedrock outcrops along the alignment. The bedrock is overlain by a relatively thin mantle of topsoil and colluvium.



Three faults are in the project vicinity. The San Gregorio fault zone, Sur Region section is located about 3.6 miles west (offshore). The southern end of the potentially active Cypress Point fault is located approximately 400 feet east of the northern end of the alignment. This fault has not been well studied, but is a Quaternary-aged dextral reverse fault. The Hatton Canyon fault, the closest fault segment of the Seaside-Monterey section of the Monterey Bay-Tularcitos fault zone is located approximately 2.3 miles northeast of the alignment. This fault zone is a complex, generally northwest-striking zone up to 15 km wide with dextral, dextral-reverse, and thrust faults with known Holocene displacement.

DISCUSSION

Based on discussions during the site visit, we understand that the Carmel Meadows gravity sewer has been in service for approximately 60 years. We are not aware of any incidents where the pipe needed to be repaired or replaced. Therefore, with regard to the serviceability of the existing pipeline, the system has performed well. However, it is evident from the horizontal and vertical profile of the elevated portions of the pipeline that the foundation supports have moved downslope. The maximum post-installation movement appears to be on the order of 2 feet though the movement is typically much less. The following paragraphs explain our observations of distress in a little more detail for each of the five reaches from the southeast part of the alignment to the northwest.

Reach 1 is approximately 55 feet long and is up to approximately 7 feet above the deepest point of the drainage re-entrant (Photos 1 and 2). Reach 1 is located approximately 100 feet southeast of manhole (MH) T601. The four C-channel supports range from 2.3 feet to 5.5 feet high. There are only very slight indications of foundation movement of up to approximately 2 inches. The foundations, at least at two locations, are founded on overburden soils and do not extend into bedrock. The depth to the bedrock is not known and there are no bedrock outcrops in close proximity.

Reach 2 is approximately 45 feet long with a buried manhole (MH T601) approximately midway along the reach (Photos 3 and 4). The manhole provides support for the pipeline as well as two C-channel supports and a concrete saddle in the portion of the pipe northwest of the manhole. The two C-channel supports are 1.6 and 4.5 feet high. We noted loose soil below the concrete saddle which provides little support at this location. The northwesterly pipeline joint appears to be up to approximately 6 inches out of alignment. Cracks in the concrete and brick of the manhole also indicate that some slope movement has occurred.

Reach 3 is approximately 24 feet long over a steep-sided drainage re-entrant (Photo 5), and is located located in the vicinity of MH T622. The pipe is up to 4.5 feet above the ground with the two C-channel supports at 3.2 and 3.7 feet high. The pipe is additionally



supported on a concrete saddle at the southeasterly end of the pipe. There appears to be slight movement of the elevated pipeline with the joints up to approximately 3 inches out of original alignment. Bedrock outcrops of granodiorite were observed in close proximity to this reach of the sewer line.

Reach 4 has the most noticeable post-installation movement with outward rotation of the two northwesterly foundation support locations (Photo 6). This reach is located between MH S622 and MH S616 based on GPS data collected during the site reconnaissance. The reach is approximately 65 feet long with four C-channel supports ranging from 1.3 to 2.8 feet high. The pipe is along a bench on an approximately 1 ½ to 1 (horizontal to vertical) hillside. Based on this unnatural break in slope, it appears the bench was likely created by cutting from the upslope side of the pipeline alignment and casting the soil on the downslope side. Bedrock outcrops of granodiorite were observed at either end of this reach. The fill soils along with the concrete pedestals have evidently crept downslope. The pipeline has moved up to approximately 2 feet. One pipeline joint at the point of greatest movement is separating.

Reach 5 is approximately 128 feet long extending northwestward from MH S618 with nine C-channel supports ranging from 5.3 to 15 feet high (Photos 7 through 10). The concrete pedestal foundations are larger to accommodate the taller and wider C-channel sections. An intermediate concrete saddle in an area of higher ground has settled away from the pipe leaving one length of pipe unsupported. A manhole is located a short distance to the southeast of where the pipeline transitions from being elevated to below grade. The pipe along this reach has moved from its original location although it appears that the pipe was likely constructed with some variation in grade and horizontal alignment to accommodate the topography and elevations of the support structures. The supports do not have noticeable tilt or other similar indications of large scale movement. Due to the height of the supports, a small rotation of the concrete pedestal will have a more pronounced effect at the top of the C-channel section. Bedrock outcrops of granodiorite were observed in close proximity to this reach of the pipeline.

CONCLUSIONS AND RECOMMENDATIONS

As noted above, there has been some movement of the elevated portions of the Carmel Meadows gravity sewer since its installation approximately 60 years ago. The sewer line has performed well, however, given the steep topography through which it traverses. The rehabilitation strategy to mitigate possible future soil movement will depend on other aspects of the evaluation including whether or not the pipeline is to be replaced and the structural integrity and corrosion resistance of the C-channel sections. For example, if the pipeline is to be replaced in its entirety, it would make sense to replace the foundation systems of elevated portions of the pipeline as well to improve its future performance and reduce the risk of failure.



The sewer line along Reaches 1 and 3 exhibits the least downslope movement, and therefore we expect that these reaches have the least risk of future movement and resulting pipe failure. Conversely, Reach 4 has moved considerably and at least one joint is separating from its connection. The sewer line movement and risk of future movement for the other two reaches, Reach 2 and Reach 5, lie between these two extremes. Therefore, if a phased approach to pipeline upgrades is desirable, we recommend that Reach 4 be corrected in the near term. The other reaches do not appear to be in immediate risk of failure. All sections should be monitored periodically to document further distress until upgrades are constructed.

In broad terms, there are three strategies to reduce the risk of pipe failure due to slope movements: 1) avoid the area where slope displacement is possible either by re-routing pipeline or going underneath any vulnerable soils (i.e. bury the pipeline), 2) stabilize the hillside so that the risk of slope movement is limited, or 3) design the pipeline and/or foundation support systems so that any slope displacement can be accommodated or resisted by the structures. The existing pipeline has performed fairly well using shallow concrete pedestal foundations, which would fall within “Strategy 3” listed above.

We anticipate that the upgrades would likely focus on Strategy 3 as the most viable and least costly alternative while still providing a measurable reduction of risk of pipeline failure. However, Kennedy/Jenks and the Carmel Area Wastewater District may want to explore Strategies 1 and 2. Because of the vulnerability of the pipeline through Reach 4, consideration of a slope repair may be desirable if an access route can be constructed so that construction equipment and supplies can access the site. This repair strategy would involve rebuilding the slope underneath and below the pipe to provide a properly keyed-in fill slope that would not be prone to slope creep and erosion processes. A lower cost alternative would be to install plate piles in the existing slope to improve, but not necessarily fully arrest, future slope movement. The past performance of the pipeline along the remaining reaches indicates that slope stabilization is probably not warranted.

The possibilities for improving the pipeline and/or foundation supports (Strategy 3) are wide ranging. One may consider re-using the existing foundations, identifying which supports need replacement or underpinning, and upgrading only to the extent necessary. On the other end of the spectrum, the elevated portions of the pipe can be supported on all new foundations. These foundation improvement options can be coupled with replacing the pipe and pipe support system with something that is less affected by movement of the support system and can be easily adjusted to accommodate additional movement. The same strategies for underpinning and new foundations are relevant and consist of deepening the footings with hand excavated underpinning piers, or using drilling equipment to anchor the foundation into bedrock with rock bolts or micropiles. Although larger diameter drilled piers have been installed for pipeline support in unstable slopes, we think that the size of the equipment would preclude drilled piers as a viable foundation alternative for this project. If track-mounted drilling



equipment can access the site, the most robust and most risk averse option would be to support the elevated portions of the pipeline on a trellis or pipe saddles that are founded on a micropile-supported foundation. The micropiles would be drilled into the underlying bedrock. This micropile option would likely involve constructing new foundations rather than attempting to underpin existing shallow pedestal footings.

Based on the above discussion, the foundation improvements would likely consist of replacing the existing concrete pedestals with similar systems but extending deeper below grade to resist the earth pressures from the movement of soil overburden. The foundations should extend a sufficient distance into the bedrock to resist these earth pressures. If the depth to bedrock makes the excavation infeasible, the concrete footing can be secured into the bedrock by drilling small-diameter (approximately 3-inch diameter) rock bolts. We discussed the possible repair strategies with three local engineering contractors specializing in similar foundation systems. Due to the limited accessibility, the excavations and drilling will likely need to be conducted with hand-operated equipment including jackhammers and rotary drills. One contractor indicated larger diameter (approximately 6- to 9-inch diameter) drill holes can be constructed if within 200 feet of their diesel hydraulic power pack unit. The hard rock will likely make drilling progress slow with a high rate of drill bit wear.

The depth to bedrock is difficult to ascertain without a subsurface program consisting of test pits and/or borings. As bedrock outcrops are fairly close to the alignment at Reaches 3, 4 and 5, we anticipate that the colluvium overlying the bedrock at the support locations is relatively thin (perhaps less than about 5 feet deep). The fill and colluvium may be thicker at Reaches 1 and 2 as there were no nearby bedrock outcrops observed.

The transition between the elevated portion of pipeline and the below-grade portion should be carefully considered during development of repair strategies. The first length(s) of buried pipe can also be prone to movement and these should be adequately supported on concrete saddles embedded into the bedrock.

Also, it is important to revegetate the construction areas as soon as practicable after construction. Slopes will need temporary slope protection such as jute or coir netting until the vegetation is re-established.

The potential for and amount of future movement is dependent on additional factors including periods of intense rainfall and earthquakes. These events can lead to additional slope movement above that experienced in the past.



Kennedy/Jenks Consultants
Carmel Meadows Gravity Sewer
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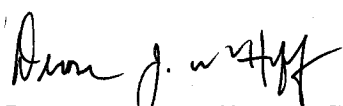
June 14, 2013
Project No. SF13013

CLOSURE

The conclusions and recommendations presented herein are professional opinions based on geotechnical and geologic data and the project as described. The findings and professional opinions presented in this report are presented within the limits prescribed by the client, in accordance with generally accepted professional engineering and geologic practices. There is no other warranty, either express or implied.



Respectfully submitted,
GEOTECHNICAL CONSULTANTS, INC.

 6/14/13
Deron J. van Hoff, P.E., G.E.
Vice President



Kennedy/Jenks Consultants
Carmel Meadows Gravity Sewer
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REFERENCES

Clark, J.C., Dupré, W.R. and Rosenberg, L.I., Geologic Map of the Monterey and Seaside 7.5-Minute Quadrangles, Monterey County, California: A Digital Database, USGS Open-File Report 97-30, 1997.

United States Geological Survey, 2012, Monterey Quadrangle, California, 7.5-Minute Series (Topographic), Map Scale 1:24,000.

PHOTOGRAPHS



Photo 1
Reach 1

Elevated sewer line on concrete pedestal foundation



Photo 2
Reach 1
Facing northwest

PHOTOGRAPHS



Photo 3
Reach 2

From manhole facing northwest



Photo 4
Reach 2

From manhole facing southeast

PHOTOGRAPHS



Photo 5
Reach 3

Elevated sewer line on C-channel supports



Photo 6
Reach 4

Facing northwest – outward rotation of foundation support

PHOTOGRAPHS



Photo 7
Reach 5

Elevated sewer line – facing southeast along northwestern portion of Reach 5



Photo 8
Reach 5

15-foot high supports through steep re-entrant valley

PHOTOGRAPHS



Photo 9
Reach 5

Facing northwest along northwestern portion of Reach 5



Photo 10
Reach 5

Facing southeast along southeastern portion of Reach 5

Appendix C

Alternative Analysis Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST

KENNEDY/JENKS CONSULTANTS

Project: Carmel Meadows Gravity Sewer BH

28-Jun-13

Alternative: Spot Repairs 1399011*00

Estimate Type:

<input checked="" type="checkbox"/> Conceptual	<input type="checkbox"/> Construction		
<input type="checkbox"/> Preliminary (w/o plans)	<input type="checkbox"/> Change Order		
<input type="checkbox"/> Design Development @	% Complete		

Spec. Section	Item No.	Description	Qty	Units	\$/Unit	Total
	1	Manhole Repair	10	EA	990.00	9,900
	2	Removal and mitigation of Trees	15	EA	1,978.06	29,671
	3	Replacement of Pipe Supports	10	EA	6,651.82	66,518
Total						106,089

Subtotals		106,089
Contractor OH&P @ 15%		15,913
Subtotals		122,002
Estimate Contingency @ 30%		36,601
Total Estimate of Project Cost		158,603

OPINION OF PROBABLE CONSTRUCTION COST

KENNEDY/JENKS CONSULTANTS

Project: Carmel Meadows Gravity Sewer BH
28-Jun-13
Alternative: Removal and Replacement of Pipe in Place 1399011*00

Estimate Type: **Conceptual** **Construction**
 Preliminary (w/o plans) **Change Order**
 Design Development @ _____ % Complete

Spec. Section	Item No.	Description	Qty	Units	\$/Unit	Total
	1	Removal and Replacement of Pipe	1,300	LF	66.33	86,235
	2	Manhole Replacement	8	EA	3,222.29	25,778
	3	Replacement of Pipe Supports	20	EA	6,651.82	133,036
	4	Removal and mitigation of Trees	15	EA	1,978.06	29,671
	5	Slope Stabilization	1,139	EA	10.00	11,390
Total						286,110

Subtotals		286,110
Contractor OH&P	@ 15%	42,917
Subtotals		329,027
Estimate Contingency	@ 30%	98,708
Total Estimate of Project Cost		427,735

OPINION OF PROBABLE CONSTRUCTION COST

KENNEDY/JENKS CONSULTANTS

Project: Carmel Meadows Gravity Sewer BH
28-Jun-13
Alternative: New Lift Station and Force Main 1399011*00

Estimate Type: **Conceptual** **Construction**
 Preliminary (w/o plans) **Change Order**
 Design Development @ **% Complete**

Spec. Section	Item No.	Description	Qty	Units	\$/Unit	Total
	1	New Lift Station	1	EA	95,472.47	95,472
	2	4" Force Main through existing streets	2,230	LF	58.66	130,818
	3	Replace (E) Gravity Sewer	160	LF	96.00	15,360
	4	Rebuild S618 to S615	180	LF	66.33	11,940
	5	Pipe Supports	9	EA	6,651.82	59,866
	6	New Utility Service	1	LS	25,000.00	25,000
	7	Operation and Maintenance	1	Years	20,700.24	20,700
Total						359,158

Subtotals		359,158
Contractor OH&P	@ 15%	53,874
Subtotals		413,031
Estimate Contingency	@ 30%	123,909
Total Estimate of Project Cost		536,941

OPINION OF PROBABLE CONSTRUCTION COST

KENNEDY/JENKS CONSULTANTS

Project: Carmel Meadows Gravity Sewer BH

28-Jun-13

Alternative: Horizontal Directional Drill (HDD) 1399011*00

Estimate Type: **Conceptual** **Construction**
 Preliminary (w/o plans) **Change Order**
 Design Development @ _____ % Complete

Spec. Section	Item No.	Description	Qty	Units	Materials \$/Unit	Total
	1	HDD with 6" DR9 HDPE	2,000	LF	524.32	1,048,635
	2	Easement Acquisition	22	EA	20,000.00	440,000
	3	Replace Gravity Sewer	160	LF	96.00	15,360
	4	Rebuild S618 to S615	180	LF	66.33	11,940
	5	Pipe Supports	9	EA	6,651.82	59,866
SUBTOTAL - DIVISION						1,575,802

Subtotals					1,575,802
Contractor OH&P	@	15%			236,370
Subtotals					1,812,172
Estimate Contingency	@	30%			543,652
Total Estimate of Project Cost					2,355,823

EXHIBIT B

BID SET

PROJECT MANUAL
INCLUDING SPECIFICATIONS
FOR
CARMEL MEADOWS GRAVITY SEWER REPLACEMENT PROJECT

CARMEL AREA WASTEWATER DISTRICT
PROJECT NO.

May 2016



KENNEDY/JENKS CONSULTANTS
303 Second Street, Suite 300 South
San Francisco, California 94107
415-243-2150
FAX: 415-896-0999

JOB NO. 1368037*00

PROJECT MANUAL

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02080	Precast Concrete Sectional Manholes
02200	Site Preparation
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DOCUMENT NUMBER 00010

INVITATION TO BID

1. Notice is hereby given that the Owner

Carmel Area Wastewater District
Owner

3945 Rio Road (P.O. Box 221428)
Address

Carmel Monterey CA
City County State

will receive sealed bids for performing the construction of

Carmel Meadows Gravity Sewer Replacement Project
Project Name

according to the Drawings and Project Manual including Specifications prepared by Kennedy/Jenks Consultants and accepted by the Owner and described in general as:

The Work of this Contract comprises the removal of approximately 1,050 LF of gravity sewer pipe and pipe supports and replacement with new restrained joint ductile iron pipe and new pipe supports. Replacement of **eight** existing manholes with new precast manholes. Demolition of all existing aerial pipe supports and the construction of new aerial supports including footing and pinpiles. Construct and maintain a sewer bypass system, including lateral connections, until the new sewer piping has been tested and is operable. Removal of up to 14 oak trees that are within the new gravity sewer alignment and final site restoration.

2. The Engineer's Estimated Construction cost is four hundred and twenty thousand dollars (\$420,000).
3. Questions regarding the type of work required may be addressed to:

Drew Lander at Carmel Area Wastewater District, phone number: (831) 624-1248

4. A pre-bid conference and site visit will be held on Thursday, 16 June 2016 at 9:00 a.m. PST. Contractors who do not attend the pre-bid conference are required to visit the site prior to submitting bids.
5. Sealed bids will be received at:

Carmel Area Wastewater District Administration Building
3945 Rio Road, Carmel CA, 93922
Place

until:

Friday 1 July 2016 3:00 p.m. local time
Day of Week Date Time

Bids received after that time will not be accepted. Bids will be opened in public and read aloud shortly after the specified closing time. Interested parties are invited to attend.

6. Bid security made payable to the Owner is required to accompany each bid. Bid security shall be in the form of a cashier's or certified check or a Bid Bond as required by the Bid Security Document following the Bid Form.
7. Requirements for California Public Works Contracts.

7.1 Wage Rates

The State Director of the Department of Industrial Relations has established the general prevailing rates of per diem wages and rates for overtime and legal holidays in the locality in which the work is to be performed. Not less than said prevailing wages shall be paid for work on this project.

7.2 License Requirements

The Contractor shall possess a valid State of California Class A General Engineering Contractor's License at the time of submitting a bid. The Contractor shall provide its license number classification and expiration date on the Bid Form.

7.3 Security in Lieu of Retainage

Provisions concerning the Contractors' rights to deposit security in lieu of retainage in accordance with California Public Contract Code Sections 10263 and 22300 are covered in the Agreement.

8. No bidder may withdraw its Bid for a period of forty-five (45) days after the time fixed for the opening of the bids, within which time an award will be made.

The Owner reserves the right to reject any and all bids or to waive any irregularities or informalities in any bid or in the bidding.

9. The Drawings and Project Manual including Specifications may be obtained from the Carmel Area Wastewater District:

- Carmel Area Wastewater District
3945 Rio Rd
Carmel, CA 93922
- An electronic copy may be obtained by calling the Carmel Area Wastewater District at (831) 624-1248

10. Time Constraints:

1. Requests for information received less than five (5) days prior to Bid opening may not be answered. (00100 paragraph 5.1)
2. Bids shall remain in effect and subject to acceptance for forty-five (45) days after the date of Bid opening. If a contract is awarded, it will be awarded within the period that Bids are subject to acceptance. (00100 paragraphs 15 and 16.6)

3. The successful Bidder shall sign the required number of counterparts of the Agreement and deliver them together with the required bonds to the Owner within fifteen (15) days after the date of the Notice of Award.
4. The Owner will sign the Agreement and deliver a fully-signed counterpart to the Contractor within ten (10) days after receipt of the required signed counterparts of the Agreement and Satisfactory Bonds from the Contractor. (00100 paragraph 19)
5. The Owner may issue the Notice to Proceed at any time between the time the Agreement is fully signed by all parties and thirty (30) days thereafter.
6. The Contract time shall begin to run on the date stated in the Notice to Proceed and the Contractor shall begin construction at the site within ten (10) days thereafter but not before submitting required insurance certificates.
- 8 The Work shall be fully completed within the Contract Time which is one hundred twenty (120) days as stated in the Agreement.
8. Progress payments shall be made monthly and shall cover work performed up to the Application for Payment Date, which shall be the last day of each month. The Contractor shall submit it's Application for Payment at least five (5) days prior to the Application for Payment Date. The Owner shall make payment within twenty five (25) days after the Engineer issues a Recommendation for Payment.

By order of _____

Carmel Area Wastewater District

END OF INVITATION TO BID

Article 1. General

Bidding Documents containing the Bidding Requirements are provided to prospective bidders to enable them to prepare a bid. Documents that must be submitted with the Bid are listed at the end of the Instructions to Bidders.

Article 2. Defined Terms

2.1 Terms used in these Instructions to Bidders which are defined in the GENERAL CONDITIONS of the Construction Contract have the meanings assigned to them in the General Conditions.

2.2 The term "Addenda" (Addendum) means the written or graphic instruments issued prior to execution of the Agreement which modifies or interprets the Bidding Documents and Contract Documents.

2.3 The term "Bidder" means any person, firm or corporation submitting a Bid directly to Owner, as distinct from a sub-bidder, who submits a bid to a Bidder.

2.4 The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

2.5 The term "Bid" means the offer or proposal of the Bidder submitted on the prescribed forms setting forth the prices for the work to be performed and furnishing other required information.

2.6 The term "Base Bid" means the amount bid on all of the work required to complete a single Contract as described in the Contract Documents. The Base Bid submitted by the successful bidder combined with any additive or deductive amounts bid on alternates accepted by the Owner and any other modifications becomes the Contract Price.

2.7 The term "Bidding Documents" includes the Invitation to Bid, Instructions to Bidders, Information Available to Bidders, the Bid Form with related documents, the Contract Conditions, Specifications and Drawings (and includes all Addenda issued prior to receipt of Bids.)

2.8 The terms "Contract" and "Project" are defined in the General Conditions paragraph 1.1.

2.9 The term "Notice of Award" is a written notice by the Owner to the Bidder that it is the successful Bidder and upon the Bidders compliance with the Owner's requirements the Owner will execute the Agreement.

Article 3. Copies of Bidding Documents

3.1 Complete sets of Bidding Documents must be used in preparing Bids; neither the Owner nor the Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.2 The Owner and the Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer or grant a license for any other use.

Article 4. Examination of Contract Documents and Site

4.1 It is the responsibility of each Bidder before submitting a Bid to (a) examine the Bidding Documents thoroughly; (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work; (c) dig test pits or drill test holes to further evaluate subsurface soil conditions to the extent the Bidder considers necessary; (d) consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work; (e) study and carefully correlate Bidder's observations with the Contract Documents; and (f) notify the Engineer of all conflicts, errors or discrepancies in the Contract Documents.

4.2 Additional information available to Bidders, if any, is described in Document Number 00200, Information Available to Bidders.

4.3 Differing Conditions:

.1 General Conditions paragraphs 3.3 through 3.5 limit the extent to which the Contractor may rely on information provided by the Owner or the Design Engineer with regard to: a) subsurface soil conditions, b) existing concealed or underground utilities and underground facilities, and c) existing structures and facilities.

.2 General Conditions paragraphs 3.6 and 3.8 identify the Contractor's responsibility: a) for using care in making excavations and in doing demolition, b) for damage to existing utilities and underground facilities and for loss of use thereof, and c) for the protection of workers and others from known and unknown or concealed hazards.

.3 General Conditions paragraph 3.7 identifies conditions under which the Contractor may be entitled to a change in Contract Time or Price due to differing or unknown conditions.

4.4 The lands upon which the Work is to be performed are on the property of the Carmel Area Wastewater District Wastewater Treatment Plant. Equipment staging areas are available at the Wastewater Treatment Plant site.

4.5 Bidder's Representations. By submitting a bid each bidder represents and warrants:

.1 It has visited the site and has reviewed the Bidding Documents and the Information Available to Bidders; it has made any other investigations, explorations or tests and has obtained any other data it considers necessary for preparation of its Bid; and it has read and understands provisions in the General Conditions relevant to differing and unknown conditions.

.2 It has read, studied and understands the entire set of Bidding Documents including the Construction Drawings, Specifications and General Conditions and finds them fit and sufficient for the purpose of preparing its Bid and constructing the Work required.

.3 Its Bid is based on providing all of the material, labor, equipment and services necessary to complete the Work in full compliance with the Contract Documents without exception.

Article 5. Interpretations and Addenda (Before Contract Award)

5.1 All questions about the meaning or intent of the Contract Documents are to be directed to the Engineer's Interpretations or responses considered necessary by the Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by the Engineer as having received the Bidding Documents. Questions received less than five days prior to the date for opening of bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or responses will be without legal effect and are not to be relied upon by the Bidders unless they are integrated into the written Contract Documents.

5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by the Engineer.

Article 6. Bid Security

Each Bid must be accompanied by Bid Security conforming to the requirements of Document Number 00410, Bid Security.

Article 7. Contract Time

The dates (Contract Time) within which the Work is to be Substantially Completed and Finally Completed and ready for acceptance and final payment are set forth in the Bid Form and the Agreement.

Article 8. Liquidated Damages

Provisions for liquidated damages, if any, are set forth in the Agreement.

Article 9. Substitute or Proposed Equivalent ("Or Equal") Items

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or Proposed Equivalent ("Or Equal") items. Whenever it is indicated in the Drawings or specified in the Specifications that a Proposed Equivalent ("Or Equal") item of material or equipment may be furnished or used by the Contractor if acceptable to the Engineer, such acceptance will not be considered by the Engineer until after the Effective Date of the Agreement. The procedure for submission of any such Proposed Equivalent ("Or Equal") item by the Contractor for the Engineer's review and consideration is set forth in Article 8 of the GENERAL CONDITIONS under Specified Items/Proposed Equivalents and may be supplemented in Division One.

Article 10. Listing of Subcontractors

The Contractor's Bid must include a listing of subcontractors conforming to the requirements and format of Document Number 00430.

Article 11. Bid Form

11.1 The Bid Form is included with the Bidding Documents; additional copies may be reproduced by the Bidder.

11.2 All blanks on the Bid Form must be completed legibly in ink or by typewriter. Bid amounts must be stated in words and in figures.

11.3 Bids by corporations must be executed in the corporate name by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

11.5 All names must be legibly printed in ink or typed below the signature.

11.6 The Bid shall contain an acknowledgement of receipt of all ADDENDA (the numbers of which must be filled in on the Bid Form). ADDENDA are designated as Document Number 00900.

11.7 The address and telephone number for communications regarding the Bid must be shown.

11.8 When the Bidding Documents include more than one Contract, Bidders may submit a Bid for any of the individual portions of the project defined in Bidding Documents as a separate Contract or any combination of Contracts provided for in the Bid Form.

11.9 Bids must include a single lump sum price for the Base Bid and a separate price or state "no change in price" for each Alternate described in the Specifications and listed on the Bid Form. The Bid for each Alternate will be the amount to be added to or deducted from the Base Bid if the Owner selects the Alternate. Bids that do not include a price for every Alternate may be rejected.

Article 12. Submission of Bids

Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title and, when the Project includes more than one Contract, with the designated Contract or portion of the project for which the Bid is submitted. The envelope shall bear the name and address of the Bidder and the Bid shall be accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

Article 13. Modification and Withdrawal of Bids

13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

13.2 If, within five days after Bids are opened, any Bidder files a duly signed, written notice with the Owner and promptly thereafter demonstrates in detail to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, how the mistake occurred, that the mistake was not due to an error in judgment or to carelessness in inspecting the site or reading the plans or specifications, that Bidder may withdraw its Bid. A Bidder who withdraws its Bid will be disqualified from further bidding on the Work to be provided under the Contract Documents.

Article 14. Opening of Bids

Bids will be opened and (unless obviously non-responsive) read aloud publicly. An abstract of the amounts of the Base Bids and major Alternates (if any) will be made available to Bidders after the opening of Bids.

Article 15. Bids to Remain Subject to Acceptance

All Bids will remain subject to acceptance for forty-five (45) days after the day of the Bid opening, but the Owner may, in its sole discretion, release any Bid and prior to that date. Bids on Alternates shall remain valid for 45 days after execution of the Agreement.

Article 16. Award of Contract

16.1 The Owner reserves the right to reject any and all Bids and to waive any and all irregularities in Bids not involving price, time or changes in the Work. The Owner reserves the right to reject any nonconforming, nonresponsive, incomplete, unbalanced or conditional Bids. The Owner also reserves the right to reject the Bid of any Bidder that in the Owner's judgment would not be financially or otherwise responsible or that does not meet pertinent minimum experience criteria established by the Owner and stated in the Instructions to Bidders.

16.2 In evaluating Bids, the Owner will consider whether or not the Bids comply with the prescribed requirements, and include such Alternates, unit prices and other data, as may be required in the Bid Form and supplements thereto.

16.3 Discrepancies in the multiplication of units of Work and unit prices, if any, will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between bid amounts stated in words and in figures will be resolved in favor of the amount stated in words.

16.4 The Owner may accept any Alternate without regard to the order in which they are listed and will determine the lowest Bidder on the basis of the Base Bid and the Alternates accepted.

16.5 If the Contract is to be awarded, it will be awarded to the lowest qualified, responsible and responsive Bidder, defined as the sum of all project tasks in the Bid form, that in the Owner's judgment will be in the best interests of the Project.

16.6 If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within the number of days that Bids are subject to acceptance as stated in Article 14.

16.7 If the Contract is to be awarded, the Owner at his discretion, may only provide Notice to Proceed on individual project tasks, as listed on the Bid Form. These tasks shall be completed for the price specified in the Bid Form, and within any designated schedule constraints as specified in the Bid Form, the Agreement, and Section 01010 Summary of the Work and Contract Consideration.

Article 17. Contract Security

17.1 The Owner's requirements for performance and payment bonds are set forth in Article 4 of the General Conditions.

17.2 The Successful Bidder shall engage a surety who through binding agreement will assume liability for all debts and responsibility for the acceptable performance of the Work under this Contract if the Contractor defaults.

17.3 When the Successful Bidder delivers the executed Agreement to the Owner, it must be accompanied by the required bonds in the forms contained in the section of the Project Manual titled Contract Forms.

Article 18. Insurance

18.1 The Owner's requirements for insurance are set forth in Article 4 of the General Conditions.

18.2 The Successful Bidder shall purchase insurance from an insurance company or companies who meet the requirements of General Conditions paragraphs 4.3 through 4.5, will provide the required insurance and will furnish insurance certificates.

18.3 The Successful Bidder shall deliver the required insurance certificates to the Owner and Engineer prior to beginning work. In no case will the Notice to Proceed be considered as allowing the Work to begin until the insurance certificates are received by the Owner, even though the Contract Time as stated in the Notice to Proceed will commence to run.

18.4 If Acts of God insurance is required, it will be quoted as a separate bid item.

Article 19. Signing of Agreement

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within fifteen (15) days thereafter the Contractor shall sign and deliver the required number of counterparts of the Agreement together with the required Bonds to the Owner. Within ten (10) days thereafter the Owner will deliver one fully signed counterpart to the Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification which shall be signed by the parties to the Agreement.

Article 20. Limitation of Liability

The Agreement contains a clause limiting the liability of the Owner and the Design Engineer to the Contractor for defects in the Contract Documents.

Article 21. Retainage

The percentage of retainage that will be withheld from each Progress Payment is set forth in the Agreement.

Provisions concerning the Contractor's rights to deposit securities in lieu of retainage in accordance with California Public Contract Code Sections 10263 and 22300 are set forth in the Agreement.

Article 22: Sales and Use Taxes

Owner is not exempt from California State Sales and Use Taxes on materials and equipment to be incorporated in the Work. Said taxes shall be included in the Contract Price.

Article 23. Pre-bid Conference

A pre-bid conference will be held at a time specified by the Owner. Representatives of the Owner and the Engineer will be present to discuss the Project. Bidders who do not attend and participate in the conference will be required to visit the site at another time prior to bidding to be eligible to bid.

Article 24. Access to Site

The Contractor may arrange with the Owner for access to the site at the Owner's convenience for the purpose of digging test pits or drilling test holes to evaluate subsurface soil conditions. The Contractor shall fill all holes and leave site in "as found condition."

Article 25. Minimum Experience Requirement

Bidder shall submit Document Number 00420 - Bidder's Qualifications, with its Bid to verify it has the minimum experience qualifications required for bidding.

In the Owner's judgment, the minimum experience requirement for Bidders to Bid on this Contract is the successful completion of at least two projects similar or greater in size complexity and construction cost to the project being bid at this time. Projects shall have been satisfactorily completed within the last 3 years.

Article 26. Bidder's Special Technical Experience Requirement

Bidder shall submit Document Number 00420 - Bidder's Qualifications, with its Bid to verify it has the minimum experience qualifications required for bidding.

Because of the specialized nature of this project, the Owner has determined that the minimum experience for the Bidders to Bid on this contract is the successful completion of at least four (4) projects installing industrial mechanical systems. Projects shall have been satisfactorily completed within the last 3 years.

Article 27. Documents that Must be Submitted with Bids

Bidders must submit the following signed Documents with their Bids:

<u>Document Number</u>	<u>Title</u>
00300	Bid Form
00410	Bid Security
00414	Security for Compensation Certificate
00420	Bidders Qualifications
00430	Subcontractor List
00480	Noncollusion Affidavit

END OF INSTRUCTIONS TO BIDDERS

INFORMATION AVAILABLE TO BIDDERS

Article 1

For the convenience of Bidders, the Owner is providing the items and information listed below which the Owner has in its possession and which may relate to the Work, the Project, or the site. The Owner has not made any independent investigation to determine the accuracy or completeness of any such items and information; and all such items and information are provided or made available to Bidders without any representation or warranty by the Owner whatsoever as to their accuracy, completeness, or relevancy. Bidders are solely responsible for independently evaluating any such items and information; and such items and information shall not be relied upon by the Bidders without careful independent verification.

- 1.1 Existing Wastewater Treatment Plant As-Built Drawings: Are available for review at the District Office.
- 1.2 Geotechnical Data: The Geotechnical Report for the Carmel Meadows Gravity Sewer Replacement Project by Geotechnical Consultants, Inc. dated March 2014 is provided in Appendix A as part of the Project Manual. The report is for "Information Only" and is not part of the contract documents.
- 1.3 Access to the Work Site: Work site is accessible from Calle La Cruz and Mariposa Drive.
- 1.4 Easements: The owner retains an existing easement that is 20 feet wide (approximately 10 feet on each side of the existing sewer centerline) over the length of the Carmel Meadows gravity sewer. The existing easement is shown on the drawings. A Temporary Construction Easement will be obtained by the Owner for the access from Mariposa Drive, and information will be available at a later date.

END OF INFORMATION AVAILABLE TO BIDDERS

DOCUMENT NUMBER 00300

BID FORM

Project Identification: Carmel Meadows Gravity Sewer Replacement Project

This Bid is Submitted To: Carmel Area Wastewater District
3945 Rio Road (Physical Address)
P.O. Box 221428 (Mailing Address)
Carmel, CA 93922
831-624-1248 (Phone)

The Design Engineer is: Kennedy/Jenks Consultants:
303 Second Street, Suite 300 South
San Francisco, CA 94107
415-243-2150 (Phone)

Article 1

The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

Article 2

Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for forty five (45) days after the day of Bid opening. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of the Owner's Notice of Award.

Article 3

In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

- (a) Bidder has examined copies of all the Bidding Documents.
(b) Bidder has examined copies of the following Addenda (receipt of which is hereby acknowledged):

Table with 2 columns: Date, Number. Three rows of blank lines for input.

- (c) Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, site locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- (d) Bidder has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in Document Number 00200, Information Available to Bidders.

Bidder has read and accepts the provisions in General Conditions paragraphs 3.3 through 3.5 which limit the extent to which the Contractor may rely on information provided by the Owner or the Design Engineer with regard to: a) subsurface soil conditions, b) existing concealed or underground utilities and underground facilities, and c) existing structures and facilities.

- (e) Bidder has read and accepts the provisions in General Conditions paragraphs 3.6 and 3.8 identifying the Contractor's responsibility: a) for using care in making excavations and in doing demolition, b) for damage to existing utilities and underground facilities and for loss of use thereof, and c) for the protection of workers and others from known and unknown or concealed hazards.
- (f) Bidder has read and accepts the provisions in General Conditions paragraph 3.7 which identifies the limited conditions under which the Contractor may be entitled to a change in Contract Time or Price due to differing or unknown conditions.
- (g) Bidder has visited the site and has reviewed the Bidding Documents and the Information Available to Bidders and it has made any other investigations, explorations or tests and has obtained any other data it considers necessary for preparation of its Bid.

Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the Contract Documents and Bidder has read and understands provisions in the General Conditions relevant to differing and unknown conditions.

- (h) Bidder has given Engineer written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder.
- (i) Bidder has read, studied and understands the entire set of Bidding Documents including the Construction Drawings, Specifications and General Conditions and finds them fit and sufficient for the purpose of preparing its Bid and constructing the Work required.
- (j) Bidder represents that its Bid is based on providing all of the material, labor, equipment and services necessary to complete the Work in full compliance with the Contract Documents without exception.
- (k). The Bidder declares that it possesses a valid State of California Class A - General Engineering Specialty Contractor's license at the time of submitting this Bid.

Bidder shall state its license number, classification and expiration date on its Bid Form.

- (a) **TRENCH SHEETING AND SHORING.** Bidder shall list on its Bid as a separate Bid Item costs associated with trench sheeting, shoring and bracing for all trenching and

excavation work 5 feet and deeper as required by Section 6707 of the California Labor Code.

- (b) **PREVAILING WAGE RATES.** The undersigned agrees that, if awarded the Contract, the undersigned and all of its subcontractors shall pay all laborers, workers, and mechanics employed in the performance of such Contract, or any subcontract thereunder, not less than the general prevailing rate of per diem wages and rates for overtime and legal holidays in the locality in which the work is to be performed, as ascertained and determined, by the statutes and regulations applicable thereto.
- (c) **NONCOLLUSION AFFIDAVIT.** In accordance with Public Contract Code Section 7106, Bidders are required to execute and submit with their Bid Document Number 00480 "Noncollusion Affidavit."
- (d) **USE OF BID DEPOSITORIES.** The Bidder declares that it has not used subcontractors' bids from a bid depository that in any way attempts to restrict, control, influence or regulate free open price competition among subcontractors in the submission of their bids to prime Bidders.
- (e) **SECURITY FOR COMPENSATION CERTIFICATE.** Bidders are required to execute and submit with their Bid Document Number 00414 "Security for Compensation Certificate."

Article 4

Bidder will complete the Work for the following lump sum price(s):

- 1. Gravity Sewer Removal and Replacement: Demolition of existing gravity sewer, pipe supports and manholes. Installing new gravity sewer pipe, manholes, pipe supports, and foundations. Work also includes providing and maintaining a bypass sewer pipeline around the work area, tree removal, earthwork, site restoration, and all associated work as shown on the drawings and as described in the Contract Documents.

_____ (\$ _____)
(use words) (figures)

- 2. Sheeting, Shoring, and Bracing For Trenches: Cost of sheeting, shoring and bracing for all trenching and excavation work 5 feet and deeper in accordance with California Labor Code Sections 6707.

_____ (\$ _____)
(use words) (figures)

TOTAL LUMP SUM AMOUNT (sum of Gravity Sewer Removal and Replacement, and Sheeting, Shoring and Bracing for Trenches)

_____ (\$ _____)
(use words) (figures)

Article 6

- (a) Bidder agrees that the Work will be finally complete and ready for acceptance and final payment in accordance with Article 13 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- (b) Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.
- (c) Bidder accepts the Limitation of Liability Clause contained in the Agreement.

Article 7

The following documents are attached to and made a condition of this Bid:

- (a) Security for Compensation Certificate
- (b) Subcontractor List
- (c) Noncollusion Affidavit

Article 8

Communications concerning this Bid shall be addressed to:

Drew Lander
 Carmel Area Wastewater District
 3945 Rio Road (Physical Address)
 P.O. Box 221428 (Mailing Address)
 Carmel, CA 93922
 831-624-1248 (Phone)

Telephone Number: 831-624-1248
 Fax Number: 831-624-0811
 Email: Lander@CAWD.org

Article 9

The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

Bidder declares that it does possess a contractor's license of the required classification, valid in the appropriate jurisdiction at the time of submitting this bid.

Contractor's license number: _____

License classification: _____

License expiration date: _____

SUBMITTED on _____, 2016.

If Bidder is:

An Individual

By: _____ (SEAL)

Individual's Name

(Signature)

Doing business as: _____

Business Address: _____

Telephone Number: _____

A Partnership

By: _____ (SEAL)

(Firm Name)

(General Partner Name)

(Signature)

(Title)

Business Address: _____

Telephone No.: _____

A Corporation

By: _____
(Corporation's Name)

(State of Incorporation)

By: _____
(Name of Person Authorized to Sign)

(Signature)

(Title)

Attest _____
(Secretary)

Business Address: _____

Telephone No.: _____

Home Office Address (if different from above): _____

A Joint Venture

By: _____
(Name)

(Signature)

Address: _____

Telephone Number: _____

By: _____
(Name)

(Signature)

Address: _____

Telephone No.: _____

Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture shall be in the manner indicated above.

END OF BID FORM

DOCUMENT NUMBER 00410

BID SECURITY

1.1 Bid Security, made payable to the Carmel Area Wastewater District, shall accompany each Bid. Bid Security shall be in the form of a certified or cashier's check or bid bond in the amount of not less than ten percent (10%) of the Bidder's maximum price (in the form attached). Bid Bond shall be executed by such sureties as are named in the current list of "Certified Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds or Certified Reinsurer Companies Holding Certificates Of Authority As Acceptable Reinsuring Companies" published in Circular 570 (most recent amendment) by the Audit Staff Bureau of Accounts, U.S. Treasury Department (www.fms.treas.gov/c570/index.html) and is admitted to issue bonds in the states in which the Project is located and all Work is performed. All bonds signed by an agent shall be accompanied by a certified copy of the authority to act.

1.2 Bid Security shall remain subject to acceptance for forty-five (45) days after the day of the Bid opening, but the Owner may, at its sole discretion, release any Bid and return the Bid Security prior to that date.

1.3 The Bid Security of the successful Bidder will be retained until such Bidder has within fifteen (15) days of issuance of written notice of contract award;

- (a) Executed the contract agreement,
- (b) Furnished a performance bond and a payment bond fully executed as described in the Contract Forms section.
- (c) Furnished certificates of insurance as described in the General Conditions, and

If the successful Bidder fails to deliver the executed documents described above within fifteen days after Notice of Award, the Owner may annul the Notice of Award and the Bid Security of that Bidder will be forfeited.

1.4 Within ten (10) days after the award of the contract, Carmel Area Wastewater District will, upon request, return the proposal guarantees accompanying the proposals, which are not considered in making the award. All other proposal guarantees will be held until the contract has been finally executed. They will then, upon request, be returned to the respective bidders.

1.5 Bid Security with Bids that are not competitive will be returned within seven days after the Bid.

BID BOND FORM

KNOW ALL PERSONS BY THESE PRESENTS: That we, _____,
_____, as Principal, and _____,
_____, as Surety, are held and firmly bound unto the
Carmel Area Wastewater District, as obligee, hereinafter called CAWD, in the penal sum of _____
Dollars, for the
payment of which the Principal and Surety bind themselves, their heirs, executors,
administrators, successors and assigns, jointly and severally, by these presents.

The condition of this obligation is such that if CAWD shall make any award to the Principal for the **Carmel Meadows Gravity Sewer Replacement Project** according to the terms of the proposal or bid made by the Principal therefore, and the Principal shall duly make and enter into a contract with CAWD in accordance with the terms of said proposal or bid and award and shall give bond for the faithful performance thereof, with Surety or Sureties approved by CAWD; or if the Principal shall, in case of failure so to do, pay and forfeit to CAWD the penal amount of the deposit specified in the call for bids, then this obligation shall be null and void; otherwise it shall be and remain in full force and effect and the Surety shall forthwith pay and forfeit to CAWD, as penalty and liquidated damages, the amount of this bond.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this _____ day of _____, 2014 the name and corporate seal of each corporate party being hereto affixed, and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(SEAL) _____
Principal

(SEAL) _____
SURETY
BY: _____
TITLE: _____

END OF BID SECURITY

DOCUMENT NUMBER 00414

SECURITY FOR COMPENSATION CERTIFICATE
(To be submitted with Bid)
(Required by Section 1861, California Labor Code)

TO: Carmel Area Wastewater District
(Owner)

I am aware of the provisions of Section 3700 of the Labor Code of the State of California which require every employer to be insured against liability for workers' compensation claims or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the Work of this Contract.

(Signature of Bidder)

(Type or Print Name)

(Title)

(Company)

(Business Address)

(Place of Residence)

END OF SECURITY FOR COMPENSATION CERTIFICATE

DOCUMENT NUMBER 00416

BIDDER'S REFERENCES
(To be submitted with Bid)

Reference is hereby made to the following bank or banks about the financial responsibility of the Bidder:

<u>Name of Bank</u>	<u>Address</u>
_____	_____
_____	_____
_____	_____

Reference is hereby made to the following surety company or companies about the financial responsibility and general reliability of the Bidder:

Name of Surety Company _____

Name of Surety Company _____

Signature of Bidder _____
Title _____
Company _____
Address _____

END OF BIDDER'S REFERENCES

DOCUMENT NUMBER 00430

SUBCONTRACTOR LIST
(To be submitted with Bid)

Each Bidder shall set forth below:

(a) The name and the location of the place of business of each Subcontractor who will perform work or labor, fabricate a portion of the work or improvement according to detailed drawings in the project Drawings, or render service to the Contractor in or about the construction of the work in excess of one-half of one percent of the Contractor's total price or ten thousand dollars (\$10,000), whichever is greater.

(b) The portion of the work which will be done by each such Subcontractor. The Contractor shall list only one Subcontractor for each portion of the work.

If the Bidder fails to specify a Subcontractor for any portion of the work as above-stated, or if the Bidder lists more than one Subcontractor for the same portion of the work, he agrees to perform that work himself. The following is submitted concerning Subcontractors:

<u>Name:</u> <u>Subcontractor</u>	<u>Address</u> <u>Shop, Mill or Office</u>	<u>Class</u> <u>of</u> <u>Work</u>	<u>Portion of</u> <u>Work to be</u> <u>Done</u>	<u>Subcontractor's</u> <u>License Number</u> <u>and Class</u>

List alternate numbers and changes required in Subcontractors due to alternate selection on a separate copy of this form.

(Signature of Bidder)

END OF SUBCONTRACTOR LIST

DOCUMENT NUMBER 00480

NONCOLLUSION AFFIDAVIT
(To be submitted with Bid)

In accordance with Section 7106 of the State of California Public Contract Code, Bidders are required to execute the following Noncollusion Affidavit.

NONCOLLUSION DECLARATION TO BE SUBMITTED WITH BID

I, _____, declare that I am _____
(Name) (Title)
of _____, the party making the foregoing bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder or fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee, to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Executed on _____, 2016, in _____

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

(Signature of Declarant)

END OF NONCOLLUSION AFFIDAVIT

DOCUMENT NUMBER 00500

AGREEMENT

THIS AGREEMENT made and entered into this _____ day of _____, 2016, by and between Carmel Area Wastewater District, Monterey County, State of California, herein called the Owner, by and through its Secretary, and _____, herein called the Contractor.

IT IS AGREED:

Article 1. WORK

In consideration of the agreements herein made by the Owner and the sums of money to be paid to the Contractor by the Owner in the manner and form as provided in the attached Contract Documents, the Contractor agrees to furnish all labor, tools, appliances, equipment, plant and transportation, and any and all other expenses necessary or incidental to the performance of the Work as specified or shown in the Contract Documents including such alternates and additional bid items as are listed in Article 3. The Work is generally described as follows:

The Work of this Contract comprises the removal of approximately 1,050 LF of gravity sewer pipe and replacement with restrained joint ductile iron pipe. The existing sewer piping and new sewer piping consists of both above grade and below grade sections. Replacement of eight existing manholes with new precast manholes. Demolition of all existing aerial pipe supports as shown and the construction of new aerial supports including footing and pinpiles. Construct and maintain a sewer bypass system, including lateral connections, until the new sewer piping has been tested and is operable. Removal of up to 14 oak trees that are within the new gravity sewer alignment.

The Contract Documents which define the Work covered by this Agreement are those prepared by the Design Engineer Kennedy/Jenks Consultants and filed in the office of the Secretary identified by the signatures of the parties to this Agreement.

The Work was designed by and the Contract Documents were prepared by Kennedy/Jenks Consultants herein referred to as the Design Engineer.

The Owner's representative during the construction phase will be Kennedy/Jenks Consultants, herein referred to as the Engineer who will assume the duties and responsibilities and will have the rights and authority assigned to the Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

Article 2. CONTRACT TIME AND LIQUIDATED DAMAGES

(a) Time of Performance: In accordance with the Specifications the Contractor further agrees to plan the Work and to prosecute it with diligence and shall commence the Work ten (10) days after the date established in Notice to Proceed from the Owner, and shall Finally Complete the Work with the Contract Time of 120 days.

(b) Liquidated Damages: The Owner and the Contractor recognize that time is of the essence of this Agreement and that the Owner will suffer financial loss if the Work is not completed within the times specified in paragraph (a) above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Owner and the Contractor agree that as liquidated damages for delay (but not as a penalty) the Contractor shall pay the Owner five hundred dollars (\$500.00) for each day that expires after the dates specified in Article 2 (a) for Completion until the Work is complete and the Owner issues notice that the Work is substantially complete.

Article 3. CONTRACT PRICE

The Owner shall pay the Contractor for completion of the Work in accordance with the Contract Documents in current funds as follows:

For all work required by the Contract Documents to be provided under the Base Bid the sum of: _____ (\$ _____)
words figures

The total Contract Price for all work awarded is:

_____ (\$ _____)
words figures

Article 4. RETAINAGE

(a) The Owner will withhold 10% as retainage from each progress payment due to the Contractor. Retainage shall be paid to the Contractor at the time of Final Payment as set forth in paragraph 13.13 of the General Conditions.

(b) In accordance with California Public Contract Code Sections 10263 and 22300, the Contractor is hereby permitted to substitute securities of the kind listed below in place of the retention withheld in accordance with this section, or any other moneys withheld by the Owner to insure performance of this contract. At the request and expense of the Contractor, securities equivalent to the amount withheld may be deposited directly with a state or federally chartered bank as the escrow agent, who shall pay such moneys to the Contractor at the time of Final Payment and upon satisfactory completion of this contract. The Owner is authorized to execute documents necessary for this purpose. The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall be entitled to receive any interest thereon. Securities eligible for investment under this provision shall include those listed in Government Code, Section 16430, or bank or savings and loan certificates of deposit. The retention or other moneys withheld will not be released to the Contractor until the Owner has satisfied itself that the substitution of securities has been made in accordance with the provisions of this paragraph.

(c) The period covered by each Application for Payment shall be one calendar month ending on the last day of each month. The Owner shall make payment within twenty-five (25) days after the Engineer issues a Recommendation for Payment.

Article 5. COMPONENT PARTS

This Contract shall consist of the following documents, each of which is on file in the office of the Owner and all of which are incorporated herein and made a part hereof by reference thereto:

- (a) This Agreement
- (b) Performance Bond
- (c) Payment Bond
- (d) Notice of Award
- (e) General Conditions
- (f) Supplementary Conditions
- (g) Addenda Numbered _____ through _____ inclusive
- (h) General Requirements
- (i) Wage Rates
- (j) Technical Specifications
- (k) Drawings
- (l) Executed Change Orders, if any, which may be effective after the date of this Agreement.

There are no Contract Documents other than those listed above.

Article 6. CONTRACT REPRESENTATIONS

In consideration of the Owner entering into this Agreement, the Contractor makes the following representations:

(a) The Contractor has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

(b) The Contractor has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Information Available to Bidders and accepts the limitations set forth in the General Conditions as to the extent to which the Contractor may rely on the information contained in such reports and drawings or otherwise provided by the Owner, the Design Engineer or the Engineer.

(c) The Contractor has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7 (b) above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as the Contractor considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Article 3 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by the Contractor for such purposes.

(d) The Contractor has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing facilities, existing utilities, existing underground or concealed utilities and existing underground facilities at or contiguous to the site and accepts the limitations set forth in the General Conditions as to the extent to which the

Contractor may rely on such information or on other information provided by the Owner, the Design Engineer or the Engineer. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect to said existing facilities, existing utilities, existing underground or concealed utilities and underground facilities are or will be required by the Contractor in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Article 3 of the General Conditions.

(e) The Contractor has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

(f) The Contractor has given the Engineer written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution therefor by the Engineer is acceptable to the Contractor.

Article 7. LIMITATION OF LIABILITY

The Contractor stipulates that it has carefully reviewed the Contract Documents and finds them fit and sufficient for preparation of its bid and for construction of the Work. The Contractor agrees that neither the Contractor nor any of its employees, subcontractors or suppliers will make a claim against the Owner, the Design Engineer or any of their agents, consultants, officers, employees or shareholders for damages on this project such that the total aggregate liability, including the attorneys fees and costs of Owner, the Design Engineer and all of their agents, consultants, officers, employees or shareholders shall not exceed the greater of fifty thousand dollars (\$50,000.00) or five percent of the Contract Price.

Article 8. MISCELLANEOUS

(a) Terms used in this Agreement, which are defined in Article 1 of the General Conditions, will have the meanings indicated in the General Conditions.

(b) No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

The Owner and the Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, the Owner has caused these presents to be executed in triplicate by its officers, thereunto duly authorized, and the Contractor has subscribed same, all on the day and year first above written. One counterpart each has been delivered to the Owner, the Contractor and the Design Engineer.

OWNER: Carmel Area Wastewater District

(SEAL)

ATTEST:

By

(Signature)

By

(Signature)

Name

Name

(Type or Print)

Title:

Address for giving notices:

CONTRACTOR:

By _____
(Signature)

Name _____
(Type or Print)

Title _____

Address _____

(Federal Employer Identification Number)

California Contractor's License Class, License Number
and License Expiration Date

Telephone Number (____) _____

(SEAL)

If the Contractor is a corporation, attach evidence
of authority to sign.

ATTEST:

By _____
(Signature)

Name _____

Title _____
(Type or Print)

Address for giving notices _____

CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT

State of _____

County of _____

On _____, before me, _____,
Name and Title of Officer

personally appeared _____,
Name of Signer(s)

personally known to me - **OR** - proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is(are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature of Notary Public

-----**OPTIONAL**-----

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document

Description of Attached Document

Title of Type of Document: _____

Document Date: _____ Number of Page: _____

Signers) Other than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____ Signer's Name: _____

- Individual
- Corporate Officer
- Title(s): _____
- Partner Limited General
- Attorney-in-Fact
- Trustee
- Guardian or Conservator
- Other _____

- Individual
- Corporate Officer
- Title(s): _____
- Partner Limited General
- Attorney-in-Fact
- Trustee
- Conservator
- Other _____

Signer is Representing:

Signer is Representing:

END OF AGREEMENT

DOCUMENT NUMBER 00610

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that, WHEREAS, the Secretary of Carmel Area Wastewater District hereinafter designated as the "Owner," Monterey County, State of California, has awarded to _____, hereinafter designated as the "Principal," a Contract, the terms and provisions of which Contract are incorporated herein by reference, for constructing the Carmel Meadows Gravity Sewer Replacement Project.

WHEREAS, said Principal is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract;

NOW, THEREFORE, we, the Principal, and _____, as Surety, are held and firmly bound unto the Owner, Engineer and Design Engineer in the penal sum of _____ Dollars (\$ _____), lawful money of the United States, being one hundred percent (100%) of the Contract amount, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and faithfully perform the covenants, conditions, and agreements in the said Contract and any alterations made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Owner, Engineer, Design Engineer, its officers and agents, as therein stipulated, then this obligation shall be null and void; otherwise it shall be and remain in full force and virtue.

As a condition precedent to the satisfactory completion of the said Contract, the above obligation shall hold good for a period of one (1) year(s) after the completion and acceptance of the said work, during which time if the above bounden Principal, his or its heirs, executors, administrators, successors or assigns shall fail to make full, complete and satisfactory repair and replacements or totally protect the said Owner, Engineer, and Design Engineer from loss or damage made evident during said period of one (1) year(s) from the date of acceptance of said work, and resulting from or caused by defective materials or faulty workmanship, in the prosecution of the work done, the above obligation shall be and remain in full force and virtue.

And the said Surety, for value received, hereby stipulates and agrees to waive the provisions of California Civil Code Section 2819 regarding consent to change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligations on this bond; and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work, or to the Specifications.

In the event the Owner, Engineer, Design Engineer or their successors or assigns, shall be the prevailing party in an action brought upon this bond, then, in addition to the penal sum herein above specified, we agree to pay to the Owner, Engineer, Design Engineer or their successors or assigns, all reasonable attorney's fees, costs and expenses incurred, which sum shall be fixed by the court.

IN WITNESS THEREOF, the above bounden parties have executed this instrument under their seals this _____ day of _____, 2016, the name and corporate seal of each corporate party being hereto affixed, and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

(SEAL)

Principal

Witness as to Principal

By _____ (s)

(Address)

(Address)

ATTEST:

(Surety)

(Witness to Surety)

(Attorney-in-Fact)

(Address)

(Address)

If CONTRACTOR is partnership, all partners must execute BOND.

END OF PERFORMANCE BOND

DOCUMENT NUMBER 00620

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

That we, _____,
as Principal, and _____,
organized and existing under the laws of the State of _____, and
authorized to execute bonds and undertaking as sole surety, as Surety, are held and firmly
bound unto any and all persons named in California Civil Code Section 3181 whose claim has
not been paid by the Contractor, company or corporation in the aggregate total of
_____ Dollars (\$_____))
(being 100% of the Contract amount) for the payment whereof, well and truly to be made, said
Principal and Surety bond themselves, their heirs, administrators, successors, and assigns,
jointly and severally, firmly by these presents.

The condition of the foregoing obligation is such that, whereas the above bounden
Principal has entered into a Contract dated _____, 2016, with the
Carmel Area Wastewater District to do the following work, to-wit: Construct the Carmel
Meadows Gravity Sewer Replacement Project.

NOW, THEREFORE, if the above-bounden Principal or his subcontractors fail to pay any
of the persons named in Section 3181 of the Civil Code of the State of California, or amounts
due under the Unemployment Insurance Code with respect to work or labor performed under
the Contract, or for any amounts required to be deducted, withheld, and paid over to the
Employment Development Department from the wages of employees of the Contractor and his
subcontractor pursuant to Section 13020 of the Unemployment Insurance Code of the State of
California, with respect to such work and labor, the surety will pay for the same, in the amount
not exceeding the sum specified in this bond, and also, in case suit is brought upon this bond, a
reasonable attorney's fee, to be fixed by the Court.

This bond shall inure to the benefit of any person named in Section 3181 of the Civil
Code of the State of California so as to give a right of action to them or their assignees in suit
brought upon this bond.

This bond is executed and filed to comply with the provisions of the act of Legislature of
the State of California as designed in Civil Code Sections 3247 to 3252, inclusive, and all
amendments thereto.

And the said Surety, for value received, hereby stipulates and agrees to waive the
provisions of California Civil Code Section 2819 regarding consent to change, extension of time
alteration, or addition to the terms of the Contract, or to the work to be performed thereunder, or
the Specifications accompanying the same, shall in any way affect its obligations on this bond;
and it does hereby waive notice of any such change, extension of time, alteration, or addition to
the terms of the Contract, or to the work, or to the Specifications.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument
under their seals this _____ day of _____, 2016, the name and
corporate seal of each corporate party being hereto affixed and these presents duly signed by
its undersigned representative, pursuant to authority of its governing body.

ATTEST:

Principal Secretary

Principal

(SEAL)

By _____ (s)

Witness as to Principal

(Address)

(Address)

(Surety)

ATTEST:

(Witness to Surety)

(Attorney-in-Fact)

(Address)

(Address)

If CONTRACTOR is a partnership, all partners must execute BOND.

END OF PAYMENT BOND

DOCUMENT NUMBER 00700
GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

USE NOTES

The following text highlights the latest changes to Section 00700 General Conditions. Division 0 and 1 Guide Specifications incorporate the updated changes and cross references to Section 00700.

Article 1: Definitions

1.2: “Contract Documents” do not include the bid. Transfer the numbers from the bid to the Agreement Form 00500.

Article 4: Bonds and Insurance

4.1: **Performance and Payment Bonds.** The length of time for each bond to remain in effect has changed and should be reviewed by counsel for the Client. The Surety for each bond must be on the U.S. Treasury’s Circular 570, which is accessible on the Internet. The Client should verify each surety is acceptable.

4.3: **Insurance Requirements.** These requirements are new, detailed and extensive. They are important protection for the Client and Kennedy/Jenks. Specific ISO (Insurance Services Office) Endorsement forms are required. Newer versions are not acceptable as they often limit the extent of coverage.

4.4: **Certificates of Insurance.** Certificates of Insurance and endorsements to the Contractor’s policies are required to be provided to the Owner and Engineer before the work begins and along with the Application for Final Payment.

Article 5 – Contractor

Contractor’s Construction Schedule

5.16: Detailed CPM schedules are required.

5.17: Float has been allocated in the Agreement. The Contractor waives all claims for compensation due to delays, interference or acceleration. The Contractor is entitled only to an extension of time of the contract. Counsel for the Owner should review this provision because many states limit its enforceability.

5.32: **Indemnification.** This changed provision provides more protection to the Owner and Kennedy/Jenks than the prior provision.

5.36: Escrowed Bid Documents. The Owner should consider whether to require bid documents to be escrowed. If not, 5.36-5.39 may be deleted by using the Supplementary Conditions.

Article 7 Administration of the Contract

7.8: **Requests for Information (RFI) and Responses:** This is a new form, GC-1 that the contractor must use to request information and we should use to respond. We no longer use “clarifications” as a response to a RFI because in most instances there is not an ambiguity in the documents, just an inability of the Contractor to find the answer.

Article 8 – Submittals

8.3: Proposed Equivalent Form, GC-3 must be used by the Contractor as it contains a number of certifications and specific information that we must rely upon in considering the request.

8.8: **Intent of Contractor’s Review:** Submittals must be on the Submittal Form, GC-2, as it contains a number of certifications.

Article 9 – Changes in the Work

9.4: **Change Orders.** This provision has been modified to include a waiver of known and **unknown claims** by the **OWNER** and Contractor, unless expressly reserved. The reservation should be on the Change Order. This should help to limit the Contractor’s further requests for time or money after the Change Order has been executed.

Article 10 – Claims and Disputes

10.6: **Mediation.** Should direct negotiations not resolve a dispute, controversy or claim, then Mediation is the next step before a lawsuit or arbitration.

Article 13 – Payment and Completion

13.1: **Schedule of Values.** This submittal form is left to the discretion of the Engineer, but should be detailed enough to evaluate Applications for Payment which should use the same schedules and values (but not the same form).

13.2: **Application for Payment.** The Form, GC-4 and the timing has changed. The Form should be used as it contains certifications by the Contractor and a Recommendation (not a certification) by the Engineer. GC-4 is a Microsoft Excel Template.

13.4: **Engineer’s Recommendation for Payment.** We do not certify Applications, we make recommendations to Owners. Owners may withhold additional amounts based upon legal, insurance or other considerations. The timing has changed for issuance of our recommendations.

13.9: **Contractor’s List of Deficiencies:** Previously known as a Punch List, the Contractor now prepares it and we review and modify it as necessary. The sequence of its preparation, our Semi-Final Inspection, and Final Inspection has been modified and is important. These provisions place upon the Contractor the responsibility to determine substantial completion before we go to the site, otherwise the Contractor will pay for our unnecessary site visits.

DOCUMENT NUMBER 00700
GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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DOCUMENT NUMBER 00700
GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1 - DEFINITIONS

1.1 The term "Contract" refers to a single identified portion of the construction which may be the whole or a part of the Project. The Project is the total construction and consists of one or more Contracts performed by the same or separate contractors or by the Owner. A single set of drawings, specifications and contract conditions may include more than one Contract; when combined with the Agreement for an individual Contract they become the Contract Documents for that Contract. The construction performed under a set of Contract Documents is the Work required by an individual Contract.

1.2 The "Contract Documents" consist of the Agreement, General and Supplementary Conditions, Drawings, Specifications, Addenda issued prior to executing the Agreement and modifications issued after executing the Agreement.

1.3 The term "Contract Price" refers to the total monies payable to the Contractor for completion of the Work in accordance with the Contract Documents.

1.4 The term "Design Engineer" refers to the firm that prepared the Contract Documents - Kennedy/Jenks Consultants - and includes all of their officers, directors, shareholders, employees and consultants.

1.5 The term "Drawings" refers to the graphic and pictorial portion of the Contract Documents, showing the design, location, dimensions, details, scope and character of the Work. Drawings may include plans, elevations, sections, schedules, details and diagrams.

The terms Plans, Plan, Drawing and similar terms shall have the same meaning as the term "Drawings."

1.6 The term "Engineer" refers to the person or entity designated by the Owner to provide administration of the Contract.

1.7 The term "Notice to Proceed" refers to a written notice by the Owner to the Contractor authorizing it to proceed with the Work and establishing the date of commencement from which the Contract Time is measured.

1.8 The term "Owner" is the person or entity referred to in the Agreement and includes all of its officers, employees, and consultants.

1.9 The term "Work" means the entire construction required by the Contract Documents completed or in progress and includes all labor, materials, equipment and services necessary to fulfill the Contractor's obligations. The Work does not include the Contractor's tools, equipment, scaffolding, shoring, barricades, guardrails or any other temporary construction or safety devices employed by the Contractor to complete the Work.

1.10 Definitions of other terms are included at the beginning of each Article or in Division 1 Section 01010.

ARTICLE 2 - CONTRACT DOCUMENTS

Contract Relationships

2.1 The Contract Documents constitute the entire Agreement between the Owner and the Contractor for the Work and supersede prior agreements written or oral.

2.2 The Contract Documents shall not be construed to create a duty of any kind (1) on behalf of the Design Engineer or the Engineer and toward the Contractor, any subcontractor, worker, or any other party, or (2) on behalf of the Owner and toward any subcontractor, worker, or any other party.

2.3 Provisions in referenced standards, specifications, manuals, publications, installation instructions, operation and maintenance instructions or codes shall not change the duties or responsibilities between any of the parties involved in this work from those described in these General Conditions.

Correlation, Intent

2.4 It is the intent of the Contract Documents to include everything necessary for the proper execution of the Work as a complete functioning facility that serves the intended purpose. The Contractor shall provide all labor, material, equipment and services required by the Contract Documents or that may

reasonably be inferred from the Contract Documents as being required to produce the intended result.

2.5 The Contract Documents are complementary: What is required by one shall be as binding as if required by all. Organization of the Specifications into sections and the arrangement of the Drawings on separate sheets for Mechanical, Electrical, etc. shall not control the Contractor in dividing the Work among subcontractors or among trades.

Order of Precedence

2.6 In case of conflict between different parts of the Contract Documents, the order of precedence shall be as follows:

- .1 Supplementary Conditions take precedence over the General Conditions and the Specifications including Division 1;
- .2 General Conditions take precedence over the Specifications including Division 1;
- .3 Provisions in Division 1 General Requirements apply to all sections of the Specifications.
- .4 Specifications take precedence over the Drawings;
- .5 Stated dimensions take precedence over scaled dimensions;
- .6 Larger scale drawings take precedence over smaller scale drawings;
- .7 Detailed drawings take precedence over general or typical drawings;
- .8 Specific notes on the Drawings take precedence over schedules; and
- .9 Notes, descriptions or schedules take precedence over graphic representations on drawings.
- .10 Higher quality takes precedence over lower quality.
- .11 Greater number, amount or size takes precedence over lesser number, amount or size.

2.7 The Contractor will be furnished three (3) one-half (½) size Drawings sets, 3 copies of the Project Manual, 1 PDF copy of each and the Contractor may obtain additional copies at their cost of reproduction.

Use of Contract Documents

2.8 The Drawings, Specifications and other documents prepared by the Design Engineer, are instruments of service to which the Design Engineer retains legal title, including copyright rights. These instruments of service shall not be used on other projects, for subsequent changes to this project, and shall not be

changed or modified without the written permission of the Design Engineer.

2.8.1 Nothing herein shall relieve the Contractor of its obligation to notify the Owner of any inconsistencies in the Contract Documents. Should it appear that the Work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents or in the event of a conflict, inconsistency or discrepancy in the Contract Documents, the Contractor shall immediately submit an RFI to the Owner in writing for such further written explanations as may be necessary. Any adjustment(s) to the Work made by Contractor without first obtaining written clarification from the Engineer shall be at Contractor's risk and expense and shall be subject to removal if required by Owner.

2.8.2 Contractor Deviations. No deviation by the Contractor from the Contract Documents relating to any portion of the materials, labor services or equipment required for the Work shall be construed to set a precedent with respect to subsequent interpretation of the Contract Documents or performance of the Work unless such a deviation is documented in a Change Order to the Contract.

ARTICLE 3 - LAND, EXISTING CONDITIONS, LAYOUTS

Land

3.1 The Owner shall furnish access to the land on which the Work is to be performed including rights-of-way and easements for access. The Contractor shall confine its operations to the land furnished or to that portion of the land indicated on the Drawings. The Contractor shall provide all other land that it may require.

Existing Conditions

3.2 Execution of the Agreement by the Contractor is a representation that the Contractor has visited the site and has become familiar with existing and local conditions which may affect the Work and has included all costs associated therewith in its Bid.

Subsurface Soil Conditions

3.3 If information on subsurface soil conditions was obtained for design purposes, the Contractor may rely on the boring logs as a representation of soils that existed at the location of the boring at the time the borings were made but may not rely on the

interpretations or opinions contained in the report nor on the completeness or adequacy of the information for the Contractor's bidding or construction purposes.

Existing Utilities and Underground Facilities

3.4 Information shown with respect to existing concealed or underground utilities and underground facilities is based on data provided by the utility or facility owners or by others. The Contractor may rely on the information shown in the Contract Documents for purposes of establishing the Scope of Work included in the Contract Price but the Owner and the Design Engineer are not responsible for the adequacy or completeness of such information for the Contractor's bidding or construction purposes.

Existing Structures

3.5 Information on existing structures and facilities including concealed utilities was obtained from such records as were available from facility owners and not from exhaustive field investigations. The Contractor may rely on technical data for existing structures and facilities including concealed utilities when such data are shown in the Contract Documents but not on the completeness or adequacy of such data for the Contractor's bidding or construction purposes.

Contractor Responsible for Damage

3.6 The Contractor shall be responsible for:

- .1 verifying the existence and location of all utilities and underground facilities, including the use of potholing, hand excavations and hand demolition;
- .2 coordinating work with utility and facility owners;
- .3 protection of concealed and underground utilities and underground facilities from damage;
- .4 the repair or replacement of utilities or underground facilities damaged by the Contractor's failure to exercise reasonable care; and
- .5 damage to others due to loss of utility service resulting from the Contractor's operations.

Differing Conditions

3.7 If the Contractor encounters: (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character covered by these Contract Documents, (3) material that the Contractor

believes may be hazardous waste as defined by law, the Contractor shall immediately report them to the Engineer. Failure to notify the Engineer of a differing condition prior to performing additional work shall prejudice the Owner and shall be a waiver by Contractor of any and all claims arising from the differing conditions. If the Engineer determines that conditions encountered are materially different from those indicated in the Contract Documents or ordinarily encountered in work of the character required and that the differing conditions cause a change in the Contractor's cost or time, it will recommend an equitable adjustment in Contract Price and/or Time. The Contractor's failure to notify the Owner of differing conditions that cause a reduction in the Contractor's cost or time shall not affect the Owner's right to make a Claim for adjustment in Contract Price and/or Time. If either the Contractor or the Owner disagrees with the Engineer's recommendation, they may make a Claim under Article 10.

Contractor Responsible for Safety Precautions

3.8 The Contractor shall take all precautions required to protect workers and others from known and unknown or concealed hazards including verifying the location of concealed and underground utilities and underground facilities with utility and facility owners, potholing, hand excavation and hand demolition and shall not rely on the adequacy, accuracy or completeness of information provided in the Contract Documents or elsewhere by the Owner, the Engineer or the Design Engineer. The Contractor shall be solely responsible for and take all responsibility for safety in, on, or about the site.

Reference Points, Layout

3.9 The Owner shall provide reference points to establish property corners, a baseline and an elevation. The Contractor shall protect reference points provided by the Owner and shall reset any that are damaged. The Contractor shall hire a surveyor licensed in the state where the project is being built to reset and document baseline reference points, elevation bench marks and property corners that are damaged.

3.10 The Contractor shall layout the Work from the reference points provided and shall be responsible for accurate location, alignment, elevation and level of the completed Work.

ARTICLE 4 - BONDS AND INSURANCE

Performance and Payment Bonds

4.1 The Contractor shall furnish Performance and Payment Bonds, each in an amount equal to the Contract Price as security for the faithful performance and payment of the Contractor's obligations under the Contract Documents. The Payment Bond shall remain in effect for at least two (2) years after final acceptance. The Performance Bond shall remain in force the greater of: (a) four (4) years after final completion and final acceptance of all work, or (b) until the expiration of all Warranties and Guarantees as required by the Contract Documents. All Bonds shall be in the forms prescribed by law and by the Contract Documents and be executed by Sureties named in the current list of "Certified Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds or Certified Reinsurer Companies Holding Certificates Of Authority As Acceptable Reinsuring Companies" published in Circular 570 (most recent amendment) by the Audit Staff Bureau of Accounts, U.S. Treasury Department (www.fms.treas.gov/c570/index.html) and is admitted to issue bonds in the states in which the Project is located and all Work is performed. If the Surety is declared bankrupt or becomes insolvent or its right to do business is terminated by the state where the Work is located or if it ceases to meet the foregoing listing requirement, the Contractor shall provide another Bond meeting the stated requirements. All Bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

4.2 Sureties shall specifically waive all rights of notice of and consent to change, extension of time, alteration or addition to the terms of the Contract. The Contractor shall be responsible for notifying Sureties of all events that may affect them.

Insurance Requirements

4.3 The Contractor shall, at its sole cost, obtain and maintain, in force and effect for the duration of the Contract, including the Guarantee and Warranty periods, insurance of the following types with limits not less than those set forth below, in a company or companies with a Best's rating of no less than A:VII and admitted to issue insurance in the jurisdiction(s) in which all work is to be performed, where the site is located and where any waste is transported or deposited. The Contractor shall require compliance with these Insurance Requirements by its lower tier subcontractors:

.1 Workers' Compensation Insurance, including occupational illness or disease coverage, in accordance

with the laws of the nation, state, territory or province having jurisdiction over the Contractor's employees and Employer's Liability Insurance with limits the greater of the statutory requirements, or \$1,000,000 per accident and, for bodily injury by disease, \$1,000,000 per employee. Coverage shall include all work covered under the U.S. Longshoreman's and Harbor Workers' Compensation Act and Jones Act. The Contractor shall not utilize occupational accident or health insurance policies, or the equivalent, in lieu of mandatory Workers' Compensation insurance, or otherwise attempt to opt out of the statutory Workers' Compensation system. This insurance shall contain a waiver of subrogation against the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants.

.2 Commercial General Liability Insurance (Occurrence Form) ISO Form CG 00 01 12 04 with a full defense and indemnity, and unless modified in the Supplementary Conditions, shall include:

(a) a minimum combined single limit of liability of \$3,000,000 or the limits required by law, whichever is greater for each occurrence for bodily injury and property damage;

(b) a minimum limit of liability of \$3,000,000 each person for personal and advertising injury liability;

(c) a minimum limit of liability of \$3,000,000 each occurrence for products/completed operations liability. The products/completed operations liability shall be maintained in full force and effect for not less than 10 years following completion of any of the Contractor's work;

(d) a general aggregate limit of not less than \$3,000,000, which shall be provided on a per project basis by means of ISO Endorsement CG 25 03 11 85 or approved equivalent;

(e) an endorsement that names the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants as additional insureds. Such endorsement shall be made upon an ISO Endorsement CG 20 10 11 85 or approved equivalent (CG 20 10 04 13 is not equivalent or acceptable), Additional Insured - Owners, Lessees or Contractor (Form B) and shall state "insurance is primary and all other insurance shall be noncontributory" and shall waive all rights of subrogation against the additional insureds;

(f) XCU coverage for claims arising from explosion, collapse and underground damage;

(g) Pollution Impairment Liability coverage of not less than \$1,000,000;

(h) Contractual liability coverage for all oral and written contracts including the indemnity provisions contained herein;

(i) Deductibles shall not exceed \$5,000 per occurrence and shall be the sole responsibility of the Contractor;

(j) Cross Liability, Separation of Insureds endorsement, or coverage for Severability of Interest shall be included;

(k) Claims made policies are not acceptable;

(l) Coverage for Work performed on or within 50 feet of a railroad, by deletion of any limitation or exclusion of coverage on or within 50 feet of a railroad or by a Railroad Protective Liability policy which complies with Article 4.3.2 (a), (d), (e), and (h)-(k).

.3 Automobile Liability Insurance covering use of all owned, non-owned and hired automobiles with a minimum combined single limit of liability for bodily injury and property damage of \$3,000,000 per occurrence, and shall include:

(a) An endorsement that names the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants as additional insureds, states such "insurance is primary and all other insurance shall be noncontributory", and waives all rights of subrogation against the additional insureds;

(b) Cross Liability, Separation of Insureds endorsement, or coverage for Severability of Interest;

.4 Property Insurance shall be on an all-risk policy form and shall include:

(a) A minimum limit of liability in the amount of the initial Contract Price as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles;

(b) The interests of the Owner, the Contractor, the Engineer, and the Design Engineer and each of their officers, employees, agents, consultants, and all tiers of subcontractors, all of whom shall be listed as insureds or additional insureds and the policy shall, by endorsement, waive all rights of subrogation against the insureds and additional insureds and the endorsement shall state: "Subrogation: This insurance shall not be invalidated should the named Insured waive in writing prior to a loss, any right of recovery against any person for loss occurring to the property described.";

(c) Coverage for the Completed Value. If the Owner is damaged by the failure of the Contractor to maintain such insurance, the Contractor shall bear all reasonable costs properly attributable thereto;

(d) Coverage against the perils of fire and extended coverage and all physical loss or damage including, without limitation or duplication of coverage:

(i) lightning, windstorm, hail, smoke, explosion, riot, riot attending a strike, civil commotion, aircraft and vehicles;

(ii) theft, vandalism, malicious mischief, and water damage;

(iii) collapse, flood including tidal waves or overflow from bodies of water, landslide, water pressure or earth movement and earthquake;

(iv) removal of debris resulting from an insured loss and demolition occasioned by enforcement of any applicable legal requirements;

(v) falsework, temporary buildings and safety devices used by the Contractor to perform the Work;

(vi) portions of the Work stored on and off the site and in transit when such portions of the Work are included in an Application for Payment (including Inland Marine coverage and Installation and Equipment Floater coverage as applicable);

(vii) and shall cover compensation for the services of the Design Engineer and the Engineer required as a result of the insured loss.

(viii) flood and tidal wave insurance coverage shall be for the maximum percentage of the Contract Price permitted by law.

(e) Remaining in full force and effect until the Final Payment has been made to the Contractor. The property insurance policy shall be endorsed to allow for partial use or occupancy by the Owner without permitting a cancellation or lapse of insurance coverage;

(f) Deductibles shall not exceed \$5,000 per occurrence with a deductible aggregate of \$5,000. The Contractor shall pay for deductible losses at no cost to any other insured or additional insured.

.5 Boiler and Machinery Insurance shall be provided as required by the Supplementary Conditions or by law.

Certificates of Insurance

4.4 Prior to beginning any Work, the Contractor shall file with the Owner, Design Engineer and Engineer, Certificates of Insurance in a form satisfactory to Owner and Engineer (ACCORD form) along with a copy of all endorsements as required in Article 4.3. The certificates shall name each additional insured required by these General Conditions, shall state "insurance is primary and all other insurance shall be noncontributory", shall waive all rights of subrogation against the additional insureds; and shall also contain a provision that the Owner, Design Engineer and Engineer shall be notified in writing 30 days before the policies may be canceled or allowed

to expire or any reduction in coverage. An additional certificate shall be submitted with the final Application for Payment showing required continuation of coverage beyond the Final Payment.

Property Insurance: Adjustment of Loss

4.5 A loss insured under the Contractor's property insurance shall be adjusted with the Contractor and made payable to the Contractor as fiduciary for the insured, as their interests may appear subject to the requirements of any applicable mortgage clause. The Contractor shall deposit the insurance proceeds in a separate account, and shall distribute payment to the parties in proportion to their cost for repairing or replacing the damaged Work. The Contractor shall provide a complete audited accounting of the distribution of insurance proceeds to all parties of interest.

ARTICLE 5 - CONTRACTOR

5.1 As a material inducement to enter into this Agreement, Contractor represents it and its subcontractors are skilled in the type of work required by the Contract Documents and is licensed in accordance with applicable law. The Contractor shall perform at least ten percent of the dollar value of the Work using personnel on its own payroll.

Supervision

5.2 The Contractor shall supervise and direct the Work using its best skill and attention. The Contractor shall employ a competent superintendent to represent the Contractor at the site at all times work is being performed. The Superintendent shall not be replaced without reasonable cause and notice to the Engineer. Communications given to the Superintendent shall be as binding as if given to the Contractor.

Contractor Responsible for Means and Methods

5.3 The Contractor shall be solely and completely responsible for and have control over construction means, methods, techniques, sequences, procedures and safety and for coordinating all portions of the Work under the Contract Documents. The Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants shall not be responsible for any construction means, methods, techniques, sequences, nor for safety in, on or about the site, nor for coordinating any part of the Work.

Labor, Material and Equipment

5.4 The Contractor shall provide and pay for labor, material, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, communications, and other facilities and services necessary for the proper execution and completion of the Work.

5.5 The Contractor warrants to the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants that materials and equipment furnished under the Contract will be of good quality, that the Work will be free from defects, that all material, equipment, hardware, software and firmware products provided to the Project will strictly conform with the requirements of the Contract Documents. If required by the Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Work not conforming to these requirements, including Proposed Equivalents not Favorably Reviewed, may be considered defective. The Contractor's warranty excludes remedy for damage caused by the Owner's abuse, modification, improper maintenance, improper operation, or normal wear.

5.6 The Contractor shall enforce strict discipline and good order among persons performing the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

5.7 The Contractor shall be responsible to the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants for the acts and omissions of the Contractor's employees, subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

Subcontractors and Suppliers

5.8 Unless listing subcontractors at the time of bidding is required by the bidding documents, the Contractor shall furnish a list of all subcontractors whose work amounts to one-half percent or more of the Contract Price prior to beginning construction. The Contractor shall not contract with any subcontractor to whom the Owner or the Engineer has made reasonable and timely objection.

5.9 Contracts between or among the Contractor, suppliers and subcontractors shall (1) require each supplier and subcontractor to be bound to the Owner, Engineer and Contractor by the terms of these Contract

Documents, and to assume toward the Contractor, the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants all the obligations and responsibilities including but not limited to insurance and indemnity requirements which the Contractor, by these Contract Documents, assumes toward the Owner, the Design Engineer and the Engineer, and (2) at the Owner's option, provide for the assignment of subcontracts to the Owner at Owner's request.

Taxes, Permits, Fees and Notices

5.10 The Contractor shall pay sales, consumer, use, and other similar taxes which are legally enacted when bids are received. The Contractor shall secure and pay for the building permit (less the Plan Review fee) and other permits and governmental fees, licenses and government required inspections necessary for proper execution and completion of the Work including utility connection fees. The Owner will submit the Drawings, Specifications and other required data to the Building Official prior to bidding and will pay for the Plan Review fee. The Owner will pay capital cost assessments such as plant investment fees required by utility owners.

5.11 The Contractor shall give all notices and shall comply with all laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on furnishing and performing the Work.

Patents

5.12 The Contractor shall include in its bid and shall pay royalties and license fees required for the use of all patents. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner, the Engineer, and the Design Engineer and each of their officers, employees, agents and consultants harmless from loss on the account thereof.

Documents at the Site, Record Drawings

5.13 The Contractor shall keep a complete set of Contract Documents including all modifications and all favorably reviewed submittals at the site. The Contractor shall prepare Record Drawings by neatly adding the following information in ink at least once a week to a set of Contract Drawings: (1) references to Contract modifications including Responses to Request For Information, minor changes and Change Orders; (2) as-built work that differs from work shown on the Contract Drawings; and (3) the dimensioned, as-installed location of major underground and concealed utilities, conduits, piping, tanks, facilities and similar items. Record Drawings shall be made on a clean copy of the Contract

Drawings furnished under General Conditions paragraph 2.7 and not used for any other purposes. The Contractor shall make Record Drawings available to the Engineer to verify progress. The Contractor shall submit and obtain favorable review of the Record Drawings prior to Final Acceptance.

Review of Contract Documents and Field Conditions

5.14 Before starting work, the Contractor shall carefully study and compare the Contract Documents with each other and with existing site conditions and field measurements. The Contractor shall immediately report any discovered deficiencies including code violations to the Engineer, in writing. The Contractor is not responsible for finding all deficiencies but will be held responsible for construction required to correct deficiencies or code violations that the Contractor had knowledge of or should reasonably have had knowledge of and did not report to the Engineer in writing.

Contractor's Construction Schedule

5.15 Within 10 days after the date in the Notice to Proceed and prior to the commencement of any onsite work, Contractor shall submit:

- .1 a temporary construction schedule covering the first 60 days of the Contract Time. The submittal shall be graphic and in electronic form. The electronic information submitted shall include files using the specified scheduling software format, if specified, and an easily readable file such as Adobe Acrobat PDF;
- .2 a proposed Critical Path construction schedule, which shows each constituent operation, quantity, rate and period required to accomplish the Work;
- .3 the proposed method of procedure, which enumerates the methods and equipment to be employed during each phase of the Work; and
- .4 a plan, which indicates the storage and working areas desired to accomplish the construction and is acceptable by the Engineer and the Owner.

5.16 Within 30 days after the date in the Notice to Proceed, the Contractor shall prepare and submit for the Owner's and the Engineer's information a construction schedule for the Work. Unless a specific type of schedule is specified in Division One, the form of schedule may be selected by the Contractor if acceptable by Engineer, and the schedule shall show the beginning and ending date for each major construction

task by each trade and the interdependencies between tasks, and shall identify the critical sequence of tasks (or "Critical Path") that determines the shortest time required to complete the Work. The construction schedule shall: (i) not exceed the Contract Time and Milestone dates established in the Contract Documents; (ii) be updated at monthly intervals or as requested by the Engineer; (iii) be related to the entire Project; and (iv) provide for expeditious and practicable execution of the Work. The schedule shall reflect input from the Contractor's subcontractors and suppliers, shall include an allowance for normal unfavorable weather and enough float time to accomplish all clarifications, requests for information, all submittals and changes required in the Contract Documents, and shall not exceed time limits specified in the Contract Documents. If the Contractor's schedule shows a shorter construction period than provided in the Contract Documents, the Contractor's schedule shall be a Critical Path Method (CPM) type schedule, shall be prepared in sufficient detail to demonstrate the feasibility of early completion and shall be submitted within 30 days after beginning construction. This CPM schedule shall show all required submittals and dates for ordering, shipping and receiving critical materials and equipment. Contractor's submittals shall be submitted with sufficient time to permit 30 days for a response and not impact Contractor's schedule. The submittals shall be graphic and in electronic format. The electronic information submitted shall include files using the specified scheduling software format, if specified, and an easily readable file such as Adobe Acrobat PDF.

5.16.1 Format. Unless otherwise provided in the Specifications, the construction schedule shall be in a detailed precedence Critical Path Method ("CPM") or Primavera-type format satisfactory to the Engineer, which shall also: (i) provide a graphic representation of all activities and events that will occur during performance of the Work; (ii) identify each phase, design, construction and maintenance; and (iii) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as Milestone dates). At a minimum the Construction Schedule shall depict the schedule or Work on a discipline by discipline and trade by trade basis and tasks within each discipline and trade. The Construction Schedule shall include (i) proposed activity sequences and durations showing the amount of Float for each activity; (ii) Milestone dates for receipt and acceptance of pertinent information, including Owner-supplied information and approvals by public authorities having jurisdiction over the Project; (iii) dates for preparation and processing of Submittals; (iv) dates for delivery of materials or equipment requiring long-lead time procurement; (v) Owner's occupancy /use

requirements showing portions of the Project having occupancy priority; (vi) the dates of Substantial and Final Completion; and (vii) other information reasonably required by Owner.

5.16.2 Updates. With each Application for Payment submitted by Contractor (other than the final Application for Payment), the Contractor shall submit to the Engineer an updated construction schedule revised to indicate the portion of the Work executed, all progress slippages, corrective actions taken, or slippage carry-over, for all anticipated delays of difficulties, and all other information required to accurately present the actual status of the progress of the Work as of the date of the Application for Payment. If the Contractor does not submit an updated construction schedule with an Application for Payment, Owner shall withhold payment, in whole or in part. In the event any update to the Project Schedule indicates any delays to the Contract Time that are the fault of Contractor or others for whom Contractor is responsible, the Contractor shall propose an affirmative plan to correct the delay, including overtime and/or additional labor, if necessary. In no event shall any construction schedule update constitute an adjustment in the Contract Time, any deadline, or the Contract Price unless any such adjustment is agreed to by the Owner and authorized pursuant to Change Order.

5.16.3 Daily Logs. Contractor shall maintain a daily log containing a record of weather, Contractor's own forces working on Site; Subcontractors working on the Site; number and labor classification of workers or each Subcontractor on Site; materials delivered; major equipment on Site, Work started, completed and accomplished that day; approximate count of all personnel at the Project Site; inspections tests and visitors; accidents, any Work stoppages, delays, shortages or losses; problems encountered and other similar relevant data as the Owner may reasonably require. The daily log shall be signed by Contractor's Superintendent, submitted by 4:30p.m. on the next Working Day to Engineer and shall be made available to others as directed by Owner.

5.16.4 Performance. The Contractor shall perform the Work in accordance with the most recent construction schedule and schedule of Submittals accepted by the Owner. The Contractor shall monitor the progress of the Work or conformance with the requirements of the Construction schedule and shall promptly advise the Engineer and Owner of any delays or potential delays.

5.16.5 Extraordinary Measures. In the event the Owner determines that the performance of the Work has not

progressed or reached the level of completion required by the Contract Documents, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including without limitation: (i) working additional shifts or overtime, (ii) supplying additional manpower, equipment, and facilities and (iii) submitting a recovery schedule for re-sequencing performance of the Work or other similar measures. Such corrective measures shall continue until the progress of the Work complies with the stage of completion as required by the Contract Documents. The Contractor shall not be entitled to an adjustment in the Contract Price in connection with the corrective measures required by the Owner under or pursuant to this section. The Owner may exercise these rights pursuant to this section as frequently as the Owner deems necessary to ensure that the Contractor's performance of the Work will comply with the Contract Time or interim completion dates set forth in the Contract Documents. If Contractor or its Subcontractors fail to implement or commence corrective measures within ten (10) calendar days of Owner's written demand, Owner may, without prejudice to other remedies take corrective action at the expense of the Contractor and shall reduce the Contract Price.

5.17 It is agreed that the Contract Price includes the Contractor's office and field overhead, profit and related charges for the full Contract Time. The Contractor may, at its option, complete the Work in a shorter period than the Contract Time but the Contractor may not make a claim for extended overhead or other charges for: (1) delays that extended completion beyond the date planned by the Contractor but not beyond the Contract Time, and (2) delays contemplated by the Contractor and the Owner. All float in the schedule shall first be for the benefit of the Owner, the Engineer, the Design Engineer and then for the benefit of the Contractor. To the fullest extent permitted by law, the Contractor on behalf of itself and its subcontractors, waive any and all claims for damages attributable to delays, interference, or acceleration caused by the Owner, the Engineer, the Design Engineer and each of their officers, employees, agents and consultants and the Contractor and its subcontractors shall be entitled to an extension of the Contract Time as their exclusive remedy.

5.18 The construction schedule shall provide for expeditious and practicable execution of the Work and shall be revised and submitted monthly unless excused by the Engineer in writing. The Contractor shall conform to the most recent schedule.

5.19 The Contractor shall prepare and keep current, for the Engineer's information, a schedule of submittals

which is coordinated with the Contractor's construction schedule and allows 30 days for the Engineer's review of each submittals and 30 days for review of each resubmittal.

Safety of Persons and Protection of Property

5.20 The Contractor shall be solely and exclusively responsible for construction safety means and methods and for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of this Contract.

5.21 The Contractor shall take all necessary precautions for safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's subcontractors or sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.

5.22 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

5.23 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, necessary fences and other safeguards for safety and protection of persons and property on and off the site and shall: (1) post danger signs and other warnings against hazards, (2) promulgate safety regulations, and (3) notify owners and users of adjacent sites and utilities when the Contractor's operations may affect them.

5.24 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry out such activities under supervision of properly qualified personnel.

5.25 The Contractor shall promptly remedy damage and loss to property that the Contractor is required to

protect caused in whole or in part by the Contractor, a subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable. The Contractor shall not be responsible for damage or loss resulting solely from the acts or omissions of the Owner or the Engineer or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under the Indemnification clause in this Article 5.

5.26 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent unless otherwise designated by the Contractor in writing to the Owner and Engineer.

5.27 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs required in connection with the Work and shall send copies of all accident, injury or work-related illness reports and of all notices of unsafe conditions to the Engineer.

5.28 The Contractor shall not load or permit heavy weights to be placed on any part of the construction or site so as to endanger its safety.

Hazardous Materials

5.29 If the Contractor encounters material on the site which it reasonably believes may contain asbestos, polychlorinated biphenyl (PCB) or other hazardous material, the Contractor shall stop work in the affected area and shall notify the Owner in writing. The Owner shall have the suspected material tested and if found to contain asbestos, PCB or other hazardous material, the Owner shall have the material removed or rendered harmless. Work in the affected area may be resumed when the Owner gives written notice that the material containing asbestos, PCB or other hazardous material has been removed or made harmless. If halting work in the affected area impacts the Contractor's critical path for construction, the delay will be regarded as an Excusable Delay and the Contract Time will be extended.

Owner's Indemnification for Hazardous Materials

5.30 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Engineer, Design Engineer, and each of their consultants, agents, employees, officers, and shareholders from and against all claims, damages, losses and expenses,

including, but not limited to, attorney's fees, arising out of or resulting from work in areas affected by asbestos, polychlorinated biphenyl (PCB) or other hazardous material, the presence and location of which has not been identified by the Owner in writing.

Emergencies

5.31 In an emergency affecting safety of persons or property, the Contractor shall act as required to prevent threatened damage, injury or loss without instruction or authorization from the Owner or Engineer. Additional compensation or extension of time claimed by the Contractor on account of such an emergency shall be determined as provided under Article 10.

Indemnification

5.32 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Engineer and the Design Engineer and each of their agents, consultants, officers, employees, and shareholders from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, caused in whole or in part, or arising out of, connected with, or resulting from the performance of the Work, regardless of whether or not such liability, claim, damage, loss or expense was caused in part by any negligent act or omissions, whether active or passive, by a party indemnified hereunder. The Contractor stipulates that this provision has been negotiated in accordance with applicable law to be fully enforceable.

5.33 The obligation of the Contractor under this indemnity and hold harmless agreement shall not apply to liability for damages arising from the sole negligence or willful misconduct of the Owner, the Engineer, or the Design Engineer or their agents, consultants, employees, officers, shareholders or independent contractors (other than the Contractor).

5.34 The Contractor's liability to the Owner, Engineer and Design Engineer under this Indemnification Clause shall not be limited by any legal limitation on the amount or type of damages, compensation or benefits payable under workers' compensation acts, disability benefit acts or other employee benefit acts.

5.35 The Contractor's liability insurance shall provide coverage for the Contractor's obligations under this Indemnification Clause in accordance with paragraph 4.3.

Escrowed Bid Documents

5.36 Contractor shall submit, within twenty-four (24) hours after award of the Contract, one copy of all documentary information generated in preparation of Bid prices for the Work and shall include all Subcontractor and Material Supplier estimates. This material is hereinafter referred to as "Escrowed Bid Documents" and shall be submitted in sealed containers and clearly marked "Escrowed Bid Documents." The Escrowed Bid Documents of the successful Contractor will be held in escrow for the duration of the Contract.

5.36.1 The Escrowed Bid Documents are, and shall always remain, the property of the Contractor, subject to joint review by the Owner, Engineer Contractor and their agents, as provided for herein.

5.36.2 The Owner stipulates and expressly acknowledges that all or parts of the Escrowed Bid Documents, as defined herein, constitute trade secrets. This acknowledgement is based on the Owner's express understanding that the information contained in the Escrowed Bid Documents may not be known outside Contractor's business, may be known only to a limited extent and only by a limited number of employees of the Contractor, is safeguarded while in the Contractor's possession, is extremely valuable to Contractors and could be extremely valuable to Contractor's competitors by virtue of it reflecting Contractor's techniques of construction. Owner further acknowledges that Contractor expended substantial sums of money in developing the information included in the Escrowed Bid Documents and further acknowledges that it would be difficult for a competitor to replicate the information contained therein. Owner further acknowledges that the Escrowed Bid Documents and the information contained therein are being provided to Owner only because it is an express prerequisite to award of the Contract. Owner further acknowledges that the Escrowed Bid Documents include a compilation of information used in Contractor's business, intended to give Contractor an opportunity to obtain an advantage over competitors who do not know of or use the contents of the documentation. Owner further agrees to safeguard the Escrowed Bid Documents against disclosure to the fullest extent permitted by law. In the event a third party requests disclosure of all or parts of the Escrowed Bid Documents, the Owner shall immediately notify the Contractor and cooperate with Contractor's efforts to prohibit disclosure.

5.36.3 The Contractor agrees, acknowledges, represents and warrants that as a condition of award of the Contract, that the Escrowed Bid Documents constitute all the information used in the preparation of the Bid and that no

other bid preparation information shall be considered in resolving disputes or claims. The Contractor also agrees that nothing in the Escrowed Bid Documents shall change or modify the terms or conditions of the Contract Documents.

5.36.4 Purpose. The purpose of the "Escrowed Bid Documents" procedure can best be explained by defining what this program is intended to accomplish and what this program is not intended to accomplish.

5.36.5 To Be Accomplished.

.1 Create a spirit of cooperation in an atmosphere of honesty and candor between the Owner and the Contractor.

.2 Establish a base line of the Contractor's accepted proposal.

.3 Provide an objective data bank to facilitate the determination and negotiation of changes/additions/deletions.

.4 Minimize Owner/Contractor disputes and streamline the resolution of these disputes.

.5 Creates risk sharing between the Owner and Contractor thereby eliminating contingency costs to the Owner for conditions which may never occur.

5.36.6 Not To Be Accomplished.

.1 Not to be used by the Owner to evaluate the Contractor's anticipated construction methods and procedures.

.2 Not to be used to any extent to furnish information from the Contractor's bid to any organization, company or individuals other than the Owner's and Engineer's staff and claims consultants associated with the Project.

.3 Not to be reproduced by the Owner except by mutual agreement.

.4 Not to create additional expense to the Contractor during bid preparation.

Content of Escrowed Bid Documents.

5.37 Contractor may submit Escrowed Bid Documents in its usual estimating format; a standard format is not required. It is not the intention of this requirement to cause the Contractor extra work during

the preparation of the bid but to ensure that the Escrowed Bid Documents will be adequate to, enable complete understanding and proper interpretation for their intended use

5.37.1 It is required that the Escrowed Bid Documents clearly itemize the estimated costs of performing the Work as required to present a detailed cost estimate and allow a detailed cost review. Crews, equipment, takeoff quantities, and rates of production shall be detailed. Estimated costs shall be broken down into the Contractor's usual estimate categories such as direct labor, repair labor, equipment ownership and operation, expendable materials, permanent materials, and Subcontract costs as appropriate. Plant and equipment and indirect costs shall be detailed in the Proposer's usual format.

5.37.2 All costs shall be identified. For items amounting to less than \$10,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and Subcontracts, as applicable, are included and provided that indirect costs, contingencies, and markup, as applicable, are allocated.

5.37.3 The Escrowed Bid Documents shall include all quantity takeoffs, calculations of rates of production and progress, copies of quotes from Subcontractors and Material Suppliers, and memoranda, narratives, add/deduct sheets and all other information used by the Contractor to arrive at the prices contained in the Bid.

5.37.4 The Escrowed Bid Documents shall be accompanied by the certification signed by a corporate officer authorized by the Contractor stating that the material in the Escrowed Bid Documents constitute all the documentary information used in preparation of the bid and that the Contractor has personally examined the contents of the Escrowed Bid Document container and has found that the documents in the container are complete.

Initial Examination

5.38 Escrowed Bid Documents of the Contractor will be examined, organized, and inventoried immediately upon receipt by a representative of the Owner and a representative of the Engineer.

5.38.1 This examination is to ensure that the Escrowed Bid Documents are legible and complete. It will not include review of and will not constitute approval of proposed construction methods, estimating assumptions,

or interpretations of Contract Documents. Examination will not alter any condition or term of the Contract.

5.38.2 Should the examination and inventory by the Owner or Engineer indicate that data is incomplete or missing, the representatives will describe such incomplete or missing data to the Contractor who shall supply it within twenty-four (24) hours.

5.38.3 If all the itemized cost breakdowns and allocations required previously mentioned herein have not been made, due to last minute bid revisions, the detailed breakdown of estimated costs shall be reconciled and revised by agreement between the Contractor and Owner before making the award.

Subsequent Examinations

5.39 The Escrowed Bid Documents may be examined at any time deemed necessary by both the Owner and the Engineer in order to determine the Contractor's bid concept and assumptions and to assist in the negotiation of price adjustments and Change Orders and the settlement of disputes and claims.

5.39.1 Examination of Escrowed Bid Documents is subject to the following conditions:

(a) The Escrowed Bid Documents are proprietary and confidential as to trade secrets contained therein.

(b) The Owner and the Contractor shall each designate in writing to the other party and within ten (10) calendar days after execution of the Contract, representatives who are authorized to examine the Escrowed Bid Documents. No other person shall have access to the Escrowed Bid Documents. The designated representatives may be amended from time to time by either party.

(c) Access to the Escrowed Bid Documents may take place only in the presence of duly designated representatives of both the Owner and Contractor.

(d) The Owner will take reasonable steps to protect the Escrowed Bid Documents from disclosure not permitted by this agreement.

Conditions for Return to Contractor

5.40 Upon completion of the Contract issuance of Final Payment by the Owner, verification that all litigation has been completed, and verification that future litigation does not exist, the Escrowed Bid

Documents will be sealed and promptly returned to the Contractor by the party in charge of the Escrowed Bid Documents. Reproducing of any portion of the Escrowed Bid Documents will not be permitted at any time without written permission from the Contractor.

ARTICLE 6 - OWNER

Owner's Right to Perform Work and Award Separate Contracts

6.1 The Owner reserves the right to perform construction within, related to or adjacent to the Work as a separate activity using its own workers or by contracts with separate contractors under contract conditions similar to those in Article 4 with respect to insurance and subrogation. The Owner shall provide coordination of these separate activities with the Work of the Contractor.

6.2 The Contractor shall cooperate with the Owner's separate contractors and workers and shall afford them access to their work areas and space to store materials, tools and equipment. The Contractor shall adjust its construction schedule to reflect agreed upon interfaces with the Owner's separate activities.

Mutual Responsibility

6.3 If part of the Contractor's work depends on or must interface with work performed by the Owner as a separate activity, the Contractor shall (1) cooperate with the Owner's coordination of the work efforts, (2) inspect work provided by the Owner's separate activities for compatibility with work provided or intended to be provided by the separate contractor, and (3) report to the Owner and the Engineer, prior to proceeding with work that may be affected, any deficiencies in work planned or executed by the Owner that would render it incompatible with work planned or completed by the separate contractor.

6.4 If the Contractor is caused delay or additional cost because of the Owner's separate activities, it may make a Claim as provided under Article 10.

Owner's Right to Stop the Work

6.5 If the Contractor fails to correct defective work or continues to perform defective work, the Owner may issue a signed order directing the Contractor to stop the Work or a portion of the Work until the defective work has been corrected. This right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

Owner's Right to Carry Out The Work or Correct Defective Work During Construction

6.6 If the Contractor fails to remove and replace or correct Defective Work, or if the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails to cure the defect, fault or neglect within 7 days after receipt of written notice from the Owner, the Owner may issue a second notice warning the Contractor that if it does not correct the defect, fault or neglect within the second 7-day period the Owner will, without prejudice to other remedies the Owner may have, correct such deficiencies. In which case, the Owner will deduct the cost of correcting such deficiencies, including compensation for any additional engineering services required, from payments due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. The Owner's right to correct Defective Work during the Guarantee Period is covered in Article 12.

ARTICLE 7 - ADMINISTRATION OF THE CONTRACT

7.1 At the Owner's option, either the Owner or the Engineer designated by the Owner will provide administration of the Contract and will be the Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the Guarantee Period. If an engineer other than the Design Engineer is appointed to be the Engineer to administer the Contract during construction, the duties and responsibilities of the Engineer and the Design Engineer during construction will be defined in the Supplementary Conditions, in Division One of the Specifications or in a modification to the Contract.

7.2 The Engineer may visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in accordance with the Contract Documents. However, the Engineer will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. The Contractor shall not rely upon the Engineer's site visits nor raise as a defense to any claims of defective work, that the Engineer visited the site or observed the site.

7.3 The Engineer shall not have control over or charge of and shall not be responsible for construction means, methods, techniques, sequences or procedures,

or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Article 5. The Engineer shall not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

7.4 The Engineer shall not have the authority to authorize extra work or to change the Contract Time or Price. The Engineer shall not have the authority to stop the Work. The Engineer's duties, responsibilities and limitations of authority are set forth in the Agreement between the Owner and the Engineer and shall not be modified by any action or inaction of any parties and can only be changed by a fully executed Amendment to the Agreement between the Owner and the Engineer.

7.5 The Engineer will have authority to reject Defective Work. The Engineer will have authority to require additional inspection or testing of the Work whether or not such Work is fabricated, installed or completed. Neither this authority of the Engineer nor a decision not to exercise such authority shall give rise to a duty or responsibility of the Engineer to the Contractor, subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

7.6 The Owner may arrange for the Engineer to provide a full-time on-site Resident Engineer with additional staff as appropriate. The duties, responsibilities and limitations of authority of the Resident Engineer and his staff shall be the same as defined for the Engineer in the Agreement between the Owner and the Engineer.

Communications

7.7 Communications between the Owner or the Design Engineer and the Contractor shall be through the Engineer. Communications between the Contractor and the Design Engineer shall be through the Engineer, and communications between the Contractor and the Design Engineer's consultants shall be through the Engineer and the Design Engineer. Communications between the Engineer and the subcontractors shall be through the Contractor.

Requests for Information and Responses

7.8 The Engineer will endeavor to issue Responses to Requests for Information within 30 days of the date a Request for Information is received by the Engineer unless the Engineer requests more information from the Contractor in which case the Response will be issued 20 days after receipt of the additional information. The Contractor shall use the Request for Information form,

attached as Exhibit GC-1. The Engineer's Response to a Request for Information shall not authorize a change in Contract Time or Price. If the Contractor disagrees with the Engineer's interpretation of the Contract Documents, it shall notify the Engineer in writing in accordance with Article 9. The Engineer shall not be required to answer Requests for Information when the information is contained in the Contract Documents or when the Request for Information form is incomplete or not used.

ARTICLE 8 - SUBMITTALS

Definitions

8.1 Definition of Terms:

.1 "Shop Drawings" are drawings, diagrams, schedules and other data custom prepared by the Contractor or one of its subcontractors or suppliers to illustrate some portion of the Work.

.2 "Product Data" are catalogue pages, brochures, schedules, performance charts, diagrams, instructions and other information which have been highlighted or marked and certified (if required in the Technical Specifications) by the Contractor to indicate the specific items, including options, that are being submitted for some portion of the work.

.3 "Submittal for Informational Purpose Only" is an item required for the Owner's permanent records relating, in part, to future maintenance, repair, modification, replacement of work or as otherwise required. Submittals for Informational Purpose Only will only be received and logged to document that the required submittals have been made. Neither the Owner nor Engineer will respond to a Submittal for Informational Purpose Only.

.4 A "Proposed Equivalent" is an item proposed for use by the Contractor in lieu of the first specified item and warranted by the Contractor as being at least equal in quality, utility, function and appearance to the first specified item. The Contractor shall assume all costs and be fully and solely responsible for the Proposed Equivalent.

.5 "Favorable Review" by the Engineer means that based on information submitted by the Contractor and in consideration of the Contractor's warranty required by General Conditions paragraph 8.8 the Contractor may provide the Favorably Reviewed item or work subject to the limitations in General Conditions Article 8, the General Requirements of Division 1, and the Engineer's review comments.

.6 The term "first specified item" or "first named maker" refers to the first product identified in the

Specifications by a model number or trade name and/or by a maker's name for a specified item.

Specified Items, Proposed Equivalent ("Or Equal")

8.2 When the first specified item is followed by a second maker's name and "or equal," the Contractor may submit Proposed Equivalent items for the Engineer's review. Proposed Equivalent items that are in the Engineer's judgment equal to the first specified item in quality, utility, and appearance, will be Favorably Reviewed. Where a product description and first maker's name is followed by "or equal" with no second maker's name, it means the specifier knows of no equivalent product and the Contractor may submit Proposed Equivalent products by other makers for review. Where the term "or equal" is omitted, it means that the named item is required to meet the Owner's needs; no products or makers other than those specified will be considered.

8.3 Proposed Equivalent items must be submitted as required for Product Data submittals on the form attached as Exhibit GC-3 and shall include adequate technical information to fully describe the function and quality of the item. Submittals of Proposed Equivalent items that are not made within 35 days of the Notice to Proceed will be rejected unless the Engineer has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Engineer for the late submittal. If the Contractor's second attempt to obtain Favorable Review of a Proposed Equivalent item is unsuccessful, the Contractor shall submit the first specified item.

8.4 Inclusion of a second maker's name indicates the maker is acceptable but does not necessarily indicate the maker offers a standard product equal to the first specified item.

.1 Items by the second named maker are subject to the same conditions of review and compatibility as other Proposed Equivalent items.

.2 Inclusion of a maker's name and/or model number after a specification description is not a representation that the maker will furnish an item meeting the Contract requirements at bid time or at time of need. It is the Contractor's sole responsibility to furnish items meeting the Contract requirements.

8.5 Where items are specified with a description followed by a maker's name and trade name or model number, the item shall be provided with all of the custom modifications, special features, accessories and options described even though such things may not normally be included by the maker or provider as part of the model specified. Where there is a conflict between the written

description of an item and maker's trade name and/or model number, the written description shall take precedence.

8.6 The design is based on first specified items including all described custom modifications, special features, accessories and options as made by the first named maker. The Contractor shall be responsible for all cost including redesign required to accommodate a Proposed Equivalent item including items by the second named maker.

8.7 The Engineer's review of Proposed Equivalent items is based solely on information provided by the Contractor and on the Contractor's warranty that the proposed item is at least equal in quality, utility, function and appearance to the first specified item. Favorable Review of a Proposed Equivalent item has the same meaning and is subject to the same limitations that apply to the Favorable Review of Product Data and Shop Drawings described in this Article.

Shop Drawings, Product Data, Samples and Proposed Equivalents

Intent of Contractor's Review

8.8 The Contractor shall make required submittals including Shop Drawings, Product Data, Samples and Proposed Equivalent items in time to allow for the Engineer's review and resubmittal, if required, without causing delay to the Work. The Contractor and appropriate subcontractor shall review, stamp, date and sign submittals before sending them to the Engineer. By making such a submittal, the Contractor makes the following warranty and shall include that warranty statement on its letter of transmittal.

"The Contractor warrants:

1. Work or items submitted are complete, accurate and meet the requirements of the Contract Documents, or else any deviations are identified and described in a separate letter accompanying the submittal form, Exhibit GC-2.
2. Work or items submitted have been coordinated with and meet the requirements of other submittals, field conditions and the Work as a whole and quantities and dimensions are correct.
3. Proposed Equivalent items are at least equal in quality, utility and appearance to the first specified item, or else any deviations are identified in a separate letter accompanying the submittal form, Exhibit GC-3.

4. Adjustments to other work required to accommodate Proposed Equivalent items including second named items have been delineated on the submittal and will be made at the Contractor's expense.

5. This submittal includes all items needed for a particular specification section or assembly for which submittals are required.

6. And represents that all material, equipment, hardware, software and firmware product provided to the Project will perform without error, loss of data or loss of functionality arising from any failure to process, calculate, compare or sequence data data accurately.

Intent and Limitations on Engineer's Review

8.9 The Engineer's review of the Contractor's submittals is done solely for the Engineer's and Owner's benefit. The Contractor agrees that the Engineer has no duty to the Contractor or any of its subcontractors or suppliers for the accuracy, completeness or adequacy of the Engineer's review of its submittals.

8.10 The Engineer's review of submittals is for compliance with the design intent and requirements of the Contract Documents and is based solely on information provided by the Contractor and on the Contractor's warranty that the work or items submitted meet the requirements of the Contract Documents, and the Work as a whole. If later information reveals that work or items submitted or furnished do not meet the requirements of the Contract Documents or the Work as a whole, the Engineer's Favorable Review shall be void and the items or work shall be considered Defective. The Engineer's Favorable Review shall not include an examination of methods or means of construction or required safety precautions. The Engineer's Favorable Review: (1) shall not include a review of quantities or dimensions, (2) shall not relieve the Contractor from responsibility for errors or omissions in submittals, (3) shall not relieve the Contractor from responsibility for complying with the requirements of the Contract Documents, (4) shall not constitute a Change Order, and (5) shall not constitute final acceptance of a product, item or portion of the Work.

8.11 The Engineer's Favorable Review of submittals shall not relieve the Contractor from responsibility for deviations from the requirements of the Contract Documents unless the deviations are specifically called to the Engineer's attention in a separate letter accompanying the submittal form, Exhibit GC-2, and the Engineer favorably reviews the specific deviations in writing.

8.12 The Engineer's Favorable Review of a re-submittal does not include a review of changes made by the Contractor to a previous submittal that were not requested by the Engineer unless the Contractor specifically calls the Engineer's attention to the non-requested changes, in a separate letter accompanying the resubmittal of form Exhibit GC-2.

8.13 Where performance type specifications are used or where pre-engineered or Contractor designed systems, elements, equipment or components are called for, the Owner, the Design Engineer and the Engineer shall have the right to rely on the Contractor's design. Favorable Review of the Contractor's design submittal shall be limited to acknowledgment that the design was prepared with the intent of meeting the specified performance criteria, but the Engineer's review shall not constitute a review of the design itself, of the designer's calculations, or of the effectiveness of the design in actually satisfying the specified criteria.

8.14 The Contractor shall allow 30 days for the Engineer's review of each submittal and 30 days for each resubmittal unless a different period is specified by the Engineer in writing. If the Engineer requests additional information or clarification of a submittal, the 30 days shall be measured from the date the additional information or clarification is received. If the Contractor requires more than two submittals to obtain the Engineer's Favorable Review, the Contractor shall compensate the Owner for the cost of the Engineer's additional review time. The Contractor shall not perform work for which reviewed submittals are required without obtaining Favorable Review of submittals.

8.15 Submittals required for the Owner's or Engineer's information and on which the Engineer shall not be expected to take responsive action are identified in the Contract Documents.

ARTICLE 9 - CHANGES IN THE WORK

Changes

9.1 The Owner may order changes in the Work after executing the Agreement by issuing a written Change Order or Work Directive Change.

9.2 The Contractor expressly agrees that it shall not consider any order, instruction, Clarification, Response to a Request for Information or any other communication either written or oral given intentionally or unintentionally by the Engineer, Owner or any other person as authorization or direction to do work that

would cause a change in Contract Time or Price unless it is a Change Order or Work Directive Change signed by the Owner.

Requests for Quotation

9.3 If a change involving Contract Price or Time is being considered, the Engineer will issue a Request for Quotation describing the proposed change. The Contractor shall submit a quotation promptly so not to delay or interfere with the progress of the Work, in accordance with the requirements for determining the cost of changes described in this Article.

Change Orders

9.4 If the Owner and the Contractor agree on the change in Price and Time for a proposed change, a Change Order will be issued and signed by the Engineer, Contractor and the Owner. An executed Change Order shall be conclusive and final settlement of the change in Contract Time and Price for the work covered by the Change Order including the effect of the change on all other portions of the work completed or not and shall include compensation for all related claims for disruption, impact, delay or extended overhead, if any, that may result from the change. Implied in every Change Order, unless expressly reserved by the Owner or Contractor, is a waiver of all known and unknown claims arising out of the Change Order, including a waiver of Section 1542 of the California Civil Code as well as under any other state or federal statute or common law principle of similar effect which provides as follows:

"GENERAL RELEASE CLAIMS EXTINGUISHED.

A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which, if known by him, must have materially affected his settlement with the debtor."

9.5 The Owner reserves the right to have changed work performed by a separate contractor or its own workers if the Contractor and the Owner cannot agree on the change in Price and Time required.

Work Directive Change

9.6 If the Owner and the Contractor have not agreed on the change in Price or Time required for a proposed change, or if time does not permit preparation of a quotation, the Owner may direct the Contractor to proceed with the work on a cost accounting basis by issuing a Work Directive Change.

9.7 All Work Directive Changes must be signed by the Owner and will state the maximum sum the Owner is obligated to pay.

.1 If the Contractor has agreed to do the work on a cost accounting basis and to complete the work for an amount not to exceed the stated maximum sum, the Contractor shall sign the Work Directive Change.

.2 If the Contractor cannot agree to a maximum sum to complete the work, the Contractor shall not sign the Work Directive Change. In that case the maximum sum shall limit the amount the Owner is obligated to pay to the Contractor but shall not obligate the Contractor to complete the work for that sum.

9.8 When the Owner and the Contractor agree on the change in Price and Time for a Work Directive Change, the Work Directive Change shall be converted into a Change Order.

Information, Interpretations and Minor Changes

9.9 The Engineer has the authority to order minor changes in the Work including interpretations which are consistent with the intent of the Contract Documents. The Engineer does not have authority to order any changes which involve:

- .1 a change in Contract Price, or
- .2 a change in the Contract Time, or
- .3 means, methods, techniques or sequence of Work, or
- .4 safety in, on or about the site.

If the Contractor considers that any minor changes so ordered causes a change in Contract Price or Time, the Contractor shall notify the Engineer in writing within 15 days of receipt of the order and shall not proceed with the work except in the case of an emergency endangering persons or property.

9.10 If, after reviewing the Contractor's objection to a minor change, the Engineer determines the work is required by the Contract Documents and does not involve a change in Price or Time, the Owner may direct the Contractor, in writing, to proceed with the work. If so directed, the Contractor may (1) accept the Engineer's determination and proceed with the work or (2) give the Engineer written notice 5 days in advance of beginning work stating that it intends to make a claim under Article 10 and will document costs in accordance with paragraphs 9.11 through 9.14.

Determining Cost of Changes

9.11 The Contractor's quotations of cost on proposed changes and cost reported for work performed on a cost accounting basis shall be determined as the sum of the following:

.1 costs of labor including foremen engaged on the work but not of the Superintendent, field engineer, project manager, and other supervisory or support personnel except as provided in paragraph 9.11.5. Labor costs shall include the cost of social security, old age and unemployment insurance, fringe benefits required by labor agreements and workers' or workmen's compensation insurance;

.2 costs of materials, supplies and equipment, including cost of transportation, incorporated in the Work;

.3 rental costs of machinery and equipment, exclusive of portable power or hand tools, supplied by the Contractor or rented from others;

.4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the change;

.5 the increased or decreased cost of the Contractor's supervision and field office personnel but only if the change affects the "critical path" of construction activities and requires a change in Contract Time;

.6 the reasonable cost of any tier of subcontractors' work computed as required for the Contractor's work. The mark-up charged by a subcontractor for overhead and profit shall be the lesser of: i) subject to negotiation, ii) as included in the original bid for the Work, or iii) not to exceed 10% for work performed directly by the subcontractor and 5% for work performed by a subcontractor one tier below it, and

.7 for the reasonable work performed by the Contractor, the mark-up for overhead, profit and all other costs shall be the lesser of: i) subject to negotiation, as included in the original bid for the Work and contained in escrowed bid documents, or iii) not to exceed 10% for work performed directly by the Contractor and 5% for work performed by a subcontractor.

.8 Limitations on Markup for Changes. Where multiple tiers of Subcontractors are involved in a change in the Work, the maximum total amount of adjustment to the Contract Price and for markup for all tiers of Subcontractors and for Contractor self-performed Work shall not exceed twenty percent (20%) of the direct costs incurred by Contractor and the Subcontractors and Material Suppliers actually performing the Work.

Work shall be done making the most effective use of labor; materials shall be purchased at the lowest

available price and all discounts shall be passed on to the Owner; equipment shall be rented at the most favorable rate available for the term of use required.

9.12 When both additions and deletions are related and pertain to the same work item and are included in the same Change Order, the mark-up for overhead and profit shall be computed on the net increase, if any. No deductions for overhead and profit will be made on deductive changes except for deductive changes that materially change the scope of the work or deductive changes issued pursuant to the Owner's right to correct defective work, the Owner's right to remedy the Contractor's default or neglect or the Owner's right to terminate the Contract for cause.

9.13 The Contractor shall keep the Engineer informed as to when and where work is being performed on a cost accounting basis and shall submit complete auditable records of the cost of such work including daily time sheets signed daily by the Engineer.

9.13.1 Contractor Maintenance of Daily Records for Changes. In the event that Contractor is directed to perform any changes to the Work, or should Contractor encounter conditions which the Contractor believes would obligate the Owner to adjust the Contract Price and/or the Contract Time, Contractor shall maintain detailed records of the cost of such changes on a daily basis and a summary in a daily report supplemented by back-up records. Such records shall include without limitation hourly records for labor and construction equipment, itemized records of materials, including delivery tickets, and equipment used each day in connection with the performance of any change to the Work. In the event that more than one change to the Work is performed by Contractor in a calendar day, Contractor shall maintain separate records of labor, construction equipment, materials, and equipment for each such change. In the event that any Subcontractor of any tier shall provide or perform any portion of any change to the Work, Contractor shall require that each such Subcontractor maintain records in accordance with this Article. Each daily record maintained hereunder shall be signed by the Contractor; such signature shall be deemed Contractor's representation and warranty that all information contained therein is true, accurate, complete, and relates only to the change referenced therein. All records maintained by Subcontractors of any tier, relating to the costs of a change in the Work shall be signed by such Subcontractor's authorized Project Manager or Superintendent as a representation and warranty that all information contained therein is true, accurate, complete, and relates only to the change referenced therein. All such records shall be delivered

to Engineer not later than on the day the Work is performed (same day) for independent verification. The Engineer shall attempt to review and reconcile costs of changes on a daily basis. The Engineer's signature on the report shall indicate agreement with the information reflected therein, not that the Contractor is entitled to payment of the costs in the report. If the Engineer disagrees with the response, the Engineer shall note the areas of disagreement on the report. In the event that the Contractor shall fail or refuse, for any reason, to maintain or make available for inspection, review and/or reproduction such records, adjustments to the Contract Price or Contract Time, if any, on account of any change to the Work may be deemed waived for that day. Contractor's obligation to maintain back-up records hereunder is a material inducement to and in addition to, and not in lieu of, any other Contractor obligation under the Contract Documents with respect to changes to the Work.

9.13.2 Labor. The daily report shall show the names, trade, labor, classifications, and hours worked, for the workers.

9.13.3 Material. The daily report shall describe and list quantities of materials used, attaching delivery tickets.

9.13.4 Equipment. The daily report shall show type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable.

9.13.5 Other Services and Expenditures. Other services and expenditures shall be described in such detail in the daily report as the Owner or Engineer may require.

9.13.6 Cost. The report shall provide dollar values for each category of cost.

9.14 Any work for which the Contractor may wish to make a claim shall be done in accordance with these requirements for work done on a cost accounting basis.

Change in Contract Time Due to Changes in the Work

9.15 If the work required by a Change Order affects the "Critical Path" of construction tasks and is the sole, unavoidable cause for changing the length of time required to complete the Work, the Contract Time will be adjusted accordingly.

ARTICLE 10 - CLAIMS AND DISPUTES

Claims

10.1 A Claim is a written demand by one of the parties to the Contract for an interpretation of Contract terms or an adjustment in Contract conditions including Price or Time and may involve questions of performance under the Contract including acceptability of work, progress of work, the extent to which work has been completed, whether work is included in the Contract, and other matters in question between the Owner and the Contractor.

10.2 Content of Claim. Claims shall be made in writing and shall include complete documentation including:

.1 The Contractor's certification, by its owner or an officer, under penalty of perjury, that (a) the claim is made in good faith, (b) supporting data are accurate and complete to the best of the Contractor's and subcontractor's knowledge and belief, and (c) the amount requested accurately reflects the Contract adjustment for which the Contractor believes the Owner is liable.

.2 Full disclosure of facts and detailed reasons supporting the Claim and citing relevant provisions in the Contract Documents.

.3 Complete documented cost of doing the work for which it is making a Claim and such cost and documentation shall be submitted in accordance with General Conditions paragraphs 9.11 through 9.14.

Engineer's Decisions

10.3 The Engineer, as an arbiter of disputes, will make an initial decision on all Claims made prior to the date the final payment is due including Claims alleging an error or omission by the Engineer. The Engineer's decision will be in writing, will be consistent with the intent of the Contract Documents and will cite the basis on which it is made. The Engineer will endeavor to make decisions that are impartial and will not be liable for results of decisions made in good faith. The Engineer's decision is a condition precedent to a demand by either party that a Claim be settled by litigation, or if agreed to in advance by both parties or if required by law, be settled by mediation or arbitration.

Time Limits for Submitting and Deciding Claims

10.4 The Contractor shall give written notice 5 days prior to beginning any work for which it intends to make a Claim for an increase in Contract Time or Price and expressly waives any right to make a Claim if the required notice is not given. All other Claims must be

made within 14 days of the time the condition giving rise to the Claim becomes known to the claimant. The Engineer, as an arbiter of disputes, will issue a written decision on the Claim within 30 days after receipt of the Claim unless additional information is requested from the claimant or the claimant amends the Claim and then a decision will be issued within 30 days after receipt of additional information, or an amended Claim. Should a Claim be presented that is in part timely and in part untimely, the Engineer shall reject the untimely Claim and decide the timely claim. All Claims must strictly follow the notice requirements of this agreement.

10.5 A demand to appeal the Engineer's decision and settle a Claim by litigation, mediation or arbitration can only be made after the Engineer has made a written determination, or in the absence of a determination, 7 days after the Engineer's determination became due. If no demand to settle a Claim by litigation, mediation or arbitration is made within 15 days after the Engineer's written decision was issued, the Engineer's decision shall become final and binding on the Owner and the Contractor and if a change in Contract Time or Price is involved, a Change Order shall be signed by both parties.

10.6 Provisions of law notwithstanding, the Owner and Contractor hereby agree that neither the Engineer, the Design Engineer, nor any other third party shall, without its specific written consent, be required to participate as a party in any litigation, arbitration or mediation proceedings between the Contractor and the Owner initiated to resolve disputes under the Contract Documents.

Mediation

10.7 If any dispute, controversy, or Claim (hereinafter referred to as a dispute) arises out of or relates to this Contract, or breach thereof, and if the dispute cannot be settled through direct discussions, then the parties first agree to try to settle the dispute by mediation before resorting to litigation or some other dispute resolution procedure. The mediator shall be an attorney experienced in mediating construction disputes and shall be chosen by agreement of the parties, but if no agreement then appointed by the Presiding Judge of the Superior Court in the jurisdiction of the site. Each party shall bear its own costs and expenses of the mediation, including attorney's fees. The fees and costs of the mediator shall be borne equally by the parties.

Work Continued During Disputes

10.8 The Contractor shall continue to work in conformance with the requirements of the Contract

Documents and the progress schedule during any dispute and when waiting for decisions on Claims by the Engineer or for resolution of Claims by litigation, mediation or arbitration, unless otherwise directed in writing by the Engineer or Owner.

ARTICLE 11 - CONTRACT TIME AND DELAYS

Definitions

11.1 Definitions of Terms:

1 "Contract Time" is the period of time including authorized adjustments allowed for completion of the Work and is measured from the date of commencement in the Notice to Proceed to the date of Final Completion.

.2 "Day" is a calendar day beginning and ending at midnight.

.3 "Unusual Weather" is defined as when either the number of Wet Days or the number of Freezing Days exceeds the most recent published mean number of Wet or Freezing Days for the period of record, for the same month and for the weather observing station closest to the project site as reported in "Comparative Climatic Data" published by the National Oceanic and Atmospheric Administration, Ashville, NC 28801. "Wet Days" are defined as days that have at least 0.01 inch of rainfall unless modified in the Supplementary Conditions. "Freezing Days" are defined as days with a minimum temperature of 32 degrees F or lower.

Computation of Time

11.2 Any period of time referred to in the Contract Documents measured in days shall mean consecutive calendar days and shall exclude the first and include the last day. If the last day falls on a Saturday, Sunday or legal holiday, it shall be omitted from the calculation.

Contract Time

11.3 Time limits stated in the Agreement are the essence of the Contract. The Contractor confirms that the Contract Time is a reasonable period for performing the Work and includes enough float time to allow for normal unfavorable weather and other reasonably anticipated delays.

Damages for Late Completion

11.4 Liquidated damages if applicable are stipulated in the Agreement. If liquidated damages are not stipulated, the Contractor will be assessed actual

damages suffered by the Owner as a result of completion after the Contract Time.

Commencing Work

11.5 The Contractor shall not commence work (1) prior to the date in the Notice to Proceed, (2) prior to giving the Engineer 5 days written notice and (3) prior to the effective date of insurance coverage required under Article 4.

Accelerated Work If Required to Meet Schedule

11.6 The Contractor shall proceed expeditiously with adequate forces and shall achieve Final Completion within the Contract Time. If the Contractor's performance falls behind schedule, the Contractor shall accelerate the work as required to get back on schedule at no additional cost to the Owner. Accelerated work shall include air or express delivery of materials and equipment, increasing the number of workers, working overtime, working Saturdays, Sundays, and holidays and working additional shifts. The Contractor shall pay the Owner for any extra cost of inspection made necessary by accelerated work required under this provision.

Excusable Noncompensable Delay

11.7 "Excusable Delay" means unforeseeable delay beyond the Contractor's or Owner's control and not resulting from the Contractor's fault or negligence. Excusable Delay includes labor disputes, fire, Unusual Weather, unavoidable casualties and unusual delays in transportation. The Contractor may make a Claim under Article 10 for an extension of Contract Time due to an Excusable Delay if it can show that the Excusable Delay is the sole and unavoidable cause increasing the time actually needed to complete the Work. The Contractor shall not be entitled to an increase in Contract Price due to an Excusable Delay.

Compensable Delays

11.8 The Contractor may make a Claim under Article 10 for extension of Contract Time due to delays that are not due to the fault or neglect of the Contractor and which could not have been reasonably anticipated, including delays: (1) caused by the Owner or Engineer or by the Owner's separate contractors or workers, (2) resulting from the Owner's failure to provide access to lands or rights-of-way on which the Work is to be performed, or (3) due to suspension of the Work ordered by the Owner. In making such a Claim, the Contractor must demonstrate that the delay was the sole and unavoidable cause for increasing the length of time required to complete the Work on the critical path. In the case of a delay which

was caused in part by the Contractor and in part by the Owner (Concurrent Delay), Contractor shall only be entitled to an extension of the Contract Time or Milestone(s) and Contractor shall not be liable for Liquidated Damages during the period of Concurrent Delay, but Contractor shall not be entitled to any additional compensation whatsoever during the period of Concurrent Delay. For purposes of settlement of Claims under this paragraph, the Contractor's cost shall be determined in accordance with paragraph 9.11 except that no mark-up for profit will be allowed and therefore, the maximum percentage mark-ups allowed under subparagraphs 9.11.6 and 9.11.7 shall be reduced by one-third.

11.9 Changes in Contract Time associated with changes ordered by the Owner are covered under Article 9.

11.10 An executed Change Order covering changes ordered by the Owner under Article 9 or the resolution of Claims made under Article 10 shall be the final and conclusive settlement of the change in Contract Time and Price for the work or Claim covered by the Change Order including all related costs in accordance with Article 9.4.

10.11 Early Completion Delay Damages. While the Contractor may schedule completion of all the Work, or portions thereof, earlier than the Contract Time established in the Agreement, the Owner and Engineer are exempt from liability for and the Contractor shall not be entitled to an adjustment of the Contract Price or to any additional costs, damages, or compensation whatsoever, for use of Float or for Contractor's inability to complete the Work earlier than the Contract Time established in the Agreement, for any reason whatsoever, including but not limited to, delay caused by Owner, Engineer or other compensable delay.

ARTICLE 12 - INSPECTION, DEFECTIVE WORK, GUARANTEE

Defective Work

12.1 Defective Work is work that (1) is unsatisfactory, faulty, deficient, or leaks, breaks, fails or does not conform to the Contract Documents; or (2) does not meet the requirements of reference standards, tests or approvals specifically referred to in the Contract Documents; or (3) has been damaged prior to final acceptance; or (4) does not meet applicable industry or trade standards; or (5) a submittal is required and Favorable Review has not been obtained.

Access to Work and Notice

12.2 The Contractor shall provide the Owner, the Engineer and each of their representatives safe access to every part of the Work at all times work is in progress for observation, inspecting and testing. The Contractor shall give 2 days notice of work being ready for required inspection, test or approval or of intent to cover work up.

Tests and Inspections

12.3 Unless otherwise specified, the Contractor shall arrange and pay for tests, inspections and approvals required by laws, ordinances, rules, regulations, orders of public authorities having jurisdiction or by the Contract Documents. All such tests, inspections and approvals shall be performed by an independent testing laboratory or inspection agency acceptable to the Engineer or to the appropriate public authority. Samples to be tested and items of work to be inspected will be selected by the Engineer or the public authority requiring the test or inspection. Test reports, inspection reports and certificates shall be submitted directly to the Engineer by the performing laboratory or agency. The Contractor shall notify the Engineer at least 2 days prior to all tests and inspections to permit observation by the Engineer.

Reinspection

12.4 If the Engineer determines that portions of the Work require additional testing or retesting, the Contractor shall provide material to be tested, safe access to test locations, power, light and other services. The cost of retesting shall be paid for by the Owner, but if the additional tests or retesting indicate that said portion of the Work is Defective, the Contractor shall pay the Owner all costs associated with additional testing or retesting including the cost of the Engineer's additional service.

Uncovering Work

12.5 If work is covered or concealed without giving the Engineer 2 days notice to permit observation, it shall be uncovered or exposed at the Contractor's expense to permit observation if so requested.

12.6 If the Engineer wishes to have work uncovered for observation after having been given the required notice to observe it, the Contractor shall uncover the work on a cost accounting basis. If the work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of uncovering and replacing the work. If the work is found to be Defective, the Contractor shall pay the cost of uncovering and correcting the work and the

cost of required additional engineering and testing service.

Correction of Defective Work

12.7 The Contractor shall promptly correct or replace: (1) work rejected by the Engineer as being Defective, and (2) work that is Defective whether or not rejected by the Engineer. The Contractor shall correct Defective Work prior to installing subsequent related or connected Work. The Contractor's obligation to correct Defective Work applies to latent as well as patent defects and whether or not the work is fabricated, installed or completed and whether observed before or after Substantial Completion. The Contractor shall bear the cost of correcting Defective Work including consequential costs, engineering services and attorneys' fees made necessary thereby.

Acceptance or Use of Defective Work

12.8 The Owner may elect to accept Defective Work in which case a deductive Change Order shall be signed by the Contractor reflecting the decreased value of the Work. If final payment has been made, the Contractor shall pay to the Owner a sum reflecting the decreased value of the Work.

12.9 The Owner may use Defective Work without negating its rejection or decreasing the Guarantee Period which shall commence when the work is finally corrected or replaced and accepted. When all or part of the Work is being used by the Owner, the Contractor shall schedule correction or replacement of Defective Work at the Owner's convenience.

Tests and Inspections Do Not Reduce Contractor's Responsibility for Performance

12.10 Observations by the Engineer or tests, inspections or approvals by others shall not relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents.

Guarantee Period

12.11 Within 7 days of receipt of written notice from the Owner, the Contractor shall correct or replace work found Defective within one year after the date of Final Completion of the Work and Acceptance by the Owner or such longer period as covered by any Special Guarantee required by the Contract Documents or by law. For work first performed or first made acceptable after the date of Final Completion, the one-year or longer Guarantee Period shall commence to run at the time the Work is completed or made acceptable.

Owner's Right to Correct Defective Work During Guarantee Period

12.12 If the Contractor fails to correct Defective Work within 7 days of receiving notice to do so, the Owner may correct the Work and recover the cost of correction from the Contractor. If the Defective Work creates an emergency where delay would cause unsafe conditions or serious risk of loss or damage, the Owner may proceed to correct the Defective Work without giving the Contractor notice.

12.13 If the Owner corrects Defective Work under this paragraph, the Contractor shall pay the Owner all direct, indirect and consequential cost and all required engineering services and attorney's fees.

12.14 The Contractor shall be responsible for the cost of removing and replacing work provided by the Owner when such removal and/or replacement is necessary to permit correction of Defective Work for which the Contractor is responsible.

Contractor's Liability for Defective Work Not Limited by Guarantee

12.15 Nothing contained in this Article 12 nor in any Special Guarantee required under Division 1 General Requirements shall be construed to limit the period of the Contractor's obligations under the Contract Documents or under law. Establishment of a time period for the Contractor's specific obligation to correct work places no limit on the time within which the Contractor's obligation to comply with the Contract Documents may be enforced nor on the period during which the Contractor may be held liable for the effect of Defective Work.

12.16 Nothing contained in this Article 12 nor in any Special Guarantee required under Division 1 General Requirements shall be construed to limit the Contractor's, subcontractor's, material or equipment supplier's liability for damages sustained as a result of latent or patent defects in equipment or materials furnished or caused by the negligence of the Contractor or his subcontractors or suppliers. The guarantees contained in this Article 12 shall not be a waiver of nor shall they reduce any guarantee or warranty offered by the suppliers of materials or equipment furnished under this Contract nor shall they reduce any responsibilities imposed on manufacturers or suppliers of such equipment under law.

ARTICLE 13 - PAYMENT AND COMPLETION

Schedule of Values

13.1 At least 20 days prior to the first Application for Payment Date, the Contractor shall submit a Schedule of Values, in a form acceptable to the Engineer, allocating the Contract Price to various trades, types of work, pieces of equipment, and major tasks to assist the Engineer in evaluating the percentage completion for each part of the Work. The Contractor's overhead and profit shall be uniformly pro-rated over all items in the Schedule of Values. The Schedule of Values shall represent the actual cost of each segment of the work and shall not allocate higher costs, overhead or profit to work items scheduled for early completion. If the Engineer objects to the allocation of cost or the level of detail provided, the Contractor shall revise and resubmit the Schedule of Values.

Application for Payment

13.2 The period covered by each Application for Payment shall be one calendar month. Payment shall be based on work completed as of the Application for Payment Date which shall be the last day of the month unless otherwise stated in the Agreement. Within 7 days after each Application for Payment Date, the Contractor shall meet with the Engineer to review the line item amounts proposed by the Contractor for payment. When the amounts proposed are acceptable to the Engineer, the Contractor shall prepare and submit within 3 days, the Application for Payment form, attached as Exhibit GC-4, and Conditional Lien Releases from the Contractor, each subcontractor, supplier and materialman whose work is included in the Application. The Contractor shall sign and certify on the Application for Payment, subject to penalty of perjury, the following: "The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief, the Work covered by this Application for Payment has been completed in accordance with the Contract Documents and that all Work for which previous payments have been received is free and clear of liens, claims, security interests or encumbrances of any kind. The Contractor further warrants that title to all Work covered by this Application for Payment will pass to the Owner no later than the time of payment."

13.2.1 Taxes. The Contractor shall pay all applicable sales, consumer, use, and similar taxes for the Work provided by the Contractor and such taxes shall be included in the Contract Price.

13.2.2 Liability for Employee Payments. Contractor accepts full liability for the payment of any and all contributions, deductions, or taxes for social security, unemployment insurance, old age and survivor's benefits, medical and health benefits, or for any other purpose now or hereafter imposed under any applicable law measured by the wages, salary or other remuneration paid to persons employed by or on behalf of Contractor for the Work. Contractor covenants and agrees to observe and fully comply with all applicable law, including procurement of any necessary occupational licenses, permits and inspection certificates.

Payment for Items Delivered But Not Installed

13.3 If recommended by the Engineer, Applications for Payment may include the percentage of value stipulated in the Agreement for major equipment and custom fabricated items that have been delivered, stored and protected at the site providing proof is furnished that title will pass to the Owner upon payment. Payment will not be made for material stored at the site that is not custom fabricated. Payment will not be made for items stored off the site. Payment will not be made for stored or installed items that are not protected from physical, environmental or other damage. Payment for successful submittal of Shop Drawings or Product Data will be made only when specifically provided for in Division 1.

Engineer's Recommendation for Payment

13.4 Within 7 days after receipt of the Contractor's Application for Payment, the Engineer will either issue a Recommendation for Payment for such amount as the Engineer determines is due or will notify the Contractor and the Owner of reasons for withholding recommendation. The Engineer's recommendation will not be an evaluation or interpretation based upon legal theories or principles but will be based upon sound engineering judgment. The Owner will seek independent legal services, if necessary to assist it in determining if withholds are appropriate. Retainage to be withheld by the Owner is stipulated in the Agreement.

13.5 The Engineer's Recommendation for Payment will constitute a representation that to the Engineer's best knowledge, information and belief the Work has progressed to the point indicated and is generally in conformance with the Contract Documents but is subject to re-evaluation during subsequent site visits and upon final completion. The Engineer's Recommendation for Payment shall not be taken as a representation that the Engineer has (1) made exhaustive or continuous onsite inspections to check the quality of the Work, (2) reviewed construction means, methods, techniques, sequences or

procedures, (3) reviewed copies of requisitions received from subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Price, or (5) offered its legal opinion in any respect.

13.6 If, in the Engineer's opinion, the representations in paragraph 13.5 cannot be made or if the Engineer has knowledge of any of the faults listed below, then the Engineer may decline to issue a Recommendation for Payment or may recommend a reduced amount of payment or may rescind previously issued Recommendation for Payment. Faults for which payment may be withheld, reduced or rescinded include:

- .1 Defective Work not corrected;
- .2 Third party claims filed or reasonable evidence indicating probable filing of such claims;
- .3 Failure of the Contractor to make payments properly to subcontractors or suppliers for labor, materials or equipment;
- .4 Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;
- .5 Damage to property, the Work, the Owner, another contractor or a third party;
- .6 Reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- .7 Work performed for which submittals are required prior to obtaining Favorable Review of submittals;
- .8 Persistent failure to carry out the Work in accordance with the Contract Documents;
- .9 Failure to submit a construction schedule or to update the construction schedule in accordance with General Conditions paragraph 5.18;
- .10 Failure to update Record Drawings weekly;
- .11 Failure to reinstate required insurance that has been allowed to lapse; or
- .12 Non-payment of money owed to the Owner for the extra cost of inspection or engineering services provided for in the General Conditions.

Completion and Acceptance

13.7 Definitions

- .1 "Substantial Completion" means the Work has progressed to the point that: (1) the Work is ready for

beneficial use and occupancy by the Owner for the intended purpose, (2) all fire and life safety work has been completed, inspected and accepted, (3) all mechanical and process systems and equipment are complete and have been put in automatic operation, (4) the total value of uncompleted work is less than one-half of one percent of the Contract Price and (5) completing the Work will not significantly interfere with the Owner's convenience, use or cost of operation.

.2 "Semi-Final Inspection" determines if the Work is Substantially Complete.

.3 "Final Inspection" determines if the Work has reached Final Completion.

.4 "Final Completion" indicates that the Work has been fully completed in accordance with the Contract Documents and is ready for acceptance and final payment by the Owner.

.5 "The Final Punch List" contains items that remain uncompleted after Substantial Completion but that must be completed prior to Final Completion.

Owner's Right to Partial Use

13.8 When provided for in the Contract Documents or agreed to in writing by the Owner and the Contractor, the Owner may notify the Contractor and begin using a portion of the Work even though it is not Substantially Complete. The Contractor, the Owner and the Engineer shall agree on and document responsibilities for security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that portion of the Work being used by the Owner. The Owner, the Contractor and the Engineer shall inspect such portion of the Work and shall prepare a list of work to be completed or corrected before final acceptance. The Owner's use of any portion of the Work shall not constitute final acceptance of that portion of the Work prior to Final Completion and acceptance of the Work as a whole. The Owner shall allow the Contractor reasonable access to complete or correct work in areas being used by the Owner. Partial beneficial occupancy shall not relieve the Contractor of Liquidated Damages unless the Contract Documents expressly provide for and identify the portion of Work that may be considered Substantially Complete before the remaining portions of the Work.

Contractor's List of Deficiencies

13.9 When the Contractor considers the Work nearly complete, the Contractor shall review the Contract Documents, inspect the Work and prepare a list of deficiencies (Punch List). The Contractor shall complete or correct the items on the Punch List until, in the Contractor's opinion, the Work is Substantially Complete

and ready for occupancy and use by the Owner. The Contractor shall then deliver the Punch List to the Engineer and notify the Engineer in writing that the Contractor believes the Work is Substantially Complete and ready for a Semi-Final Inspection.

Semi-Final Inspection, Substantial Completion

13.10 When the Work is ready and the Contractor so notifies the Engineer in writing, the Engineer will make a Semi-Final Inspection and may add additional items to the Contractor's Punch List. As a result of this inspection, the Engineer may determine that (1) the Work is not sufficiently complete to warrant a Semi-Final Inspection, additions to the Contractor's Punch List, or the preparation of a Final Punch List, (2) the Work is sufficiently complete for the Engineer to prepare a Final Punch List but certain incomplete or Defective Work prohibits use of the Work for its intended purpose and therefore, the Work is not Substantially Complete, or (3) that the Work is Substantially Complete and usable for its intended purpose and the Engineer can prepare a Final Punch list. In preceding cases 1 and 2, the Contractor shall continue the Work and call for a second Semi-Final Inspection when the Work is ready. In case (3), the Engineer will prepare a Final Punch List and a notice of Substantial Completion which shall establish the date of Substantial Completion and shall state the time agreed to by the Owner and the Contractor (not to exceed 30 days) in which the Contractor shall complete all work ready for Final Inspection. The date of Substantial Completion shall be revised if necessary such that it is no more than 30 days prior to the actual date of Final Completion. The Engineer shall attach a copy of the Final Punch List to the notice of Substantial Completion. If the Contractor does not achieve Substantial Completion on the second attempt, it shall reimburse the Owner the cost of the Engineer's services for additional inspections.

Final Inspection, Final Completion

13.11 When the Contractor has completed or corrected all the items on the Engineer's Final Punch List and has made all required final submittals, the Contractor shall give the Engineer written notice that the Work is ready for Final Inspection and acceptance and upon receipt of a final Application for Payment, the Engineer shall make a Final Inspection. If the Engineer finds the Work is not fully complete, it shall notify the Contractor of items still requiring completion or correction. The Contractor shall immediately correct these deficiencies and call for a reinspection. When the Engineer finds to the best of the Engineer's knowledge, information and

belief, and on the basis of the Engineer's observations and inspections, the Work is acceptable and fully complete in accordance with the Contract Documents, and when all final submittals have been made, the Engineer will recommend that the Owner issue and file a Notice of Completion, designating Final Completion, make Final Payment and Accept the Work in accordance with the terms and conditions of the Contract Documents.

13.12 Neither the Engineer's failure to include an item on the Final Punch List, nor making of the Semi-Final or the Final Inspection, nor recommendation of final acceptance shall alter the Contractor's responsibility to complete all Work in accordance with the Contract Documents.

Final Payment

13.13 Within 10 days after the Contractor has delivered to the Owner a complete release of all liens arising out of this Contract or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory to the Owner to defend and indemnify the Owner against such liens, the Owner shall accept the Work and file a Notice of Completion. Final Payment shall not become due until 60 days after the Owner files a Notice of Completion and there being no liens or stop notices filed. If any lien or stop notice remains unsatisfied, the Contractor shall immediately take all steps necessary to remove all liens or stop notices before Final Payment is made. If any liens are filed or exist after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such liens, including all costs and reasonable attorneys' fees.

Waiver of Claims

13.14 The making of Final Payment shall constitute a waiver of claims by the Owner except those arising from:

- .1 Liens, claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 Failure of the Work to comply with the requirements of the Contract Documents; or
- .3 Terms of the one-year guarantee period and special warranties required by the Contract Documents.
- .4 Any of the Contractor's continuing obligations under the Contract Documents.

13.15 Acceptance of Final Payment by the Contractor, a subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 14 - TERMINATION

Termination by the Owner for Cause

14.1 The Owner may terminate all or part of the Contract if the Contractor:

- .1 Persistently fails to provide enough workers or materials to properly pursue the Work as required to complete the Work within the Contract Time;
- .2 Persistently fails to perform the Work in accordance with the Contract Documents including, but not limited to providing monthly updates to the schedule of Work and monthly updates to Record Drawings, or to correct or replace Defective Work when directed to do so;
- .3 Fails to make payment to subcontractors or material suppliers;
- .4 Becomes insolvent, commences any form of voluntary bankruptcy proceedings, has any petition or action filed against it under any bankruptcy code or law, makes a general assignment for the benefit of creditors, or if a trustee, receiver or agent is appointed under law to take charge of Contractor's property or operations for the benefit of creditors;
- .5 Persistently disregards laws, regulations, rules or orders of public bodies having jurisdiction or persistently disregards the authority of the Engineer or Owner;
- .6 Fails to retain a valid Contractor's license of the required class in the applicable jurisdiction; or
- .7 Otherwise commits a material breach of the Contract.

14.2 When any of the above reasons exist and without prejudice to any other rights or remedies the Owner may have, and after giving the Contractor and the Contractor's Surety 7 days written notice, the Owner may terminate the employment of the Contractor and, subject to any prior rights of the Surety, the Owner may:

- .1 Take possession of the site and of all material, tools and construction equipment on the site owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to paragraph 5.9; and
- .3 Complete the Work by any reasonable method the Owner may select.

14.3 When the Owner terminates the Contract for cause, the Contractor shall not be entitled to further payment until the Work has been completed.

14.4 If the cost of completing the Work, including additional engineering services, attorney's fees and administrative expenses made necessary thereby, exceeds the unpaid Contract Price, the Contractor shall pay the difference to the Owner. This obligation for payment shall be binding after termination of the Contract. If the cost of completing the Work including costs for engineering, legal, and administrative services minus the Contractor's unearned overhead and profit computed in accordance with paragraphs 9.11.6 and 9.11.7, is less than the unpaid Contract Price, the difference and other consequential costs shall be paid to the Contractor.

14.5 If it has been adjudicated or otherwise determined that the Owner has erroneously or negligently terminated the Contractor for cause, then the termination shall automatically convert to a Termination by Owner for Convenience as set forth in Article 14.7

Suspension by the Owner for Convenience

14.6 The Owner, without cause, may issue written order giving the Contractor 7 days notice to suspend, delay or interrupt the Work in whole or in part. The order shall fix the dates on which the work shall cease and resume.

14.7 If a suspension, delay, or interruption of the Work ordered by the Owner for convenience causes an increase or decrease in the cost of performing the Contract, the Contract Price shall be adjusted as agreed by the Owner and the Contractor or in accordance with the method for determining the cost of changes in Article 9. The Contract Price shall not be adjusted if the Contractor's performance would otherwise have been suspended, delayed or interrupted due to causes for which the Contractor is responsible.

Termination by the Owner for Convenience

14.8 The Owner may terminate all or part of the Contract without cause by giving the Contractor 7 days written notice. Such termination shall not prejudice any other right or remedy the Owner may have under the Contract. If the Contract is terminated without cause, the Contractor shall be paid for all work executed as of the date of termination plus reasonable termination expenses including direct, indirect and consequential costs but the Contractor shall not be paid for anticipated profit on work not performed.

Contractor May Stop Work or Terminate

14.9 If, through no act or fault of Contractor, the Work is suspended for a period of more than 90 days by the Owner or under an order of court or other public

authority, or the Engineer fails to act on any Application for Payment within 30 days after it is submitted, or the Owner fails for 60 days to pay the Contractor any sum finally determined to be due, the Contractor may, upon 7 days' written notice to the Owner and the Engineer, terminate the Agreement and recover from the Owner payment for all Work performed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if the Engineer has failed to act on an Application for Payment or the Owner has failed to make any payment as aforesaid, the Contractor may, upon 7 days' written notice to the Owner and the Engineer, stop the Work until payment of all amounts then due is received. The provisions of this paragraph shall not relieve the Contractor of the obligations to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with the Owner.

ARTICLE 15 - MISCELLANEOUS

Method for Giving Notices

15.1 Written notice shall only be considered to have been given if delivered in person to the individual, partner of the partnership or joint venture, or officer of the corporation for whom intended or if sent by registered or certified mail to the address given in the Agreement unless amended by written notice. Notice to the Contractor's superintendent shall be considered notice to the Contractor. Notice to the Resident Engineer shall be considered notice to the Engineer. Notice to the Owner's Project Representative or Manager shall be considered notice to the Owner.

Rights and Remedies

15.2 Duties, obligations, rights and remedies prescribed by the Contract Documents shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed by or available under law.

Failure to Act Not a Waiver of Rights

15.3 Except as expressly provided in the Contract Documents, no action or failure to act by the Owner, Engineer, Design Engineer or Contractor shall constitute a waiver of a right afforded or duty imposed under the Contract. No such action or failure to act shall constitute approval of or acquiescence in failure to perform in accordance with the Contract Documents or any other breach of contract.

Severability of Provisions

15.4 The finding under law that any one or more provisions or any portion of a provision in the Contract Documents is invalid, unenforceable, or illegal shall not impair the validity or enforceability of any other provision or of the Contract Documents as a whole. In the case of invalidity or enforceability of any provision or portion thereof, the provision shall be rewritten and enforced to the maximum extent permitted by law to accomplish as near as possible the intent of the original provision.

Right to Audit

15.5 Maintenance, Inspection, and Audit of Records. All books, account, reports, files, correspondence, data and other records relating to this contract shall be maintained by the Contractor, its subcontractors and material suppliers and shall be subject to all reasonable times to review, inspection, and audit by the Owner, Engineer and their agents at all times during performance of the Work and for a period of five (5) years after Final Completion of the Work. Such records shall be produced by the Contractor and/or the subcontractor or Material Supplier within a reasonable time at a place designated by the Owner or Engineer, upon written notice to the Contractor.

15.5.1 Accounting System. Contractor shall exercise such controls as may be necessary for proper financial management of the Work. Such accounting and control systems shall comply with prevailing custom and practice for similar projects, be satisfactory to City and shall include preservation of records for a period of four (4) years after Final Completion, or for such longer period as may be required by Applicable Law.

15.5.2 Books and Records. Contractor shall keep, and shall require provisions to be included in all contracts entered into by subcontractors and suppliers requiring the subcontractors and suppliers to keep, full and detailed books, records, information, materials and data, of every kind and character (hard copy, as well as computer readable data if it exists), that have any bearing on or pertain to any matters, rights, duties or obligations relating to the Project, Work or Contract, including, without limitation, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, change orders, change order requests, estimates, field orders, schedules, diaries, logs, reports, shop drawings, samples, exemplars, drawings, specifications, invoices, delivery tickets, receipts, vouchers, canceled checks, memoranda; accounting records; job cost reports; job cost files (including complete documentation of negotiated

settlements); backcharges; general ledgers; documentation of cash and trade discounts earned; insurance rebates and dividends and other documents relating in any way to any claims, charges or time extensions asserted by Contractor of any of the subcontractors.

15.5.3 Inspection and Copying. Contractor shall allow, and shall require provisions to be included in all contracts entered into by subcontractors allowing, Owner, Engineer and their authorized representative(s), auditors, attorneys and accountants, upon twenty-four (24) hour notice to Contractor, full access to inspect and copy all its aforesaid books and records at a location designated by Owner or Engineer and within 200 miles of the Project.

15.5.4 Noncompliance by Contractor. Contractor's compliance with this Article 15.5 et seq, shall be a condition precedent to maintenance of any judicial or extra-judicial action by Contractor against Owner or Engineer. In addition to and without limitation upon Owner's or Engineer's other rights and remedies for breach, including any other provisions for withholding set forth in the Contract documents, Owner shall have the right, exercised in its sole discretion, to withhold from any payment to Contractor due under a current application for payment an additional sum of up to ten percent (10%) of the total amount set forth in such application for payment, until Contractor and the subcontractors have complied with any outstanding and unsatisfied request by City under this Article 15.5. Upon compliance with this Article 15.5, any such monies withheld shall be released to Contractor.

15.5.5 Special Enforcement by Owner or Engineer. Contractor agrees that any failure by Contractor or any subcontractor to provide access to books and records as required by this Article 15.5 et seq. shall be specifically enforceable, by issuance of a preliminary and/or permanent mandatory injunction by a court of competent jurisdiction based on affidavits submitted to such court and without the necessity of oral testimony, to compel Contractor to permit access, inspection, audit and/or reproduction of such books and records or the require delivery of such books and records to Owner and Engineer for inspection, audit and/or reproduction.

Governing Law

15.6 The Contract shall be governed by the law of the place where the project is located.

15.7 Survival of Terms. Any indemnity, warranty or guarantee given by Contractor to Owner or Engineer

under this Agreement shall survive the expiration or termination of the Agreement and shall be binding upon Contractor and their subcontractors and suppliers until any action is barred according to terms in the Agreement or by the applicable statute of limitations or statute of repose. All obligations of Contractor under this Contract

shall survive the expiration or termination of this Contract.

END OF GENERAL CONDITIONS

From: Company Name
Mailing Address
City, ST Zip
Name

Page: 1 of 2
Date: _____
K/J Job No.: _____
Project Name: _____

Request for Information

Originator: _____ **Drawing Reference:** _____
Requested Date of Response: _____ **Specification Section:** _____

Written requests for information will not be considered without an accompanying completed copy of this RFI. By submission of this form the Contractor represents it has carefully reviewed the Contract Documents, coordinated the Work with the appropriate subcontractors, reviewed the field conditions and hereby certifies that the information requested cannot be determined from such efforts as required by the Contract Documents.

The Contractor requests the following information in accordance with the requirements of the Contract Documents.

Description of Requested Information

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

Contractor's Proposed Method of Resolving Issue

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

Contractor's Proposed Impact on Project

Estimated Contract Cost will be increased decreased unchanged by: _____

Estimated Contract Time will be increased decreased unchanged by: _____ days.

Attachments

Empty box for attachments.

Attach supporting documentation sufficient for Engineer to evaluate Request for Information, including documentation of field conditions. Forms submitted without adequate documentation will be returned without comment for further clarification.

Contractor's signature below signifies acceptance of responsibility for accuracy and completeness of information included in this Request for Information Form.

Authorized Signature: _____ **Title:** _____
Company: _____ **Date:** _____

Response Date: _____ **K/J Job No.:** _____
Specification Section: _____ **Project Name:** _____
Drawing Reference: _____ **Page:** 2 of 2

Response

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

If Contractor estimates an impact on Project time or price based upon Response, submit Reply within 5 working days of receipt.

Respondent: _____ **Signature:** _____
Company: _____ **Date:** _____
Issued for Kennedy/Jenks Consultants by: _____

Contractor's Reply To Response:

Estimated Contract Cost will be increased decreased unchanged by: _____
 Estimated Contract Time will be increased decreased unchanged by: _____ Days.

Comments

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

Distribution	RFI	Response	Reply
Owner	_____	_____	_____
Engineer	_____	_____	_____
Contractor	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
File	_____	_____	_____

From: Company Name
Mailing Address
City, ST Zip
Name

Page: 1 of 2

Submittal Date: _____

K/J Job No.: _____

Project Name: _____

Specification Section: _____

Prior Submittal: _____

Submittal

A. Certification of Completeness and Accuracy

We certify that we have reviewed this submittal in detail and that the submittal is:

1. Complete and accurate and in complete compliance with the Contract Documents.
2. Compliant with the requirements of "Material and Equipment" in Section 01040, especially the subparagraph titled "Compatibility of Equipment and Material".
3. Compliant with the paragraph titled "Performance Specifications and Contractor Designed Items" in Section 01040.
4. Without any deviations from the Contract Drawings, except the following (describe deviation) which have the following advantages and disadvantages:

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

Signed by Subcontractor: _____ Title: _____ Date: _____

Signed by Contractor: _____ Title: _____ Date: _____

Response Date: _____
Specification Section: _____

K/J Job No.: _____
Project Name: _____

Page: 2 of 2

Response

Item	K/J Action	Refer to Comment	Manufacturer or Supplier	Title of Submittal / Drawing

A. The action(s) noted above have been taken on the enclosed document(s).

- NET = No Exceptions Taken
- MCN-N = Make Corrections Noted, No Resubmittal Required
- MCN-R = Make Corrections Noted, Partial Resubmittal Required
- A&R = Amend and Resubmit
- NR = Not Reviewed
- RR = Rejected, Resubmit
- RA = Receipt Acknowledged

Comment(s):

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

B. Corrections or comments made on the shop drawings during this review do not relieve the Contractor from compliance with the requirements of the Drawings and Specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating its work with that of all other trades, and performing its work in a safe and satisfactory manner.

 Responder: type name here - sign above

Distribution	Submittal	Encl.	Response
Owner	_____	_____	_____
Engineer	_____	_____	_____
Contractor	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
File	_____	_____	_____

From: Company Name
Mailing Address
City, ST Zip
Name

Page: 1 of 3

Submission Date: _____

K/J Job No.: _____

Project Name: _____

Specification Section: _____

Prior Submittal: _____

Proposed Equivalent

- A. When the first specified item is followed by a second maker's name and "or equal," the Contractor may submit Proposed Equivalent items for the Engineer's review. Proposed Equivalent items that are in the Engineer's judgment equal to the first specified item in quality, utility, and appearance, will be Favorably Reviewed. Where a product description and first maker's name is followed by "or equal" with no second maker's name, it means the specifier knows of no equivalent product and the Contractor may submit Proposed Equivalent products by other makers for review. Where the term "or equal" is omitted, it means that the named item is required to meet the Owner's needs; no products or makers other than those specified will be considered.
- B. This request shall include adequate technical information to fully describe the function and quality of the item. Submittals of Proposed Equivalent items that are not made within 35 days of the Notice to Proceed will be rejected unless the Engineer has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Engineer for the late submittal. If the Contractor's second attempt to obtain Favorable Review of a Proposed Equivalent item is unsuccessful, the Contractor shall submit the first specified item.
- C. Inclusion of a second maker's name indicates the maker is acceptable but does not necessarily indicate the maker offers a standard product equal to the first specified item. Items by the second named maker are subject to the same conditions of review and compatibility as other Proposed Equivalent items. Inclusion of a maker's name and/or model number after a specification description is not a representation that the maker will furnish an item meeting the Contract requirements at bid time or at time of need. It is the Contractor's sole responsibility to furnish items meeting the Contract requirements.
- D. The Engineer's review of Proposed Equivalent items is based solely on information provided by the Contractor and on the Contractor's warranty that the proposed item is equal in quality, utility, function and appearance to the first specified item. Favorable Review of a Proposed Equivalent item has the same meaning and is subject to the same limitations that apply to the Favorable Review of Product Data and Shop Drawings described in the Contract Documents.
- E. Submit with proposal:
 - 1. Description of item being proposed including the Manufacturer's model number.
 - 2. Manufacturer's representation that item is equal to or superior to specified item in all respects.
 - 3. Manufacturer's product data.
 - 4. Information about several recent similar installations, including project name, owner's name, address, telephone number, and name of knowledgeable person to contact for information on performance of the product.
 - 5. Whether a reduction in the Contract Price is being proposed and, if so, how much.
 - 6. Any differences between the product specified and the Proposed Equivalent, including the warranty.

Submission Date:
Project Name:
Specification Section:
Page 2 of 3

F. Certification of Equivalency, Completeness and Accuracy:

We certify that we have reviewed this request in detail and that the item proposed is:

1. Equal to or superior to the specified item
2. Complete and accurate and in complete compliance with the Contract Documents,
3. Compliant with the requirements of "Material and Equipment" in Section 01040, especially the subparagraph titled "Compatibility of Equipment and Material",
4. Compliant with the paragraph titled "Performance Specifications and Contractor Designed Work" in Section 01040,
5. Without any deviations from the Contract Documents, except the following (describe deviation) which have the following advantages and disadvantages:

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.
--

We further represent and warrant to be solely responsible for any extra cost or expense necessary to make the proposed item or service fully equivalent to and compatible with the Contract Documents and meet or exceed the design intent.

If we use the Proposed Equivalent, we agree to comply with all additional requirements imposed upon us by the Engineer and Owner.

Signed by Subcontractor: _____ Title: _____ Date: _____

Signed by Contractor: _____ Title: _____ Date: _____

Response Date: _____
Specification Section: _____
Page: 3 of 3

K/J Job No.: _____
Project Name: _____

Response

Item	K/J Action	Refer to Comment	Manufacturer or Supplier	Title of Submittal / Drawing / Information

A. The action(s) noted above have been taken on the enclosed document(s).

NET = No Exceptions Taken A&R = Amend and Resubmit NR = Not Reviewed
MCN = Make Corrections Noted RR = Rejected, Resubmit

Comment(s):

Delete or replace this text with your response. Space is limited; attach additional sheets if necessary.

B. Corrections or comments made on the submittal during this review does not relieve the Contractor from compliance with the requirements of the Drawings and Specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating its work with that of all other trades, and performing its work in a safe and satisfactory manner.

Responder: type name here & sign above

Distribution	Proposed Equivalent	Encl.	Response
Owner	_____	_____	_____
Engineer	_____	_____	_____
Contractor	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
File	_____	_____	_____

To: Name
MailingAddress
CityStateZip

Date: Date
K/J Job No.: 000000.00
Project: ProjectName
Contract Date: Date
Period To: Date

Distribution to:
 Owner
 Engineer
 Contractor
 Architect

Attn: Name

From: ContractorName
Mailing Address
CityStateZip

Reviewed By: Kennedy/Jenks Consultants, Inc.
MailingAddress
CityStateZip

Prepared By: Name

Recommended By: Name

Contractor's Application for Payment		
1. Original Contract Sum		
2. Net Change by Change Orders		
3. Contract Sum To Date (Line 1 ± 2)		
4. Total Completed & Stored to Date (Column G on Page 2)		
5. Retainage:		
a. _____ % of Completed Work (Column D + E)		
b. _____ % of Stored Material (Column F)		
Total Retainage (Lines 5a + 5b or Total in Column I)		
6. Total Earned Less Retainage (Line 4 less Line 5 Total)		
7. Less Previous Payments (Line 6 from prior Applications)		
8. Current Payment Due (Line 6 less Line 7)		
9. Balance to Finish, Including Retainage (Line 3 less Line 6)		
Change Order Summary	Additions	Deductions
Total Changes approved by Owner in previous months		
Total approved this month		
Totals		
Net Changes by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief, the Work covered by this Application for Payment has been completed in accordance with the Contract Documents and that all Work for which previous payments have been received is free and clear of liens, claims, security interests or encumbrances of any kind. The Contractor further warrants that title to all Work covered by this Application for Payment will pass to the Owner no later than the time of payment.

By: _____ Date: _____
Contractor

State of: _____ County of: _____
Subscribed and sworn to before me this _____ day of _____

Notary Public: _____

My Commission expires: _____

Engineer's Recommendation for Payment: In accordance with the Contract Documents, the Engineer recommends to the Owner that the Contractor is entitled to payment in the amount recommended, subject to withholds, deductions or credits pursuant to the Contract Documents.

Amount Recommended..... _____

By: _____ Date: _____
Kennedy/Jenks Consultants, Inc.

This Certificate is not negotiable. The amount recommended is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

Contractor's signed certification is attached. In tabulations below, amounts are stated to the nearest dollar. Use Column I on Contracts where variable retainage for line items may apply.

Application No.: #REF!
 Application Date: #REF!
 Period to: #REF!
 K/J Job No.: #REF!

A Item No.	B Description of Work	C Scheduled Value	D Work Completed		F Materials Presently Stored (not in D or E)	G Total Completed and Stored to Date (D+E+F)	H Balance to Finish (C-G)	I Retainage (if variable rate)
			D From Previous Application (D+E)	E This Period				
Grand Totals								

SUPPLEMENTARY CONDITIONS

The following supplementary conditions change portions of Document Number 00700, General Conditions, as noted. When any provision is changed, the unaltered provisions shall remain in effect.

SC-4.1 The Performance Bond required by paragraph 4.1 of the General Conditions shall be changed to remain in force the greater of: (a) one (1) year after final completion and final acceptance of all work, or (b) until the expiration of all Warranties and Guarantees as required by the contract documents.

SC-4.3 The limits of liability for the insurance required by paragraph 4.3 of the General Conditions shall be changed to provide coverage for not less than the following amounts or greater where required by laws and regulations.

4.3.2 Comprehensive General Liability described under paragraph 4.3.2 of the General Conditions.

- (1) Bodily Injury (including completed operations and products liability):
\$1,000,000.00 Each Occurrence
\$1,000,000.00 Annual Aggregate

Property Damage:
\$1,000,000.00 Each Occurrence
\$1,000,000.00 Annual Aggregate
or a combined single limit of..... \$1,000,000

- (2) Property Damage liability insurance will provide Explosion, Collapse and Underground coverages where applicable.

- (3) Personal Injury, with employment exclusion deleted
\$1,000,000.00 Annual Aggregate

4.3.3 Comprehensive Automobile Liability described under paragraph 4.3.3.

Bodily Injury:
\$1,000,000.00 Each Person
\$1,000,000.00 Each Occurrence

Property Damage:
\$1,000,000.00 Each Occurrence

or combined single limit of..... \$1,000,000.00

4.3.4 Property Insurance described under paragraph 4.3.4:
\$1,000,000.00 Each Occurrence
\$1,000,000.00 Annual Aggregate
\$ 5,000.00 Deductible Not Greater Than

SC 5.15 Replace paragraph 5.15 with the following:

"Within 5 days after the date in the Notice to Proceed, Contractor shall submit a construction schedule in graphic format. The submittal shall be in electronic form."

SC 10.1 Add the following at the end of existing paragraph 10.1.

"Claims by the Contractor for \$375,000 or less shall be resolved in accordance with California Public Contract Code Section 20104-20104.6 which is incorporated herein in full. The timing provisions for making and responding to Claims under Section 20104-20104.6 are summarized in the following subparagraphs 10.1.1 through 10.1.7.

- .1 All claims and responses to claims shall be in writing and shall be fully documented in accordance with General Conditions paragraph 10.2
- .2 The Owner will respond to Claims of \$50,000 or less within 45 days of receipt or may request additional information supporting or refuting the Claim within 30 days of receipt in which case the Owner will respond within the greater of 15 days after receipt of additional information or a period equal to the time taken by the Contractor to furnish additional information.
- .3 The Owner will respond to Claims of \$375,000 or less but greater than \$50,000 within 60 days of receipt or may request additional information supporting or refuting the Claim within 30 days of receipt in which case the Owner will respond within the greater of 30 days after receipt of additional information or a period equal to the time taken by the Contractor to furnish additional information.
- .4 If in either size of claim described above more information is required after the additional information was first requested and furnished, it shall be requested and provided pursuant to Public Contract Code Sections 20104-20104.6 and upon mutual agreement of the Owner and the Contractor.
- .5 If the Contractor disputes the Owner's response or the Owner fails to respond within the time prescribed, the Contractor may, within 15 days of receipt of the Owner's response or within 15 days of the time prescribed for the Owner's response, demand an informal conference to meet and confer for settlement of the issues in dispute. Upon such a demand the Owner shall schedule a meet and confer conference with the Contractor within 30 days for settlement of the dispute. Mediation pursuant to paragraph 10.6 shall satisfy this requirement.
- .6 If following the meet and confer conference the claim or any portion remains in dispute, the Contractor may file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period within which a claim must be filed shall be tolled from the time the Contractor first submits its written claim pursuant to this provision until the time that the claim is denied, including any time utilized by the meet and confer process.
- .7 Public Contract Code Section 20104.4 establishes procedures for civil actions filed to resolve claims subject to this Section. These procedures include mandatory submission of the matter to nonbinding arbitration followed, if necessary, by mandatory submission to judicial arbitration.

"Claims for more than \$375,000 shall be resolved in accordance with General Conditions paragraphs 10.2 through 10.5. Arbitration shall not be used to resolve such claims without the express written agreement of both parties except as

required by law."

SC-15.7 Add a new paragraph

"Assignment of Antitrust Claims

15.7 The Contractor offers and agrees to assign to the Owner all rights, title and interest in and to causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act [Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the California Business and Professions Code], arising from purchasing of goods, services or materials pursuant to this Contract. This assignment shall be made and become effective at the time the Owner tenders final payment to the Contractor, without further acknowledgment by the parties."

END OF SUPPLEMENTARY CONDITIONS

SECTION 01010

SUMMARY OF WORK AND CONTRACT CONSIDERATIONS

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The project includes:
- a. Removal and replacement of approximately 1,050 linear feet of ductile iron gravity sewer pipe with new restrained joint ductile iron pipe.
 - b. Replacement of **eight** existing manholes with new precast manholes.
 - c. Replace all existing aerial pipe supports with new pipe supports as shown in the drawings.
 - d. Construction and maintenance of a sewage by-pass during project.
 - e. Removal of trees within the gravity sewer alignment.
 - f. Slope stabilization.
 - g. Perform demolition and abandonment of existing pipe, manholes, and pipe supports as shown on the drawings.
 - h. Traffic control as required to construct the project.
 - i. Mobilization and Demobilization.
 - j. Environmental Mitigation, including amending and implementing SWPPP, as required by these specifications.
 - k. Rock excavation as required to perform footing and pipe installation.
 - l. Sheet piling, shoring and bracing as required by Section 6707 of the Labor Code.
 - m. Restore all areas disturbed by construction, including paving, curb and gutter, sidewalk, and landscaping repair.

1.02 TYPE OF CONTRACT

- A. The Work covered by these Contract Documents shall be provided under a single lump sum Contract.

1.03 WORK UNDER OTHER CONTRACTS –NOT USED

1.04 WORK SEQUENCE-NOT USED

1.05 CONTRACTOR'S USE OF SITE AND OWNERS CONTINUED OPERATIONS

- A. The Contractor shall confine his use of the site for work and storage to the Work Area Limits shown on the contract drawings. The Contractor's use of adjacent lands and roads for access to move onto and off of the site and for daily access of workers, material and equipment shall be arranged and scheduled to minimize interference with the Owner's continued operations and the public.
- a. The only two accesses to the site are through an existing trail at the end of Mariposa Court and an access road that starts adjacent to the Calle la Cruz Pump Station. The limit of equipment access is shown on the drawings.

- B. The Owner intends to continue operation of portions of its existing gravity sewer and pump station during all of the construction period. The Contractor shall plan and schedule its work to minimize impacting the Owner's continued operations and shall, at all times, maintain safe access for the Owner's operating personnel and equipment.
- C. The Contractor shall be responsible for maintaining safe emergency exiting for the Owner's and Contractor's personnel in all areas affected by the Contractor's work.
- D. If operation of the Owner's existing facility is adversely affected by the Contractor's work, the Owner may suffer a financial loss and may make a claim against the Contractor to recover its loss.

1.06 DOCUMENTING EXISTING

- A. Prior to commencing the Work, tour the site with the Owner and the Engineer. Examine and document photographically and in writing the condition of existing buildings, equipment, improvements, and landscape planting on or adjacent to the site. This record shall serve as a basis for determination of subsequent damage due to the Contractor's operations and shall be signed by all parties making the tour. Record existing conditions by making a video and taking digital photographs. Submit copies of the video and photos to the Owner prior to starting work.

1.07 SHUTDOWN OF EXISTING UTILITIES, SERVICES OR OPERATIONS

- A. Obtain the Engineer's approval at least seven (7) days prior to the shutdown of any utility, service or operation of any existing facility. Only a brief shut down of the gravity sewer system is anticipated to make the connections to sewer bypass system. Give required notice and make appropriate arrangements with the District and other affected parties prior to shutdown of any utility service. Base bids on work performed during normal working hours (7am to 5pm). The Owner may authorize a Change Order if work must be performed during premium time hours.
- B. Schedule utility service or operations shutdowns for periods of minimum use and at the Owner's convenience. Have all required material, equipment and workers on site prior to beginning any work involving a possible shutdown. Perform work as required to reduce shutdown time to the minimum. In some cases, this may require increased numbers of workers and/or premium time night or weekend work.

1.08 SCHEDULE OF VALUES

- A. Specific provisions are described in Article 13, paragraph 13.1 of the General Conditions.
- B. The Contractor's Schedule of Values shall be in a form acceptable to the Engineer and have at least the following level of detail: a separate line item for each technical specification section, for site mobilization, for Construction Scheduling, for bonds and insurance, for final cleanup and for final deliverables. Subdivide final deliverables into: Record Drawings; Operation and Maintenance Manuals with Parts Lists; and Special Guarantees. Include the appropriate specification section and paragraph number for each line item. Subdivide major trades or portions of the

work into multiple line items that relate to observable milestones to aid monthly progress evaluations in accordance with the following example:

- a. Demolition of existing pipe and footings,
- b. Sewer bypass system,
- c. New pipe,
- d. New pipe supports,
- e. Site Restoration,
- f. Sheet piling shoring and bracing, and
- g. Storm Water Pollution Prevention.

1.09 APPLICATION FOR PAYMENT

- A. Applications for Payment may be made only on General Conditions Exhibit GC-4, in accordance with General Conditions paragraph 13.2. Line items on the Application for Payment shall be the same as those used on the Schedule of Values. Applications for Payment shall contain the Contractors Certification required by General Conditions paragraph 13.2.

1.10 UNIT PRICE WORK –NOT USED

1.11 CONTRACT MODIFICATIONS

- A. Methods of modifying the Contract Documents are covered in General Conditions, Article 9.
- B. The following documents may be used by the Engineer:
 1. Request for Quotation: Issued by the Engineer, a Request for Quotation is used to describe a proposed change and request a cost quotation from the Contractor but does not authorize a change in the Work or in the Contract Time or Price.
 2. Change Order: Signed by the Engineer signifying its recommendation, and signed by the Contractor and Owner signifying their acceptance, a Change Order changes the Scope of Work and possibly the Contract Price and/or Contract Time.
 3. Work Directive Change: Signed by the Owner (and in some cases by the Contractor) signifying their acceptance and issued by the Engineer, a Work Directive Change is used: (1) to direct the Contractor to do extra work on a cost accounting basis with a fixed maximum sum when the Owner and Contractor have not agreed on the price and time for the change, and (2) to direct the Contractor to do work that the Contractor contends is not included in the contract scope. Work done under case 1 will be converted to a Change Order when the Contractor and Owner agree on the change in price and time. The Contractor may make a claim under General Conditions Article 10 for recovery of cost and time extension for work done under case 2; but if the claim is denied because the work is determined to be included in the contract scope, then the Contract Time and Price will not be changed. Work done under both cases 1 and 2 shall be done in accordance with the requirements for work done on a cost accounting basis described in General Conditions paragraphs 9.11 through 9.14.
 4. Response to Request for Information: Issued by the Engineer, a Response to Request for Information is used to order or document minor changes in the

work consistent with the intent of the Contract Documents and NOT involving a change in price or time. Information issued on a Response to Request for Information shall NOT authorize a change in Contract Price or Contract Time and shall not be considered a Constructive Change Order. If the Contractor considers that a Response to Request for Information would cause a change in Contract Price or Time, it shall notify the Engineer in writing within 15 days of receipt of the Response to Request for Information and shall not proceed with the work. See General Conditions paragraphs 7.8, 9.9 and 9.10.

5. The Contractor hereby expressly waives any claim or right to make a claim for an increase in contract time or price without written notice to the Engineer of the Contractor's intent to make a claim 5 days prior to proceeding to execute the work or portion thereof giving rise to such claim. See General Conditions paragraph 10.3.
6. The Contractor agrees that it shall not consider any Response to Request for Information, order, instruction, clarification, suggestion or any other communication either written or oral, given intentionally or unintentionally by the Engineer, Owner or any other person as authorization or direction to do any work that would cause a change in Contract Time or Price unless it is a formal written Change Order or Work Directive Change signed by the Owner.

1.12 REGULATORY REQUIREMENTS

- A. The codes and regulations together with local amendments when applicable adopted by the State and other governmental authorities having jurisdiction shall establish minimum requirements for this project. This project shall comply with the following:
 1. Uniform Building Code (UBC) latest edition.
 2. Uniform Building Code Standards (UBCS)
 3. Uniform Fire Code (UFC)
 4. Uniform Mechanical Code (UMC)
 5. Uniform Plumbing Code (UPC)
 6. National Electric Code (NEC)
 7. California Building Code
 8. California Code of Regulations
 - a. Title 8, Industrial Relations: Especially CAL-OSHA.
 - b. Title 19, Public Safety: Portions of the work regulated by the State Fire Marshal.
 9. Statewide NPDES Stormwater General Construction Permit (CGP)
- B. The latest edition of the requirements in effect at the date of submission of bids shall apply.
- C. General Conditions paragraph 5.11 covers the Contractor's responsibility to comply with laws and codes applicable to Means and Methods for performing the Work.
- D. General Conditions paragraph 5.14 covers the Contractor's responsibility to report code deficiencies in the design to the Engineer prior to proceeding with the Work.
- E. Paragraphs addressing Pre-Engineered Systems and Performance Specifications in other Sections cover the Contractor's responsibility to comply with code requirements when (1) performance specifications are used to describe all or

portions of Work or items and (2) when pre-engineered (contractor designed) systems are specified.

- F. In cases where the Contract Documents are more restrictive than applicable codes, the Contractor shall comply with the Contract Documents.

1.13 REFERENCE STANDARDS

- A. When these specifications state that Work or tests shall conform to specific provisions in a referenced standard, specification, code, recommendation or manual published by an association, organization, society or agency the referenced provisions, as they apply to the Work of the Contractor only shall be considered a part of these specifications as fully as if included in total. When these specifications or applicable codes contain higher or more restrictive requirements than those contained in reference standards these specifications or applicable codes shall govern.
- B. The latest edition of a referenced standard published at the time of submission of bids shall apply unless a specific date for the referenced standard is cited in these specifications.
- C. General provisions in referenced standards, specifications, manuals or codes shall not change the specific duties and responsibilities between any of the parties involved in this work from those described in the General Conditions. Provisions in referenced standards with regard to measurement and payment shall not apply to this Work unless specifically cited. See General Conditions paragraph 2.3.

1.14 SPECIFICATION LANGUAGE AND STYLE

- A. Many parts of the Specifications as well as notes on the Drawings are written in the active voice and are addressed to the Contractor.
 - 1. When words or phrases requiring an action or performance of a task are used, it means that the Contractor shall provide the action or perform the task. For example: provide, perform, install, furnish, erect, connect, test, operate, adjust or similar words mean that the Contractor shall perform the action or task referred to.
 - 2. When words or phrases requiring selection, acceptance, approval, review, direction, designation or similar actions are referred to, it means that such actions are the Owner's or the Engineer's prerogative and that the Contractor must obtain such action before proceeding.
- B. Requirements in the Specifications and Drawings apply to all work of a similar type, kind or class even though the word "all" or "typical" may not be stated.

1.15 DEFINITIONS

- A. The following terms, when used in the Contract Documents, shall have the meanings listed:

ACCEPTABLE	"acceptable to the Engineer"
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PERFORM	"perform all operations required to complete the work referred to in accordance with the intent of the Contract Documents"
PROVIDE	"furnish and install the work referred to including proper anchorage, connection to required utilities or other work, testing, adjustment and startup ready to put in service and perform the intended function"
REQUIRED	"required by the Contract Documents or required to complete the Work and produce the intended results"
SATISFACTORY SHOWN SITE	"acceptable to the Engineer" "as indicated on the Drawings" "geographical location of the Project and land within the work area shown on the contract drawings and within which the Work will be installed or built"
SPECIFIED	"as written in the Contract Documents including the Specifications and the Drawings"
SUBMIT	"submit to the Engineer"

1.22 ABBREVIATIONS

- A. The following acronyms or abbreviations are used in these specifications for the organizations listed.

<u>Abbreviation</u>	<u>Stands for</u>
AASHTO	American Association of State Highway and Transportation Officials
AAMA	Architectural Aluminum Manufacturers Association
ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ADC	Air Diffusion Council
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standard Institute (formerly United States of America Standards Institute)
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CAGI	Compressed Air and Gas Institute

<u>Abbreviation</u>	<u>Stands for</u>
CAL/OSHA	State of California Department of Industrial Relations, Division of Industrial Safety
CAL TRANS	California Department of Transportation
CBC	California Building Code
CBM	Certified Ballast Manufacturers
CBR	California Bearing Ratio
CI	Chlorine Institute
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CPSC	Consumer Products Safety Commission
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards for the U.S. Department of Commerce
CTI	Cooling Tower Institute
DFPA	Douglas Fir Plywood Association
EIA	Electronic Industries Association
EPA	U.S. Environmental Protection Agency
ETL	Electronic Testing Laboratory
FM	Factory Mutual Insurance Company
FPS	Fluid Power Society
FS	Federal Specifications
GO 95	General Order No. 95, California Public Utilities Commission Rules for Overhead Electric Line Construction
GO 128	General Order No. 128, California Public Utilities Commission Rules for Underground Electrical Construction
HI	Hydraulic Institute
HMI	Hoist Manufacturers Institute
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IGCC	Insulating Glass Certification Council
IPCE	International Power Cable Engineers Association
ISA	Instrument Society of America
NAAMM	National Association of Architectural Metal Manufacturers
NBS	National Bureau of Standards
NCPI	National Clay Pipe Institute
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association
NGVD	National Geodetic Vertical Datum
NSF	National Sanitation Foundation
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
REA	Rural Electrification Administration
SAMA	Scientific Apparatus Makers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Structural Steel Painting Council

<u>Abbreviation</u>	<u>Stands for</u>
TCA	Tile Council of America
UBC	Uniform Building Code
UFC	Uniform Fire Code
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USDC	U.S. Department of Commerce
UL	Underwriters Laboratories
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WQCB	Water Quality Control Board (Regional)
WRCB	Water Resources Control Board

END OF SECTION

SECTION 01040

COORDINATION AND PROJECT REQUIREMENTS

1.01 PROJECT COORDINATION

- A. Coordinate scheduling, submittals and work of various Sections of the Specifications and subcontractors to assure efficient and orderly sequence of interdependent construction.
- B. Normal working hours for this project shall be confined from 7am to 5pm, Monday through Friday. Note that dues to the proximity of local residences, the contractor shall not use noisy equipment, tools, or have materials delivered to the work area until after 9am.

1.02 CUTTING, FITTING, AND PATCHING

- A. Provide cutting, fitting, or patching required to complete the Work and to make all of its parts fit together properly. Include cutting, fitting, and patching required to:
 - 1. Fit the several parts together and to integrate with other work.
 - 2. Uncover work to install or correct ill-timed work.
 - 3. Remove and replace defective and non-conforming work.
 - 4. Remove samples of installed work for testing.
- B. Request guidance from the Engineer prior to beginning cutting or altering construction, which affects:
 - 1. Structural integrity of any element.
 - 2. Functional performance of any element.
 - 3. Integrity of weather-exposed or moisture-resistant elements.
 - 4. Efficiency, maintenance, or safety of elements.
 - 5. Visual qualities of sight-exposed elements.
 - 6. Work by Owner or separate contractor.
- C. Execute cutting and patching using workers that specialize in and are skilled in installing the type of work being cut or patched.
- D. Perform work in accordance with the Contract Documents or in the absence of specific requirements comply with best trade practice for the work involved.
 - 1. Execute work by methods that will avoid damage to other work.
 - 2. Provide proper support and substrates to receive patching and finishing materials.
 - 3. Cut concrete materials using masonry saw or core drill. Locate all reinforcing steel, conduits and pipes with electronic detecting devices prior to cutting or core drilling existing concrete.
 - 4. Replace or patch work with new materials meeting the requirements of these specifications or if not specified matching materials and finishes of existing or adjacent work.
 - 5. Report any hazardous or unsatisfactory conditions to the Engineer.

1.03 ALTERATION PROJECT PROCEDURES

- A. Plan, schedule and perform alteration work as required to minimize impacting the Owner's continued operations. See Section 01010 paragraph titled "Contractor's Use of Site and Owner's Continued Operations."

1.04 CONNECTIONS TO UNDERGROUND UTILITIES, CONDUITS, OR PROCESS PIPING

- A. Obtain best available current information on location, identification and marking of existing utilities, piping and conduits and other underground facilities before beginning any excavation. In areas where utilities that participate in Underground Service Alert may occur, call 800-642-2444 for information at least 48 hours in advance of beginning work. Give Engineer 24 hours notice before beginning work.
- B. The location of existing utilities and underground facilities known to the Design Engineer are shown in their approximate location based on information available at the time of preparing the Drawings. The actual location, size type and number of utilities and underground facilities may differ from that shown and utilities or underground facilities may be present that are not shown. See General Conditions Article 3 for the Contractor's responsibilities and for differing conditions that warrant a change in Contract Price.
- C. Use extreme care when excavating or working in areas that may contain existing utilities, process piping, conduits or other underground facilities. Use careful potholing, hand digging and probing to determine the exact location of underground installation. Some locations contain multiple pipes or conduits. Prior to performing any subsurface work, investigate, determine and prepare a plan to turn off or disconnect each utility believed to be in the within 100 feet of the subsurface work in the event of an accidental breach of a utility conduit.
- D. Where connections to existing utilities or other underground facilities is required or where new piping or conduits may cross or interfere with existing utilities or underground facilities carefully excavate and uncover existing installations to a point 1 foot below the pipe or conduit to determine the actual elevation and alignment. Call the Engineer's attention to differing existing conditions that may require a clarification or change.
- E. Shutdown of existing utilities, services or operations shall be done in accordance with Section 01010.

1.05 FIELD ENGINEERING AND LAYOUT

- A. See General Conditions, Article 3.9 regarding reference points provided by Owner.
- B. General Conditions, Article 3.10 requires the Contractor to accurately layout the Work.
- C. Employ a Land Surveyor to establish and verify the elevation of all elements affecting the hydraulic gradient of the facility including: Invert of all piping, manholes, and laterals. Use recognized engineering surveying methods and documentation techniques. Design inverts are shown on the drawings, elevations are relative and based on the stream gauge in the lagoon.

1. In general the replacement pipe will be routed in a straight line between manholes and the grades shall be constant between manholes.

1.06 PRECONSTRUCTION MEETINGS

- A. Prior to beginning the Work, the Contractor and its key personnel and Subcontractors including the Contractor's Superintendent, Project Manager, and Field Engineer shall attend a meeting with the Owner and the Engineer to discuss the following:
1. Name, Authority, and Responsibilities of Parties Involved
 2. Project Procedures:
 - a. Progress meetings
 - b. Correspondence
 - c. Notification
 - d. Submittal of Product Data, Shop Drawing Samples, and Proposed Equivalents
 - e. Requests for Information
 - f. Response to Requests for Information
 - g. Requests for Quotation
 - h. Work Directive Change
 - i. Change Orders
 - j. Engineer's "Items of Concern List"
 3. Temporary Schedule and Contractor's Construction Schedule
 4. Temporary Facilities and Control
 5. Testing During Construction
 6. Contractors Coordination
 7. Mechanical/Electrical Coordination
 8. Maintenance of Record Drawings
 9. Owner Provided Items or Work and Owner Furnished Contractor Installed items
 10. Early Beneficial or Partial Occupancy
 11. Final Testing, Startup, and Balancing
 12. Punch Lists and Project Closeout Procedures
 13. Final Deliverables including Record Drawings, Operation and Maintenance Manuals, and Special Guarantees.

1.07 PROGRESS MEETINGS

- A. The Owner may conduct weekly meetings with Contractor at the Owners office. Attendance required by Contractor's project manager, superintendent and affected Subcontractors and suppliers. The Engineer will prepare, maintain and distribute agenda and dated record of: (1) actions required and taken and (2) decisions needed and made.
- B. Agenda:
1. Review critical items/action list.
 2. Review work progress. Compare actual progress with planned progress shown on Contractors rolling three-week Schedule. Discuss Corrective action required. Compare actual and projected progress with Contractor's Construction Schedule, propose methods to correct deficiencies.
 3. Review status of Submittals; review delivery dates and date of need for critical

- items.
4. Review coordination problems.
 5. Schedule needed testing and critical inspections.
 6. Review critical requirements for each trade or major piece of equipment prior to beginning work or installation.
 7. Discuss Contractor Quality Control.
 8. Discuss open items on Engineers "Items of Concern List."
 9. Discuss impact of proposed changes on progress Schedule.
 10. Other business.

1.08 PERFORMANCE SPECIFICATIONS AND CONTRACTOR DESIGNED WORK

- A. Work under this Contract may be specified by a combination of descriptive, performance, reference standard and proprietary specifications. In the event of conflict between any of the various specification methods used to specify a single item the order of precedence shall be the order in which the methods are listed in the preceding sentence. The terms used to describe types of Specifications are taken from the Construction Specification Institute (CSI) Handbook of Practice.
- B. Where Specifications are used to define the characteristics of Contractor designed systems, items or components, the Contractor shall be fully responsible to design, engineer, manufacture, and install the systems, items and components to meet the specified functional requirements, performance requirements, quality standards, durability standards and conditions of use as well as all applicable codes, regulations and referenced trade or industry standards. The Contractor shall perform such design by employing engineers licensed in the State in which the Work is being constructed. The Contractor's design submittals shall include calculations and assumptions on which the design is based and shall be stamped and signed by appropriately licensed engineers.
- C. In accordance with *General Conditions paragraph 8.13*, the Owner and the Engineer shall have the right to rely on the expertise and professional competence of the Contractor's design. Favorable review of the Contractor's design submittal shall not relieve the Contractor from full responsibility for the adequacy of the Contractor design.

1.09 MATERIAL AND EQUIPMENT

- A. General:
 1. Verify that products delivered meet requirements of Contract Documents and the requirements for Favorably Reviewed submittals.
- B. Compatibility of Equipment and Material:
 1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
 2. In addition, but only if so stated in each affected Specification Section, similar items furnished under two or more Specification Sections shall be made by the same maker and have interchangeable parts.
 3. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

- C. Transportation and Handling:
 - 1. Transport and handle products in accordance with manufacturer's instructions.
 - 2. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
 - 3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

- D. Storage and Protection:
 - 1. Store and protect products in accordance with manufacturer's instructions. Seals and labels shall be intact and legible.
 - 2. Store moisture sensitive products including finish woodwork, gypsum products, acoustical products, motors, electrical equipment, instruments and controls in weathertight, humidity and temperature controlled enclosures.
 - 3. For exterior storage of fabricated products, place items on sloped supports, aboveground.
 - 4. Cover products subject to deterioration from moisture, dust, or sunlight with opaque watertight but breathable sheet covering. Provide ventilation to avoid condensation.
 - 5. Provide offsite storage and protection including insurance coverage when site does not permit onsite storage or protection.
 - 6. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
 - 7. Provide facilities, equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
 - 8. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

- E. Installation Standards and Manufacturers' Recommendations:
 - 1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendations of referenced trade associations or standards.
 - c. These specifications and drawings.
 - 2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.

- F. If reference standards or manufacturer's instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence. See General Conditions paragraph 2.3.

1.10 BACKING, SUPPORTS AND FASTENERS

- A. Provide backing, supports, bracing, fasteners and other provisions required for the proper support and attachment of all work. Backing, supports, bracing and fasteners shall be sized to resist vertical and horizontal loads including seismic and wind loads required by codes listed under Regulatory Requirements in Section 01010 and in accordance with Seismic Design Requirements in this Section. Where finishes in existing facilities must be removed to install backing or where finishes are installed in new construction prior to installing backing the

Contractor shall remove finishes, install backing and reinstall finishes.

- B. Low velocity pneumatic type power-driven fasteners may be used only:
 - 1. Where specifically shown, specified or approved.
 - 2. Where they meet the structural requirements for a particular assembly with a safety factor of at least 400 percent.
 - 3. Power-driven fasteners may not be used for electrical or mechanical installations or to attach any items loaded in withdrawal or subject to vibration.
 - 4. Non-load bearing metal stud tracks fastened to concrete. Powder-driven fasteners shall not be used within 3 inches of the edge or corners of concrete surfaces

1.11 SEISMIC REQUIREMENTS – see Specification Section 01300 regarding seismic submittal requirements. This project was designed in accordance with seismic design criteria in the California building code.

1.12 SAFETY

- A. In accordance with generally accepted construction practice, applicable law and the General Conditions, especially paragraphs 5.3, 5.20 through 5.28 and 7.3, the Contractor shall be solely and exclusively responsible for:
 - 1. Construction means and methods.
 - 2. Safety of employees engaged in the work while on and off the site.
 - 3. Safety of the Owner, the Engineer, the Design Engineer, and others who may visit or be affected by the work.
 - 4. Safety of the work itself including material and equipment to be incorporated therein.
 - 5. Safety of other property at the site or adjacent thereto.
 - 6. Safety programs, equipment and protective devices required to assure the safety of persons and property for whom/which the Contractor is responsible.
- B. The duties of the Engineer in conducting review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing, scaffolding or safety measures in, on, or near the construction site. See General Conditions, paragraph 7.3.
- C. The Contractor is hereby informed that work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as required to prevent injury to personnel and damage to property, and to comply with all applicable laws and regulations including State OSHA, Federal OSHA, and other regulations referenced in these Contract Documents.
- D. The Contractor shall, at all times, maintain the job in a condition that is safe for the Owner, the Engineer and their Consultants to make site visits and to conduct construction reviews. If the Owner or the Engineer cannot allow personnel to visit the job because it is not safe, the Contractor is not providing required safe access to the Work as required by General Conditions, paragraph 12.2.
- E. The Contractor shall prepare a Safety Plan meeting the requirements of applicable regulations. As a minimum, the Contractor's Safety Plan shall set forth definite procedures for informing workers about safety, for instructing workers in safe

practices, for assuring that workers are using appropriate safety equipment and safe work practices and for reporting accidents.

1.13 EXCAVATION AND TRENCHING; WORK WITHIN CONFINED SPACES

- A. Submit specific plans to the Owner showing details of provisions for worker protection from caving ground in accordance with Section 6705 of the California State Labor Code. The detailed plans shall show the design of shoring, bracing, sloping banks or other provisions and shall be prepared, signed and stamped by a Civil or Structural Engineer licensed in the State in which the Work is performed and retained by the Contractor. The Owner's acceptance of the detailed plans submitted is only an acknowledgment of the submission and does not constitute review or approval of the designs, design assumptions, criteria, completeness, applicability to areas of intended use, or implementation of the plans, which are solely the responsibility of the Contractor and his Registered Engineer.
- B. Work within Confined Spaces: Work within confined spaces is subject to applicable laws, regulations and safety orders including applicable *California Tunnel Safety Orders*.
- C. The foregoing provisions do NOT reduce the requirement for the Contractor to maintain safety in ALL operations performed by the Contractor or its Subcontractors.

1.14 CONTRACTOR'S QUALITY CONTROL

- A. The Contractor shall be fully responsible for inspecting the work of its suppliers and Subcontractors to assure that the work when completed will comply with the standards for materials and workmanship required by the Contract Documents. See General Conditions paragraph 13.9.
- B. Inspections, periodic observations and testing performed by the Owner or the Engineer are for the Owner's benefit and information only and shall not be construed as partial or incremental acceptance of the work and shall not be deemed to establish any duty on the part of the Owner or the Engineer to the Contractor, its subcontractors or suppliers. See General Conditions paragraphs 7.5 and 12.10.
- C. The Contractor shall:
 - 1. Monitor quality control over suppliers, manufacturer, products, services, site conditions, and workmanship, to produce work of specified quality.
 - 2. Comply fully with manufacturer's installation instructions, including performing each step in sequence as recommended by the manufacturer.
 - 3. Submit a Request for Information to Engineer before proceeding with work when manufacturers' instructions or reference standards conflict with Contract Documents.
 - 4. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
 - 5. Perform work by persons specializing in the specific trade and class of work required and qualified to produce workmanship of specified quality.
 - 6. Secure products in place with positive anchorage devices designed and sized to withstand seismic, static and dynamic loading, vibration, and physical

distortion or disfigurement.

- D. If reference standards or manufacturers' instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence.
- E. The Contractor shall provide assistance required by the Engineer to adequately inspect the Work including ladders, scaffolding, lighting, ventilation and other aids to facilitate access and provide a safe working environment.

1.15 TESTING LABORATORY SERVICES AND CERTIFIED LABORATORY REPORTS

- A. Provide testing service in accordance with General Conditions Article 12 and specific requirements contained in each technical specification section and within the project plans. Submit Certified Laboratory Reports required by technical specification sections.

END OF SECTION

SECTION 01140

ENVIRONMENTAL PROTECTION

1.01 SCOPE

- A. During the progress of the work, keep the work areas occupied by the Contractor in a neat and clean condition and protect the environment both onsite and offsite, throughout and upon completion of the construction project.

1.02 SUBMITTALS

- A. Develop an Environmental Protection Plan in detail and submit to the Engineer in the Product Review category within thirty (30) days from the date of the Notice to Proceed and before any work occurs. Distribute the favorably reviewed plan to all employees and to all subcontractors and their employees. The Environmental Protection Plan shall include, but not be limited to, the following items:
 - 1. Copies of required permits.
 - 2. Proposed sanitary landfill site.
 - 3. Other proposed disposal sites.
 - 4. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Any such agreement made by the Contractor shall be invalid if its execution causes violation of local or regional grading or land use regulations.
 - 5. Water pollution control plan.

1.03 MITIGATION OF CONSTRUCTION IMPACTS

- A. Requirements: All operations shall comply with all federal, state and local regulations pertaining to water, air, solid waste and noise pollution.
- B. Definitions of Contaminants:
 - 1. Sediment: Soil and other debris that have been eroded and transported by runoff water.
 - 2. Solid Waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings.
 - 3. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalies, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous."
 - 4. Sanitary Wastes:
 - a. Sewage: That which is considered as domestic sanitary sewage.
 - b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
 - 5. Hazardous Materials: As defined by applicable laws and regulations. Undisclosed hazardous material contamination, if encountered will constitute a changed site condition. The Owner may retain a separate contractor to dispose of undisclosed hazardous material encountered.

C. Protection of Natural Resources:

1. General: It is intended that the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the Drawings. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities to avoid ponding stagnant water conducive to mosquito breeding.
2. Land Resources: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Only trees that are shown on the contract drawings to be removed may be removed. Do not remove, deface, injure or destroy trees within the work area without permission from the Engineer.
 - a. Protection: Protect trees that are located near the limits of the Contractor's work areas which may possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No ropes, cables or guys shall be fastened to or attached to any existing nearby trees or shrubs for anchorages unless specifically authorized. Where such special emergency use is permitted, the Contractor shall be responsible for any damage resulting from such use.
 - b. Trimming: Trim and seal tree limbs overhanging the line of the work and in danger of being damaged by the Contractor's operations in accordance with recognized standards for such work. Remove other tree limbs under the direction of the Engineer, so that the tree will present a balanced appearance.
 - c. Treatment of Roots: Do not cut roots unnecessarily during excavating or trenching operations. Expose major roots encountered in the course of excavation and do not sever. Wrap them in burlap as a protective measure while exposed. Neatly trim all other roots larger than 1-inch in diameter that are severed in the course of excavation at the edge of the excavation or trench and paint them with a heavy coat of an approved tree seal.
 - d. Repair or Restoration: Repair or replace any trees or other landscape features scarred or damaged by equipment or construction operations as specified below. The repair and/or restoration plan shall be favorably reviewed prior to its initiation.
 - e. Temporary Construction: Obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the Engineer. Level all temporary roads, parking areas and any other areas that have become compacted or shaped. Any unpaved areas where vehicles are operated shall receive a suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Owner. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction material dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.

3. **Water Resources:** Investigate and comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the underground and natural waters. Perform all work under this Contract in such a manner that any adverse environmental impacts are reduced to a level that is acceptable to the Engineer and regulatory agencies. Refer to the paragraph on control of water in Section 02302, Earthwork, for "dewatering" water disposal requirements. Exercise every reasonable precaution to protect streams, lakes, reservoirs, bays and coastal waters from pollution with fuels, oils, bitumens, calcium chloride and other harmful materials and conduct and schedule operations so as to avoid or minimize muddying and silting of said streams, lakes, reservoirs, bays and coastal waters.

Water pollution control work is intended to provide prevention control and abatement of water pollution to streams, waterways and other bodies of water, and shall consist of constructing those facilities that may be shown on the Drawings, specified herein or in the Special Provisions, or directed by the Engineer. Water pollution control shall comply with Section 01354 Water Pollution Control Measures.

The Contractor shall provide temporary water pollution control measures, including but not limited to, dikes, basins, and ditches, and shall apply straw and seed, which become necessary as a result of his operations. The Contractor shall coordinate water pollution control work with all other work done on the Contract.

- a. **Oily Substances:** At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the area. Any soil or water that is contaminated with oily substances due to the Contractor's operations shall be disposed of in accordance with applicable regulations.
- b. If the measures being taken by the Contractor are inadequate to control water pollution effectively, the Engineer may direct the Contractor to revise his operations and his water pollution control program. Such directions will be in writing and will specify the items of work for which the Contractor's water pollution control measures are inadequate. No further work shall be performed on said items until the water pollution control measures are adequate; and if also required, a revised water pollution control plan has been accepted.
- c. Where erosion which will cause water pollution is probable due to the nature of the material or the season of the year, the Contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.
- d. Nothing in the terms of the Contract nor in the provisions in this Section shall relieve the Contractor of the responsibility for compliance with Sections 5650 and 12015 of the California Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.
- e. The Contractor shall also conform to the following provisions:
 - 1) The contractor shall prevent any construction related water or any muddy storm water from the construction site from reaching the lagoon.

- 2) The contractor shall not perform any work within areas considered waters of the US.
 - 3) Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a water body.
 - 4) Portland cement or fresh portland cement concrete shall not be allowed to enter a water body.
4. Fish and Wildlife Resources: Perform all work and take such steps required to prevent any interference or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise significantly disturb native habitat adjacent to the project area which are critical to fish and wildlife except as may be indicated or specified.
5. Cultural Resources: The project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during the construction. In the event that artifacts, human remains, or other cultural resources are discovered during excavations at locations of the Work, the Contractor shall protect the discovered items, notify the Engineer, and comply with applicable law.
6. Revegetation of Disturbed Areas:
- a. Tree and Shrubs Replacement: Any tree and shrub replacement will be performed by the District or under Change Order by the Contractor.
 - b. Hydroseeding: Restore disturbed areas within the easements by hydroseeding said areas using an approved native plant seed mix.
 - c. Planting of Trees and Shrubs:
 - 1) Selection: Deliver trees and shrubs to the site in the nursery containers, with the nursery tags identifying the species and variety. The trees and shrubs should be selected for shape and symmetrical branching habit, which at maturity will produce strong, full foliated specimens. The specimens shall have grown in the designated size of container for a sufficient length of time for the root system to hold the earth when taken from the container, but not long enough to become rootbound or cause a "hardening off" of the root system. Specimens which are loose in the root ball will be rejected. Remove all rejected specimens from the site and replace with specimens as specified. Specimens shall be sound, healthy, vigorous and free from insects, pests, plant diseases and injuries.
 - 2) Protection: Specimens which cannot be planted within one day of delivery shall be properly protected and kept moist to prevent drying.
 - 3) Planting Procedure: Planting hole shall be twice the width of the root ball and at least one and one-half times the height of the root ball. Fill the planting hole with water and let drain away. Mix excavated soil with a planting mix appropriate for the type and condition of the soil and the species of tree or shrub and place the mixed soil in the planting hole to the depth necessary to bring the root ball slightly higher than the surrounding soil. Remove the specimen from the container carefully so that the root ball remains unbroken. Place in planting hole and fill with mixed soil to one-half the height of the root

- ball, tamp thoroughly, then water. Set specimens at such a level that after settlement the top of the root ball is level with the surrounding finish grade. Add mixed soil to form watering basin, fill basin twice with water immediately after planting. Water as frequently as required to keep the specimens adequately moist until well established. The Contractor will be responsible for maintaining specimens for a minimum of one year after final acceptance or planting, whichever is later.
- 4) Staking: Use 2-inch x 2-inch redwood or cedar stakes of length adequate to support each tree. Drive a stake on each side of each specimen outside of the root ball, to a depth of 3 feet. Support tree to stakes using twisted galvanized wire covered with reinforced rubber hose where in contact with the specimen.
 - 5) Mulching: Fill all watering basins of trees and shrubs with a layer of mulch not less than 2 inches thick.
7. Noise Control: The following noise control procedures shall be employed:
 - a. Maximum Noise Levels shall comply with the County of Monterey's noise ordinance.
 - b. Equipment: Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor.
 - c. Operations: Keep noisy equipment as far as possible from noise-sensitive site boundaries (i.e. private residences). Machines should not be left idling. Use electric power in lieu of internal combustion engine power wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.
 - d. Scheduling: Schedule noisy operations so as to minimize their duration at any given location. The use of power tools, heavy equipment, and any other activities that generate a significant amount of noise that may pose as a nuisance to local residents will not be permitted prior to 9:00am.
 - e. Monitoring: To determine whether the above noise limits are being met and whether noise barriers are needed, the Contractor shall use a portable sound level meter meeting the requirements of American National Standards Institute Specification S1.4 for Type 2 sound level meters. If non-complying noise levels are found, the Contractor shall be responsible for monitoring and correction of excessive noise levels.
 8. Dust Control, Air Pollution and Odor Control: Employ measures to prevent the creation of dust, air pollution and odors.
 - a. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment, to eliminate dust formation.
 - b. Store all volatile liquids, including fuels or solvents in closed containers.
 - c. No open burning of debris, lumber or other scrap will be permitted.
 - d. Properly maintain equipment to reduce gaseous pollutant emissions.
 9. Construction Storage Areas: Storage of construction equipment and materials shall be limited to the designated Contractor's storage area.
 - a. Store and service equipment at the designated Contractor's storage area where oil wastes shall be collected in containers. Oil wastes shall not be allowed to flow onto the ground or into surface waters. Containers shall be required at the construction site for the disposal of materials such as paint, paint thinner, solvents, motor oil, fuels, resins and other environmentally

- deleterious substances. No dumping of surplus concrete or grout on the site will be permitted.
- b. The contractor has a designated storage area at the Carmel Area Wastewater District Wastewater Treatment Plant.
10. Sanitation: During the construction period, provide adequate and conveniently located chemical sanitation facilities, properly screened, for use of construction crews, the Engineer, and visitors to the site. Facilities shall be regularly maintained.
11. Fire Prevention: Take steps to prevent fires including, but not limited to the following:
- a. Provide spark arrestors on all internal combustion engines.
 - b. Store and handle flammable liquids in accordance with the Flammable and Combustible Liquids Code, NFPA 30.
 - c. Provide fire extinguishers at hazardous locations or operations, such as welding.
12. Erosion and Sediment Transport Control: See Specification Section 01354 Water Pollution Control Measures.

1.04 DISPOSAL OPERATIONS

- A. Solid Waste Management:
- 1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
 - 2. Washing of concrete containers where wastewater may reach adjacent property or natural water courses will not be permitted. Remove any excess concrete to the sanitary landfill.
- B. Chemical Waste and Hazardous Materials Management: Furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.
- C. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.
- D. Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable regulations.
- E. Excavated Materials:
- 1. Native soil complying with the requirements of Section 02302, *Earthwork*, may be used for backfill, fill and embankments as allowed by that section.
 - 2. Spoil Material:
 - a. Remove all material which is excavated in excess of that required for backfill, and such excavated material which is unsuitable for backfill, from the site and dispose of off site in accordance with applicable regulations at the disposal site indicated in the Environmental Protection Plan. No additional compensation will be paid to the Contractor for such disposal. Include all such costs in the lump sum prices bid for the project. Remove rubbish and materials unsuitable for backfill immediately following

- excavation. Remove material in excess of that required for backfill immediately following backfill operations.
- b. Rubbish shall consist of all materials not classified as suitable materials or rubble and shall include shrubbery, trees, timber, trash and garbage.

END OF SECTION

SECTION 01300

SUBMITTALS

1.01 SUBMITTAL PROCEDURES

- A. Accompany each submittal with a Submittal form, General Conditions Exhibit GC-2, which contains the following information:
 - 1. Contractor's name and the name of Subcontractor or supplier who prepared the submittal.
 - 2. The project name and identifying number.
 - 3. Description of the submittal and reference to the Contract requirement or technical specification section and paragraph number being addressed.
 - 4. Submittal format: One Copy of all submittals in PDF format (electronic copy). Submittal shall be less than 5 mb to facilitate communication via email. If submittals are greater than 5 Mb they shall be broken into multiple copies. Responses will be provided in PDF format back to the contractor. The Owner or Engineer will keep a master hard copy file of the submittals during the project.

- B. Submit the number and type of copies for each submittal and follow the procedures described below or in other paragraphs in this Section. Submit one copy of submittals covered in Section 01300 and one copy for items not covered in Section 01300.
 - 1. Designation of Superintendent: Include name, address, home telephone number and a brief resume.
 - 2. List of Subcontractors and Major Suppliers: Include address, telephone number and name of responsible party.
 - 3. Schedule of Values, in a form acceptable to the Engineer: No copy will be returned. See General Conditions paragraph 13.1.
 - 4. Subcontractors'/Suppliers'/Manufacturers' Affidavits for items specified in the Technical Specifications.
 - 5. Environmental Protection Plan.
 - 6. Sewer Bypass Piping Plan.
 - 7. Storm Water Pollution Prevention Plan.

1.02 SCHEDULE OF SUBMITTALS

- A. See General Conditions paragraph 5.19. Within 15 days after the Notice to Proceed, submit a Schedule of Submittals showing the date by which each submittal required for Product Review or Product Information will be made. Identify the items that will be included in each submittal (see paragraph 1.05 of this Section) by listing the item or group of items and the Specification Section and paragraph number under which they are specified. Indicate whether the submittal is required for Product Review of Proposed Equivalents, Shop Drawings, Product Data or Samples or required for Product Information only.

1.03 PLAN OF OPERATIONS

- A. Before beginning on site work, submit a plan showing Contractor's intended use of the site assigned to it. Show location of enclosing fence, access points and gates. Show location for Contractor's, Subcontractor's, and Engineer's field office and

parking. Show location of Contractor's and Subcontractor's work areas and storage areas.

1.04 CONSTRUCTION SCHEDULE

- A. Submit for information. No copy will be returned. See General Conditions paragraphs 5.15 through 5.19.
- B. The form of Construction Schedule may be selected by the Contractor but the Schedule shall meet the minimum requirements of General Conditions paragraph 5.16. Preferred format is a Microsoft Excel Bar Chart or Microsoft Project schedule.
- C. If the Construction Schedule does not reflect the Critical Path Method (*CPM*) format requirements, the specified work, or the Contract Time, it will be returned to the Contractor for modification.
- D. Revise the Construction Schedule and resubmit within seven (7) days following any monthly meeting to review Contractor's Application for Payment when Contractor's work is fifteen (15) days or more behind schedule.
- E. Accelerated Work if Required to Meet Schedule: See General Conditions paragraph 11.6. Give Engineer 3 days prior notice of construction that will take place outside of normal work hours or work days. Compensate Owner for extra inspection cost caused by Accelerated Work required to meet Schedule.
- F. Give Engineer 3 days prior notice of normal work days on which construction will not take place or of scheduled construction that will not take place. Compensate Owner for extra inspection cost resulting from failure to give notice.

1.05 SHOP DRAWING, PRODUCT DATA AND SAMPLES SUBMITTED FOR PRODUCT REVIEW

- A. This paragraph covers submittal of Shop Drawings, Product Data and Samples required for the Engineer's review referred to as Product Review submittals in the Technical Specifications (Division 2 through 17). Submittals required for information only are referred to as Product Information submittals in the Technical Specifications and are covered in paragraph 1.07 of this Section. See General Conditions Article 8.
- B. Number and type of submittals:
 - 1. Shop Drawings:
Submit clear, sharp high contrast copies in PDF format one of which will be marked, stamped and returned to the Contractor.
The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.
 - 2. Product Data: Submit four clear PDF copies. One copy will be marked, stamped and returned. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.

3. Samples: Submit three labeled samples or three sets of samples of manufacturers full range of colors and finishes. Comply with requirements in Technical Specification Sections. One sample will be returned to Contractor.
- C. The Contractor shall make all Product Review submittals early enough to allow adequate time for the Engineer's review, for manufacture and for delivery at the construction site without causing delay to the Work. Submittals shall be made early enough to allow for unforeseen delays such as:
1. Failure to obtain Favorable Review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
 2. Delays in manufacture.
 3. Delays in delivery.
- D. Content of Submittals:
1. Each submittal shall include all of the items and material required for a complete assembly, system or Specification Section.
 2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
 3. Include information on characteristics of electrical or utility service required and verification that requirements have been coordinated with services provided by the Work and by other interconnected elements of the Work.
 4. Provide verification that the physical characteristics of items submitted, including size, configuration, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are compatible with other interrelated items that are existing or have or will be submitted.
 5. Label each Product Data Submittal, Shop Drawing and Sample with the information required in paragraph 1.01A of this Section. Highlight or mark every page of every copy of all Product Data submittals to show the specific items being submitted and all options included or choices offered.
 6. Additional requirements for Product Review submittals are contained in the Technical Specification sections.
 7. Designation of work as "NIC" or "by others," shown on Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.
- E. Compatibility of Equipment and Material: Verify that items contained in the same or in different submittals meet the requirements in the paragraph titled "Material and Equipment in Section 01040 especially the subparagraphs titled "Compatibility of Material and Equipment."
- F. Requirements for Contractor Designed Items and for First Specified (Named) Items: Verify that items meet the requirements in the paragraph titled "Performance Specifications and Contractor Designed Items" in Section 01040.
- G. Requirements for the Contractor's review and stamping of submittals prepared by the Contractor or by Subcontractors or suppliers prior to submitting them to the Engineer are covered in General Conditions paragraph 8.8.

- H. Submittals that contain deviations from the requirements of the Contract Documents shall be accompanied by a separate letter explaining the deviations. See General Conditions paragraphs 8.8 and 8.11. The Contractor's letter shall:
1. Cite the specific Contract requirement including the Specification Section and paragraph number for which approval of a deviation is sought.
 2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the Owner.
 3. State the reduction in Contract Price if any that is offered to the Owner.
- I. Engineer's Review Procedure and Meaning:
1. The Engineer will stamp and mark each Product Review submittal prior to returning it to the Contractor. The stamp will indicate whether or not the review was favorable and what action is required of the Contractor. Review categories "No Exceptions Taken" and "Make Corrections Noted" both indicate Favorable Review.
 2. The Engineer's Favorable Review is contingent on the Contractor's warranties required by General Conditions paragraph 8.8 and is subject to all of the limitations and conditions in General Conditions Article 8. Favorable Review is also contingent on:
 - a. The compatibility of items included in a submittal with other related or interdependent items included in previous or future submittals.
 - b. Future submittal of items related to or required to be part of this submittal that were not included with this submittal.
 3. Favorable Review of a submittal does not constitute approval or deletion of items required as part of the submittal but not included with the submittal. Favorable Review of items included in the submittal does not constitute deletion of specified features, options or accessories that were not included in the submittal.
 4. The action required by the Contractor for each category of review is as follows:
 - a. **NO EXCEPTIONS TAKEN.** NO RESUBMITTAL REQUIRED.
 - b. **MAKE CORRECTIONS NOTED:**
 - (1) **NO RESUBMITTAL REQUIRED.** The Contractor shall make corrections noted prior to manufacture.
 - (2) **PARTIAL RESUBMITTALS REQUIRED.** The Contractor shall submit related accessory or optional items as noted which are required but were not included with the submittal and/or shall resubmit unsatisfactory portions or attributes of items as noted. The Contractor may proceed to manufacture those portions of the submittal that will be unaffected by required resubmittals.
 - c. **AMEND AND RESUBMIT.** The Contractor shall amend and resubmit the submittal as noted or required to comply with the Contract Documents.
 - d. **REJECTED - RESUBMIT.** The item submitted does not comply with the Contract Documents in a major way. Resubmit items that comply with the requirements of the Contract Documents.
 5. The letter of transmittal accompanying the returned Product Review submittal may contain numbered notes. Marking a corresponding number on a Shop Drawing or Product Data submittal shall have the same affect as applying the entire note to the submittal.
- J. Re-submittals that contain changes that were not requested by the Engineer on the previous submittal shall be accompanied by a letter explaining the change. See General Conditions paragraph 8.12.

- K. Favorable Review Required Prior to Proceeding: Do not proceed with manufacture, fabrication, delivery or installation of items prior to obtaining the Engineers Favorable Review of Product Review submittals. See General Conditions paragraph 12.1.
- L. Intent and Limitation on Engineer's Review:
 - 1. See General Conditions Article 8.
 - 2. The Contractor has primary responsibility for submitting and providing work that complies with the requirements of the Contract Documents. That responsibility cannot be delegated in whole or in part to subcontractors or suppliers. Neither the Engineer's Favorable Review nor the Engineer's failure to notice or comment on deficiencies in the Contractor's submittals shall relieve the Contractor from the duty to provide work, which complies with the requirements of the Contract Documents.

1.06 PROPOSED EQUIVALENTS

- A. Submit Proposed Equivalent submittal form, General Conditions Exhibit GC-3 and comply with the submittal requirements for Shop Drawings, Product Data, and Samples submitted for Product Review in another paragraph of this Section.
- B. See General Conditions paragraphs 8.1 through 8.15.
- C. Time of Submittal:
 - 1. General Conditions paragraph 8.3 requires submittal of Proposed Equivalents within 35 days of the Notice to Proceed. The Engineer may agree to a later submittal date if requested in writing within 35 days of the Notice to Proceed. The request shall identify the item, give the Specification reference, and proposed manufacturer and model number of the item that will be submitted and the proposed submittal date.
 - 2. The Engineer's agreement to a later submittal date shall be in writing and shall not be construed as Favorable Review or acceptance of the manufacturer or item proposed.
- D. Content of submittals shall be the same as that required for Product Data, Shop Drawings and Samples submitted for Product Review in another paragraph of this Section. In addition, the Contractor shall provide information on several recent similar installations of the item to verify its suitability. The information shall include the project name and location, the Owner's name, address, telephone number and name of a knowledgeable person to contact for information on performance of the product.
- E. When the Contractor has listed specific maker's products on Document Number 00411 Designation of Equipment or Material Manufacturers submitted with its Bid no changes will be permitted without submittal of acceptable evidence justifying the change and the Engineer's written approval.
- F. If a non-equivalent substitute is submitted for review, it shall be accompanied by a proposed reduction in Contract Price which shall include the increased cost of Engineering service required to evaluate the proposed substitute (which shall be paid to the Owner whether or not the substitute is accepted) plus the greater of

- 1) the difference in price between the first specified item and the item submitted and
- 2) the difference in value to the Owner between the two items.

1.07 PRODUCT INFORMATION SUBMITTALS

- A. Submit one PDF copy. No copies will be returned. See General Conditions paragraph 8.15.
- B. Product Information submittals are required for the Owner's permanent records and will be used for future maintenance, repair, modification or replacement work. Product Information submittals will be examined only to verify that the required submittals have been made; they will NOT be reviewed for compliance with the Contract Documents.
- B. Make Product Information submittals prior to delivering material, products or items for which Product Information submittals are required.
- C. The Contractor has the sole and exclusive responsibility for furnishing products and work that meets the requirements of the Contract Documents.
- D. The Engineer reserves the right to comment on any submittal and to reject any product or work delivered, installed or otherwise at any time that the Engineer become aware that it is defective or does not meet the requirements of the Contract Document. See General Conditions paragraph 12.1.

1.08 OPERATION AND MAINTENANCE MANUALS AND PARTS LISTS

- A. After the initial O&M manual has been favorably reviewed, submit three complete hard copy sets, and one set in PDF format.
- B. Provide operation and maintenance manuals and parts list for all equipment furnished under this contract. Comply with the detailed requirements in Technical Specification sections. Include instructions for delivery, storage, assembly, installation, lubrication, adjusting, startup, operation and maintenance.
 1. For all equipment include:
 - a. Startup instructions
 - b. Normal operation instructions.
 - c. Trouble shooting instructions.
 - d. Lubrication instructions.
 - e. Maintenance and reinstallation instructions.
 - f. Parts identification.
 - g. List of spare parts recommended to have on hand.
 - h. Operator safety instructions.
 2. For all Electrical Equipment, provide the following additional information:
 - a. Equipment ratings.
 - b. Calibration curves and rating tables if appropriate.
 3. For Complex Equipment provide in addition:
 - a. Alternate specified operating modes.
 - b. Emergency shutdown instructions.
 - c. Normal shutdown instructions.
 - d. Long-term shutdown instructions.

4. Operation and maintenance manuals for systems composed of separate pieces of equipment shall include a system explanation of items 1, a, b, and c, and 3a through c, as well as the instructions for each separate piece of equipment.
- C. Submit at least 15 days prior to Facility Startup and Training specified in Section 01650, paragraph 1.05.
 - D. Provide the number of copies specified in paragraph 1.01 of this Section. Bind each copy in one or more "D" ring, 8-1/2x11, 3-ring binders with clear view spine and cover, Avery E-Z –D View Binder; K&M; or equal. Prepare Titles for the spine and cover and a Table of Contents listing each piece of equipment. Organize the contents by Specification Section and paragraph number under which the equipment was specified. Provide labeled tab separators for each major item or group of smaller similar items. When standard manufacturers literature is used highlight or mark all copies to shop specific items and options provided.

1.09 MANUFACTURER'S CERTIFICATES

- A. Submit three hard copies.
- B. When specified in Technical Specification section, submit manufacturers' certificate to Engineer for review. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer.

1.10 CONSTRUCTION PHOTOGRAPHS

- A. Each month submit photographs to Engineer with Application for Payment.
- B. Photographs: Submit JPEG format electronic files of site photos.
- C. Take four site photographs from different directions to show progress of the Work. Make photographs within five days of the Application for Payment Date.
- D. Identify photographs with date, time, orientation and project identification.

END OF SECTION

Section 01354

WATER POLLUTION CONTROL MEASURES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section addresses the requirements for temporary construction measures commonly used in complying with the Best Management Practices (BMPs) of the Storm Water Pollution Prevention Plan (SWPPP) as required by a NPDES Permit. All erosion and sediment control devices or materials will be removed from the site upon completion of excavation, and new devices and materials used during facility construction to avoid potential cross-contamination from potentially contaminated excavated soils.
- B. The overall site impact is less than 1-acre therefore a state permit is not required. However, the Contractor shall perform water pollution control work in conformance with the requirements in the new California Construction General Permit, NPDES No. CAS000002, adopted on September 2, 2009, and effective July 1, 2010 (General Permit).
- C. SWPPP submittals shall be made to the District and not the State. No on-line filing of the permit is required, further references to on-line filing of the SWPPP shall be ignored.
- D. Before the start of job site activities, the Contractor shall provide training for project managers, supervisory personnel, and employees involved with water pollution control work. The training shall include:
 - 1. Rules and regulations
 - 2. Implementation and maintenance for:
 - a. Temporary Soil Stabilization
 - b. Temporary Sediment Control
 - c. Tracking Control
 - d. Wind Erosion Control
- E. The Contractor shall designate in writing a Qualified SWPPP Practitioner (QSP). The Contractor shall submit a statement of qualifications describing the training, work history, and expertise of the proposed QSP. The qualifications shall meet the requirements in the General Permit. The QSP shall be:
 - 1. Responsible for water pollution control work.
 - 2. The primary contact for water pollution control work.
 - 3. Have authority to mobilize crews to make immediate repairs to water pollution control practices.

1.02 RELATED SECTIONS

- A. 01140 Environmental Protection
- B. 01300 Submittals

1.03 REFERENCES

- A. State Water Resources Control Board (SWRCB) Order No. 09-09-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity.
- B. Caltrans Storm Water Quality Handbooks, Construction Site Best Management Practices Manual, dated November 2009.
- C. Caltrans Storm Water Quality Handbooks, SWPPP/WPCP Preparation Manual, dated November, 2009.
- D. California Stormwater BMP Handbook – Construction, November 2009.

1.04 GENERAL

- A. The Contractor shall develop the storm water pollution prevention plan and implement the measures specified in this section in a manner that will meet the requirements of the General Permit. Contractor shall also prepare documents associated with the new California Construction General Permit, NPDES No. CAS000002, adopted on September 2, 2009, and effective July 1, 2010. Contractor shall review the changes and requirements to this Permit, which can be located at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml
- B. For all construction activity disturbing land area of one (1) acre or more, Contractor shall follow the new permit requirements. These permit documents are noted in Section 1.05, Submittals. Contractor shall work with the Engineer to ensure document preparation and implementation is carried out by a Qualified SWPPP Developer (QSD), as regulated by the Regional Water Quality Control Board (RWQCB).

1.05 SUBMITTALS

- A. The Contractor shall follow the requirements of the new General Permit for the preparation of Permit Registration Documents for this project. Contractor shall work with the Engineer as necessary to determine Sediment Risk and Receiving Water Risk. Contractor shall work with the Engineer to identify potential risk level, required storm water or other discharge monitoring, and reporting requirements. Contractor shall verify risk level and provide all necessary project documents and plans for monitoring, sampling, and reporting. Contractor shall assist the Owner with preparation of applicable Permit Registration Documents, including the Notice of Intent (NOI), Site Maps, Drawings, and Stormwater Pollution Prevention Plan, required by the new General Permit that shall be filed electronically by the Owner.
- B. Storm Water Pollution Prevention Plan:
 - 1. The Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) to the Engineer for approval within seven (7) days of Notice to Proceed. The SWPPP shall conform to the requirements in the General Permit and these Specifications.
 - 2. The Contractor's Qualified SWPPP developer (QSD) is fully responsible for preparing the SWPPP to reflect Contractor's specific activities on the project. The Contractor is fully responsible for assuring that the SWPPP complies with the General Permit.
 - 3. The Contractor shall prepare and implement a site specific SWPPP in accordance with the requirements of the SWRCB, the NPDES General

Permit, and the Construction BMP Handbook Web-based portal developed by CASQA. The SWPPP and all Contractor activities shall be coordinated with other construction activities and SWPPPs at the site.

4. The SWPPP shall include water pollution control practices:
 - a. For storm water and non-storm water from areas outside of the job site related to construction activities for this contract such as:
 - 1) Staging areas.
 - 2) Storage yards and stockpile areas.
 - 3) Access roads.
 - b. Appropriate for each season as described in "Implementation Requirements" of this Section.
 - c. For activities or mobile operations related to the General Permit.
5. The SWPPP shall include a schedule that:
 - a. Describes when work activities that could cause water pollution will be performed.
 - b. Identifies soil stabilization and sediment control practices for disturbed soil area.
 - c. Includes dates when these practices will be 25, 50, and 100 percent complete.
 - d. Shows 100 percent completion of these practices before the rainy season.
6. Within seven (7) days of Notice to Proceed, the Contractor shall submit five (5) copies of the SWPPP to the Engineer. The Contractor shall allow seven (7) days for the Engineer's review. If revisions are required, the Engineer will provide comments and specify the date that the review stopped. The Contractor shall revise and resubmit the SWPPP within five (5) days of receipt of the Engineer's comments. The Engineer's review will resume when the complete SWPPP is resubmitted. When the Engineer approves the SWPPP, the Contractor shall submit five (5) copies of the approved SWPPP to the Engineer. The Contractor may proceed with construction activities if the Engineer conditionally approves the SWPPP while minor revisions are being completed.
7. The Contractor shall not perform work that may cause water pollution until the SWPPP has been approved by the Engineer. The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State and local laws, regulations, and requirements.
8. Amendments:
 - a. If there is a change in construction schedule or activities, the Contractor and Contractor's QSD shall prepare an amendment to the SWPPP to identify additional or revised water pollution control practices. The Contractor shall submit the amendment to the Engineer for review within a time agreed to by the Engineer not to exceed the number of days specified for the initial submittal of the SWPPP. The Engineer will review the amendment within the same time allotted for the review of the initial submittal of the SWPPP.
 - b. The Contractor and Contractor's QSD shall amend the SWPPP, graphically and in narrative form, whenever there is a change in construction activities or operations which may affect the discharge of significant quantities of pollutants to surface waters, ground waters, municipal storm drain systems or when deemed necessary by the Engineer. The SWPPP shall be amended if the SWPPP is in violation of any condition of the Permit, or has not effectively achieved the objective

of reducing pollutants in storm water discharges. Amendments shall show additional control measures or revised operations, including those in areas not shown in the initially approved SWPPP, which are required on the project to control water pollution effectively. Amendments to the SWPPP shall be submitted for review and approval by the Engineer in the same manner specified for the initially approved SWPPP. Approved amendments shall be dated and logged in the SWPPP. Upon approval of the amendment, the Contractor shall implement the additional control measures or revised operations.

- c. If directed by the Engineer or requested in writing by the Contractor and approved by the Engineer, changes to the water pollution control work specified in these special provisions will be allowed. Changes may include addition of new water pollution control practices. The Contractor and Contractor's QSD shall incorporate these changes in the SWPPP.
- d. The Contractor shall keep a copy of the approved SWPPP at the job site. The SWPPP shall be made available when requested by a representative of the RWQCB, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests from the public shall be directed to the Owner. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

C. Water Pollution Control Schedule of Values:

- 1. The Contractor shall submit with the SWPPP, for approval by the Engineer, a schedule of values detailing the cost breakdown of the contract lump sum item for water pollution control. The cost breakdown shall include both the special minimum requirements required by the Engineer and those selected by the Contractor for this project. The combined requirements shall be considered as items of work as part of the lump sum bid. The schedule of values shall reflect the total items of work, including both those required by the Engineer and those selected by the Contractor. The Contractor shall indicate quantities and costs for the control measures shown in the schedule of values, except for critical temporary controls and permanent control measures which are shown on the project plans and for which there is a contract item of work. Adjustments in the items of work and quantities listed in the schedule of values shall be made when required to address approved amendments to the SWPPP.
- 2. The sum of the amounts for the units of work listed in the schedule of values shall be equal to the contract lump sum price for Water Pollution Control Measures.
- 3. If approved in writing by the Engineer, the schedule of values will be used to determine progress payments for water pollution control during the progress of the work. The schedule of values will be used as the basis for calculating any adjustment in compensation for the contract item for water pollution control due to changes in the work ordered by the Engineer.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 IMPLEMENTATION REQUIREMENTS

- A. The Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of Work.
- B. If the Contractor or the Engineer identifies a deficiency in the implementation of the approved SWPPP, the deficiency shall be corrected immediately, unless an agreed date for correction is approved in writing by the Engineer. The deficiency shall be corrected before the onset of precipitation. If the Contractor fails to correct the deficiency by the agreed date or before the onset of precipitation, the Owner may correct the deficiency and deduct the cost of correcting deficiencies from payments.
- C. If the Contractor fails to conform to the provisions of this section, "Water Pollution Control Measures", the Engineer may order the suspension of Work until the project complies with the requirements of this section.
- D. Year-Round:
 - 1. The Contractor shall monitor the National Weather Service weather forecast on a daily basis during the contract. The Contractor may use an alternative weather forecasting service if approved by the Engineer. Appropriate water pollution control practices shall be in place before precipitation.
 - 2. The Contractor may discontinue earthwork operations for a disturbed area for up to 21 days and the disturbed soil area will still be considered active. When earthwork operations in the disturbed area have been completed, the Contractor shall implement appropriate water pollution control practices within three (3) days, or before predicted precipitation, whichever occurs first.
 - 3. The Contractor shall provide soil stabilization and sediment control practices during the rainy season from October 15 to April 15.
 - 4. The Contractor shall implement soil stabilization and sediment control practices a minimum of 10 days before the start of the rainy season.
 - 5. During the rainy season, the active disturbed soil area of the project site shall be not more than 1 acre. The Engineer may approve expansions of the active disturbed soil area limit if requested in writing. The Contractor shall maintain soil stabilization and sediment control materials on site to protect disturbed soil areas.
 - 6. During the non-rainy season, the project schedule will sequence construction activities with the installation of both erosion control and sediment control measures.
 - 7. Risk Level 1 dischargers shall provide effective soil cover for inactive areas and all finished slopes, open space, utility backfill, and completed lots. Inactive areas of construction are areas of construction activity that have been disturbed and are not scheduled to be re-disturbed for at least 14 days.

3.02 EROSION AND SEDIMENT CONTROLS

- A. Due to the increased requirements applicable to storm water and non-storm water runoff according to the new General Permit, Contractor is encouraged to use BMPs to the maximum extent possible in order to prevent any potential runoff.
 - 1. Stabilization Practices: In a daily report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, trenching, and grading); when construction activities temporarily

or permanently cease on a portion of the site; and when stabilization practices are initiated. Stabilization practices must be implemented immediately and daily upon land disturbance. Stabilization practices shall be initiated during and after construction, and until permanent vegetation is established. Contractor will stabilize any disturbed land left overnight.

2. Structural Practices:
 - a. Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices.
 - 1) Silt fences.
 - 2) Fiber rolls.
 - 3) Gravel bag berms.
 - 4) Storm drain inlet protection.
 - b. Silt Fence, Fiber Rolls, and Gravel Bag Berms: The Contractor shall provide silt fences, fiber rolls, and straw bales as a temporary structural practice to minimize erosion and sediment runoff. Silt fences, fiber rolls, and gravel bag berms shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences, fiber rolls, and gravel bag berms shall be installed at the perimeter of disturbed soil areas or as needed based on Contractor operations. Final removal of silt fence, fiber rolls, and gravel bag berms shall be upon approval by the Engineer.
 - c. Storm Drain Inlet Protection: The Contractor shall provide sand bags or other barriers to create sediment traps to control runoff from the construction area. Straw bales will not be allowed.
 - d. Sediment Control and Containment Devices: The Contractor shall provide pumped water sediment control and containment devices for all excavation de-watering applications. These measures may require the use of holding tanks.
 - e. Contractor shall control run-on and potential run-off from the site in accordance with new permit regulations. Contractor's QSD will implement additional measures in the SWPPP as necessary to prevent run-on and potential runoff during excavation of contaminated soils.
 - f. Contractor shall have a Qualified SWPPP Practitioner (QSP) on site to inspect, maintain, report and repair BMPs.
 - g. Reporting Requirements: Contractor shall meet all monitoring, sampling and reporting requirements as specified for the risk level of the project for the duration of the project. Contractor shall follow these requirements as stated in Attachments A through F of the new General Permit, as applicable.

3.03 CONSTRUCTION SITE MONITORING PROGRAM

- A. The Contractor shall develop and implement a written site-specific Construction Site Monitoring Program (CSMP) in accordance with the new Permit requirements for Risk Level 1 dischargers, Attachment C to the General Permit.
- B. CSMP will include the following:

1. All monitoring procedures and instructions, location maps, forms and checklists as required, and be included as a separate appendix or chapter to the SWPPP.
2. All visual monitoring required for Risk Level 1 dischargers.
3. All non-visible pollutant monitoring requirements and potential sampling and analysis. Risk Level 1 dischargers shall collect one or more samples, during any breach, malfunction, leakage, or spill observed during a visual inspection which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water. Contractor will follow the guidelines in Attachment C of the General Permit.
4. The CSMP should include specific details about sample collection frequency; sample constituents; sample collection methodologies (including clean sample collection techniques); and use of pH and turbidity field meters and field quality assurance/quality control.
5. Sample procedures for laboratory analysis should also be described (in the event of nonvisible pollutant monitoring or other required laboratory sample analysis, e.g. SSC). These procedures should include which laboratory will be performing the sample analysis and how samples will be delivered to the laboratory, laboratory analytical methods and reporting limits, sample container requirements and required sample volume; field and laboratory quality assurance/quality control, and chain of custody procedures.

3.04 MAINTENANCE AND INSPECTIONS

- A. The Contractor shall make visual inspections of all erosion control and sediment transport devices as necessary to ensure proper operation not less than once per week, and promptly before and after every rainstorm and at least every 24 hours during an extended rainfall event. If such inspection reveals that additional measures are needed to prevent erosion and sediment transport, the Contractor shall promptly maintain, modify, or install additional devices as needed. The Contractor shall use the forms in the SWPPP for all inspections, and all completed forms shall be included in the SWPPP, and submitted to the Legally Responsible Person (LRP).
- B. All inspection, maintenance, repair and sampling activities at the project location shall be performed or supervised by a QSP. The QSP may delegate any or all of these activities to an employee trained to do the task(s) appropriately, but shall ensure adequate deployment.
- C. The Contractor shall perform routine maintenance, which shall include maintenance and repair of BMPs, debris removal, silt/sediment removal, clearing of vegetation around flow control devices to prevent clogging, and maintenance of healthy vegetative cover.
- D. Upon identifying failures or other shortcomings, as directed by the QSP, Risk Level 1 dischargers shall begin implementing repairs or design changes to BMPs within 72 hours of identification and complete the changes as soon as possible.

3.05 REPORTING REQUIREMENTS

- A. If the Contractor identifies discharges into surface waters or drainage systems causing or potentially causing pollution, or if the project receives a written notice or order from a regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within five (5) days of the discharge, notice, or order. The report shall include the following information:

1. The date, time, location, and nature of the operation, type of discharge and quantity, and the cause of the notice or order.
 2. The water pollution control practices used before the discharge, or before receiving the notice or order.
 3. The date of placement and type of additional or altered water pollution control practices placed after the discharge, or after receiving the notice or order.
 4. A maintenance schedule for affected water pollution control practices.
- B. Annual Certifications
1. By June 15 of each year, the Contractor shall complete and submit to the Engineer an Annual Certification of Compliance, as required by the General Permit.

3.06 MEASUREMENT AND PAYMENT

- A. The contract lump sum price shall include payment for Storm Water Pollution Prevention Plan including full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the Work involved in preparing, obtaining approval of, and amending the SWPPP and inspecting water pollution control practices as required in the Specifications and as directed by the Engineer.
- B. Payments for preparing Storm Water Pollution Prevention Plan will be made as follows:
1. After the SWPPP has been approved by the Engineer, 50 percent of the contract item price for Storm Water Pollution Prevention Plan will be included in the monthly progress estimate.
 2. Forty percent of the scheduled value for Storm Water Pollution Prevention Plan will be paid over the life of the contract.
 3. After acceptance of the completed Work, payment for the remaining 10 percent of the scheduled value for Storm Water Pollution Prevention Plan will be made.
- C. The contract lump sum price paid shall include payment for Water Pollution Control Measures including full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the Work involved in installing, constructing, maintaining, removing, and disposing of control measures, sampling and analysis, and excluding developing, preparing, obtaining approval of, revising, and amending the SWPPP, as shown on the Drawings, as required in the Specifications, and as directed by the Engineer.
- D. No payment will be made for the preparation, collection, analysis, and reporting of storm water samples where appropriate water pollution control practices are not implemented before precipitation or if a failure of a water pollution control practice is not corrected before precipitation.
- E. Implementation of water pollution control practices in areas outside the Limits of Work not specifically provided for in the SWPPP, on the Drawings, in the Specifications, or as directed by the Engineer will not be paid for.
- F. Full compensation for changes in control measures required by an approved amendment to the SWPPP shall be considered as included in the scheduled value for Water Pollution Control Measures and no additional compensation will be allowed thereafter.
- G. During each estimate period the Contractor fails to conform to the provisions in this Section, "Water Pollution Control Measures", or fails to implement the water pollution control measures shown on the Drawings or specified elsewhere in these Specifications, the Owner will withhold 25 percent of the progress payment.

- H. Withholds for failure to perform water pollution control Work will be in addition to all other withholds provided for in the contract. The Owner will return performance-failure withholds in the progress payment following the correction of noncompliance.
- I. Retentions for failure to conform to the provisions in this section "Water Pollution Control Measures" shall be in addition to the other retentions provided for in the contract. The amounts retained for failure of the Contractor to conform to the provisions in this section will be released for payment on the next monthly estimate for partial payment following the date that an approved SWPPP has been implemented and maintained, and water pollution is adequately controlled, as determined by the Engineer.

END OF SECTION

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SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.01 TEMPORARY FACILITIES

- A. Sanitary Facilities: Provide and maintain self-contained portable sanitary facilities for the Contractor's, subcontractor's, Engineer's, and Owner's use. Facilities shall comply with applicable regulations and shall be serviced, cleaned and disinfected frequently.
- B. Temporary Water, Power and Telephone Service: Provide all temporary utility service required for the project. Pay all utility service connection and use charges.
- C. Temporary Lighting: Provide and maintain lighting for construction operations to achieve a minimum lighting level of 20-foot candles for rough work and 60-foot candles for finish work.
- D. Temporary Fire Protection:
 - 1. Provide and maintain fire protection equipment, including extinguishers, fire hoses, and other equipment required by law, insurance carriers, or necessary for proper fire protection during the course of the work.
 - 2. Use fire protection equipment only for fighting fires.
 - 3. Locate fire extinguishers in field offices, storage sheds, tool houses, temporary buildings, and throughout the construction site.
- E. Staging areas: Staging areas are available at the Districts wastewater treatment plant. Location and dimensions of the staging area will be designated by the District.

1.02 TEMPORARY CONSTRUCTION

- A. The Contractor is solely and exclusively responsible for the design, construction and maintenance of all temporary construction including sewer bypass, forms, falsework, shoring, scaffolding, stairs, ladders and all other similar items. See General Conditions paragraphs 5.3 and 5.20 through 5.28 and Section 01040.
- B. Construct adequate and safe forms and falsework, to rigidly support partially completed structures. Provide temporary bridges and decking to maintain vehicular and pedestrian access. Design and construct temporary forms, falsework, bridges and decking in accordance with applicable regulations and codes. Due to site topography, ladders, stairs, and temporary walkways may be necessary.
- C. Temporary sewer bypass:
 - 1. The contractor shall construct a temporary sewer bypass from **manhole 603** to **Manhole 616**. The sewer bypass shall tie into the existing gravity sewer line above manhole 603 and run the entire length of the project. The bypass pipe shall be a 6-inch nominal diameter HDPE fusion welded pipe. The bypass shall include the lateral connection at Manhole 618 and any other lateral encountered along the length of gravity sewer that is to be replaced. It is expected that the bypass will be constructed on a temporary support system constructed of timbers or similar

methods to provide bridging of the ravines and a consistent slope over the length of the project.

1.03 BARRICADES, FENCES AND ENCLOSURES

- A. See General Conditions paragraphs 5.3 and 5.20 through 5.28 and Section 01040.
- B. Barricades: Provide temporary guard rails, ladders, stairs, guards, and barricades to protect persons in accordance with applicable regulations, including California Code of Regulations Title 8 and Cal/OSHA.
- C. Fences:
 - 1. Provide a temporary 6-foot-high chain-link fence at working area access points to exclude unauthorized persons from construction areas.

1.04 PROTECTION OF INSTALLED WORK

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
- B. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is unavoidable provide adequate protection to prevent damage to waterproof membranes and comply with recommendations for protection of the waterproofing or roofing material manufacturer.
- C. Provide heavy planking to protect curbs, gutters, culverts, paving and similar surfaces from damage by heavy equipment or vehicles.

1.05 SECURITY

- A. Provide security and facilities to protect the Work from unauthorized entry, vandalism, or theft.

1.06 ACCESS ROADS AND PARKING AREAS

- A. Access Roads: Use only access roads designated on the Drawings.
- B. Parking:
 - 1. Park workers' vehicles offsite, parking will be available at the Wastewater Treatment Plant. Limited parking for contractor's vehicles is available on street at Mariposa Court and Calle La Cruz. Parking shall follow local laws and ordinances.
 - 2. Any vehicles that may be temporarily parked within the easements shown on the drawings shall not be over any brush which can be a fire hazard.

1.07 FIELD OFFICES

- A. Contractor's Office at the Site: The contractor shall maintain a suitable office at the site for the Contractor's Superintendent who shall be authorized to receive submittals, drawings, instructions, or other communications from the Engineer or the Owner. The office shall be located at the Wastewater Treatment Plant. The

contractor shall coordinate with the owner power hook-ups and provide for their own potable water and sanitary facilities. At the pre-construction meeting, the Owner may allow the placement of a temporary storage box/office within the easement.

END OF SECTION

SECTION 01550

TRAFFIC REGULATION

PART 1 - GENERAL

1.01 OBJECTIVES

- A. The Contractor shall provide for safe movement of vehicular, bicycle and pedestrian traffic through and around construction operations. Traffic control requirements set forth herein are the minimum requirements imposed. The Contractor shall be solely responsible for providing all protective measures necessary.
- B. Proper traffic movement through the work area depends upon the driver controlling and directing his vehicle properly under unexpected situations and pedestrian attention to signs. The means of clarifying such conditions to the public include signs, flaggers, pavement markings, barricades, lights, cones and delineators.
- C. No one standard sequence of signs or control devices will suit all conditions, which may result from construction operations. Even for the same work the conditions may vary from hour to hour, requiring adjustment and revision of the traffic control program in effect.
- D. The traffic control requirements specified herein are intended to establish general principles to be observed in the control and regulation of traffic through and around construction operations anticipated for this project. All pedestrian and vehicular detours are subject to review by the police chief, sheriff or enforcement officer of the agencies having jurisdiction, and the Contractor shall revise the detours as ordered at no additional cost.
- E. Clean up site each day after completing work and remove all traffic hazards. Daily traffic control measures shall continue until cleanup activities have been satisfactorily completed and all of the Contractor's equipment has been removed from the traveled way area.

1.02 DESCRIPTION OF WORK

- A. Work Included:
 - 1. At all times, the Contractor shall provide safe and adequate passage for vehicular and pedestrian traffic through, around and adjacent to all construction operations by use of detours, bridging, backfilling, paving, traffic barriers or other favorably reviewed means.
 - 2. The Contractor shall establish and maintain detours and conduct his construction operations in such a manner as to minimize hazard, inconvenience and disruption to the public.
 - 3. Traffic control shall be directed equally to the regulation and protection of pedestrian traffic including pedestrians, bicyclists, joggers, skaters, skateboarders, etc.
 - 4. The Contractor shall provide for protection of pedestrians and separation of pedestrians from construction operations at all times.

5. The Contractor shall direct, divert and detour traffic through, around and adjacent to construction operations in accordance with the traffic control plans as specified herein or in accordance with favorably reviewed Traffic Control Plans. The Contractor may revise the Traffic Control Plan as necessary only with the favorable review of the Engineer.

1.03 REFERENCES

- A. Manual of Traffic Controls, California Department of Transportation.
- B. Work Area Traffic Control Handbook, Building News Incorporated, P.O. Box 3031, Terminal Annex, Los Angeles, California 90051.

1.04 SUBMITTALS

- A. Traffic Control Plan:
 1. Submit a Traffic Control Plan under the Product Information category to clearly describe proposed traffic control measures. The plan shall be generally in accordance with the illustrations included in the Manual of Traffic Control and in the Work Area Traffic Control Handbook.
 2. The submittal shall consist of scaled drawings for each situation anticipated to be encountered, i.e., intersections, mid-block, construction deliveries (each during working and non-working hours), etc.
 3. The scaled drawings shall show signs, traffic control devices and flaggers as required.

PART 2 - PRODUCTS

2.01 CONSTRUCTION SIGNS

- A. Construction signs shall conform to the standards of the Manual of Traffic Controls.
- B. Temporary warning signs in construction areas shall have a black legend on an orange background. Color for other signs shall follow the standard for all highway signs.
- C. All signs used during hours of darkness shall be reflectorized or illuminated.

2.02 OTHER TRAFFIC CONTROL DEVICES

- A. General: Traffic control devices shall conform to the standards of the Manual of Traffic Controls.
- B. Cones or Delineators:
 1. Cones or delineators shall consist of cylindrical or cone shaped plastic devices, which shall be 18 inches to 48 inches in height.
 2. Cones or delineators shall have a flexible base of suitable weight, which will ensure stability.
 3. Cones used during hours of darkness shall be internally illuminated or reflectorized meeting the requirements of the Manual of Traffic Controls.

- C. Barricades:
 - 1. Barricades shall be Type I, Type II or Type III barricades as set forth in the Manual of Traffic Controls.
 - 2. Barricades used during hours of darkness shall be equipped with flashers.

PART 3 - EXECUTION

3.01 DIVERTING PEDESTRIAN TRAFFIC

- A. Whenever construction operations obstruct the flow of pedestrian traffic or present a hazard to pedestrians, the Contractor shall take appropriate action to protect and separate pedestrians from the work area.
- B. Such action may include placement of barricades between pedestrians and work areas, placement of warning signs, and provision of personnel as required to protect pedestrians as conditions warrant.

3.02 DIVERTING VEHICULAR TRAFFIC

- A. Whenever construction operations obstruct the flow of vehicular traffic or present a hazard to vehicles operating in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour and otherwise protect approaching drivers and vehicles.

3.03 TRAFFIC CONTROL DEVICES

- A. General:
 - 1. Traffic control devices shall be provided in sufficient quantities and types as required to provide safe and adequate traffic control.
 - 2. During hours of darkness, approved lights and/or flares shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic.
 - 3. Barricades shall be furnished and maintained along all open trenches in contact with traffic.
 - 4. No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised.
- B. Placement:
 - 1. All traffic control devices shall be placed in accordance with the Manual of Traffic Controls and favorably reviewed Traffic Control Plan.
 - 2. Locations of devices shall be adjusted to suit the conditions and circumstances of each detour situation. In all cases, signs shall be placed to most effectively convey their messages to approaching traffic.
- C. Test Drive of Detour:
 - 1. Immediately after traffic control devices have been placed, the detour shall be test driven by the Engineer and Contractor's representative.
 - 2. Test drive shall include approach to the detour from each possible direction and traversing full length of each detour route.
 - 3. The Contractor shall adjust and revise all traffic control devices as determined to be required by test drive through and shall repeat test drive if determined necessary by the Engineer.

4. The Contractor shall provide additional traffic control devices if required to maintain flow of traffic through construction operation.

D. Maintenance of Devices:

1. The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor's operations exists.
2. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations.

E. Removal of Devices:

1. Traffic control devices shall remain in place at all times required to alert approaching traffic of upcoming hazards.
2. After hazard has been removed, all traffic control devices shall be removed. Signs shall be removed or their messages covered.

3.04 FLAGGERS

A. General: The Contractor shall employ flaggers:

1. At all locations on a construction site where barricades and warning signs cannot control the moving traffic.

B. Placement: Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed approximately 100 feet ahead of impact point.

C. Warning Signs:

1. A warning sign shall be placed ahead of the flagger reading: "Flagger Ahead." The distance between the sign and the flagger should be based on the average traffic speed, allowing approximately 50 feet for each 10 miles per hour.
2. During hours of darkness, flagger stations shall be illuminated such that the flagger will be clearly visible to approaching traffic. Lights for illuminating the flagger station shall receive favorable review by the Engineer.

D. Equipment:

1. The flagger shall be provided with and wear a red or orange warning garment when flagging. Flaggers shall be provided with approved hand signs and two way radios for communication.
2. When flagging during hours of darkness, the flagger shall signal with a red light or flare and shall have a belt and suspender harness outside his garment fitted with reflectors or made from reflectorized cloth, unless the garment is well reflectorized in one of these ways.

3.05 NOTICE TO AGENCIES

- A. The Contractor shall notify in writing all agencies having jurisdiction at least forty-eight (48) hours, excluding holidays and weekends, prior to instituting any lane closure or detour. At the end of each day's work, the Contractor shall inform the ambulance services, police and fire departments of the status of all detours and/or lane or road closures.

- B. List of Agencies:
 - 1. County of Monterey
 - a. Fire Department
 - b. Police Department
 - 2. U.S. Postal Service

3.06 EMERGENCY VEHICLE ACCESS THROUGH DETOURS

- A. During all detours and/or street closures the Contractor shall provide for movement of emergency vehicles through the work area.
- B. It is essential that the Contractor's work and equipment does not impede egress from any fire or police station to other areas of their service area.

3.07 ACCESS TO PRIVATE PROPERTY

- A. General: The Contractor shall schedule operations to minimize disruption of access to private property.
- B. Notice to Residents: Prior to blocking access to any private driveway or parking lot entrance, the Contractor shall notify the resident or business owner or tenant of pending closure and allow resident to remove vehicles.
- C. Nights: During non-working hours no driveway, house or parking lot shall be denied access to a public roadway.

3.09 PARKING RESTRICTIONS

- A. General: The Contractor shall post approved "NO PARKING" signs at all locations necessary to establish work areas and detour traffic.
- B. Signs:
 - 1. Signs shall read: "NO PARKING - CONSTRUCTION TOW-AWAY ZONE." Show hours of parking restriction and indicate telephone number of police agency having jurisdiction.
 - 2. Signs shall be placed at least 24 hours in advance of restriction.

3.10 STAGING AREAS

- A. The Owner is providing a staging area at the WWTP, if the Contractor requires additional staging areas, the Contractor shall provide that area.

END OF SECTION

SECTION 01650

FACILITY STARTUP

1.01 FACILITY STARTUP

- A. Commission all systems and equipment to verify performance, function, and correct operation by performing procedures to activate, startup, adjust, test, and demonstrate that the work is in operating order in accordance with these general requirements of this Section and the detailed requirements of the technical sections under the system or equipment specified.

To ensure that the work is ready for full-time operation the procedures include verification, witness testing, documentation, inspection by equipment manufacturers and operator training where specified.

- B. Notification: Notify the Engineer five days prior to starting each system or piece of equipment.
- C. Coordination: During the startup of bypass piping system and final gravity sewer connections, coordinate the operation of the sewer with Engineer, subcontractors, Owner's operators, and manufacturer's representatives.
- D. Furnish test equipment, measuring devices and supplies required to conduct tests.
- E. Maintain the bypass piping system until acceptance of the new sewer. Provide all lubricants, chemicals, and electricity necessary until acceptance.
- F. Furnish all expendable supplies, gas, water, etc., required for startup, demonstration and testing and dispose of all waste or used supplies, water, etc.

1.02 SUBMITTALS

- A. Startup Plan, Forms, and Schedule: Prepare a facility startup plan and schedule. The plan shall include test methods and procedures and sample forms for recording test data.
- B. Affidavit.
- C. Submit documentation of tests, balancing reports, and the like.

1.03 INITIAL STARTUP AND OPERATION OF FACILITIES

- A. The following listing is a general sequence of startup activity steps to be used in placing facility systems into operation:
- a. Perform mandrel testing to ensure that ovality and deflections are within design tolerances. Submit the proposed mandrel testing method to the Owner for approval.
 - b. Verify that the gravity sewer is sloped per the requirements of the contract documents, and that the new alignment does not contain any sags or crests. Perform a verification survey with measurements taken at no more than fifteen (15) foot intervals.
 - c. Testing of the new pipe and manholes to verify that all components are leak proof.
 - d. Functional testing of the new pipe with potable water after leak test to verify leak proof.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

1.01 FINAL CLEANUP

- A. Prior to Final Inspection clean the entire construction area and all other areas affected by the performance of work under this Contract. Perform cleaning using personnel specializing in and skilled in cleaning and maintenance work. Perform repair work using personnel skilled in executing the type of work being repaired. Perform all work to the highest trade standards applicable to that type of work.
 - 1. Remove all temporary construction, signs, tools, equipment, excess material and debris.
 - 2. Remove all lumps, splatters, spots and stains caused by paint, adhesive, asphalt, concrete, mortar, sealant or other foreign material from exposed or finished surfaces. Remove all temporary labels.
 - 3. Repair, patch or replace new or existing work including pavement, sidewalks, curbs, gutters, catch basins, gratings, manholes, covers, landscaping, plant materials and other items that have been damaged, broken, cracked or chipped as a result of performing this Work.
 - 4. Sweep clean and wash down all exterior pavement. Remove all hazardous material and material that may cause sediment in drainage systems prior to washdown. Remove all grease and oil stains on pavement caused by Contractor's equipment.

1.02 CONTRACTOR'S ACTION LIST OF ITEMS TO BE CORRECTED AND/OR COMPLETED

- A. During construction, the Contractor shall maintain an action list of items to be corrected and/or completed. The Contractor shall regularly add items and update the list as information becomes available or as requested by the Engineer. The Contractor shall deliver a current copy of the list to the Engineer at each progress meeting.

1.03 SEMIFINAL INSPECTION/SUBSTANTIAL COMPLETION

- A. See General Conditions paragraph 13.7 through 13.15. When the Contractor considers the Work nearly complete, the Contractor shall review the Contract Documents, inspect the Work, and use the Contractor's action list to prepare a Contractor's Punch List of all deficient or uncompleted items. The Contractor shall complete or correct items on the Punch List. When the Work is Substantially Complete in accordance with General Conditions paragraph 13.7, the Contractor shall notify the Engineer in writing that the Contractor has reviewed the Contract Documents, inspected the Work and believes that the Work is Substantially Complete and ready for Semifinal Inspection.
- B. See General Conditions paragraphs 13.9 through 13.10. On receipt of the Contractor's Punch List and notice that the work is ready for Semifinal Inspection, the Engineer will inspect the Work. The Engineer may add additional items to the

Contractor's Punch List, may find that the work is not ready for inspection, is ready for inspection but not Substantially Complete or that the Work is Substantially Complete. When the Engineer finds the Work is Substantially Complete, it will prepare a Final Punch List and a notice of Substantial Complete, which will state the date of Substantial Completion and the time agreed to by the Owner and the Contractor (not to exceed 30 days) in which the Work shall be fully complete and ready for Final Inspection.

1.04 FINAL INSPECTION, FINAL COMPLETION AND FINAL PAYMENT

- A. See General Conditions paragraph 13.11 through 13.15. When the Contractor has completed or corrected all the items on the Engineer's Final Punch List, the Contractor shall give the Engineer written notice that the Work is ready for Final Inspection. When the Engineer finds the Work acceptable and fully complete in accordance with the Contract Documents, and upon receipt of a final Application for Payment and all final submittals, the Engineer will recommend that the Owner issue a Notice of Final Completion, make Final Payment and Accept the Work stating that to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's observations and inspection, the Work has been fully completed in accordance with the terms and conditions of the Contract Documents.
- B. Final Submittals include:
 - 1. Operation and Maintenance Manuals and Parts Lists
 - 2. Record Drawings
 - 3. Extra Materials
 - 4. Special Guarantees
 - 5. Maintenance Contracts
 - 6. Insurance Certificate showing required continuation of coverage beyond Final Payment. See General Conditions paragraph 4.6.
 - 7. Release of Liens. See General Conditions paragraphs 13.2 and 13.13
 - 8. Waiver of Claims by Contractor. See General Conditions paragraph 13.14.
 - 9. And any other submittals required by the Contract Documents and not previously received.
- C. The Owner will record the Notice of Final Completion at the County Recorders Office.
- D. The Owner will make Final Payment to the Contractor 35 days after recording the Notice of Final Completion.

1.05 RECORD DRAWINGS

- A. The Contractor shall maintain on the jobsite, a complete set of Contract Documents and a complete file of all addenda, contract modifications and favorably reviewed submittals. The Contractor shall prepare a set of Record Drawings concurrently with the construction of the Work and in accordance with General Conditions paragraph 5.13 and the following:
 - 1. Show the invert elevation of all gravity piping and the top of pipe, top of conduit or top of protective concrete encasement for other utilities. Elevations shall be related to a permanent visible elevation benchmark set at the site by the Contractor.

2. Show the horizontal location of underground utilities measured from permanent visible physical features such as fence line or centerline of manhole.
3. Comply with detailed requirements in technical specification sections describing the type of information required on Record Drawings. The Contractor's copy of Contract Documents, Contract modifications and Record Drawings shall be available to the Engineer for weekly verification that the records are being currently updated.

B. Submit Record Drawings and obtain acceptance prior to completion.

1.06 EXTRA MATERIALS

- A. Deliver specified extra materials and parts to the Owner. Itemize all items on a transmittal letter in duplicate and obtain signature of receiving party. Submit copies of signed transmittals for all specified extra materials and parts prior to completion.

1.07 SPECIAL GUARANTEES

- A. Article 12.11 of the General Conditions covers the Contractor's responsibility to remedy defects due to faulty workmanship and materials, which appear within one year from the date of Final Completion and acceptance by the Owner.
- B. Guarantees for more than one year when called for in various sections of the Specifications shall be evidenced by the Contract Documents and in the form of a special guarantee written on the letterhead of the Contractor, Subcontractor, or Supplier doing the work and/or supplying the item to be guaranteed, and countersigned by the Contractor as follows. Failure to provide the special guarantee on the letterhead shall not relieve the Contractor, Subcontractor, or Supplier from its obligations for the special guarantees.
- C. Special Guarantee:

We hereby guarantee that the _____ which we have provided in the _____, Project, was done in accordance with the Drawings and Specifications, and that the work, as installed, will fulfill the requirements of the guarantee included in Specification Section _____. We agree to repair or replace any or all of our work, together with any other adjacent work which may be damaged or displaced by so doing, that may prove to be defective in workmanship or material (with the exception of defects due to ordinary wear and tear, and unusual abuse or neglect) within a period of _____ years from the date of acceptance of the abovenamed facility, without any expense whatsoever to the Owner. In the event of our failure to comply with the above-mentioned conditions within the period set forth in Article 12 of the General Conditions after being notified in writing by the Owner, we, collectively or separately, do hereby authorize the Owner to proceed to have said defects repaired and made good at our expense, and we will honor and pay the costs and charges therefor upon demand. We understand that the provisions of General Conditions paragraphs 12.15 and 12.16 apply to this Special Guarantee.

Signed _____
(Subcontractor or Supplier)

Company _____

Address _____

Telephone Number _____

Countersigned _____
(Contractor)

- D. Submit two notarized original signed copies of each required Special Guarantee prior to completion.

1.08 TWELVE-MONTH INSPECTION

- A. Thirty (30) days prior to the expiration of the one-year guarantee period described in General Conditions Article 12, the Contractor shall tour the project with the Engineer and/or the Owner to prepare a list of corrective work required under the 12-month guarantee. The Contractor shall correct all items found to be defective within 20 days of receipt of the list of items to be corrected.

END OF SECTION

SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all demolition required to perform the work covered under this contract including without limitation:
 - 1. Remove existing construction shown to be removed.
 - a. Demolition includes but is not limited to: existing manholes, pipe supports, footings, and sewer pipe.
 - 2. Remove and replace existing construction and/or finishes as required to provide access to perform other work included in this contract.
 - 3. Disconnect and cap off utilities in accordance with applicable codes and safety regulations.
 - 4. Where utilities that are not shown pass through construction that must be removed and those utilities serve other areas notify the Engineer before disrupting service. If rerouting is required to maintain service, the Owner may issue a Change Order to accomplish the required work.
 - 5. Store and protect items intended for reuse.
 - 6. Assume ownership of debris and unwanted materials removed from the site and dispose of legally.
 - 7. Include the cost of removing and disposing of hazardous material including without limitation asbestos or asbestos-containing material, lead-containing paint, and PCBs. If the presence of a hazardous material is suspected, have material tested. If material is identified as hazardous, retain qualified and licensed specialist to remove and dispose of it legally.
- B. Related Sections:
 - 1. Section 02530: Sewers
 - 2. Section 03300: Cast-in-Place Concrete
 - 3. Section 05500: Miscellaneous Metal Fabrications

1.02 NOISE AND DUST CONTROL

- A. Perform work in accordance with requirements in Division 1. Particular attention is directed without limitation to paragraphs titled: Owner and Contractor's Use of Premises, Cleanup During Construction, Fire Protection During Construction, Maintenance of Exit Routes for Building Users, Temporary Dust Barriers, Noise Control and Care of Existing Facilities.
- B. Provide temporary partitions to control dust and noise and exclude unauthorized persons.
- C. Perform work in a manner to cause least disturbance to nearby residents and least damage to work to remain. Contractor may not use power tools, heavy equipment, or other noisy machinery or equipment before 9am or after 5pm.
- D. Maintain adequate means of safe, clear egress for the Owner and Engineer.
- E. Employ all available techniques for construction noise abatement. Use remote, well-muffled air compressors and newest noise suppressed pneumatic and electric tools.

1.03 WARNING

- A. The Contractor is advised that work under this Section may be hazardous. The Contractor is to take all necessary precautions to ensure the safety of workers and property. Removal of and/or working in areas containing even minor amounts of hazardous material including without limitation, asbestos, lead-based paint, PCBs or other hazardous materials requires special precautions, knowledge and procedures. If hazardous material is suspected, notify the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 REMOVAL OF CONSTRUCTION IN AREAS TO RECEIVE NEW WORK

- A. Remove all unwanted mechanical and electrical work (whether shown or not) that is not wanted and is not needed to serve other areas that is in, on, or concealed behind work being removed. Cap off or terminate all mechanical or electrical work in accordance with the requirements of Divisions 15 and 16.
- B. Protect mechanical and electrical work that serves other areas. Relocate concealed mechanical and electrical work that is required to preserve service to other areas.
- C. Remove structural work designated for removal. Take precautions not to damage structural work intended to remain. Where temporary shoring is needed, submit a design prepared by an appropriately licensed engineer for review before proceeding.
- D. If structural elements are encountered that were not shown, protect them from damage and report their presence to the Owner.

3.02 REMOVAL OF LIMITED PORTIONS OF EXISTING CONSTRUCTION TO PERMIT MODIFICATIONS

- A. Protect existing construction to remain with temporary.
- B. Treat existing mechanical, electrical or structural work as described in other parts of this Section.
- C. When modifications are complete, replace removed work with new construction and finishes to match adjacent existing work. Standards of material and workmanship shall be in accordance with other portions of this Specification or if not covered then in accordance with current practice for this class of work. Salvaged materials may be used for replacement if in good condition.

3.03 REMOVAL OF EXISTING CONSTRUCTION TO PROVIDE ACCESS TO PERFORM WORK

- A. Provide careful selective cutting and removal of existing construction where required to permit installation of new concealed mechanical or electrical work, or installation of equipment, fixtures or devices.

- B. Treat existing mechanical, electrical or structural work as described in other parts of this Section.
- C. Replace and/or patch removed construction and finishes in accordance with other parts of this Section.

3.04 PROTECTION OF WORK TO REMAIN

- A. Protect all work to remain such as manhole "S 615". Repair damage with materials, workmanship and finishes matching existing work when new.

3.05 CUTTING HOLES IN CONCRETE AND/OR CONCRETE UNIT MASONRY

- A. Use chipping guns to chip out small holes for pipes or conduits. Proceed carefully to avoid damage to concealed conduits. Core drilling is permitted only at the Contractor's risk and only with the Owner's permission.

3.06 REMOVE UNWANTED FIXED EQUIPMENT

- A. If items are designated on the Drawings to be salvaged, remove them carefully without causing damage. Deliver items to be turned over to the Owner to the Owner's storage facility at (address): Carmel Area Wastewater District Waste Water Treatment Plant
- B. Store and protect items to be reused until time of need on jobsite.

3.07 IF HAZARDOUS MATERIALS ARE ENCOUNTERED

- A. If hazardous materials are discovered, comply with paragraph 1.01 of this Section and all applicable laws.

3.08 REMOVAL AND DISPOSAL OF MATERIAL

- A. Store debris in suitable covered containers located where directed by the Owner and remove from site when full. Burning on the site is not permitted.
- B. Removed material (other than material to be reused) shall become the property of the Contractor who shall remove it from the site and dispose of it in a legal manner.

END OF SECTION

SECTION 02080

PRECAST CONCRETE SECTIONAL MANHOLES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Precast reinforced concrete cylindrical sectional manholes, complete with openings, inserts, ladder rungs (where specifically called for), hardware, drains, covers and frames.
 - 2. Precast reinforced concrete manhole bases and tops.
- B. Related Sections:
 - 1. Section 02302: Earthwork
 - 2. Section 03300: Cast-In-Place Concrete

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM), Standard Specifications:
 - 1. A36 Structural Steel
 - 2. A48 Gray Iron Castings
 - 3. C150 Portland Cement
 - 4. C478 Precast Reinforced Concrete Manhole Sections
- B. American Association of State Highway and Transportation Officials (AASHTO), Standard Specifications for Highway Bridges.
- C. Federal Specification: SS-S-210: Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data:
 - 1. Descriptive details of the manufacturer's proposed standard products, including:
 - a. Precast manhole sections.
 - b. Precast roof slab or cone section.
 - c. Precast base slab.
 - d. Steps, ladder rungs and other hardware.
 - e. Minimum concrete 28-day compressive strength.
 - f. Cement certification.
 - g. Manhole cover and frame.
 - 2. Shop drawings, including:

- a. Design criteria.
- b. Reinforcing steel location and concrete cover.
- c. Layout of all inserts, attachments and openings.
- d. Location and type of joints.

1.04 QUALITY ASSURANCE

- A. Provide products of a manufacturer who has been regularly engaged in the design and manufacture of the product.
- B. Demonstrate to the satisfaction of the Engineer that the quality is equal to the product made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

PART 2 - PRODUCTS

2.01 DESIGN CRITERIA

- A. General: ASTM C478, and also:
 - 1. Roof slab live load: *300 lb/sq. ft.*
 - 2. Backfill material: *6" minimum structural backfill.*
 - 3. Buoyancy: *N/A.*

2.02 PRECAST SECTIONS

- A. General:
 - 1. Manhole cone section: *Concentric* taper if used.
 - 2. Cement: ASTM C150, Type II, low alkali.
 - 3. Roof slab opening: Centered, and size to support the manhole cover frame.
 - 4. Lifting eyes: Provide for each section.
- B. Lining: All manholes shall have an interior coating of spray applied 100% solids elastomeric polyurethane. Coating shall be a minimum of 80 mils thick. Provide SprayRoq Sprayshield Green 1 or equivalent product that is specifically designed to be used to coat and protect new concrete in wet environments.
- C. Manufacturer: Hanson Concrete Products, Inc., Milpitas, CA; Santa Rosa Cast Products Company, Santa Rosa, CA; or equal.

2.03 SEALANT GASKETS

- A. Type: Preformed, continuous rope form plastic material, protected by removable two-piece wrapper.
- B. Sealing Compound: Reinforced hydrocarbon resins blended with plasticizing compounds and reinforced with inert mineral filler. No solvents, irritating fumes or obnoxious odors.

- C. Adhesive and Cohesive Strength: Not dependent on oxidizing, evaporating, or chemical action.
- D. Conform to Federal Specification SS-S-210.
- F. Provide: RAM-NEK as manufactured by K. T. Snyder Company, Inc., Houston, TX; QUIKSEAL as supplied by Associated Concrete Products, Santa Ana, CA; or equal.

2.04 FRAMES AND COVERS

- A. Material: Fiber reinforced Polymer composite, Heavy Duty Traffic Rated.
- B. Marking: In raised letters, as specified, on manhole cover "Sanitary Sewer".
- C. Coating: None.
- D. Size: *26-inch*-outside diameter cover for 24-inch clear opening.
- E. Lock: Stainless Steel Titus TwistLIFT Lock Systems.
- F. *Seal: Provide continuous gasket between frame and cover.*
- G. Manufacturer: GMI Composites, no equal.

2.05 LADDER RUNGS-NOT USED

2.06 SOURCE QUALITY CONTROL

- A. Precast Sections:
 - 1. Verify concrete compressive strength test results are satisfactory for the sections supplied.
 - 2. State the curing method. Identify the start and end dates for the sections supplied.
- B. Frames and Covers:
 - 1. Verify cast test bar tensile strengths are satisfactory.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Compact subgrade to 95% relative density for 6-inch minimum depth.
- B. Provide a 6-inch compacted gravel layer under the base slab prior to placement.
- C. Set precast manhole sections in a concrete base joint groove to designated elevations, form the flow channel in the *cast-in-place* concrete base slab.

- D. Apply primer to joint surfaces in accordance with manufacturer's instructions. Make all joints watertight with sealant gaskets.
- E. Backfill around the manhole with *Structural Backfill* material. Compact the backfill material to 95% of relative density from the pipe bedding and base slab up to final finish grade, over an area defined as being within a distance of 4 feet from the exterior walls of the manhole.
- F. Accurately locate and place the manhole frames to within 1/8-inch vertical elevation in paved areas and to 1/2-inch in other areas. Coordinate the activities of all trades so that this tolerance is achieved.
- G. Install the manhole cover in the frame. Machine the cover if necessary to obtain a solid fit, without rattling under load.

3.02 FIELD QUALITY CONTROL

- A. Verify all precast sections are continuously sealed with gaskets.
- B. Verify all manhole covers fit quietly in the frames.

3.03 TEST FOR MANHOLES

- A. Furnish and dispose of water used for testing.
- B. Hydraulically test all manholes installed.
- C. After all pipe has been laid, backfilling has been completed, and after the testing of the pipes, plug the end of the pipe stubs in each manhole with flexible-joint caps, or acceptable alternate, securely fastened.
- D. Fill the manhole with water and measure leakage over a period of not less than one hour.
- E. Allowable Leakage: less than one (1) gallon per hour per 10-foot depth of manhole. No water shall be visually observed leaking from manholes.
- F. When leakage from the manhole exceeds the above amount, determine the source or sources of the leakage, and repair or replace defective materials and workmanship.
- G. The completed pipe and manhole installation shall pass this test before the project can be accepted.

END OF SECTION

SECTION 02200
SITE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Site preparation shall consist of all clearing, grubbing, stripping, (demolition), and related work necessary to prepare the project site for construction operations.
 2. No open burning of debris, lumber, or other scrap will be permitted.
 3. Trees and vegetation to be left standing shall be protected from damage incident to site preparation and construction operations by the erection of barriers or by such other means as the circumstances require.
- B. Related Sections:
1. Section 01140: Environmental Protection
 2. Section 02302: Earthwork
 3. Section 02050: Demolition

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 DEMOLITION

- A. Demolition in accordance with Section 02050

3.02 CLEARING

- A. Clearing shall consist of the **felling, trimming and cutting of trees**, and the removal of downed timber, shrubs, grasses, debris and rubble from the project site which will obstruct or otherwise impede construction operations. Clearing may only occur within the Districts 20-foot easement. Trees may not be removed unless shown as being removed on the drawings, or with owner's written consent.
- B. Clear the following areas:
1. **Areas as shown on the drawings which are within the existing and new sewer alignment may be cleared as needed to facilitate construction.**

3.03 GRUBBING

- A. Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the construction area. This material, together with logs and other organic debris, shall be excavated and removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated as construction areas under this Contract, such as areas for structures, pavement, fills. Depressions made by grubbing shall be filled with structural backfill material and compacted to make the surface conform with the

original adjacent surface of the ground, unless further excavation is required. Grub borrow areas to the extent necessary to obtain material free of stumps and roots.

3.04 STRIPPING

- A. Strip the upper 6 inches of soil containing vegetation and root matter from all areas to receive fill and from all areas to be excavated.

3.05 DISPOSAL

- A. Felled Trees and Downed Timber: Cut up and stockpile where directed by the Owner.
- B. Strippings: Stockpile stripped material and use it to restore the site.
- C. Dispose of remaining vegetation and debris in accordance with Section 01140.

END OF SECTION

SECTION 02302

EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Perform all excavation, shoring, dewatering, backfilling, compaction and grading necessary or required for the construction of the work as covered by these Specifications and indicated on the Drawings. The excavation shall include, without classification, the removal and disposal of all materials of whatever nature encountered, including water and all other obstructions that would interfere with the proper construction and completion of the required work.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. State of California, Department of Transportation, Standard Specifications (Standard Specifications), 2010.
- C. State of California, Department of Transportation, Manual of Test (California Test).

1.03 SUMMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit the following under the Product Information category.
 - 1. Sheeting and Shoring Plan: Refer to Paragraph 1.08 below and Section 01040, paragraph 1.14.
 - 2. Potholing Report as described in Paragraph 3.02.
 - 2. Samples and Test Results: Furnish, without additional cost to the Owner, such quantities of import materials as may be required by the Engineer for test purposes. Cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. Submit test results for import materials. Tests shall be performed within 60 days of the submission. All material furnished and all work performed shall be subject to rigid inspection, and no material shall be delivered to the site until it has been favorably reviewed by the Engineer, or used in the construction work until it has been inspected in the field by the Engineer.

1.04 QUALITY ASSURANCE

- A. Source Quality Control: Test import materials proposed for use to demonstrate that the materials conform to the specified requirements. Tests shall be performed by an independent testing laboratory.
- B. Field Quality Control:
 - 1. The *Owner or Owner's Representative* will:
 - a. Review and test materials proposed for use.

- b. Inspect foundations, site grading and borrow operations.
 2. Contractor shall excavate holes and perform in-place soil sampling as specified herein. Contractor shall be responsible for costs of additional inspection and re-testing resulting from non-compliance.
 - a. Test soils compaction during placement of fill. Contractor shall perform a minimum of 20 in-place density test.
 - b. Employ a soil technician to inspect placement and perform the compaction testing of fill.
 - c. Special attention shall be given to the subgrade for footings and manhole bases.
- C. Testing Methods:
 1. Durability Index: Manual of Test, State of California, Department of Transportation.
 2. Specific Gravity: ASTM D854.
 3. Laboratory Compaction: ASTM D1557, Method A or C.
 4. In-Place Density: ASTM D1556 or ASTM D2922.
 5. Particle Size Analysis of Soils: ASTM D422.
 6. Plastic Limit and Plasticity Index: ASTM D4318.
 7. Soil Classification: ASTM D2487.
 8. In-Place Moisture Content: ASTM D3017.
- D. Definition:
 1. Relative Compaction: In-place dry density divided by the maximum dry density laboratory compaction express as a percentage.

1.05 EXPLOSIVES

- A. The use of explosives will not be permitted on this project, unless specifically authorized, in writing, by the Engineer.

1.06 SUBSURFACE INVESTIGATIONS

- A. Geotechnical investigations for design purposes for this project were made for the this project by Geotechnical Consultants Inc. in a report dated March 2014.
- B. A copy of the Geotechnical Report is contained in these specifications as Appendix A.
- C. The bidders may make additional subsurface investigations at the site prior to the bidding of the project. Prior to making any drillings or excavations, the bidder shall secure permission from the *Owner*.

1.07 REFERENCE SPECIFICATIONS

- A. Whenever the words "Standard Specifications" are referred to, the reference is to the State of California, Department of Transportation, Standard Specifications dated 2010 (or latest edition).

1.08 ADDITIONAL SAFETY RESPONSIBILITIES

- A. The Contractor shall select, install and maintain shoring, sheeting, bracing, and sloping as necessary to maintain safe excavations. The Contractor shall be responsible for ensuring such measures: (1) comply fully with 29 CFR Part 1926 OSHA Subpart P Excavations and Trenches requirements, (2) provide necessary support to the sides of excavations, (3) provide safe access to the Engineer's sampling and testing within the excavation, (4) provide safe access for backfill, compaction, and compaction testings, and (5) otherwise maintain excavations in a safe manner that shall not endanger property, life, health, or the project schedule. All earthwork shall be performed in strict accordance with applicable law, including local ordinances, applicable OSHA, CalOSHA, California Civil Code, and California Department of Industrial Safety requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Structural backfill material shall be Class 2 Aggregate Base: Class 2 AB, 3/4-inch maximum aggregate base, Standard Specifications Section 26.
- B. Bedding Materials:
 - 1. Sand: Standard Specifications, Paragraph 19-3.025B.
 - 2. Permeable Material: Standard Specifications, Paragraph 68-1.025 Class I, Type A.
 - 3. Pea Gravel: River run, rounded pea gravel with a maximum dimension no larger than 1/2-inch, and with no more than 10% passing the No. 200 sieve. The material shall have a durability index of 40 or higher.
- C. Import Backfill: Imported non-expansive soil with liquid limit no greater than 40% and a plasticity index no greater than 15%, free from clods or rocks larger than 2 inches in greatest dimension, and free from organic material.
- D. Native Backfill: Native soil prepared as necessary to be free from clods or rocks larger than 2 inches in greatest dimension, and free from organic material.
- E. Water: The water used shall be reasonably free of objectionable quantities of silt, oil, organic matter, alkali, salts and other impurities. Water quality must be acceptable to the Engineer.
- F. Warning Tape: 3-inch-wide, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil. Tape shall be green, imprinted with "CAUTION SEWER LINE BELOW," Griffolyn Terra Tape; or equal.

PART 3 - EXECUTION

3.01 CONTROL OF WATER

- A. All excavations shall be kept free from water and all construction shall be in the dry.
 - 1. It should be presumed that the presence of groundwater will require dewatering operations. Furnish, install, maintain, and operate all necessary pumping and

- other equipment for dewatering all excavations. At all times have on the project sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable.
2. Provide a sufficient number of pumps so as to hold the groundwater level at an elevation of not less than 1 foot below the lowest elevation of the pipe, or other material to be placed.
 3. Dispose of water in accordance with Section 01140 Environmental Protection and all federal, state, and local requirements and regulations..
 4. The dewatering operation shall be continuous, so that the excavated areas shall be kept free from water during construction, while concrete is setting and achieves full strength, and until backfill has been placed to a sufficient height to anchor the work against possible flotation.
 5. Continue dewatering during backfilling operations such that the groundwater is at least 1 foot below the level of the compaction effort at all times. No compaction of saturated materials will be allowed.
 6. Dewatering devices must be adequately filtered to prevent the removal of fines from the soil.
 7. The Contractor shall be responsible for any damage to the foundations or any other parts of existing structures or of the new work caused by failure of any part of the Contractor's protective works. After temporary protective works are no longer needed for dewatering purposes, they shall be removed by the Contractor.
 8. If pumping is required on a 24-hour basis, requiring engine drives, then engines shall be equipped in a manner to keep noise to a minimum. Refer to Section 01140 for noise control requirements.
 9. Prevent disposal of sediments from the soils to adjacent lands or waterways by employing whatever methods are necessary, including settling basins.
- B. The Contractor shall be responsible for furnishing temporary drainage facilities to convey and dispose of surface water falling on or passing over the site.

3.02 EXISTING UTILITIES

- A. General: The known existing buried utilities and pipelines except building connections are shown on the Drawings in their approximate location. The Contractor shall exercise care in avoiding damage to all utilities as he will be held responsible for their repair if damaged. There is no guarantee that all utilities or obstructions are shown, or that locations indicated are accurate. Utilities may be piping, conduits, wire, cable, manholes, pull boxes and the like, located at *the project site and adjoining said site and along the pipeline right-of-way.*
- B. Check on Locations (Potholing):
1. Contact all affected utility owners and request them to locate their respective utilities prior to the start of "potholing" procedures. The utility owner shall be given 7 days written notice prior to commencing potholing. If a utility owner is not equipped to locate its utility, the Contractor shall locate it.
 2. Clearly paint the location of all affected utility underground pipes, conduits and other utilities on the pavement or identify the location with suitable markers if not on pavement. In addition to the location of metallic pipes and conduits, non-metallic pipe, ducts and conduits shall also be similarly located using surface indicators and detection tape, if present and shall then be similarly marked.

3. After the utility survey is completed, commence "potholing" to determine the actual location and elevation of all utilities where crossings, interferences, or connections to the new pipelines are shown on the Drawings, marked by the utility companies, or indicated by surface signs. Prior to the preparation of piping shop drawings, or the excavating for any new pipelines or structures, the Contractor shall locate and uncover these existing utilities *including services and laterals* to a point 1 foot below the utility. Submit a report identifying each underground utility and its depth and station. Any variation in the actual elevations and the indicated elevations shall be brought to the Engineer's attention.
 4. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury to workmen or damage to electrical ducts or conduits. Similar precautions shall be exercised around gas lines, telephone and television cables.
- C. Interferences:
1. If interferences occur at locations other than shown on the Drawings, the Contractor shall notify the Engineer, and a method for correcting said interferences shall be supplied by the Engineer. Payment for interferences that are not shown on the plans, nor which may be inferred from surface indications, shall be in accordance with the provisions of the General Conditions *paragraph 3.7*. If the Contractor does not expose all required utilities prior to shop drawing preparation, he shall not be entitled to additional compensation for work necessary to avoid interferences, nor for repair to damaged utilities.
 2. Any necessary relocations of utilities, whether shown on the Drawings or not, shall be coordinated with the affected utility. The Contractor shall perform the relocation only if instructed to do so in writing from the utility and the Engineer.
- D. Shutdowns: Planned utility service shutdowns shall be accomplished during period of minimum use. In some cases this may require night or weekend work. Such work shall be at no additional cost to the *Owner*. Program work so that service will be restored in the minimum possible time, and shall cooperate with the utility companies in reducing shutdowns of utility systems to a minimum.
1. Disconnections: No utility shall be disconnected without prior written approval from the utility owner. When it is necessary to disconnect a utility, the Contractor shall give the utility owner not less than 72 hours notice when requesting written approval. The Contractor shall program his work so that service will be restored in the minimum possible time.
- E. Overhead Facilities: There may be existing overhead electric and telephone transmission lines along the pipeline routes. These overhead utilities are not shown on the Drawings. Extreme caution shall be used when working in the vicinity of overhead utilities so as to prevent injury to workmen or damage to the utilities. The Contractor shall be required to comply with *CAL OSHA* when working anywhere on this project.
- F. Existing sewer laterals are not specifically shown on the Drawings but do exist along the pipeline routes. Protect all service laterals from damage due to construction operations. The existing sewer laterals shall be tied-in to the temporary bypass pipeline. If any laterals are damaged, notify the Engineer and the affected utility immediately. The cost of repair shall be borne by the Contractor.

3.03 GENERAL CONSTRUCTION REQUIREMENTS

- A. Site Access: Access to the site will be over public and private roads. Exercise care in the use of such roads and repair at own expense any damage thereto caused by Contractor's operations. Such repair shall be to the satisfaction of the owner or agency having jurisdiction over the road. Take whatever means are necessary to prevent tracking of mud onto existing roads and shall keep roads free of debris.
- B. Barriers: Barriers shall be placed at each end of all excavations and at such places along excavations as may be necessary to warn all pedestrian and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely restored.
- C. Access: Free access must be maintained to all fire hydrants, water valves and meters, and private driveways.
- D. Open Trench Limitations: No limitations, provided the site is secured at the end of each working day.
- E. Dust Control: Take proper and efficient steps to control dust.
- F. Permits: Refer to General Conditions, Paragraph 5.10.
- G. Storage of Materials: Excavated materials unsuitable for backfill shall not be stored on existing streets, and shall be disposed of immediately. Neatly place excavated materials far enough from the excavation to prevent stability problems. Keep the materials shaped so as to cause the least possible interference with drainage or the normal use of adjacent properties, structures or roadways.

3.04 TRENCH EXCAVATION

- A. Excavation for pipe shall be in open cut. The trench shall be as wide as necessary for sheeting and bracing and the proper performance of the work up to the maximum width permitted by the typical cross-sections shown on the Drawings. The sides of the trenches shall be vertical in existing streets. The bottom of the trench shall be constructed to the grades and shapes indicated on the Drawings. Should the Contractor desire to use other equivalent methods, he shall submit his method of construction to the Engineer for favorable review prior to its use.
- B. Take care not to overexcavate. Accurately grade the bottom of the trenches to provide uniform bearing and support for each section of the pipe at every point along its entire length, except for the portions of the pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints, and as hereinafter specified. Dig bell holes and depressions for joints after the trench bottom has been graded, and, in order that the pipe rest on the bedding for as nearly its full length as practicable, bell holes and depressions shall be only of such length, depth and width as required for properly making the joint. Remove stones as necessary to avoid point bearing.
- C. Backfill and compact overexcavations to 95% relative compaction with bedding material. There shall be no additional payment to the Contractor for over-excavations not directed by the Engineer. Remove unsatisfactory material encountered below the grades shown as directed by the Engineer and replace with

bedding material. Payment for removal and replacement of such unsatisfactory material directed by the Engineer shall be made in accordance with the provisions of the General Conditions.

- D. Grade trenches so that they are uniformly sloped between the pipe elevations shown on the Drawings. Comply with the minimum and maximum trench widths shown on the Drawings. Notify the Engineer if the trench width exceeds the maximum allowable width for any reason.
- E. Provide ladders for access to the trench by construction and inspection personnel.

3.05 EXCAVATION FOR STRUCTURES

- A. All excavation for structures shall be done to the dimensions and levels indicated on the Drawings or specified herein. Excavate to such width outside the lines of the structure to be constructed as may be required for proper working methods, the erection of forms and the protection of the work.
- B. Take care to preserve the foundation surfaces in an undisturbed condition. If the Contractor overexcavates or disturbs the foundation *surfaces shown on the Drawings or specified herein,* without written authorization of the Engineer, he shall replace such foundations with concrete fill or other material approved by the Engineer in a manner which will show by test an equal bearing value with the undisturbed foundation material. No additional payment will be made for the added quantity of concrete fill or other material used because of overexcavation.
- C. Inspection of Excavation: Notify the Engineer when excavation for the structure is complete. No forms, reinforcing steel, concrete, or precast structure shall be placed until the excavation has been inspected by the Engineer.
- D. Where unsatisfactory material is encountered below the grades shown for structural excavations, it shall be removed and replaced with selected material as directed by the Engineer and compacted. Payment for removal and replacement of such unsatisfactory material directed by the Engineer shall be made in accordance with the provisions of the General Conditions

3.06 BACKFILL AND COMPACTION

- A. Place bedding and backfill materials true to the lines, grades, and cross-sections indicated on the Drawings and compacted to the degree specified on the Drawings. Place bedding and backfill materials in horizontal lifts not to exceed 6 inches in thickness measured before compaction. The difference in level on either side of a pipe shall not to exceed 4 inches.
- B. Backfill material shall not be placed over the pipe until after it has been inspected by the Engineer.
- C. It shall be incumbent upon the Contractor to protect the pipe from damage during the construction period. It shall be his responsibility to repair broken or damaged pipe at no extra cost to the *Owner.* Tamping of backfill over the pipe shall be done with tampers, vibratory rollers and other machines that will not injure or disturb the pipe. Carefully place backfill around and over the pipe.

- D. Do not allow construction traffic nor highway traffic over the pipe trench until the trench backfill has been brought back even with existing adjacent grade.
- E. Add water to the backfill material or dry the material as necessary to obtain the optimum moisture content for the compaction shown on the Drawings or specified. If the Engineer determines that the nature of the ground in which the trench lies precludes compaction of the backfill to the specified density, the backfill shall be compacted to the maximum practicable density. Employ such means as may be necessary to secure a uniform moisture content throughout the material of each layer being compacted. After the material has been moisture conditioned, compact it with compaction equipment approved by the Engineer to achieve specified compaction. The Contractor shall be responsible for obtaining the densities specified. Should he fail, through negligence or otherwise, to compact to specified density, or to backfill and compact to surface grade, thus permitting saturation of the backfill material from rains or from any other source, the faulty material shall be removed and replaced with approved material which shall be compacted to the specified density at optimum moisture content, and no additional payment will be made for doing such work or removal and replacement.
- F. Compaction by flooding, ponding or jetting will not be permitted.
- G. For all piping or conduits to be placed in any excavated and backfilled area, such as at manholes or for building connections, the structural backfill shall be first compacted to a level at least 3 feet from the top of the piping or conduit elevation and then retrenched to pipe grade.
- H. Compact backfill below structures (concrete footings and manholes) to 95% relative compaction. Compact backfill around pipe and for foot paths to 85% relative compaction. Backfill placed adjacent to structures shall be compacted to 85% relative compaction as well.

3.07 SUPPORT OF EXCAVATIONS

- A. Adequately support excavation for trenches and structures to meet all applicable requirements in the current rules, orders and regulations. Excavation shall be adequately shored, braced and sheeted so that the earth will not slide or settle and so that all existing structures and all new pipe and structures will be fully protected from damage. Keep vehicles, equipment and materials far enough from the excavation to prevent instability.
- B. Take all necessary measures to protect excavations and adjacent improvements from running, caving, boiling, settling, or sliding soil resulting from the high groundwater table and the nature of the soil excavated.
- C. The support for excavation shall remain in place until the pipeline, or structure has been completed. During the backfilling of the pipeline or structure, the shoring, sheeting and bracing shall be carefully removed so that there shall be no voids created and no caving, lateral movement or flowing of the subsoils.

3.08 ROCK SUBGRADE UNDER STRUCTURES

- A. Place a 6-inch layer of Class 2 Aggregate Base, compacted to 95% relative compaction, under structures.

3.09 FINISH GRADING

- A. Except where shown otherwise in the Drawings, restore the finish grade to the original contours and to the original drainage patterns. Grade surfaces to drain away from structures. The finished surfaces shall be smooth and compacted.

3.10 DISPOSAL OF EXCAVATED MATERIAL

- A. Dispose of unsuitable material or excavated material in excess of that needed for backfill offsite in accordance with the requirements of *Section 01140*.

END OF SECTION

SECTION 02530

SEWERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Furnish and install all piping as shown on the Drawings, described in the Specifications and as required for a complete and operable system.
- B. Related Sections:
 - 1. Section 02080: Precast Concrete Sectional Manholes
 - 2. Section 02302: Earthwork

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society for Testing and Materials (ASTM):
 - 1. A74 Specification for Cast Iron Soil Pipe and Fittings
 - 2. C76 Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
 - 3. C425 Specification for Compression Joints for Vitrified Clay Pipe and Fittings
 - 4. C443 Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
 - 5. C564 Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
 - 6. C700 Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
 - 7. C923 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
 - 8. D3034 Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
 - 9. D3212 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
 - 10. F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
 - 11. FC79 Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
- C. American Water Works Association (AWWA).
- D. Cast Iron Soil Pipe Institute

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit the following in for review:
 - 1. Shop Drawings: Submit data to show that the products specified in this Section conform to the Specification requirements.
 - 2. Bypass pumping plan.

3. Leakage Testing Plan.
4. Test Results: As required herein.

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall be of manufacturers who have been regularly engaged in the design and manufacture of the materials and equipment for a period of at least 5 years.
- B. Factory Quality Control: The Contractor shall test all products as required herein and by the reference specifications.
- C. Field Quality Control:
 1. The Engineer will:
 - a. Inspect field installation of the sewer pipe and associated pipe supports and manholes.
 2. The Contractor shall:
 - a. Perform leakage tests
 - b. Be responsible for the costs of additional inspection and retesting by the Owner resulting from non-compliance.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe sizes are nominal inside diameter unless otherwise noted.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage tests as specified hereinafter.

2.02 DUCTILE IRON PIPE (DI)

- A. Pipe: Ductile iron bell and spigot pipe, AWWA C151. All pipe used for this project shall be fully restrained.
 1. Minimum Pressure Class: 350
- B. Joints: Mechanical, AWWA C111 as modified, except where flanged joints are shown on the Drawings or where making connections to valves.
- C. Bell and Spigot Gaskets: ASTM C564, sewage and grease resistant.
- D. Restrained joints: For all connections, provide restrained joints for pipe and fittings capable of deflection after restraint is installed. Joints shall not separate under an internal pressure of 250 psi. For push-on joints use TR FLEX by United States Pipe & Foundry Company; equivalent product by American Cast Iron Pipe Company; or equal. Restraining gaskets shall not be used, the joints shall be the manufacturers

proprietary mechanically restrained joint. Mechanical restrained joints such as EBAA Iron's Mega-Lug may be used where pieces are cut-to fit and it is not possible to use the manufacturers restrained joint to make a connection.

- E. Fittings: Ductile iron with push-on joints, or mechanical joints, AWWA C110 and AWWA C153.
- F. Lining: Factory applied cement mortar, double thickness.

2.03 CONNECTION DEVICES

- A. Transition Couplings: Transition couplings shall be elastomeric plastic or synthetic rubber resistant to sewage and grease, chemicals and normal sewer gases. Couplings shall be designed to slip over the outside of the pipes being connected with a snug fit. Coupling shall be held in place and sealed with a stainless steel band clamp around each end. Couplings shall be specifically manufactured for making the transition between various types of pipe with different outside diameters. Couplings shall meet the requirements of the Uniform Plumbing Code. Fernco; Indiana Seal; or equal.
- B. Transition Donuts: Transition donuts shall be elastomeric plastic resistant to sewage and grease, chemicals and normal sewer gases. They shall be designed to be inserted in the bells of sewer pipe to adapt the bell to accept the spigot of a smaller size spigot. They shall have reversed fins on the inside and outside to grip the bell and spigot. Transition donuts cast or grouted into concrete pipe or manhole sections shall have an outside diameter at least 2 inches greater than the inside diameter. Fernco; Indiana Seal; or equal.
- C. Manhole Adaptors: Use Flexible Manhole Connectors: ASTM C923, Kor-N-Seal, Press-Seal PSX, or equivalent.
- D. Other Devices: Other equivalent connection devices will be considered provided that they are made of elastomers resistant to sewage and grease, chemicals and normal sewer gases. Metallic parts shall be stainless steel.

2.04 APPURTENANCES

- A. Furnish and install all necessary guides, inserts, anchors and assembly bolts; washers and nuts, hangers, supports, gaskets, and flanges; all other appurtenant items shown on the Drawings, specified or required for the proper installation and operation of the piping; devices included in or on the piping equipment; and piping accessories.

PART 3 - EXECUTION

3.01 FLOW CONTROL

- A. Divert sewage flows and storm water around all sewer and drain replacement work areas, including building connection sewer replacement. Construct sewage bypass pipe in accordance with Section 01500.
- B. Notify the Owner of the impending work so the Owner can request that residents minimize flows shortly before working in each area.

3.02 BUILDING CONNECTION REPLACEMENT-NOT USED

3.03 PIPING INSTALLATION

- A. Storage and Handling:
 - 1. Great care shall be exercised to prevent damage to the pipe during handling, transportation or storage. Pipe shall not be stored on rough ground and rolling of the pipe on the coating will not be permitted. Any damaged pipe sections shall be repaired or replaced at the expense of the Contractor as satisfactory to the Engineer.
 - 2. Store polyvinyl pipe under opaque covers, which do not transmit ultraviolet light.
 - 3. Each pipe section shall be carefully inspected before installation, and all damaged areas patched in the field or replaced as satisfactory to the Engineer.
- B. General Piping Installation:
 - 1. Trenching, bedding, and backfill for buried piping shall be as shown on the Drawings and as specified in Section 02302, Earthwork .
 - 2. The profile drawings show invert elevations at certain structures and may show pipe slopes. In case of any conflicts the invert elevations shall govern over slopes. Install pipe with straight grades between indicated invert elevations.
 - 3. *Manhole locations are identified on the plan drawings by coordinates and by station. In case of any conflicts coordinate the manhole location with the Engineer.*
 - 4. Lay each length of pipe on a firm bed with a true bearing for its entire length between bell holes. Excavate holes of only sufficient size to accommodate the bell at each joint location. Adjust line and grade by scraping away, filling in and tamping the earth to provide true grade to fit the barrel of the pipe. No wedging or blocking up of the pipe will be permitted. The trench and bell holes shall be kept free from water during the laying of the pipe.
 - 5. All dirt and foreign matter shall be removed from the pipe interior prior to installation and all joints shall be thoroughly cleaned before joining.
 - 7. Plug open ends of pipe when construction is not underway.
 - 8. Lay pipe upgrade with bell end forward, unless specifically shown otherwise.
 - 9. After making each joint, rigidly secure the pipe in place by backfilling to the top of the pipe at the center, but not as to fill the bell hole nor interfere with the next jointing operation.

C. Installation Specifics:

1. Ductile iron pipe: Fold and insert one-piece rubber gasket into properly cleaned hub. Apply lubricant to gasket and to spigot. Lubricant shall be a type recommended by the pipe and gasket manufacturers. Push or draw spigot into gasketed hub with a pulling tool devised especially for this purpose. Fit manufacturers restraining device and test joint for pull-out and rolled gaskets.

3.04 CLEANING

- A. Prior to testing, the inside of each main sewer shall be thoroughly cleaned of all dirt, loose scale, sand and other foreign material. Cleaning shall be by flushing with water or balling as appropriate for the size and type of the pipe.

3.05 PERMANENT PLUGS-NOT USED

3.06 LEAKAGE TESTS

A. General:

1. Perform leakage tests on all sanitary sewer mains, building connection sewers, and storm drains installed in this project.
2. Furnish all equipment, materials, personnel, and supplies to perform the tests.
3. Pressure gauges and metering devices shall be of a type, accuracy and calibration acceptable to the Engineer. The Engineer may require certification of the gauges and meters by an independent testing firm at the Contractor's expense.
4. Leakage tests shall be performed on all piping at a time agreed upon and in the presence of the Engineer.

- B. The leakage test shall be made after all pipe is installed and backfilled, but prior to placing permanent resurfacing. The Contractor may conduct preliminary tests prior to backfill. If the Contractor elects to conduct preliminary tests, he shall provide any necessary temporary thrust restraint, and shall retest as set forth herein prior to surfacing placement.

C. Test Procedure: Leakage tests shall be air pressure tests conducted as follows:

1. Furnish all materials, equipment and labor for making an air test. Air test equipment shall be favorably reviewed by the Engineer.
2. The Contractor may conduct an initial air test of the sewer mainline after densification of the backfill but prior to installation of the house connection sewers. Such tests will be considered to be for the Contractor's information and need not be performed in the presence of the Engineer.
3. Each section of sewer shall be tested between successive manholes, or in sections if favorably reviewed by the Engineer, by plugging and bracing all openings in the sewer mainline and the upper ends of all building connection sewers. Prior to any air pressure testing, all pipe plugs shall be checked with a soap solution to detect any air leakage. If any leaks are found, the air pressure shall be released, the leaks eliminated, and the test procedure started over again. The Contractor has the option of wetting the interior of the pipe prior to the test.
4. The final leakage test of the sewer mainline and building connection sewers, shall be conducted in the presence of the Engineer in the following manner:

5. Air shall be introduced into the pipeline until 4.0 psi (27kPa) gage pressure has been reached; or if groundwater is present, 4.0 psi (27kPa) above the computed pressure exerted by the average adjacent groundwater. Reduce the flow of air and maintain the air pressure within plus or minus 0.5 psi (3kPa) for at least 2 minutes to allow the internal air temperature to reach equilibrium. Pressure in the pipeline shall be constantly monitored by a gage and hose arrangement separate from hose used to introduce air into the line. A blowoff valve shall be provided on the test apparatus to prevent over pressurizing the pipeline.
6. After the temperature has stabilized and no air leaks at the plugs have been found, the air pressure shall be permitted to drop until the internal pressure has reached 3.5 psi (24kPa) gage pressure; or when groundwater is present, 3.5 psi (24kPa) above the computed pressure exerted by the average adjacent groundwater. A stopwatch or sweep-second-hand watch shall be used to determine the time lapse required for the air pressure to decrease an additional 1.0 psi (7kPa).
7. If the time lapse (in seconds) required for the air pressure to decrease the additional 1.0 psi (7kPa) exceeds that shown in Table, Low Pressure Air Test for Sewers, in the Standard Specifications for Public Works Construction the pipe shall be presumed to be within acceptance limits for leakage.
8. If the time lapse is less than that shown in this table, the Contractor shall make the necessary corrections to reduce the leakage to acceptance limits without additional compensation.
T = Time in seconds for pressure to drop to 2.5 psi (17kPa) gage pressure.
D = Inside diameter of pipe in inches (mm).

D. Correction of Defects: If leakage or infiltration exceeds the allowable, the installation shall be repaired or replaced and leakage tests shall be repeated as necessary until conformance test requirements specified herein have been fulfilled. All detectable leaks shall be repaired, regardless of the test results.

- E. Reports: Keep records of each piping test, including:
1. Description and identification of piping tested.
 2. Description of test procedure.
 3. Date of test.
 4. Witnessing by Contractor and Engineer.
 5. Test evaluation.
 6. Remarks, to include such items as:
 - a. Leaks (type, location).
 - b. Repairs made on leaks.
 7. Test reports shall be submitted to the Engineer.

END OF SECTION

SECTION 02460

PIN PILES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Furnishing all materials and equipment necessary to install pin pile system
 - 2. Layout of pile pattern for driving.
 - 3. Driving of all piles, including move-on, move-off costs, and pile cut-offs.
 - 4. Driving of replacement piles for any rejected piles.
 - 5. Necessary grading or earthwork which might result from heave of ground due to driving, including removal of material if necessary.
 - 6. Cleanup of site, including removal of all pile butts.
- B. Related Sections:
 - 1. Section 03300: Cast-In-Place Concrete
- C. Payment Procedures:
 - 1. The Contract price includes full compensation for all work in connection with piling, including furnishing all labor, materials, equipment and appurtenances in piles at the site; for removing damaged or rejected piles and for driving new replacement piles; for cutting off pile heads, disposing of cut-offs and for completely installing piling in place. No additional payment will be made for broken, damaged, or rejected piles.
 - 2. Compensation for any drilling or other work necessary to obtain specified penetration and for disposing of excess earth from any necessary drilled holes is included in the lump sump price bid for the work.
 - 3. Should any extra piles be driven, when directed by the Engineer, a Change Order will be issued.

1.02 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 315 Details and Detailing of Concrete Reinforcement
 - 2. ACI 543 R-74(80) Recommendations for Design, Manufacture and Installation of Concrete Piles
- B. ASTM International (ASTM):
 - 1. ASTM A82 Steel Wire, Plain, for Concrete Reinforcement
 - 2. ASTM A416 Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
 - 3. ASTM C827 Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
 - 4. ASTM C1107 Packaged Dry, Hydraulic-Cement Grout (Non-Shrink)

- C. Precast/Prestressed Concrete Institute (PCI):
 - 1. PCI MNL-116 Quality Control for Plants and Production of Precast Prestressed Concrete Products
- D. California Building Code (CBC)

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data:
 - 1. Grout for pile fill.
 - 2. Manufacturing plant certifications, including concrete mix design and ready-mix concrete plant.
- C. Shop Drawings:
 - 1. Pile System Design.
 - 2. Show the location of handling points.
 - 3. Calculations: Include:
 - a. Stress conditions due to handling, prestressing loss and driving.
 - b. Verification of compression tension loads.
 - c. Grout strength.
 - d. End cap design and connection detail
 - 4. Submit proposed equipment for review.
- D. Pile Installation Schedule.
- E. Layout and Record Drawings:
 - 1. Pile location plan with location and identification number of each indicator and production pile.
 - 2. Record or as-built pile location plan by a licensed surveyor, showing location and deviation of each pile from those shown on the layout drawings.

1.04 QUALITY ASSURANCE

- A. Contractor Qualifications:
 - 1. Demonstrate five years of experience manufacturing and installing similar piles.
 - 2. Stamp and sign all shop drawings and calculations by a Civil Engineer registered in the state of California.
- B. Design and Construction Standard: Applicable requirements of ACI 543 R-74(80) and CBC.
- C. Mild Steel Reinforcing: Mill test certification.
- D. Concrete Mix Design: Certification by PCI or independent existing laboratory.
- E. Ready-Mix Plant: Certification by PCI or National Ready-Mix Concrete Association.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Exercise extreme care in handling, storing, moving and driving piles to avoid twisting, bending or other distortion that would result in cracking or damage to the piles.
- B. Use pick-up points marked on the piles, unless special lifting devices are provided.

1.06 SITE CONDITIONS

- A. Geotechnical investigations for design purposes are available for examination by bidders from the Owner. While the records of data obtained may be considered by the Contractor to be correct, any conclusions or recommendations made in the reports are for information to the Design Engineer and are not a part of the Contract Documents. Copies of the boring logs are in the Appendix of these Specifications and their locations are shown on the Drawings.
- B. The bidders may make additional subsurface investigation at the site prior to the bidding of the project. Prior to making any drillings or excavations, secure permission from the Owner.

PART 2 - PRODUCTS

2.01 PINPILE SYSTEM

- A. Pile Casing:
 - 1. Steel Pipe meeting requirements of ASTM A53 E or S.
- B. Grout: 3000 psi minimum
- C. Cross-Section: 4" minimum diameter.
- D. Design: Contract Drawings and applicable requirements of ACI 543 R-74(80) and CBC.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Pile Locations: Stake out and protect from movement and damage during pile installation.
- B. Obstructions: Notify Engineer if piles require more than 3 inches of relocation.

3.02 PILE DRIVING EQUIPMENT

- A. Micropile Installer:
 - 1. Provide Micropile installation rig capable of navigating terrain in field and installing piles required by design.

3.03 PILE INSTALLATION

- A. Engineer Presence: Required at all times. Provide 24 hours' notice prior to pile driving.
- B. Predrilling: Be prepared to encounter obstacles such as timber, concrete rubble, and other obstructions within the artificial fill at the site. Predrilling through the fill may be necessary.
- C. Protection: Avoid damage in placing the pile in the leads and during driving operations. Support the pile laterally during driving, but do not unduly restrain from rotation or displacement in the leads.
- D. Driving: Install using the appropriate pile installation system that is capable of delivering the necessary installation energy. These piles, if installed using a

suitable drill and rig, are unlikely to encounter 'refusals' within the bearing strata. Submit proposed equipment for review.

- E. Tolerances After Driving:
 - 1. Maximum deviation at head: 4 inches, any direction.
 - 2. Estimated maximum drift, tip to head: 2% of length.
- F. Remedial Work:
 - 1. Early pile refusal: Cut off excess pile using pneumatic tools, saws or other suitable methods, not explosives.
 - 2. Pile refusal not attained: Corrective measures will be determined by Engineer, issued by Change Order.
 - 3. Excessive pile drift or head deviation: Corrective measures will be determined by Engineer and carried out without cost to Owner.
 - 4. Pile upheaval: Correct without cost to Owner and to Engineer's satisfaction.
 - 5. Pile cracked or broken: Correct without cost to Owner, and to satisfaction of Engineer.
- G. Corrective Measures: Determined by Engineer; methods may include:
 - 1. Driving additional piles in new locations.
 - 2. Pulling initial piles and replacing with new piles.
 - 3. Enlarging the pile caps to connect new and existing piles.
 - 4. Redriving initial piles and modifying the head connections.

3.04 FIELD QUALITY CONTROL

- A. Pile Records, Each Pile: depth drilled, amount of grout installed, length of pile casing installed. Record any unusual occurrence during driving of the pile.
- B. Pile Location Plan: Keep a record of all actual pile locations, to an accuracy of 1-inch.

3.05 CLEANUP

- A. Upon completion, remove from site all excess materials, storage facilities and temporary facilities, used exclusively for the work. Clean up debris in areas which were used or occupied during construction operations, and leave in first-class condition.

END OF SECTION

Section 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. All cast-in-place concrete including bases for mechanical and electrical equipment, swept-in grout and all manholes not specified to be precast.
2. Concrete shoring, forming, patching, grouting, sealing, curing and repairing.
3. Concrete accessories including waterstops, joint fillers, and sealants.

B. Related Sections:

1. Section 03200: Reinforcing Steel
2. Division 5: Metals – Coatings for Aluminum in contact with Concrete

1.02 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 117 Standard Tolerances for Concrete Construction and Materials
2. ACI 301 Specifications for Structural Concrete for Buildings
3. ACI 306 Guide to Cold Weather Concreting
4. ACI 318 Building Code Requirements for Structural Concrete
5. ACI 347 Guide to Formwork for Concrete
6. ACI 350 Environmental Engineering Concrete Structures

B. ASTM International (ASTM) Standard Specification or Test Method:

1. ASTM C31 Making and Curing Concrete Test Specimens in the Field
2. ASTM C33 Concrete Aggregates
3. ASTM C39 Compressive Strength of Cylindrical Concrete Specimens
4. ASTM C40 Organic Impurities in Fine Aggregates for Concrete
5. ASTM C42 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
6. ASTM C87 Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
7. ASTM C88 Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
8. ASTM C94 Ready-Mixed Concrete
9. ASTM C131 Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
10. ASTM C136 Sieve Analysis of Fine and Coarse Aggregates
11. ASTM C142 Clay Lumps and Friable Particles in Aggregates
12. ASTM C143 Slump of Hydraulic-Cement Concrete
13. ASTM C150 Portland Cement
14. ASTM C156 Water Retention by Concrete Curing Materials
15. ASTM C171 Sheet Materials for Curing Concrete
16. ASTM C172 Sampling Freshly Mixed Concrete

17. ASTM C192 Making and Curing Concrete Test Specimens in the Laboratory
 18. ASTM C231 Air Content of Freshly Mixed Concrete by the Pressure Method
 19. ASTM C260 Air-Entraining Admixtures for Concrete
 20. ASTM C289 Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
 21. ASTM C309 Liquid Membrane-Forming Compounds for Curing Concrete
 22. ASTM C494 Chemical Admixtures for Concrete
 23. ASTM C595 Blended Hydraulic Cements
 24. ASTM C618 Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
 25. ASTM C827 Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
 26. ASTM C869 Foaming Agents Used in Making Preformed Foam for Cellular Concrete
 27. ASTM C881 Epoxy-Resin-Base Bonding Systems for Concrete
 28. ASTM C920 Elastomeric Joint Sealants
 29. ASTM C1077 Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
 30. ASTM C1107 Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
 31. ASTM C1240 Use of Silica Fume as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout
 32. ASTM D882 Tensile Properties of Thin Plastic Sheet
 33. ASTM D1056 Flexible Cellular Materials - Sponge or Expanded Rubber
 34. ASTM D1752 Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
 35. ASTM D2419 Sand Equivalent Value of Soils and Fine Aggregate
 36. ASTM E96 Water Vapor Transmission of Materials
- C. Corps of Engineers (COE) Specifications:
1. COE CRD-C-572 Polyvinylchloride Waterstop
- D. State of California, Department of Transportation (CALTRANS):
1. Test 217 Sand Equivalent
 2. Test 227 Evaluating Cleanness of Coarse Aggregate
- E. Standard Specifications for Public Works Construction or "GREENBOOK"
- F. International Building Code (IBC) 2012 Edition and California Building Code (CBC) 2014 Edition
- G. International Code Council (ICC)

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data:
1. Concrete mix product certification: Submit certified laboratory test results that the mix proportions and materials comply with these Specifications.
 - a. Cementitious materials.

- b. Coarse and fine aggregates.
 - c. Admixtures.
 - d. Water.
 - e. Ready-mix plant certification.
 - f. Mix designs.
 - g. Mix test results (see Paragraph 2.05.F for required testing).
- 2. Formwork products:
 - a. Forms, if fabricated off construction site.
 - b. Form ties or through-bolts.
 - c. Form coatings.
- 3. Miscellaneous products: Submit technical data including installation instructions, independent laboratory test reports (ICC), and handling and storage instructions.
 - a. Curing materials and curing program.
 - b. Joint fillers
 - c. Sealants
 - d. Epoxy compounds, including adhesives and grouts
 - e. Non-shrink grouts
 - f. Methods and materials for concrete repairs
- C. Shop Drawings:
 - 1. Construction joint layout, including waterstop placement.
 - 2. Sequence of concrete wall and slab pours.
 - 3. Program and method of concrete placement.
 - 4. Layout and sequence for reshoring suspended concrete slabs and beams.
 - 5. After defects are identified and investigation, Contractor to submit design of repair plan specific for each noted defect. See Paragraph 3.10.
- D. Samples: Submit any item of Product Data not fully assembled by a single manufacturer.

1.04 QUALITY ASSURANCE

- A. Contractor Qualifications: 10 years of experience on similar water containment facilities.
- B. Construction Standard: Applicable requirements of the IBC, ACI 301, ACI 318 and ACI 350.
- C. Concrete Products and Materials Tests: Certified by independent commercial testing laboratories. Submit certification on cementitious products and aggregates performed within the past 6 months.
- D. Concrete Mix Designs: By an independent commercial testing laboratory, complying with ASTM C1077 and favorably reviewed by the Engineer. Concrete mix design proportions shall be established on the basis of field experience and trial mixtures with the materials to be employed in accordance with ACI 318 Chapter 5.
- E. Concrete Mix Test Results:
 - 1. Submit in accordance with requirements of Paragraph 2.05.F.
 - 2. Allow adequate time for review of submittals and adjustments to comply with the Specifications.

- F. Preconstruction Meeting:
1. Attend meeting with Owner and Engineer, bringing representatives of concrete supply, pumping, placement and finishing subcontractors plus testing laboratories.
 2. Review preliminary concrete placing plans for walls and slabs, prior to plan submittals.
- G. Concrete Tests, as Placed: Performed by the Owner's Representative
1. Test frequency: Each mix type placed, each day placed.
 2. Concrete sample: ASTM C172. Provide all material required.
 3. Compressive strength: A set of four standard 6-inch x 12-inch concrete cylinders will be cast for each 100 cubic yards or fraction thereof for concrete greater than 2,500 psi.
 - a. Making, storing, initial cure, and final cure of cylinders: ASTM C31. Provide site storage and initial cure, 16 hours minimum and 24 hours maximum.
 - b. Test of cylinders: ASTM C39. Testing laboratory will transport cylinders from site, cure, test, and provide report. Test two cylinders at age of 7 days, two at 28 days.
 4. Slump: Test will be performed on each 50 cubic yards or fraction thereof. Test each sample used for strength tests.
 - a. Testing: ASTM C143.
 - b. Results outside the limits indicate possible cause for rejection of concrete. The Engineer shall be the sole judge.
 5. Air content: Test will be performed on concrete samples used for strength tests. Furnish calibrated equipment required to perform the test.
 - a. Testing: ASTM C231.
- H. Additional Tests:
1. General: Provide and pay for additional material and strength tests on new specimens, when test results fail to meet the specified requirements. Strength tests shall be considered satisfactory if the requirements of ACI 318 Section 5.6.3.3 are satisfied. If in the opinion of the Engineer, results of tests on concrete cylinders indicate the possibility of substandard concrete in the structure, cored samples may be required to be taken from the concrete.
 2. Coring and testing: ASTM C42. The Engineer will investigate low-strength test results in accordance with the requirements of ACI 318 Section 5.6.5; however, the requirements of Section 5.6.5.4 are not applicable. If, in the opinion of the Engineer, the results of the core tests indicate that concrete has been placed which does not meet this specification, the Owner may require defective concrete strengthened by means of additional concrete, reinforcing steel or replacement of the defective concrete, all at no additional cost to the Owner.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Cementitious Materials: If required at site, store immediately after delivery in a dry, weather-tight, properly ventilated structure, with adequate provisions for prevention of moisture absorption and overheating of the cement.

- B. Aggregates: If required at site, store in piles which afford good drainage and which are protected to prevent the inclusion of foreign material. Stockpile the various sizes or gradations of aggregates separately.
- C. Lumber: Store all lumber, including plywood for forms, to prevent direct contact with the ground. Protect the stored lumber from the elements by a suitable covering, such as polyethylene film or waterproof building paper, suitably held in place.
- D. Waterstop: Reject any cracked material, any joints with offsets between ribs or incomplete bond. Protect material from oil, grease and dirt and cover against direct sunlight.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Obtain materials from an established and experienced manufacturer or supplier. Provide new materials of first-class ingredients guaranteed to perform the service required.

2.02 CONCRETE MATERIALS

- A. Cementitious Materials:
 - 1. General: Use only one brand of each cementitious material. The color shall not significantly alter the typical grey concrete color.
 - 2. Portland Cement: ASTM C150, Type II. Comply with the requirements for low alkali cement in ASTM C150 Table 2.
 - 3. Pozzolan: ASTM C618, Mineral Admixture Class N.
 - 4. Blended Cement: ASTM C595 Type 1P (MS).
 - 5. Flyash: ASTM C618, Class F, with the following restrictions:
 - a. Loss on Ignition: 4% maximum
 - b. SO₃ Content: 3% maximum
 - c. Moisture Content: 1% maximum
- B. Concrete Aggregates:
 - 1. General: ASTM C33:
 - a. Provide free from organic materials, waste products, clay balls, shale, and mica and thoroughly washed before use.
 - b. Provide aggregate meeting the combined gradation requirements below as specified in Paragraph 2.05.B. For thin sections, such as slabs or walls 10 inches thick or less, or for sections that require special placement due to shape, form or congestion of reinforcing, provide 1-inch maximum size.
 - c. Provide aggregates that do not deleteriously react with the alkalis in the cement.
 - d. Grading: ASTM C136. Submit results of sieve analysis.
 - e. Reactivity: ASTM C289. Submit graphical data showing compliance.
 - 2. Coarse Aggregates:
 - a. Provide clean, hard, durable gravel, crushed gravel, crushed rock, or combinations.

- b. Deleterious substances: Submit compliance with ASTM C33, Table 3 and as follows:
 - 1) Clay lumps and friable particles: ASTM C142. Not more than 5%.
 - 2) Abrasion: ASTM C131. Not more than 45%.
 - 3) Soundness: ASTM C88. Not more than 10%.
 - 4) Cleanness: Caltrans Test 227 For three tests, not less than 70, with an average greater than 75. Max friable/clay materials in coarse aggregate at 2% for exposed architectural concrete, 3% for liquid retaining concrete structures, and 5% for all other structural concrete.
 - c. Do not use aggregate containing more than 10% of inferior materials, flat or elongated particles, cracked or laminated rock, or rock than can be readily broken after immersion in water for one hour.
3. Fine Aggregate:
- a. Provide natural sand or a combination of natural and manufactured sand, of siliceous, granitic or igneous origin, hard and durable.
 - b. Deleterious substances: Submit compliance with ASTM C33 Table 1 and as follows:
 - 1) Organic impurities: ASTM C40 and C87. Not less than 95% relative strength by ASTM C87.
 - 2) Sand equivalent: CALTRANS Test 217 **OR ASTM D2419**. For three tests not less than 70, with an average greater than 75.
- C. Combined Aggregates: Provide a mixture of fine aggregate and coarse aggregate uniformly graded between the screen sizes specified below.

Sieve Size	1-inch Maximum
2-inch	--
1-1/2-inch	100
1-inch	90-100
3/4 inch	55-100
3/8-inch	45-75
No. 4	35-60
No. 8	27-45
No. 16	20-35
No. 30	12-25
No. 50	3-15
No. 100	0-5
No. 200	0-2

2.03 WATER

- A. Provide water meeting AASHTO T26 for washing aggregates, for mixing concrete, for patching grout and for curing that is free from oil and contains not more than 1,000 parts per million (ppm) of chlorides as Cl, nor more than 1,300 ppm of sulfates as SO₄. Do not allow impurities that will cause a change in the setting time of the Portland Cement of more than 25%, nor a reduction in the compressive strength of mortar at 14 days of more than 5%, when compared to the results obtained with distilled water.
- B. Do not allow impurities that cause discoloration of the concrete or produce etching of the surface.

- C. The Engineer may require tests of the water should there be a question of the quality. Costs of such tests would be borne by the Owner, unless the quality does not meet the requirements in Paragraph A above.

2.04 ADMIXTURES

- A. Air Entraining: ASTM C260
- B. Accelerating: ASTM C494, Type C or E
- C. Retarding: ASTM C494, Type D
- D. Water Reducing: ASTM C494, Type A
- E. High Range Water Reducing: ASTM C494, Types F or G, second or third generation type. Add at the batch plant, after all other ingredients have been mixed and initial slump has been verified.
- F. Shrinkage Reducing: ASTM C157. Eclipse by W.R. Grace, Tetraguard AS20 by Master Builders, or equal.
- G. Corrosion Inhibition and Permeability Reduction (Silica Fume): ASTM C1240. Force 10,000 or 10,000D (dry) by W.R. Grace, Rheomac SF 100 (dry) or 110 by Master Builders, or equal.
- H. When two or more admixtures are used, they must be added to the mix separately (through dispensers or manually) and must not be mixed with each other prior to adding to the concrete mix. Add admixtures to concrete mix ingredients in liquid form by a special dispensing unit, approved by the manufacturer of the admixture as suitable for accurately dispensing the admixture. Install an alarm or indicator, which will immediately inform the batch plant operator if the dispensing unit malfunctions. Dispense admixtures uniformly into the mixing water as it is added to the concrete batch.
- I. No admixture containing any chloride ions is acceptable.
- J. Manufacturers: WR Grace & Co., Master Builders, Inc., or equal.

2.05 CONCRETE MIX DESIGN

- A. General:
 - 1. Employ an independent commercial testing laboratory complying with ASTM C1077 and favorably reviewed by the Engineer to design all concrete mixes and carry out all necessary testing. Concrete mix design proportions shall be established on the basis of field experience and trial mixtures with the materials to be employed in accordance with ACI 318 Section 5.3.
 - 2. If the testing laboratory has satisfactory mix designs available from prior projects, submit test record statistics to demonstrate compliance with the requirements of this Section and ACI 318 Section 5.3. Include calculations for f'_{cr} based on source quality test records.
 - 3. If new mix designs are required, prepare a range of trial batches for each design and submit the mixes that demonstrate satisfactory test results in accordance with ACI 318 Section 5.3.
 - 4. Allow for the variability of concrete strength from test to test by increasing the required average compressive strength over the specified strength as specified in ACI 318 Section 5.3.

5. Design the mixes far enough ahead of concrete placement to allow completion of trial batch testing and submittal of the test results and mix design to the Engineer for review.
6. Take sole responsibility for selection of laboratory, submittal of materials to laboratory in time for all tests, and overall timing of all aspects of testing program, including submittals.
7. Prepare mix designs for concrete placement by the batch process and/or by pumping, as required, and state the process on the design submittal.
8. Allow for the hot or cold weather and the time required to transport the concrete from the mixer to the site and to place within the forms. If accelerating or retarding admixtures will be required for only a proportion of the concrete placements, submit test results that include the full range of options.
9. Do not exceed the water-cementitious material ratios. Vary the water-reducing admixtures to accomplish an increase in slump or workability time.
10. Proportion cementitious materials, aggregates, and water by weight.
11. Check periodically the weight of moisture contained within the stockpiled aggregates. Compensate for this water when proportioning the concrete mix and adjust when change occurs.
12. Do not use chlorides in any concrete mix.

B. Mix Proportions:

Concrete Type	C
Specified 28-Day Compressive Strength (lb/in ²)	4,000
Maximum Coarse Aggregate Size (in)	1
Air Content at Point of Placement (%)	1
Maximum Water-Cementitious Material Ratio	0.50
Minimum Cementitious Material Content (lb/yd ³)	570

- C. Cementitious Material: Either Portland Cement, cement with fly ash, cement with natural Pozzolan, or blended cement.
- D. Pozzolan or Flyash: Optional. Not less than 10%, nor more than 20% of the weight of the cementitious materials. Do not use pozzolan or flyash as an admixture in concrete made with Portland-Pozzolan Cement.
- E. Mix Test Requirements:
 1. Compression: ASTM C192 for cylinder preparation. ASTM C39 for cylinder tests. Submit 7-day and 28-day curing test results in accordance with Paragraph A above.
 2. Slump: ASTM C143. Slump range is 3 to 4 inches. After high-range water reducer added, range is 6 to 9 inches.
 3. Air Content: ASTM C231. Air content range is $\pm 1\%$.
 4. After favorable review of the mix design, no variations of the constituents are permitted during the project without prior submittal and favorable review.

2.06 READY-MIX CONCRETE

- A. Supply concrete for the project using truck mixers and a ready-mix plant certified by the National Ready-Mix Concrete Association. Submit certification.
- B. Alternatively, qualify the supplier according to ASTM C94 Sections 8 through 11, inclusive.

2.07 DRY PACK GROUT

- A. Very stiff mix grout; one-part Portland Cement to two-parts sand (by weight) and water. Wet the mixture only sufficiently to moisten the materials to the point where they will ball when squeezed by hand.

2.08 NON-SHRINK GROUT

- A. ASTM C1107, with no shrinkage as measured by ASTM C827. Furnish a premixed product, consisting of properly proportioned amounts of non-metallic, dimensionally stable material to which water is added

2.09 CEMENT MORTAR

- A. For repairs and patching concrete.
- B. One-part Portland Cement, two-parts fine sand (by weight) and water. Use only the amount of water needed to make the mix workable for the intended use.
- C. Provide a mixture of white and regular cements as required to make a mortar that after curing 28 days will match the adjacent concrete. Prepare several trial batches and make test samples in an inconspicuous location for review.
- D. When a mix has been selected for color match, batch all mortar by weight in accordance with the formula for the selected mix.

2.10 CURING MATERIALS

- A. Cure by fog spray, or by one of the following methods after discontinuance of the fog spray. Slabs shall be continuously wet cured with sheet materials or wet blankets after discontinuance of the fog spray; liquid curing compound alone is insufficient.
- B. Liquid Curing Compound: A water-based membrane-forming resin suitable for exterior or interior use as a curing and hardening compound on freshly placed concrete.
 - 1. Provide an emulsion of synthetic resinous solids dispersed in water containing no waxes, paraffins or oils. Provide the fugitive type that will oxidize and disintegrate completely within 60 days when exposed to sunlight in exterior applications or that can be removed by washing with dilute muriatic acid or TSP in interior applications.
 - 2. Water retention requirements: ASTM C309, Type I or II, Class B, when tested in accordance with ASTM C156.
 - 3. Use white pigmented material for exterior applications and clear material for interior applications.
 - 4. Comply with the applicable local air quality district.
 - 5. Exterior surfaces: Aqua Resin Cure-White by Dayton-Superior; 1200-White by W.R. Meadows; or equal.

6. Interior surfaces: Spartan-Cote by Dayton-Superior; Vocomp 20 by W.R. Meadows; or equal.
- C. Sheet Materials: ASTM C171. Waterproof paper, plastic sheeting or white burlap-polyethylene sheet.
 1. Plastic sheeting: fungus-resistant, minimum 4-mil thick, clear and free of defects, having ASTM E96 perm rating of not more than 0.5.
 2. Waterproof paper: Two layers of non-staining kraft paper laminated with latex adhesive and reinforced with glass in both directions. Seal joints with 2-inch-wide tape with water-resistant adhesive.
- D. Wet Blankets: Clean cotton mats (burlap, except for white burlap-polyethylene sheeting, is unacceptable). Provide material free from any substance that will have a deleterious effect on the concrete. Use a thickness sufficient to retain moisture between programmed applications of water.
- E. Evaporation Retardant: Eucobar by the Euclid Chemical Company; E-CON by L&M Construction Chemicals, Inc.; or equal.

2.11 FORMS

- A. Provide forms for exposed concrete surfaces with a clean, smooth plywood or metal face. Exposed concrete surfaces include beams, columns, slabs, interior and exterior walls, and surfaces of tank, chamber and tunnel walls except those in contact with earth.
- B. Furnish plywood with a waterproof, synthetic resin bonded face manufactured for formwork. Furnish steel forms that incorporate reinforcement, inserts, pipe fittings, box-outs, and other details shown on the Contract Drawings without modification to these details.

2.12 FORM TIES

- A. General:
 1. Provide commercially manufactured steel rods or through-bolts capable of withstanding applied pressures.
 2. Do not use wire, wire ties or wood spreaders.
 3. Provide form ties designed that when forms are removed, no metal shall remain within 1-1/2-inch to the finished concrete surface.
- B. Cone-Snap Tie:
 1. Furnish ties adjustable in length or of proper fixed length, with no metal closer than 1-1/2-inch to the finished concrete surface.
 2. Use a plastic cone spacer at each end of the form tie to allow a full 1-1/2-inch breakback and part of tie to be removed shall leave a cone shaped depression in the concrete with a minimum diameter of 1-inch at the surface.
 3. Provide ties for walls resisting water or earth pressure with waterstop washers of diameter $\frac{3}{4}$ -inch greater than the rod, bonded to rods at the wall centerline, or with other favorably reviewed water seal devices.
- C. Taper Ties or Through Bolts:
 1. Alternatively, provide tapered removable through-bolts at least 1-inch in diameter at smallest end.
 2. Manufacture neoprene or polyurethane tapered plug to be installed at the wall centerline.

2.13 FORM COATING COMPOUNDS

- A. Do not stain or impart any material or residue to the concrete surface detrimental or incompatible with any specified paint or coating system to be applied later, or unacceptable for contact with drinking water. Provide biodegradable form coating compounds with a VOC level less than 50 grams/liter

2.14 SOURCE QUALITY CONTROL

- A. Forms: Verify that components pre-assembled offsite are satisfactory for the purpose. Verify that designs, products and samples have been submitted for Product Review.
- B. Concrete:
 - 1. Verify that ready-mix batch plant delivery tickets contain all product information necessary for acceptance of the concrete delivered to site.
 - 2. Verify that the mixing and trucking equipment have adequate capacity to deliver the concrete batches to site on time, thoroughly mixed and discharge without segregation.

PART 3 - EXECUTION

3.01 PROPORTIONING CONCRETE MATERIALS

- A. Do not place concrete prior to favorable review of submittals for reinforcing steel, materials specified in this Section and the mix proposed. Unfavorable results of actual pours may require a redesign of mixes in addition to corrective work related to any defects.
- B. Do not make substitutions to the constituents tested in the design of concrete mixes without favorable review of the revised mix and the new test results.

3.02 BATCHING AND MIXING CONCRETE MATERIALS

- A. Ready or Transit Mixed Concrete:
 - 1. Deliver completely mixed to the project site.
 - 2. Do not add water unless approved by the Engineer. Do not add mixing water during hauling. Add water after delivery and only from the "hold-out" volume indicated on the mix ticket. Should water be added, revolve the mixing drum not less than 30 revolutions at mixing speed after adding and before commencing discharge.
 - 3. Deliver each load at the job site accompanied by a ticket showing mix design number, volume of concrete, the weight of cement in pounds and the total weight of each ingredient in pounds. Also show the time at which the materials were batched and the reading of the revolution counter at the time the truck mixer was charged.
 - 4. No retempering of partially hardened material is permitted. Do not use partially hardened concrete in the work.
- B. Batching in Adverse Weather:
 - 1. Cold Weather: Perform work in accordance with ACI 306 along with the following requirements. When the atmospheric temperature is below 40°F, or is likely to fall below 40°F during the 24-hour period after placing, heat the materials before mixing, so that the temperature of the mix at the batch plant

shall be between 65° and 80°F. Do not heat the mixing water or the cement over 160°F. Remove lumps of frozen material and ice from the aggregates before they are placed in the mixer.

2. Hot Weather: When temperatures are above 90°F, reduce the temperature of the concrete mix by using iced mixing water, and protecting aggregates and cement from direct rays of the sun. Do not place concrete exceeding 80°F.
3. Should the provisions noted in 1. and 2. above not be possible or practicable, postpone the batching until favorable weather conditions prevail.

3.03 FORMS

A. General:

1. Take responsibility for adequacy of the form, bracing, and shoring. Satisfy ACI 347.
2. Form concrete unless specified otherwise.
3. Construct forms conforming to the shape, line and grade specified.
4. Provide tight seams, or seal with tape, to be mortar-tight.
5. Brace and shore all forms properly to ensure stability against pressure from any source, without failure of any component part.
6. Keep the deflection of wall or slab form sheathing or framing for beams within 1/270 of the span. Consider camber in designing the supports of beams and slabs.
7. If inadequate support is provided by the forms, remove all placed concrete and replace, as directed.
8. Provide for temporary openings for cleaning out, observation, pouring and vibration of concrete.
9. If the concrete mix design includes a high-range water reducing additive, design the forms with enough strength to resist the high liquid concrete pressure without distortion.

- #### B. Chamfers: $\frac{3}{4}$ -inch at all exposed outside corners, including the top edges of all walls, machinery bases and curbs. Use mill run chamfer strips surfaced all sides. Provide rounded top edges of sidewalks, walkways and where directed.

C. Formed Surfaces:

1. Ensure that the reinforcement has been favorably reviewed before closing up the wall forms.
2. Provide exposed, unpainted concrete surfaces that are uniform in appearance and color. Apply non-staining mineral oil, form coating or form release compound before placing the forms. Remove any excess coating with cloths. Scrape and clean any reused forms before coating again.
3. Provide flush fitting caps over any unused form tie holes.
4. Do not use mineral oil on formed surfaces that are to be painted, coated, or bonded to other concrete.

D. Form Ties and Through-Bolts:

1. Provide sufficient number and strength to prevent spreading of forms while placing concrete.
2. Remove the removable portion immediately after stripping the forms. Avoid spalling the exposed concrete surfaces.
3. Locate tapered ties, if used, with the larger diameter on the water side of the form.

4. Provide a separate support system for the curtains of reinforcing, with a minimum 1-inch clearance between rebar and form ties or bolts.
- E. Construction Joints:
1. At ends of the first concrete pour, provide forms that positively locate any waterstop. Ensure the end forms of walls are removable without releasing the side forms. Provide seals around reinforcement and waterstop to prevent mortar leaks.
 2. Overlap the hardened concrete of the first pour with forms for the second pour. Brace the ends of the forms against the hardened concrete to prevent joint offsets and mortar leakage. Align any exterior features required on the finished surface.

3.04 ALLOWABLE VARIATIONS FOR FORMED SURFACES

- A. Tolerances: ACI 301 and as noted below:
- B. Variations in Size or Thickness:
1. Footings:
 - a. Length and width: $\pm 1/2$ -inch
 - b. Reduction in thickness: 5%
 2. Slabs and walls:
 - a. Thickness of 6 inches or less: 0-inch
 - b. Thickness of more than 6 inches: $\pm 1/4$ -inch
- C. Allowable Tolerances (Location, Lines and Grades):
1. Horizontal misplacement or eccentricity of footings 2% of footing width, but no more than 1-inch
 2. Variation of vertical dimensions at all floor levels from specified position: $\pm 1/2$ -inch per 100-foot
 3. Variation of vertical dimensions from specified position: $\pm 1/4$ -inch
 4. Variation from level or from slopes specified for floors, ceilings, water channels and conspicuous lines $\pm 1/4$ -inch per 20 feet
 5. Variation in location from specified position for sleeves, pits, floor, and wall openings: $\pm 1/4$ -inch
- D. General: Set and maintain concrete forms to ensure that, after removal of the forms and prior to patching and finishing, no portion of the concrete work will exceed any of the tolerances. Measure variations in floor levels before removal of supporting shores. Accept responsibility for variations due to deflections resulting from concrete quality or curing other than that specified. The specified variation for one element of the structure will not be applicable when it will permit another element of the structure to exceed its allowable variation.

3.05 REMOVAL OF FORMS

- A. General: Comply with the recommendations of ACI Committee 347. Remove without damage to the concrete and with complete safety of the structure. Ensure that the concrete has hardened sufficiently and the members have attained sufficient strength to safely support the imposed loads.

- B. Removal Time: Minimum duration after completion of concrete placement:
- | | |
|--|--|
| 1. Walls and wall or slab construction joints | 12 hours |
| 2. Sides of beams and girders | 12 hours |
| 3. Columns | 12 hours |
| 4. Underside of suspended slabs, walkways, beams and girders | 21 days, and full design compressive strength verified by data from additional field cured cylinders, if removed at less than 28 days. |
- C. Cold Weather: Forms shall remain in place for the full protection period in accordance with ACI 306 and Engineer may further increase the minimum form removal times if the temperature is 50°F or lower.
- D. Reshoring: Submit for favorable review, any requirement for accelerated partial stripping and reshoring of forms that may be necessary to maintain the construction program. Removal times for two-way suspended slabs are contingent on reshoring and shall be favorably reviewed by the Engineer.

3.06 REUSE OF FORMS

- A. Between concrete placements, inspect all form surfaces and repair to uniform texture for all concrete surfaces to be exposed. Fill all unused holes, cracks and defects.

3.07 PLACING CONCRETE AND GROUT

- A. Preliminary Work:
1. Remove hardened concrete and foreign materials from the inner surface of the mixing and conveying equipment. Remove all debris from the space to be occupied by the concrete.
 2. Remove water from the space to be occupied by the concrete before concrete is deposited. Divert any flow of water into an excavation through proper site drainage to a sump, or by other methods. If required by the Engineer, grout up any water vent pipes and drains after the concrete has thoroughly hardened.
 3. Provide satisfactory redundancy in the delivery system so that work can continue in the event of a breakdown.
 4. Do not use aluminum materials in pumping lines, transfer hoppers or chutes longer than 12 feet. Provide conveyor belts instead of chutes when the distance is longer than 50 feet. Use a storage hopper at the start of the line.
 5. For pumped concrete, provide a hose with an angle-change, to create a back-pressure at the outlet.
 6. Provide illumination if necessary inside the forms, so that the placed concrete will be visible from the deck at top of formwork.
 7. Provide thermometer for measuring concrete temperature when weather conditions are predicted to go beyond the range 50°F to 80°F.
 8. All surfaces in contact with concrete, including forms and reinforcing steel, shall be within 10°F of the concrete prior to placement of concrete.
 9. Do not place concrete on frozen subgrade. Subgrade shall be above 32°F and within 10°F of concrete prior to placement of concrete. Remove frost before placing concrete and recompact thawed soil disturbed by frost.

- B. Embedded Items:
1. Place all equipment, bolts, anchors, sleeves, inserts, structural steel members, angles and similar items which require embedment in the concrete.
 2. Hot-dip galvanize all ferrous metal sleeves, inserts, anchors, and other embedded ferrous items unless shown otherwise. Set anchor bolts for equipment in templates, carefully plumbed and checked for location and elevation with an instrument, and held in position rigidly by double-nutting to the template to prevent displacement while concrete is being poured.
 3. Ensure that any aluminum items inserted in the concrete are isolated by a bituminous or asphaltic coating in accordance with **Division 5 Specification**.
 4. Move reinforcement bars as necessary to avoid interference with other reinforcing steel, conduits, or embedded items, but not so as to impair design strengths of the member. If bars are moved more than two bar diameters, submit the resulting arrangement of bars for review.
 5. Inspect the installation of all embedded items and reinforcing.
- C. Placing:
1. Transfer the concrete to the place of final deposit as rapidly as practicable by methods that prevent the separation or loss of ingredients. Under no circumstances deposit partially hardened concrete in the work. Deposit concrete in the forms as nearly as practicable in its final position to avoid rehandling. Maintain, until the completion of the pour, a plastic concrete surface, approximately horizontal.
 2. Deposit concrete without segregation of the aggregate and without displacement of the reinforcement.
 3. Maximum height of free fall for concrete during placement:
 - a. Concrete with maximum 4-inch slump: 4 feet
 - b. Concrete with high-range water reducing admixture and minimum 6-inch, maximum 9-inch slump: 8 feet
 4. Deposit concrete continuously or in layers 12 to 20 inches in depth so that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously as originally planned, locate construction joints during the placement.
 5. Use every means to secure a dense, impervious, homogeneous concrete, free from voids or pockets. If honeycomb, air, or rock pockets occur, repair the structure to the complete satisfaction of the Engineer, and modify the placing method or mix design, to prevent recurrence of deficient concrete. Provide such repairs and modifications at no additional cost. Extensive honeycomb or pockets may be cause for rejection of the work.
- D. Time Limit: Place all concrete in its final position in slab or forms within 1-1/2 hours of batching or before the drum has revolved 300 revolutions, whichever comes first in accordance with ASTM C94. Alternatively, as part of the mix design, provide admixtures that delay the initial set and state the proposed length of time in the submittal.
- E. Temperature Limits: Place all concrete in its final position in slab or forms at:
1. Less than 90°F, measured in the mix.
 2. More than 40°F, measured both in the mix and in the air, with air temperature predicted to rise above 50°F.

3. More than 50°F, measured in the mix, 40°F measured in the air, with air temperature falling.
 4. Temperature measurements above refer to on-site measurements. Refer to the vibration, concrete joints and curing sections for other requirements.
- F. Precast Items:
1. Items may be cast on or off the site.
 2. Apply all applicable portions of Section 03300, including materials, forms, placement, finish and curing.
 3. Take particular care when handling and placing the precast items. Lift or move after a minimum of 90% of the specified compressive strength has been attained. Use the average compressive strength of two test cylinders.

3.08 VIBRATION

- A. Compact the concrete with high frequency, internal mechanical vibrating equipment, and when required, supplement by hand spading and tamping. Consolidate slabs 6 inches or less in depth by hand tampers, spreading and settling with a heavy leveling straightedge.
- B. Operate vibrators with vibratory element submerged in the concrete, with frequency between 8,000 and 12,000 impulses per minute when submerged.
- C. Furnish sufficient vibrators to complete the compaction as specified without causing delay in the depositing of concrete. Provide at least one spare unit for each structure when concrete is being placed and at least one vibrator for each 25 cubic yards per hour of concrete placement.
- D. Vibrate by direct action in the concrete for approximately 10 seconds at approximately 12-inch intervals, not against forms or reinforcements. Do not move concrete horizontally by vibration. Work the concrete around the reinforcement, and around embedded fixtures and into the corners of the forms. Penetrate 6 to 12 inches into previously poured layers as new layers are poured, provided the running vibrator penetrates by its own weight. To secure even and dense surfaces, free from aggregate pockets, honeycomb, or air pockets, supplement vibration when required by forking or spading by hand or hammering the forms lightly opposite the freshly deposited concrete. Revibrate the final layer. Stop vibrating when concrete is thoroughly compacted and has ceased to decrease in volume and give off air bubbles.
- E. When placing concrete with 8-inch or more slump, reduce the time of vibration to 5 seconds and follow the admixture manufacturer's recommendations for technique.

3.09 CONCRETE JOINTS

- A. General:
 1. Provide joints:
 - a. As shown on the Drawings and as noted below in these Specifications.
 - b. As required for constructability.
 - c. After favorable review of layout, sequence and concrete placement program.
 2. Provide minimum curing times before the second placement:

- a. 10 days after each adjacent concrete placement for infill pours (i.e. in-between two existing sections) or checkerboard (existing concrete on two or more sides) placement patterns.
 - b. 2 days after the first concrete placement at the joint.
3. During placement of the new concrete, ensure there are no interruptions to the 14-day curing time and 14-day load restriction plan for the adjacent pours.
- B. Control Joints:
1. Space typical control joints in slabs on grade or suspended slabs not exceeding 10 feet, or as shown on the Drawings. Control joints shall not be provided in water containment structures.
 2. If cast-in with the concrete, positively locate the preformed joint filler and hold rigidly in place during concreting.
 3. If saw-cut, use a wheeled power saw as soon as the concrete surface is firm enough. Saw-cut control joints must be constructed within 12 hours after concrete placement. Fill the groove with sealant over a backer rod.
- C. Construction Joints:
1. Produce quality concrete, with full continuity of reinforcing and water tightness across the joints.
 2. Continue all reinforcing through the joint unless otherwise noted.
 3. After the first concrete placement at the joint, do not walk on or disturb any reinforcing extending into the second placement area for at least 48 hours.
 4. Before depositing new concrete on or against concrete that has hardened, clean and roughen the entire surface of the joint exposing clean coarse aggregate solidly embedded in mortar matrix. Provide typically ¼-inch roughness or amplitude of the concrete surface measured from the top of the exposed aggregate to the bottom of pockets between stones.
 5. Drench the prepared joint with clean water and remove prior to the concrete pour.
 6. Use special care in vibrating adjacent to construction joints to ensure thorough consolidation of the concrete around the waterstops and against the hardened portion of the joint. Additional hand tamping may be required.
 7. For joints that are shown on architectural drawings as having a continuous reveal or recess, leave the wood form or pour strip used to create the reveal or recess in place or re-insert before roughening. Prevent the next concrete placement from filling the reveal or recess..

3.10 REPAIR OF DEFECTIVE CONCRETE

- A. Inspect all concrete surfaces immediately after carefully removing forms. Defective work includes concrete out of line, level or plumb; cracks; poor joints; rock pockets; honeycomb; voids; spalls and exposed reinforcing. Patch all minor defects, including form tie holes, before the concrete is thoroughly dry. Do not interrupt the curing program. Ensure that repairs match the existing surface for color and texture.
- B. Minor Defects:
1. Clean thoroughly, including removal of any curing compound. Cut out to solid concrete but to a depth of not less than 1 inch. Prepare the edges of the cut slightly more than perpendicular to the surface of the concrete, so as to form a key.

2. Repair with cement mortar. Use minimum water, consistent with the requirements of handling and placing. Thoroughly compact the material into place and screed off to leave the patch flush with the surrounding surface.
 3. Keep the surface damp for at least 48 hours.
- C. Major Defects:
1. Large areas involving voids or rock pockets extending through the section may be cause for rejection of the work.
 2. If acceptable repairs can be made without adversely affecting the structural integrity of the work, cut out the section and either dry pack, or reform and re-pour to match the adjacent concrete. Do not cut the reinforcing, but cut keyways into the adjacent sound concrete to securely fasten the patch to the original work. Prepare edges of the damaged area with a minimum of a 1-inch cut perpendicular to the concrete surface.
 3. Coat all surfaces with epoxy bonding compound immediately prior to patching. Place the concrete patch before the epoxy has set. Follow the epoxy bonding manufacturer's recommendations.
 4. Provide a patch with strength and modulus of elasticity compatible with the parent concrete. Cure in accordance with the following article.

3.11 CURING AND PROTECTION

- A. General: Maintain concrete above 50°F and below 90°F in a moist condition and without external loadings for 14 days after placement. For slabs, after the specified initial moist cure, provide further moist curing, utilizing sheet materials or wet blankets for 14 days after placement. Apply liquid membrane curing after the 14-day wet curing period. For walls after the specified initial moist cure, provide further moist curing, impervious-sheeting curing, or application of liquefied membrane-curing compound, as noted.
- B. Slabs:
1. Initial moist cure: Provide a 36-hour uniform spray treatment immediately following final troweling and before the surface can dry out, but after bleeding has stopped. Use clean water and special fog spray nozzles of type and number required to keep entire surface moist. Keep all traffic off the floor surfaces.
 2. Continued cure: After 36 hours, continue fog curing, or before the surface dries out, continue curing by utilizing sheet materials or wet blankets in order to keep the surface of the slab continuously wet for the balance of the 14 days. After 14 days apply a liquid membrane curing compound:
 - a. Place waterproof curing paper smoothly upon the moist concrete surface with all joints and edges lapped a minimum of 4 inches and continuously sealed with tape. Do not use paper that will leave an impression on the finish. Repair, replace and reseal, torn or scuffed sheets.
 - b. Install polyethylene plastic sheeting and maintain in the same manner as for curing paper.
 - c. Apply liquid membrane curing compound, if favorably reviewed for this purpose. Apply while slab is still damp from the fog spray.
 - 1) Agitate compound thoroughly by mechanical means during use and apply uniformly in a two coat continuous operation by appropriate power-spraying equipment. Apply the two coats at

right angles. Apply between 150 and 200 sq. ft. per gallon of undiluted compound, total coverage. Form a uniform, continuous, coherent film that will not check, crack, or peel and free from pinholes or other imperfections. Apply an additional coat immediately to areas where the film is defective.

- 2) Keep alternate specified covering readily available for use in the event conditions occur which prevent correct application of the compound at the proper time.
- 3) Respray surfaces that are subjected to heavy rainfall within 3 hours after the curing compound has been applied (when slab reaches a moist condition and there is no standing water) with two additional coats of curing compound by the foregoing method and coverage.
- 4) Allow foot traffic only after 36 hours of cure time and only when slab is protected with paper or sheeting.
- 5) Allow building material storage only after 14 days of cure time and only on plywood sheets and wood sleepers that spread the load and protect the finish.

C. Other Surfaces:

1. Provide a curing program equivalent to either slab or wall system, as appropriate.
2. Include construction joint surfaces when applying curing compound.
3. Cover, or protect joint openings, exposed reinforcing, surfaces to be painted and other areas where curing compound may enter and interfere with a special finish.
4. Remove curing compound sprayed on reinforcing or construction joints by sandblasting after curing is completed, or before placing the next pour. If the cones of tie holes are sprayed with curing compound, lightly ream prior to patching.
5. For curing of certain interior and other slabs using hardening or coloring compounds, refer to Section 03350.

D. Cold Weather Requirements: Provide adequate equipment for heating the placed concrete during freezing or near freezing weather:

1. Whenever the surrounding air temperature is below 40°F, or may fall below 40°F within the 24-hour period after placing concrete, maintain all freshly poured concrete at not less than 50°F for 5 days.
2. Keep the housing, covering, or other protection in place and intact at least 24 hours after the artificial heating is discontinued.
3. Do not use manure, salt, calcium chloride, or other chemicals on the concrete to prevent freezing.

E. Hot Weather Requirements: Provide additional cooling to concrete when temperatures rise above 90°F, or low humidity, wind and temperature combine to cause high surface evaporation, over 0.2 lb/sq. ft./hour:

1. Provide additional water if curing by fog spray or ponding or saturated blankets.
2. Provide shade to surfaces exposed to direct sunlight.
3. Apply an evaporation retarder during the finishing operation, following the manufacturer's recommendation.

3.12 CONCRETE FINISHES

- A. Provide a Broom finish for top of wall and a filled finish for the formed surfaces meeting the requirements of ACI 301 for the respective finishes..

3.13 FIELD QUALITY CONTROL

- A. Concrete Placement:
 1. Verify that forms and reinforcement are accurately placed and secured in position. Confirm that both forms and reinforcement have been favorably reviewed.
 2. Verify that tie wire ends have been bent back away from the forms.
 3. Verify that all sleeves, castings, pipes, conduits, bolts, anchors, and any other items required, are accurately and securely placed within or on the forms.
 4. Verify waterstop is correctly in place and that splices are watertight.
 5. Verify adequate vibrators are available.
 6. Verify construction and expansion joint faces have been prepared for the next concrete placement.
 7. Check that the mix design is compatible with the method of placement of the concrete, by pump or by batch.
 8. For wall placements, verify that the modified concrete mix required at construction joints is to be delivered.
 9. Verify the concrete delivered to site is satisfactory, including checks on the batch tickets, quality assurance tests and direct observation of the batches.
- B. Concrete Curing:
 1. Verify procedures and equipment is available for controlling concrete temperature during hot and cold weather conditions.
 2. Verify actual time of application of evaporation retardant, fog spray and curing materials for each placement.
 3. For cold weather applications, record at least twice a day for the six days of special concrete curing and protecting procedures the temperature of the concrete at multiple locations (including surfaces, edges and corners), the daily maximum and minimum concrete temperature, location where temperature was taken, air temperature, weather conditions, and other special conditions. Measure concrete temperature in accordance with ACI 306.

3.14 CLEANUP

- A. Upon completion of all work performed under this Section, remove from the site all excess materials, storage facilities and temporary facilities. Smooth and clean of debris all areas that were used or occupied during concrete construction operations and leave in first-class condition.

END OF SECTION

SECTION 05090

STRUCTURAL METAL FASTENERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. All anchors, including mechanical and adhesive anchors, adhesive rebar dowels, eye bolts, turnbuckles, cable clamps, bolts, nuts, washers, inserts, and other metal fasteners not specified elsewhere.
- B. Related Sections:
 - 1. Section 03200: Reinforcing Steel
 - 2. Section 03300: Cast-in-Place Concrete
 - 3. Section 05200: Structural Metal Framing

1.02 REFERENCES

- A. American Institute of Steel Construction Specifications:
 - 1. ANSI/AISC 360-05 Specification for Structural Steel Buildings
 - 2. ANSI/AISC 341-05 Seismic Provisions for Structural Steel Buildings Including Supplement No. 1
 - 3. ANSI/AISC 358-05 Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications
- B. Research Council on Structural Connections:
 - 1. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts, 2004
- C. American Iron and Steel Institute (AISI)
- D. American National Standards Institute (ANSI):
 - 1. ANSI B18-2-1 Square and Hex Bolts and Screws
 - 2. ANSI B18-2-2 Square and Hex Nuts
 - 3. ANSI B18-21-1 Lock Washers
 - 4. ANSI B18-22-1 Plain Washers
- E. ASTM International (ASTM) Standard Specifications:
 - 1. ASTM A123 Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
 - 2. ASTM A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 3. ASTM A325 Structural Bolts, Steel, Heat-Treated
 - 4. ASTM A370 Test Methods and Definitions for Mechanical Testing of Steel Products
 - 5. ASTM A500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - 6. ASTM A525 Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

7. ASTM A563 Carbon and Alloy Steel Nuts
 8. ASTM B633 Electrodeposited Coatings of Zinc on Iron and Steel
 9. ASTM E8 Test Methods for Tension Testing of Metallic Materials
 10. ASTM F436 Hardened Steel Washers
 11. ASTM F844 Washers, Steel, Plain (Flat), Unhardened for General Use
 12. ASTM F959 Compressible-Washer-Type Direct Tension Indicator for Use with Structural Fasteners
 13. ASTM F1554 Anchors Bolts, Steel, 36, 55, and 105-ksi Yield Strength
- F. International Code Council (ICC):
1. Evaluation Service Reports
 2. AC 193 Acceptance Criteria for Mechanical Anchors in Concrete Elements
 3. AC 308 Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements
- G. International Building Code (IBC) 2012 Edition and California Building Code (CBC) 2014 Edition

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data:
1. Adhesive anchors, reinforcing steel dowels and expansion anchors.
 2. Insulation between dissimilar metals.
- C. Samples: Manufacturer's latest standard product: Specify special or unique products.
- D. ICC Evaluation Service Reports for all anchors submitted demonstrating compliance with 2009 IBC and ICC AC 193 or 308 for Mechanical or Adhesive anchors respectively. Reports for concrete anchors shall demonstrate approval for use in cracked concrete in Seismic Design Categories A-F. Reports for masonry anchors shall demonstrate approval for use for seismic loads when attached to concrete masonry unit (CMU).
- E. List of all anchors to be used including:
1. Location, diameter, material type, number and length of anchors
 2. Testing plan for anchors, including percentage of anchors to be tested and allowable loads for anchors and testing loads.
 3. Certified Verification Testing Report:
 - a. Certified by an independent testing laboratory or registered professional engineer.
 - b. Detailing results of testing required in paragraph 1.04.C.2.

1.04 QUALITY ASSURANCE

- A. General:
1. Furnish materials and fabricated items from an established and reputable manufacturer or supplier.
 2. Supply all new materials and fabricated items made from first class ingredients and construction and guaranteed to perform the service required.
 3. For adhesive anchorage, Contractor shall be trained by anchor product manufacturer representative and be provided with a certificate or card of completion, to be available upon request by the Special Inspector.

- B. Codes and Standards:
 - 1. Bolting:
 - a. General: AISC Specifications
- C. Tests:
 - 1. General: The Owner shall provide Special Inspection, defined by IBC Chapter 17 and as noted in the ICC-ES report for the anchor. The Contractor shall provide and pay for verification testing for mechanical and adhesive anchoring systems described below. Installation inspection shall be periodic special inspection or continuous special inspection as required by the ICC ES report of by the Design or Specialty Engineer.
 - 2. Verification Testing for Mechanical expansion and adhesive anchoring systems:
 - a. Do not begin installation until testing plan has been favorably reviewed by the engineer. Contractor shall be responsible for all damage, including damage to adjacent structural elements, resulting from use of loads not favorably reviewed by the engineer.
 - b. Test required anchors to the loads in the tables in Section 3.03 for the named anchors. For all other anchors, test to loads, verified in advance by the engineer, representing twice the allowable load for the anchor, or 0.5 times the maximum strength design (ultimate) load of the anchor:
 - c. Expansion and adhesive anchors shall be tested as follows:
 - 1) Test 10% of anchors used for sill plate bolting applications.
 - 2) Test 50% of anchors used for non-structural applications, such as equipment anchorage.
 - 3) Test 100% of anchors for applications not listed above.
 - d. Undercut anchors that allow visual confirmation of full set need not be tested.
 - e. Visual inspection of layout including horizontal location, minimum embedment, minimum cover, minimum spacing, and minimum edge distance.
 - f. Test anchors by a calibrated torque wrench, direct pull with a hydraulic jack, or a calibrated spring loaded devices. Testing shall be performed on a single anchor and shall be done in a “confined” manner, where the testing equipment prevents concrete breakout in tension. Torque wrench method shall not be used for screw anchors, or where additional torque will damage the installed condition.
 - g. Anchors tested using the torque wrench shall achieve the load within one-half turn of the nut. Prior to testing, the nut shall be snug to the manufacturer’s recommended installation tightness.
 - h. Anchors tested using a hydraulic ram shall be tested to the required load for a minimum of 15 seconds and shall not exhibit any discernable movement during the loading, such as loosening of the washer under the nut or an observable gap.
 - i. Anchors which do not pass the test shall be considered defective work, and such failures shall be corrected at no additional cost to the owner, including any indirect costs necessary to relocate or reinstall anchors.
- D. Additional Tests: Provide and pay for all necessary additional tests made on welds or bolts required to repair or replace faulty work performed during the original fabrication.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Handle, ship and store material in a manner that will prevent distortion, rust, damage to the shop coat or any other damage.
- B. Store material in a clean, properly drained location out of contact with the ground.
- C. Ensure that dissimilar metals are not in contact with each other.
- D. Replace or repair all damaged material in an approved manner.

PART 2 - PRODUCTS

2.01 METAL FASTENERS

- A. General:
 - 1. For buried, submerged, or conditions where anchors or fasteners will be continuously or intermittently wet, except where otherwise shown or specified, all bolts, anchor bolts, mechanical anchors, adhesive anchors, washers, and nuts shall be 316 stainless steel .
 - 2. For exterior or exposed conditions provide 316 stainless steel except where otherwise shown or specified.
- B. Bolting – Stainless Steel:
 - 1. Stainless Steel Bolts: AISI 316. ASTM A193 or F593.18-8 material is not acceptable.
 - 2. Stainless Steel Nuts: ASTM A194 or F594.
 - 3. Washers: AISI 316 washers meeting the dimensional requirements of ASTM F436
 - 4. Dimensional Requirements:
 - a. Bolts: ANSI B18.2.1
 - b. Nuts: ANSI B18.2.2
- C. Cast-in-Place Anchor Bolts:
 - 1. Headed Anchors: ASTM F1554, Grade 36, unless Grade 55 or 105 is shown on Drawings. High strength anchors on Drawings shall be Grade 55 minimum.
 - 2. Threaded and Nuted Anchors: ASTM F1554, Grade 36 with threaded ends and double hex nuts at the anchored end, or with washer between anchoring nuts if shown on the drawings. Use heavy hex nuts for rods 1-³/₄-inch-diameter or greater. Provide Grade 55 or 105 if shown on the Drawings and use heavy-hex nuts. High strength anchors on Drawings shall be Grade 55 minimum.
 - 3. Welded Headed Studs or Welded Hooked Studs: AWS D1.1, Grade B, $f_u = 60$ ksi, $f_y = 50$ ksi.
 - 4. Hooked Anchors (J and L Bolts): Are not allowed unless specifically shown on the Drawings as they do not provide equivalent performance. If shown, provide ASTM F1554, Grade 36, unless Grade 55 or 105 is shown on Drawings. High strength anchors on Drawings shall be Grade 55 minimum.
 - 5. Hooked anchor bolts shall not be used in concrete masonry unit construction.
 - 6. Provide minimum embedment shown on the Drawings, or a minimum of eight bolt diameters.

- D. Mechanical Anchoring Systems (friction anchors are not acceptable):
1. Mechanical Expansion Anchoring Systems:
 - a. Anchor: Expansion anchor shall be preassembled expanding sleeve or wedge type with a single piece three section wedge. Anchors shall meet the description of Federal Specification A-A 1923A or A-A 1922A, Type 4. Anchor will bear a length identification code that is visible after installation. Provide hex head stud style unless flat or rod coupler styles are noted on Drawings.
 - b. Stainless Steel Anchors:
 - 1) Anchor Body and Wedges: ASTM A276 or ASTM A493 with chemical composition of either AISI 304 or 316 or 316L.
 - 2) Nuts: ASTM F594 with chemical composition of either AISI 304 or 316 or 316L.
 - 3) Washers: ASTM A240 with chemical composition of either AISI 304 or 316 or 316L.
 - c. Submit a product evaluation report by ICC-ES showing Cracked Concrete testing compliance per A.C. 193.
 - d. Provide embedment depth, edge distance, and anchor spacing as shown on the Drawings and in accordance with manufacturer's recommendations for published allowable loads.
 - e. Manufacturer: Hilti, Inc. Kwik Bolt TZ, Simpson Strong-Bolt, Powers Fasteners, Power-Stud +SD1 or Power-Stud +SD2 (except ¼-inch-diameter and not for use in masonry), or equal.
 2. Concrete Screw Anchoring Systems:
 - a. Anchor: Concrete screws shall be self-tapping and heat treated. Screw anchors shall have complete contact with the base material and shall not require oversized holes for installation. Anchors will bear a length identification code that is visible after installation.
 - b. Carbon Steel Anchors:
 - 1) Anchor Body: High Yield Strength Carbon Steel ($f_y > 95$ ksi)
 - 2) Plating: Zinc plated in accordance with ASTM B633, SC1 or Mechanically galvanized per ASTM B695, Class 65, Type 1.
 - c. Submit a product evaluation report by ICC-ES showing Cracked Concrete testing compliance per A.C. 193.
 - d. Provide embedment depth, edge distance, and anchor spacing as shown on the Drawings and in accordance with manufacturer's recommendations for published allowable loads.
 - e. Manufacturer: Simpson Strong-Tie Titen HD Concrete Screw, Hilti Kwik HUS-EZ (Pending ICC approval) or equal.
- E. Adhesive Anchoring Systems:
1. Adhesive (Epoxy) Injection Anchoring Systems:
 - a. Adhesive: Adhesive consisting of two-component epoxy base resin and hardener material meeting the requirements of ASTM C881 Types I and IV, Grade 3, Class C. The adhesive shall be supplied in manufacturer's standard side-by-side cartridge and dispensed through a static-mixing nozzle supplied by the manufacturer.
 - b. Anchor Rod, Reinforcing Steel or Insert: Threaded Rod or insert with chamfered threaded end for ease of starting nut on one end and 45-degree chisel or cut point on opposite end (where insert is required by manufacturer). Furnish nuts and washers to meet the requirements

of the rod or insert. Unless noted otherwise on the drawings provide hot dip galvanize rods or inserts or stainless steel. Stainless steel rods or inserts shall be provided in buried or submerged locations. Reinforcing Steel shall meet the requirements of Section 03200. All Reinforcing Steel indicated to be embedded in existing concrete shall be embedded using the epoxy injection systems.

- 1) ASTM A36 or A307 (standard carbon steel anchor).
 - 2) ASTM A193 Grade B7 (high strength carbon steel anchor).
 - 3) Reinforcing bars as specified in Section 03200 with chisel or cut point.
 - 4) AISI 304/ASTM A276 or AISI 316L/ASTM A276 stainless steel meeting the mechanical requirements of ASTM F-593 (Condition CW).
- c. Submit a product evaluation report by ICC-ES showing Cracked Concrete testing compliance per A.C. 308.
 - d. Provide embedment depth, edge distance, and anchor spacing as shown on the Drawings and in accordance with manufacturer's recommendations for published allowable loads.
 - e. For submerged application in potable water provide NSF/ANSI Standard 61 Certification.
 - f. Manufacturer: Hilti HIT RE 500-SD Epoxy Anchoring System, Hilti HIT HY-150 MAX-SD, Simpson Strong-Tie SET-XP Epoxy, PE1000+ by Powers Fasteners or equal.
2. Adhesive (Ester) Injection Anchoring Systems (for use in CMU only):
- a. Adhesive: Adhesive consisting of methacrylate resin or acrylic based adhesive, hardener, cement and water. The injectionable adhesive shall consist of two components and a static mixing nozzle as recommended by the manufacturer.
 - b. Anchor Rod or Insert: Threaded Rod or insert with chamfered threaded end for ease of starting nut on one end and 45-degree chisel or cut point on opposite end (where insert is required by manufacturer). Furnish nuts and washers to meet the requirements of the rod or insert. Unless noted otherwise on the drawings, provide hot-dip galvanized rods or inserts or stainless steel. Stainless steel rods or inserts shall be provided in buried or submerged locations.
 - 1) ASTM A36 or A307 (standard carbon steel anchor).
 - 2) ASTM A193 Grade B7 (high strength carbon steel anchor).
 - 3) Reinforcing bars as specified in Section 03200 with chisel or cut point.
 - 4) AISI 304/ASTM A276 or AISI 316L/ASTM A276 stainless steel meeting the mechanical requirements of ASTM F593 (Condition CW).
 - c. Submit a product evaluation report by ICC-ES with seismic approvals.
 - d. Provide embedment depth, edge distance, and anchor spacing as shown on the Drawings and in accordance with manufacturer's recommendations for published allowable loads.
 - e. For submerged application in potable water provide NSF/ANSI Standard 61 Certification.
 - f. Manufacturer: Hilti HIT HY-150 MAX Injection Adhesive Anchor, Simpson Strong-Tie SET, AC100+ Gold by Powers Fasteners, or equal. For materials with voids and holes like hollow block provide Hilti HIT

HY 20 Injection Adhesive Anchor with wire mesh screen tubes for Masonry Construction, Simpson Strong-Tie Acrylic-Tie with ATS screens, or equal.

2.02 MISCELLANEOUS ITEMS

- A. Turnbuckles: ASTM F1145 and AISI C-1035.
- B. Eye Bolts and Eye Nuts: ASTM F541 and AISI C-1030.
- C. Clevises: AISI C-1035.
- D. Threaded Rods (Tie Rods): ASTM A36
- E. All metal fasteners not specified elsewhere.

2.03 GALVANIZING

- A. Hot-dip galvanize all exterior and exposed steel items, except when specified otherwise.
 - 1. Steel hardware, nuts, bolts, washers, anchors, and threaded rods: ASTM A153.
 - 2. Where specified, electroplate nuts, bolts and washers with zinc coating of 0.001-inch minimum thickness in accordance with ASTM B633 Class SC4. Where specified, provide a 4-mil DFT coating of zinc silicate.
 - 3. Size nuts so that they screw on threaded bolts readily after galvanizing or coating.
- B. Repair Materials: Gal-Viz by Thermacote Welco, Pasadena, CA; ReGalv by Rotometals, Inc., San Francisco, CA; or equal.

2.04 NON-SHRINK GROUT

- A. See Section 03300.

PART 3 - EXECUTION

3.01 ERECTION

- A. Structural Steel Work:
 - 1. Connections:
 - a. Provide anchor bolts and other connections between structural steel and foundations.
 - b. Set all anchor bolts by template, with provisions to hold bolts rigid and in correct position with respect to plan and elevation.
 - c. Install adhesive and expansion anchorages by personnel with satisfactory previous experience using the same Products, following the manufacturer's recommendations and in compliance with the latest ICC-ES report.
 - d. Detail any undesigned connections in accordance with the AISC Specification.
 - e. Do not increase any hole diameter or slot length without the Engineer's approval.

- f. Washers:
 - 1) Provide washers for slotted holes. Washers shall be hardened for high-strength bolts ($f_y > 36$ ksi) and shall be 3/8-inch thick plate washer for long-slotted holes.
 - 2) Provide washers under the turned element for bolts installed with the Calibrated Wrench Pretensioning method.
 - 3) Provide washers for bolts installed with the Direct-Tension-Indicator Pretensioning method.
- 2. Where metal is fastened to concrete, make the connections by anchor bolts, or by anchors embedded in concrete, such as adhesive, or expansion anchors.
- 3. Provide grout pads below base and bearing plates of non-shrink non-metallic grout having a minimum thickness of 3/4-inch unless otherwise noted. Do not bear directly on concrete slabs or equipment bases.
- 4. Provide leveling nuts on anchor bolts, below base plates, and adjust prior to grouting.
- 5. Where anchorage requires drilling into existing concrete, contractor shall locate all reinforcing steel at least 14 days prior to drilling and shall notify engineer of any conflicts immediately upon discovery. Contractor shall not drill through or cut any reinforcing steel without express written direction from the engineer.
- B. Mechanical Anchoring Systems: Mechanical anchoring systems shall be installed in accordance with the ICC-ES Evaluation Report for the specific anchor.
 - 1. Mechanical Expansion Anchoring Systems:
 - a. Drill a hole in the base material using drill bit diameter and embedment depth in accordance with the manufacturer's instructions. CAUTION: Oversized holes in the base material will reduce the anchor's load capacity and cannot be used.
 - b. Remove dust from holes with compressed air.
 - c. Assemble the anchor with the nut and washer so the top of the nut is flush with the top of the anchor.
 - d. Place the anchor in the fixture and drive into the hole until washer and nut are tight against the fixture.
 - e. Install nut and washer and tighten to the required installation torque.
- C. Adhesive Anchoring Systems: Adhesive anchoring systems shall be installed in accordance with the ICC-ES Evaluation Report for the specific anchor. Adhesive anchoring systems are not allowed in overhead applications.
 - 1. Adhesive (Ester or Epoxy) Injection Anchoring Systems:
 - a. Drill a hole to the specified depth and diameter.
 - b. Clean hole with a wire brush. Remove dust from holes with oil-free compressed air. Jetting holes with water is not permitted.
 - c. Install adhesives only in clean holes free of standing water:
 - 1) Dispense portion of adhesive off to the side to check for proper mixture, and consistent color before using.
 - 2) Fill hole halfway to two-thirds, starting from bottom of hole to prevent air pockets. Withdraw nozzle as hole fills up.
 - 3) Substrate temperature should be kept above the minimum allowed temperature as specified by the manufacturer for the entire curing process.

- 4) Insert anchor, turning slowly until the anchor contacts the bottom of the hole. Do not disturb anchor during the specified cure time.
 - 5) For holes 10 inches and deeper, Contractor shall use a piston plug for adhesive anchor installation.
- D. Repair of Connections: The Contractor shall pay for all necessary additional tests made on weld or bolts required to repair or replace faulty work performed during the original fabrication or during erection.

3.02 FIELD QUALITY CONTROL

- A. Mechanical and Adhesive Anchoring Systems:
1. Anchoring systems shall be installed in accordance with the ICC-ES Evaluation Report for the specific anchor. All anchors shall be tested in accordance with paragraph 1.04.C.
 2. Set torque-controlled expansion-type anchors to the recommended installation torque using a calibrated torque wrench. Following attainment of 10% of the specified torque, 100% of the specified torque shall be reached within seven or fewer complete turns of the nut. If the specified torque is not achieved within the required number of turns, the anchor shall be removed or abandoned.
 3. Set displacement-controlled expansion-type anchors to the recommended displacement. If the concrete cracks during installation of the anchor, the anchor shall be removed or abandoned.
 4. Anchors should exhibit no discernable movement during load testing.
 5. Holes drilled for anchors that do not set properly or fail in a tension test may not be reused, and shall be filled with non-shrink grout.
- B. Erection Sequence: Verify each stage is completed before proceeding to the next.
- C. Tolerances: AISC Standard Practice.

3.03 LOAD TESTING TABLES

- A. Load Testing Tables below are based on the following assumptions. Testing where these assumptions are not valid could result in damage to the structure or other elements, which shall be repaired by the contractor at no additional cost to the owner.
1. Concrete shall have a minimum compressive strength of 2500 psi.
 2. Embedment Depths and Edge distances shall be as noted in the table and shall not be outside the parameters specified by the anchor manufacturer.
 3. Tests shall be performed on a single anchor and no intermediate members shall be placed between the testing apparatus.
 4. All Values are in inches and pounds unless otherwise noted.

Table 1: Test Loading for Simpson Set XP Anchors

Embedment (in)	Edge Distance (in)	Diameter				
		½-inch	5/8-inch	¾-inch	7/8-inch	1-inch
$he \geq 8$ inches	$4 > c_{min} \geq 1.75$	180	100	140	60	90
	$6 \geq c_{min} > 4$	1200	800	1000	600	700
	$6 \leq c_{min}$	2000	2000	2200	1500	1800
$7 \leq he < 8$ inches	$4 > c_{min} \geq 1.75$	100	100	100	100	Note 1
	$6 \geq c_{min} > 4$	1200	800	1000	600	Note 1
	$6 \leq c_{min}$	200	200	2200	1500	Note 1
$6 \leq he < 7$ inches	$4 > c_{min} \geq 1.75$	100	100	100	Note 1	Note 1
	$6 \geq c_{min} > 4$	1000	1500	800	Note 1	Note 1
	$6 \leq c_{min}$	2100	1500	1900	Note 1	Note 1
$5 \leq he < 6$ inches	$4 > c_{min} \geq 1.75$	100	100	Note 1	Note 1	Note 1
	$6 \geq c_{min} > 4$	800	600	Note 1	Note 1	Note 1
	$6 \leq c_{min}$	1900	1300	Note 1	Note 1	Note 1
$4 \leq he < 5$ inches	$4 > c_{min} \geq 1.75$	100	Note 1	Note 1	Note 1	Note 1
	$6 \geq c_{min} > 4$	900	Note 1	Note 1	Note 1	Note 1
	$6 \leq c_{min}$	2000	Note 1	Note 1	Note 1	Note 1

Note:

- 1 Configuration requires special approval and consideration from the Engineer. Contractor shall not install or test this configuration without favorable review from Engineer.

Table 2: Test Loading for Hilti HY150 MAX SD Adhesive Anchors

Embedment (in)	Edge Distance (in)	Diameter				
		½-inch	5/8-inch	¾-inch	7/8-inch	1-inch
$he \geq 8$ inches	$4 > c_{min} \geq 2$	660	Note 1			
	$6 \geq c_{min} > 4$	1000				
	$6 \leq c_{min}$	1000				
$7 \leq he < 8$ inches	$4 > c_{min} \geq 2$	660	Note 1			Note 1
	$6 \geq c_{min} > 4$	1000				Note 1
	$6 \leq c_{min}$	1000				Note 1
$6 \leq he < 7$ inches	$4 > c_{min} \geq 2$	660	Note 1		Note 1	Note 1
	$6 \geq c_{min} > 4$	1000	1670		Note 1	Note 1
	$6 \leq c_{min}$	1000			Note 1	Note 1
$5 \leq he < 6$ inches	$4 > c_{min} \geq 2$	660	Note 1	Note 1	Note 1	Note 1
	$6 \geq c_{min} > 4$	1000	1390	Note 1	Note 1	Note 1
	$6 \leq c_{min}$	1000		Note 1	Note 1	Note 1
$4 \leq he < 5$ inches	$4 > c_{min} \geq 2$	560	Note 1	Note 1	Note 1	Note 1
	$6 \geq c_{min} > 4$	1000	945	Note 1	Note 1	Note 1
	$6 \leq c_{min}$	1000	Note 1	Note 1	Note 1	Note 1

Note:

- 1 Configuration requires special approval and consideration from the Engineer. Contractor shall not install or test this configuration without favorable review from Engineer.

END OF SECTION

Section 05100

STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Structural steel, stainless steel or aluminum, such as beams, channels, angles, tees, bars, pipe, tubing and plates (connection and base plates).
 - 2. Fabricated metal items, such as pipe supports, brackets, hangers, equipment supports, and lift hooks.
 - 3. All anchors, eye bolts, turnbuckles, cable clamps, bolts, nuts, washers, inserts, and other metal items not specified elsewhere.
 - 4. Fabricated tanks, hoppers, and similar structures, if not specified elsewhere.
 - 5. All structural metal framing.
- B. Related Sections:
 - 1. Section 05090: Structural Metal Fasteners
 - 2. Section 09960: Protective Coatings

1.02 REFERENCES

- A. Aluminum Association:
 - 1. AA Manual-Aluminum Design Manual
- B. American Institute of Steel Construction Specifications:
 - 1. ANSI/AISC 360-05 Specification for Structural Steel Buildings
 - 2. ANSI/AISC 341-05 Seismic Provisions for Structural Steel Buildings Including Supplement No.1
 - 3. ANSI/AISC 358-05 Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications
 - 4. AISC 303-05 Code of Standard Practice for Steel Buildings and Bridges
- C. Research Council on Structural Connections:
 - 1. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts, 2004
- D. American Iron and Steel Institute (AISI).
- E. American National Standards Institute:
 - 1. ANSI H35-1 Alloy and Temper Designation Systems for Aluminum
- F. ASTM International (ASTM) Standard Specifications:
 - 1. ASTM A36 Structural Steel
 - 2. ASTM A53 Pipe, Steel, Black and Hot-dipped, Zinc-coated Welded and Seamless
 - 3. ASTM A108 Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality

4. ASTM A123 Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
5. ASTM A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
6. ASTM A276 Stainless Steel Bars and Shapes
7. ASTM A370 Test Methods and Definitions for Mechanical Testing of Steel Products
8. ASTM A385 Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
9. ASTM A500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
10. ASTM A653 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
11. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
12. ASTM A992 Specification for Steel for Structural Shapes for Use in Building Framing
13. ASTM B633 Electrodeposited Coatings of Zinc on Iron and Steel
14. ASTM C827 Test Method for Early Volume Change of Cementitious Mixtures
15. ASTM C1107 Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
16. ASTM E8 Test Methods for Tension Testing of Metallic Materials
17. ASTM E165 Practice for Liquid Penetrant Inspection
18. ASTM E709 Practice for Magnetic Particle Examination
19. ASTM F2329 Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

G. American Welding Society:

1. AWS D1.1 Structural Welding Code - Steel
2. AWS D1.2 Structural Welding Code - Aluminum
3. AWS D10.4 Recommended Practices for Welding Austenitic Chromium-Nickel Stainless Steel Piping and Tubing
4. AWS A4.3-93R Standard Methods for Determination of the Diffusible Hydrogen Content of Martensitic, Bainitic, and Ferritic Steel Weld Metal Produced by Arc Welding
5. AWS A5.1 Mild Steel Covered Arc Welding Electrodes
6. AWS A5.3 Aluminum and Aluminum Alloy Electrodes for Shielded Metal Arc Welding
7. AWS A5.4 Covered Corrosion-Resisting Chromium-Nickel Steel Welding Electrodes
8. AWS A5.5 Low Alloy Steel Covered Arc Welding Electrodes
9. AWS A5.9 Corrosion-Resisting Chromium-Nickel Steel Base and Composite Metal Cored and Stranded Welding Electrodes and Welding Rods
10. AWS A5.10 Aluminum and Aluminum Alloy Bare Welding Rods and Electrodes
11. ANSI/AWS B4.0-98 Standard Methods for Mechanical Testing of Welds – U.S. Customary
12. AWS B5.1-2003 Standard for the Qualification of Welding Inspectors
13. AWS C4.1 Oxygen Cutting Surface Roughness Gauge and Wall Chart for Criteria Describing Oxygen-Cut Surfaces

H. American Society for Nondestructive Testing (ASNT):

1. ASNT SNT TC-1a-2001 Recommended Practice for the Training and Testing of Nondestructive Testing Personnel
 2. ANSI/ASNT CP-189-2001 Standard for the Qualification and Certification of Nondestructive Testing Personnel
- I. Federal Emergency Management Agency (FEMA):
 1. FEMA 350 Recommended Seismic Design Criteria for New Steel Moment-Frame Buildings, July 2000
 - J. International Code Council (ICC)
 - K. International Building Code (IBC) 2012 Edition and California Building Code (CBC) 2014 Edition

1.03 SUBMITTALS

- A. Submit in Accordance with Section 01300.
- B. Product Data:
 1. Hangers, pipe and equipment supports (shelf items).
 2. Stainless steel and aluminum items (not fabricated).
 3. Certified mill test results on structural metals.
 4. Electrode manufacturer's data and product data, including electrodes to be used for dissimilar metals.
 5. Insulation between dissimilar metals.
 6. Manufacturer's product data sheets or catalog data for SMAW, FCAW and GMAW composite (cored) filler metals to be used.
 7. Manufacturer's certifications that the filler metal meets the supplemental Charpy V-Notch (CVN) toughness requirements for demand critical welds.
 8. Non-shrink grout.
- C. Samples: Manufacturer's latest standard product. Specify special or unique products.
- D. Shop and Erection Drawings:
 1. Structural framing.
 2. Designation of the members and connections that are part of the seismic load resisting system (SLRS).
 3. Connection material specifications.
 4. Locations of demand critical shop welds.
 5. Locations and dimensions of protected zones.
 6. Gusset and base plates drawn to scale.
 7. Welding requirements as specified in AWS D1.1 Appendix W, Sections W2.2 and W2.3.
 8. Locations of pretensioned bolts.
 9. Field assembly or erection sequence.
- E. Quality Assurance:
 1. Welder performance qualification test records "welder's certification".
 2. Written Welding Procedure Specifications (WPSs) in accordance with AWS D1.1 requirements for each different welded joint proposed for use whether prequalified or qualified by testing.
 3. Procedure Qualification Record (PQR) in accordance with AWS 1.1 for all procedures qualified by testing.
 4. Fabricator's and Erector's AISC Certifications.

1.04 QUALITY ASSURANCE

A. General:

1. Furnish materials and fabricated items from an established and reputable manufacturer or supplier. Fabricator and Erector shall both be AISC certified for the work that they are performing.
2. Supply all new materials and fabricated items made from first class ingredients and construction and guaranteed to perform the service required.
3. The Contractor is responsible for preparing and submitting written WPSs. WPSs for each joint type shall indicate proper AWS qualification and be available where welding is performed. WPSs shall be included with any shop drawings referencing welds. WPSs shall include the manufacturer and specific electrode.
4. Quality control and quality assurance shall be provided in accordance with AISC 341 Appendix Q.

B. Codes and Standards:

1. Metalwork:
 - a. Steel: AISC Specification.
 - b. Aluminum: AA Manual.
2. Welding:
 - a. Steel: AWS D1.1.
 - b. Aluminum: AWS D1.2.
 - c. Stainless Steel: AWS D10.4.
3. Welders:
 - a. Qualify welders in accordance with AWS D1.1 for each process, position, and joint configuration.
 - b. All welding operators are subject to examination for requalification at any time during the progress of the work.

C. Tests:

1. General: The Owner will provide Special Inspection, defined by IBC **OR CBC** Section 1704, for welding and high-strength bolting. Visual welding inspection and nondestructive testing (NDT) shall be conducted in accordance with a written practice by personnel qualified in accordance with AISC 341 Appendix W.
2. Weld Tests: By a testing laboratory, selected by Engineer and paid by Owner.
 - a. Visual inspection:
 - 1) Check fit-up of joint materials. Verify satisfactory alignment of material. Verify gaps and bevels of penetration welds.
 - 2) Check during welding. Verify satisfactory technique is used.
 - 3) Check after welding completed and cleaned by wire brush or chipping hammer.
 - 4) Inspect with magnification when necessary and under strong, adequate light.
 - 5) Inspect for the following defects:
 - a) Surface cracking.
 - b) Porosity.
 - c) Excessive roughness.
 - d) Unfilled craters.
 - e) Gas pockets.

- f) Undercuts.
 - g) Overlaps.
 - h) Size.
 - i) Insufficient throat and concavity.
- b. Nondestructive testing: Ultrasonic testing, except where not feasible due to the type or location of the weld. Magnetic particle, liquid penetrant or radiograph tests when ultrasonic testing is not feasible.
- 1) Ultrasonic inspection technique and standards: AWS D1.1 Part C.
 - 2) Particle inspection method: ASTM E709.
 - 3) Penetrant inspection method: ASTM E165.
 - 4) Radiography tests: AWS D1.1, Part B.
 - 5) Charpy V-Notch (CVN).
 - a) When they are used as members in the Seismic Resisting Force System, ASTM A6, Group 3 shapes with flanges 1½ inches thick and thicker, ASTM A6 Groups 4 and 5 shapes, and plates that are 1½-inch thick or thicker in built-up cross sections shall have a minimum CVN toughness of 20 ft-lbs. at 70°F.
 - b) All complete joint penetration groove welds used in the Seismic Force Resisting System shall be made with a filler metal that has a minimum CVN toughness of 20 ft-lbs at minus 20°F, as determined by AWS classification or manufacturer certification Ultrasonic inspection technique and standards: AWS D1.1 Part C.
- c. Extent of testing:
- 1) Visual inspection of all welds.
 - 2) Measurement of weld profiles for 25% of all welds at random.
 - 3) Magnetic particle examination or liquid penetrant examination performed on root pass and on finished welds for 25% of all shear plate, stiffener plate, column base plate, gusset plate, and miscellaneous fillet welds.
 - 4) Ultrasonic contact examination on all complete joint penetration (CJP) welds. See Drawings for CJP welded beam or girder to column moment connections. Defective welds shall be repaired and costs of retesting defective welds shall be borne by the Contractor.
- D. Additional Tests: Provide and pay for all necessary additional tests made on welds or bolts required to repair or replace faulty work performed during the original fabrication.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Handle, ship and store material in a manner that will prevent distortion, rust, damage to the shop coat or any other damage.
- B. Store material in a clean, properly drained location out of contact with the ground.
- C. Ensure that dissimilar metals are not in contact with each other.
- D. Replace or repair all damaged material in an approved manner.

PART 2 - PRODUCTS

2.01 STRUCTURAL STEEL MEMBERS

- A. W-Shapes and WT-Shapes: ASTM A992, $f_y = 50$ ksi, $f_u = 65$ ksi.
- B. M-, S-, and HP-Shapes and Channels, Angles, Structural Tees, Plates and Similar Items: ASTM A36, $f_y = 36$ ksi, $f_u = 58$ ksi. Except plates for W-Shapes and WT-Shapes ASTM A572, Grade 50.
- C. Hollow Structural Sections (HSS): Rectangular and square, ASTM A500, Grade B, $f_y = 46$ ksi, $f_u = 58$ ksi. Round, ASTM A500, Grade B, $f_y = 42$ ksi, $f_u = 58$ ksi.
- D. Steel Pipe: ASTM A53 Type E or S, Grade B, $f_y = 35$ ksi, $f_u = 60$ ksi.

2.02 STAINLESS STEEL ARTICLES

- A. Material: **AISI Type 304, unless Type 316 is specifically specified.**
- B. Channels, Angles and Structural Tees: ASTM A276.

2.03 FABRICATED ALUMINUM ITEMS

- A. Material: ANSI H35-1 Alloy and Temper 6061-T6 with an anodized finish.
- B. Surfaces in Contact With Concrete or Masonry: Shop prime with a bituminous mastic or zinc chromate coating.
- C. Bolted Connections: Provide stainless steel fasteners.

2.04 METAL FASTENINGS

- A. See Section 05 09 00.

2.05 WELDING ELECTRODES, FILLER METALS

- A. Steel:
 - 1. AWS A5.1 or A5.5, E70XX category.
 - 2. AWS A5.20, A5.29, E7XTX-X except -2, -3, -10, -GS for FCAW.
 - 3. AWS A5.17 or A5.23, F7XX-EXXX for SAW.
- B. Stainless Steel: AWS A5.4 or A5.9.
- C. Aluminum: AWS A5.3 or A5.10.
- D. For welding dissimilar metals, submit the appropriate electrodes for Product Review.

2.06 GALVANIZING

- A. Hot-dip galvanize all exterior and exposed steel items, except when specified otherwise.
 - 1. Sheet steel, plain or shaped: ASTM A653, coating designation **G 90, commercial grade, 115 or heavier, check availability.**
 - 2. Products fabricated from rolled, pressed and forged steel shapes, plates, bars and strip 1/8-inch-thick or heavier: ASTM A123.
 - 3. Structural tubing and pipe: ASTM A53

4. Grind smooth fabricated items at welded joints, edges, and corners, and galvanize after fabrication. Fabricated items shall be detailed and prepared in accordance with ASTM A385.
 5. Items that are specified to receive paint or a coating after galvanizing shall receive no post treatment baths and shall not be stacked or stored in a wet environment until coated.
- B. Repair Materials: Gal-Viz by Thermacote Welco, Pasadena, CA; ReGalv by Rotometals, Inc., San Francisco, CA; or equal.
- 2.07 NON-SHRINK GROUT
- A. See Section 03 30 00.
- 2.08 MISCELLANEOUS ITEMS
- A. Furnish all items required to complete the project, but not specified herein, not specified in Section 05 50 00.
- 2.09 FABRICATION
- A. Structural Steel Work: Comply with the applicable provisions of the AISC Specification, the AISC Standard Practice and AWS D1.1. Weld only in accordance with favorably reviewed WPSs, which are to be available to welders and inspectors during the production process. Provide workmanship equal to standard commercial practice in modern structural shops.
1. Fabricate and assemble in the shop to the greatest extent possible, and deliver to the project as a unit ready for installation. Coordinate the work, making all provisions necessary for the passage of all applicable work into, and attachment to, the structures. Make joints carefully and neatly, with corners mitered and spliced, bolted, screwed, or welded together.
 2. Make proper allowance for the expansion and contraction of the metals, and of the materials to which they are fastened.
 3. Make completely watertight joints on exterior work.
 4. Shape all members correctly, with no kinks, twists, dents, or other blemishes prior to erection. Evenly spring all curved work.
 5. Make exposed edges free of burrs, sharp edges or corners. Make corners rounded or chamfered. Grind exposed welds smooth when specified.
 6. Include supplementary parts necessary to complete each item, even though such work may not be definitely specified. Provide all such miscellaneous metalwork required by the project in accordance with good accepted standard practice.
 7. Review monorail supports and splices with the hoist manufacturer.
 8. Shop prime all items that are not galvanized or epoxy coated, including connection angles, using a material compatible with the finish coat, as specified in Section 09 90 00. Provide finish paint coats as specified in Section 09 90 00.
- B. Stainless Steel Work:
1. Use the proper type of stainless steel electrodes or welding rods complying with AWS D10.4. Grind all welded joints smooth and polished, using wheels never used on carbon steel. Provide welds that eliminate injury to stainless steel parts in appearance, strength and resistance to corrosion.

2. Remove by grinding and polishing, all scratches, marks, pits and other blemishes on exposed surfaces incurred during fabrication of the material, until the entire surface possesses the same finish as the adjacent work.
- C. Aluminum Work:
1. Comply with the applicable provisions of the AA Manual and AWS D1.2.
 2. Back painting: When aluminum is in contact, such as with concrete, mortar, masonry, or adsorptive materials subject to wetting, including condensation, give the contact surfaces a brush coat of cut-back asphaltic, or coal tar paint. Submit paint for favorable review.
 3. Aluminum shall have an anodized finish.
- D. Base and Bearing Plates: Furnish under all columns, pipe supports, including rack type, supports for tanks, equipment frames and cabinets, and similar items. Provide rounded or chamfered corners.
- E. Dissimilar Metals: Insulate the faying surfaces with a brush coat of cut-back asphaltic or coal tar paint or by gasketing. Submit for favorable review.
- F. Metals in contact with cementitious or other material: Provide finish coating prior to erection.

2.10 SOURCE QUALITY CONTROL

- A. Material Tests: Not required for materials identified with valid mill test records.
1. Unidentified materials: Test samples from each 20 tons of each material, or fraction thereof. Perform tension and bend tests, conforming to ASTM A370 for steel. Perform tension tests conforming to ASTM E8 for aluminum.
 2. Do not provide unidentified stainless steel.
- B. Welding:
1. Qualify welders in accordance with AWS D1.1 for each process, position, and joint configuration.
 2. Weld only in accordance with favorably reviewed WPSs, which are to be available to welders and inspectors during the production process.
- C. Tolerances: AISC Standard Practice.
- D. Fabrication Tests: Standard and extent: See paragraph 1.04.

PART 3 - EXECUTION

3.01 ERECTION

- A. Structural Steel Work:
1. Erect members in accordance with the AISC Specification, and the AISC Standard Practice except as modified.
 2. Incorrect fabrication or damaged members:
 - a. When a condition exists whereby parts cannot be assembled or fitted properly as a result of errors in fabrication, or of deformation due to handling or transportation, report the condition immediately. The method of correction must be approved before any corrective work is done. Make the corrective work in the presence of the Engineer.
 - b. Straighten plates and angles or other shapes using approved methods.
 - c. Do not heat already heat-treated parts for straightening.

3. Connections:
 - a. Provide anchor bolts and other connections between structural steel and foundations. See Specification Section 05 09 00 for additional connection requirements.
 - b. Set all anchor bolts by template, with provisions to hold bolts rigid and in correct position with respect to plan and elevation.
 - c. Detail any undesigned connections in accordance with the AISC Specification
 - d. Do not increase any hole diameter or slot length without the Engineer's approval.
 4. Install work anchored in sleeves set in concrete with non-metallic non-shrink grout. Allow a 1/4-inch minimum clearance between items anchored and the sleeve.
 5. Where metal is fastened to concrete, make the connections by anchor bolts, or by fastenings embedded in concrete, such as adhesive, or expansion anchors, installed in accordance with Specification Section 05 09 00. Contractor shall not substitute post-installed fasteners for cast-in-place bolts without prior written permission from the Engineer.
 6. Provide a 4-inch band of coal-tar epoxy applied, half in concrete and half in air, to galvanized or painted steel, partially embedded in concrete and subject to weathering.
 7. Provide grout pads below base and bearing plates of non-shrink non-metallic grout having a minimum thickness of 3/4-inch unless otherwise noted. Do not bear directly on concrete slabs or equipment bases.
 8. Provide leveling nuts on anchor bolts, below base plates, and adjust prior to grouting.
 9. Complete the work square, plumb, straight and true, accurately fitted, and with tight joints and intersections.
- B. Welding:
1. Weld only in accordance with favorably reviewed WPSs, which are to be available to welders and inspectors during the production process. Perform all welding by the shielded electric arc method in accordance with AWS D1.1.
 2. Repair and make additional inspections, at the Contractor's expense, of the weld areas which have been rejected as a result of inspection. Follow this procedure until the welds are acceptable to the Engineer.
 3. Qualify welders in accordance with AWS D1.1 for each process, position, and joint configuration.
 4. All tack welds shall be of the same quality as the final welds. This includes preheat requirements. All tack welds not incorporated in the final welds shall be removed.
- C. Repair of Galvanized Coating:
1. Repair surfaces damaged by cutting or welding by the method of heated zinc based alloys in accordance with ASTM A780.
 - a. Clean the surface and surrounding area with wire brush, light grinding, or mild blasting.
 - b. Remove all weld flux residue and spatter by chipping, grinding, or power scaling.
 - c. Preheat the area to between 600 and 750 degrees F. Wire brush the area during preheating and pre-flux if necessary.

- d. Apply the zinc alloy by rubbing or brushing the preheated repair area. Applied coating shall be as specified herein but shall not be less than 2.0 mils.
 - e. Remove the flux residue by rinsing or wiping with a damp cloth.
 - f. Measure thickness of applied coating with magnetic, electromagnetic, or eddy-current gage.
2. See Section 09 96 00 for repair of galvanized coating for gauge metals.

3.02 FIELD QUALITY CONTROL

- A. Welding:
 1. Qualify welders in accordance with AWS D1.1 for each process, position, and joint configuration.
 2. The Owner's testing agency will inspect shop or field welding for conformance with AWS D1.1 requirements and will verify that welds are made in accordance with favorably reviewed WPSs.
- B. Erection Sequence: Verify each stage is completed before proceeding to the next.
- C. Tolerances: AISC Standard Practice.
- D. Erection Tests: Standard and extent: See paragraph 1.04.

END OF SECTION

Section 09960

HIGH PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Section 09960 provides the requirements for; coating systems, surface preparation, coating application, and quality assurance/quality control relative to the equipment, structures listed in the Finish Schedule/Contract Drawings.
- B. Unless specified elsewhere, or shown on the Contract Drawings, the following shall not be coated:
 - 1. Metal completely embedded in concrete (except aluminum).
 - 2. Piping buried in ground or encased in concrete.
 - 3. Galvanized metal,
 - 4. Chain-link fence and galvanized fence gates.
 - 5. Rubber.
 - 6. Plastic pipe, including: polyvinyl chloride, polyethylene, and polypropylene piping.
 - 7. Stainless steel.
 - 8. Bronze, brass.
 - 9. Nameplates and grease fittings.
 - 10. Factory finished electrical panels.
 - 11. Factory fusion-bonded epoxy coated items.
 - 12. Electrical conduit.
 - 13. Copper pipe.
- C. Related Sections:
 - 1. 01300: Submittals.
- D. The Contractor's bid shall be based upon using the products specified. If the products specified are not available in formulations that meet applicable regulations for volatile organic compound (VOC) levels at time of application, the Contractor shall submit for review products of equivalent quality and function that comply with regulations in effect at that time. A reasonable difference in cost of material between the first named items specified and the products that are required to meet regulations that change after the bid date and are in effect at the time of application may be approved for payment by Change Order in accordance with the General Conditions.

1.02 DEFINITIONS

- A. Abrasive: Material used for blast-cleaning, such as sand, grit or shot.
- B. Abrasive Blast Cleaning: Cleaning/surface preparation by abrasive propelled at high speed.
- C. Anchor Pattern: Profile or texture of prepared surface(s).
- D. American National Standards Institute (ANSI).

- E. ASTM International (ASTM).
- F. Bug Holes: Small cavities, usually not exceeding 15 mm in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and compaction.
- G. Coating/Lining Thickness: The total thickness of primer, intermediate and/or finish coats.
- H. Dewpoint: Temperature of a given air/water vapor mixture at which condensation starts.
- I. Dry Film Thickness (DFT): Depth of cured film, usually expressed in mils (0.001-inch). Use this definition as opposed to existing definition.
- J. Drying Time: Time interval between application and curing of material.
- K. Dry to Recoat: Time interval between application of material and ability to receive next coat.
- L. Dry to Touch: Time interval between application of material and ability to touch lightly without damage.
- M. Feather Edging: Reducing the thickness of the edge of paint.
- N. Feathering: Operation of tapering off the edge of a point with a comparatively dry brush.
- O. Field Coat: The application or the completion of application of the coating system after installation of the surface at the site of the work.
- P. Hold Point: A defined point, specified in Section 09960, at which work shall be halted for inspection.
- Q. Holiday: A discontinuity, skip, or void in coating or coating system film that exposes the underlying substrate.
- R. Honeycomb: Segregated condition of hardened concrete due to non-consolidation.
- S. ICRI: International Concrete Repair Institute.
- T. Incompatibility: Inability of a coating to perform well over another coating because of bleeding, poor bonding, or lifting of old coating; inability of a coating to perform well on a substrate.
- U. Laitance: A layer of weak, non-durable concrete containing cement fine that is brought to the surface through bleed water as a result of concrete finishing/over-finishing.
- V. Mil: 0.001-inch.
- W. National Association of Corrosion Engineers International (NACE).
- X. Overspray: Dry spray, particularly such paint that failed to strike the intended surface.
- Y. Owner's representative: The awarding authority or entity that manages/operates the facility where the specified work will be performed. For the purposes of Section 09960, the term "Owner" may also refer to designated representatives such as the Design Engineer, The Construction Manager, or an Independent Consultant.

- Z. Pinhole: A small diameter discontinuity in a coating or coating system film that is typically created by outgassing of air from a void in a concrete substrate resulting in exposure of the substrate or a void between coats.
- AA. Pot Life: Time interval after mixing of components during which the coating can be satisfactorily applied.
- BB. Resurfacer/Resurfacing Material: A layer of cementitious and/or resin-sed material used to fill or otherwise restore surface continuity to worn or damaged concrete surfaces.
- CC. Shelf Life: Maximum storage time for which a material may be stored without losing its usefulness.
- DD. Shop Coat: One or more coats applied in a shop or plant prior to shipment to the site of the work, where the field or finishing coat is applied.
- EE. Spreading Rate: Surface area covered by a unit volume of paint at a specific film thickness.
- FF. The Society for Protective Coatings (SSPC).
- GG. Stripe Coat: A separate coat of paint applied to all weld seams, pits, nuts/bolts/washers, and edges by brush. This coat shall not be applied until any previous coat(s) have cured and, once applied, shall be allowed to cure prior to the application of the subsequent coat(s).
- HH. Surface Saturated Dry (SSD): Refers to concrete surface condition where the surface is saturated (damp) without the presence of standing water.
- II. Tie Coat: An intermediate coat used to bond different types of coatings. Coatings used to improve the adhesion of a succeeding coat.
- JJ. Touch-Up Painting: The application of paint on areas of painted surfaces to repair marks, scratches, and areas where the coating has deteriorated to restore the coating film to an unbroken condition.
- KK. Technical Practice Committee (TPC).
- LL. VOC Content: The portion of the coating that is a compound of carbon, is photo chemically reactive, and evaporates during drying or curing, expressed in grams per liter (g/l) or pounds per gallon (lb/gal).
- MM. Immersion: Refers to a service condition in which the substrate is below the waterline or submerged in water or wastewater at least intermittently if not constantly.
- NN. Weld Spatter: Beads of metal scattered near seam during welding.
- OO. Wet Film Thickness (WFT): The primer or coating film's thickness immediately following application. Wet film thickness is measured in mils or thousandths of an inch (0.001-inch) and is abbreviated WFT.

1.03 REFERENCES

- A. Section 09960 contains various guide documents, technology reports, and other industry standards relative to surface preparation, coating application, and testing methods. They are a part of Section 09960 as specified and modified. Where a referenced document contains references to other standards, those documents are

included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of Section 09960 shall prevail.

- B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Invitation to Bid. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued, or replaced.
- C. Standards and References are included as Appendix A.

1.04 SUBMITTALS

- A. Provide in accordance with Section 01300:
 - 1. Submit a list and description of all surfaces for which there is a question about what standard coating system to apply as part of the work covered by Section 09960 through a Request for Information in accordance with Article 7 of the General Conditions.
 - 2. Submit a Complete Finish Schedule including the specified Finish Schedule included in paragraph 2.02 and any additional surfaces to be coated by products submitted under this Section 09960. Denote the specific products and specific manufacturers for each item (structure, equipment, or substrate plus the manufacturer's brand name, product name, and designation number for each coat of each system to be used).
 - a. If materials other than those listed are submitted, provide information to justify and define the proposed substitution. The Owner may further require the Contractor to furnish additional test results from an independent paint laboratory comparing the proposed substitution with one of the named products, at no additional cost to the Owner.
 - b. Submit a color card or fan deck for each manufacturer and each coating product submitted.
 - 3. Prior to ordering material, confirm the items included in the Complete Finish Schedule and submit the Complete Finish Schedule plus the Owner approved colors for each location (structure, equipment, substrate).
 - 4. Current printed recommendations and product data sheets for coatings/coating systems including:
 - a. VOC data.
 - b. Storage requirements.
 - c. Surface preparation recommendations.
 - d. Primer type, where required.
 - e. Maximum dry and wet mil thickness per coat.
 - f. Minimum and maximum curing time between coats, including atmospheric conditions for each.
 - g. Curing time before submergence in liquid.
 - h. Thinners/solvents for reduction and cleaning.
 - i. Ventilation requirements.
 - j. Minimum and maximum atmospheric application conditions.

- k. Allowable application methods.
 - l. Maximum allowable moisture content (concrete substrates).
 - m. Maximum shelf life.
5. Manufacturer's Certification that the submitted coatings meet applicable Air Quality Management District regulations *OR state or local regulatory agency* as to allowable VOC content for the place of application and use intended.
 6. Qualifications for Quality Control personnel to be provided on site by the Contractor including, but not limited to, the inspector's NACE and SSPC Certification numbers for the certifications requested in paragraph 1.05.E.2 of this Section 09960.
 7. Material Safety Data Sheets (MSDS) for all materials to be delivered to the job site, including coating system materials, solvents, and abrasive blast media.
 8. Detailed, written instructions for coating system treatment and graphic details for coating system terminations in the structures to be coated including pipe penetrations, and other terminations shown on the Contract Drawings.
 9. A minimum of five project references, including current contact name, address, and telephone number where the Contractor has successfully performed similar coating work within the past 5 years.
 10. A minimum of five project references, including current contact name, address, and telephone number where the submitted materials have been successfully applied, in similar exposures, within the past 5 years. This submittal is only required if products not listed in Section 09960 are submitted.
 11. A letter from the selected and approved coating manufacturers for the project that verifies that the applicator meets the quality assurance requirements of paragraph 1.05.C of Section 09960 including application personnel training requirements.
 12. Information that defines the end date for field coating application for all equipment, machinery, and piping to ensure that the maximum recoat time for the shop applied primers will not be exceeded when field applied coatings are installed.
 13. Provide written confirmation by the shop and field applied coating manufacturers that compatibility between the shop and field applied coatings has been checked and approved by those manufacturers.

1.05 QUALITY ASSURANCE

A. Environmental Regulatory Requirements:

1. All work, material, procedures, and practices under Section 09960 shall conform to requirements of the local Air Resources Board or Air Quality Management District having jurisdiction. Prime or finish coat painting done in locations other than the project site shall be in accordance with air quality regulations in effect at the place the coating is applied. Products specified herein are, to the best of the Design Engineer's knowledge, in compliance with the applicable VOC levels allowable at the date these Specifications were issued for bid.
2. The Air Resources Board or Air Quality Management District having jurisdiction may prohibit the sale or application of paints and enamels containing more than the stipulated quantities of volatile organic compounds manufactured after a stated date. Provide material meeting applicable

- regulations effective at the date of manufacture, or if not available, provide top of the line materials developed as replacements for specified materials and meeting applicable regulations as to VOC content.
3. If the Contractor applies coatings that have been modified or thinned other than as recommended or approved by manufacturer, the Contractor shall be responsible for any fines, costs, remedies, or legal actions that may result.
 4. Surface preparation activities that result in the generation of airborne emissions shall be performed in accordance with applicable Federal, State, County, or Local regulations and ordinances. The Contractor shall be responsible for securing any and all licenses and permits required, at no additional cost to the Owner.
 5. All debris (liquid or solid) generated from surface preparation or coating activities shall be disposed offsite in accordance with applicable Federal, State, County, or local regulations and ordinances. The Contractor shall be responsible for all required testing, licenses, permits, and fees, at no additional cost to the Owner.
- B. Coating Manufacturer's Qualifications:
1. 1. All protective coatings furnished under Section 09960 shall:
 - a. Be of a manufacturer who has been regularly engaged in the manufacture of protective coatings with a minimum of 10 years of successful experience.
 - b. Demonstrate to the satisfaction of the Engineer successful performance on comparable projects.
- C. Coating Applicators Qualifications:
1. The application company or entity must demonstrate with written references as required in 1.04 A. 7. and 8. a minimum of five (5) years of practical experience in the application of the specified coatings and the successful completion of a minimum of five (5) projects of similar size and complexity within the last five (5) years. This must be verified in writing by the selected coating system manufacturer.
 2. The application company or entity must be QP-1 and QP-2 Certified by SSPC for coatings work relevant to the qualifications of QP-1 and QP-2.
 3. For the application company's or entity's personnel: employ only those persons on the project trained in the application of the specified protective coatings. Written confirmation of this must be provided by the approved coating systems manufacturer.
- D. Coatings Preconstruction Meeting:
1. The Contractor shall attend a coatings preconstruction meeting prior to commencing any surface preparation or coating application work. Parties attending the meeting shall include the General Contractor, the owner, Owner's Representative, Coating Applicator, the Coating Applicator's Q.C. lead person, and a representative of the Coating Manufacturer. The following items shall be reviewed and discussed at the coatings preconstruction meeting.
 - a. Schedule
 - b. Environmental requirements
 - c. Surfaces to be coated and protection of surfaces not to be coated
 - d. Colors
 - e. Surface preparation

- f. Application
 - g. Coating repair
 - h. Field quality control
 - i. Housekeeping
 - j. Protection of coating systems
 - k. One-year inspection
 - l. Coordination with other trades / work activities/schedule
 - m. Manufacturer's ongoing technical assistance.
- E. Contractor Quality Control Requirements:
- 1. The Contractor is responsible for ensuring that the surface preparation and coating activities meet the requirements of this specification. Inspections by the Owner or Owner's Representative, or a representative of the coating manufacturer, will not relieve or limit the Contractor's responsibilities.
 - 2. The specified quality control tasks shall be performed by an individual who has been properly trained and has a minimum of 5 years experience. The Contractor shall provide the Owner or Owner's Representative documentation indicating that the individual designated to perform quality control has received training similar to NACE CIP Level 3, SSPC PCI Level 2, and, has a minimum of 5 years field experience.
 - 3. Coatings application shall conform to requirements of this specification and the standards referenced in paragraph 1.03.B. Changes in the coating system installation requirements will be allowed only with the written authorization of the Owner or Owner's Representative before work commences.
 - 4. Contaminated, outdated, diluted materials, and/or materials from previously opened containers shall not be used.
 - 5. For repairs, the Contractor shall provide the same products, or products recommended by the coating manufacturer, as used for the original coating.
 - 6. The Contractor shall identify the points of access for inspection by the Owner's Representative. The Contractor shall provide ventilation, ingress and egress, and other means necessary for the Owner's Representatives' personnel to safely access the work areas.
 - 7. The Contractor shall conduct the work so that the coating system is installed as specified and shall inspect the work continually to ensure that the coating system is installed as specified. Coating system work that does not conform to the Specifications or is otherwise not acceptable shall be corrected in accordance with the coating manufacturer's written procedures.
 - 8. The Contractor shall prepare and submit coating work daily reports for each day while on site. The coating work daily reports shall be submitted to the Owner's Representative no later than 1:00 p.m. the following workday. The coating work daily reports shall include the following:
 - a. Number of coating applicator employees on site.
 - b. Start and finish time of work shift.
 - c. Climatic conditions at 4-hour intervals (i.e., partly cloudy, air temperature 78°F, relative humidity 63%, dew point 68°F, and WNW wind @ 4 mph).
 - d. Major equipment on site regardless of utilization (i.e., trailers, air compressors, generators, spray pumps, scaffolding, aerial lifts, pressure washers, and sandblast pots).

- e. Inventory of coatings, solvents and abrasive media stored on site including information relative to deliveries received each day.
 - f. Summary of work performed to include:
 - 1) Substrates/structures prepared (size, quantity, and location).
 - 2) Surface preparation methods including materials consumed and equipment utilized.
 - 3) Substrates/structures coated (size, quantity, and location).
 - 4) Mixing method and time mixed (coating materials).
 - 5) Induction time, pot life, and application start time.
 - 6) Coating application methods including equipment utilized.
 - 7) Application finish time.
 - 8) Coating materials consumed [sequencing, product name, batch number(s) and manufacture date].
 - 9) Problems encountered (i.e., equipment malfunctions or disruption/interference by other trades).
 - 10) Accidents or near misses.
 - 11) Quality control testing results indicated in Appendix A.
 - 9. Mandatory quality control tests are included in Appendix A.
 - 10. Acceptance criteria for each Quality Control test shall be as indicated on the Coating Detail Sheets, the manufacturer's published data, or elsewhere in this specification, whichever is more stringent.
- F. Mandatory Hold Point Inspections:
- 1. Hold Point Inspections shall be performed in the Owner's Representative's presence. The Contractor shall provide the Owner's Representative a minimum two (2) hours notice prior to performing a Hold Point Inspection.
 - 2. Hold Point Inspections shall be performed as follows for each structure, equipment, substrate to receive coating application:
 - a. Prior to surface preparation to determine if the environmental or site conditions would be detrimental to surface preparation/coating application, and if the substrate is void of detrimental defects/contamination.
 - b. Upon completion of the specified surface preparation (concrete and non-ferrous substrates) or upon completion of the first full production day of surface preparation (ferrous substrates), ensure that the specified level of cleanliness and surface profile have been achieved.
 - c. Upon completion of each coating system component to: ensure that no visual coating defects such as runs, sags, voids, holidays, and embedment of foreign matter are present, and ensure that the specified dry film thickness has been achieved.
 - d. Upon final cure of the complete coating system to: identify visual coating defects, measure coating system dry film thickness, perform cure evaluation testing, perform holiday detection testing, and perform adhesion testing. Due to the nature and complexity of the specific testing requirements, this Hold Point may encompass between several hours to several days.
 - e. Upon completion of remedial repairs (final inspection), should the coating defects be identified at the final cure Hold Point Inspection, all previously stated Hold Points will be applicable during the coating repair process after which a final inspection will be performed. Retesting will

be required for the repaired areas at no additional cost to the Owner's Representative.

3. The Contractor shall indicate the execution and nature of each Hold Point Inspection in the daily report.
4. The Owner's Representative will acknowledge participation at each individual Hold Point on a Contractor prepared document appended to the daily report. The document must include a section wherein the Owner's Representative may indicate exceptions or qualifications. It shall be the Contractor's responsibility to ensure that the Hold Point Inspection is acknowledged by the Owner's Representative.
5. Failure to comply with any or all of the Hold Point Inspection requirements may result in the rejection of all subsequent work.
6. Hold Point Inspections may only be waived by written authorization from the Owner's Representative.

1.06 ILLUMINATION

- A. Provide the following minimum illumination during all phases of work:
 1. General work area: 25-Foot Candles.
 2. Surface preparation and coating application: 30-Foot Candles.
 3. Inspection: 50-Foot Candles.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all coating materials in unopened containers with manufacturer's label, which must include name, batch number, manufacturer date, shelf life, and VOC content.
- B. Store in an assigned area onsite with concurrence from the coating manufacturers. Maintain storage area clean and fire safe. Dispose of used rags, thinner and buckets daily. Store solvents in closed approved storage containers.

1.08 WARNINGS

- A. Be advised that application of paint, epoxy, and protective coating materials may be hazardous. Take all necessary precautions to ensure the safety of workers and property.
- B. Be advised that as a part of this work abrasive blasting is required. This may require the use of special equipment. Become familiar with the existing site conditions and take all steps necessary to protect adjacent facilities and personnel, at no additional cost to the Owner's Representative. In addition, abrasive blasting and painting is called for in, on or around mechanical equipment, which may be damaged by grit, dust, or painting overspray. Mask, wrap, enclose, and provide all protection required to safeguard this equipment at no additional cost to the Owner's Representative.
- C. Perform abrasive blasting activities in a manner that will not cause nuisance to plant operations, and adjacent public and private property and equipment.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The Coating Detail Sheets in Appendix B refer to specific manufacturers and have been provided as levels of quality as well as jurisdictional VOC compliance for the specified substrate and exposure conditions. Although not stated on the Coating Detail Sheets, the term "or approved equal" is applicable.
- B. Coatings used in each coating system shall be the products of a single coating manufacturer. Mixed manufacturer coating systems are prohibited.
- C. Alternate coating systems submitted for consideration must be of the same generic type as those specified.
- D. Coatings shall not contain heavy metals that exceed the regulated levels of the jurisdiction in which the coatings will be applied.
- E. Colors are to be factory mixed, using light-fast colorants proportioned by accurate measurement into proper type base.
- F. Abrasive Media:
 - 1. Shall not be classified as a health or environmental hazard.
 - 2. Shall be delivered to the site in sealed bag or containers.
 - 3. Shall be kept clean and dry while stored on site.
 - 4. Shall not be reused for abrasive blasting unless specifically manufactured for reuse and appropriate recycling equipment is utilized.
 - 5. Shall be of an appropriate size, shape, and hardness to produce the specified surface profile(s).

2.02 COATING SYSTEMS

- A. System Designations and Related Requirements:
 - 1. The following table provides a general list of the coating systems by both substrate and exposure conditions. Additional information regarding surface preparation, application, dry film thicknesses, and approved products by manufacturer is provided on the Coating Detail Sheets in Appendix B.
 - 2. It shall be the Contractor's responsibility to ensure that there is chemical compatibility between all shop applied primers or coatings on all machinery and equipment provided for the project and any field applied coatings. Compatibility shall mean that there is no chemical reactivity or physical property of the shop or field applied coatings which will cause or promote intercoat adhesion problems or proper cure problems for the shop or field applied coatings on machinery or equipment or piping. The Contractor shall provide written confirmation by the shop and field applied coating manufacturers that compatibility has been checked and approved by those manufacturers. The rework to correct any compatibility problem between shop and field applied coatings shall be solely the responsibility of the Contractor at no additional cost to the Owner's Representative.

System Identification	Substrate	Exposure
System No. 3: Epoxy (cycloaliphatic amine cured or curing agent providing equal chemical resistance properties)	Metal/Concrete	Non Immersion Immersion Non Potable Moderately Corrosive Color Required

- B. Coating System Detail Sheets:
1. Coating System Detail Sheets (CDS) are included in Appendix B.
- C. **Finish Schedule:**
1. The Finish Schedule identifies major structures, equipment, and substrates to be coated in accordance with Section 09960. The Finish Schedule is not intended to be a complete listing of all surfaces to be coated and other requirements may be identified elsewhere in the Specifications or on the Drawings. There may be additional surfaces for the project that require coating application which may not be listed in the Finish Schedule, and the Contractor shall be responsible for coating those surfaces in accordance with the requirements of Section 09960. The Contractor shall be responsible to identify any surfaces for which there is a question about what standard coating system to apply. Address any questions in writing in accordance with paragraph 1.04.A.2 of Section 09960. The Finish Schedule designates the coating system to be applied. Specific information relative to number of coats and film thicknesses is indicated on the Coating Detail Sheets found in Appendix B.
 2. **Colors shall be selected by the Owner.**
- D. The Contractor shall provide 1 unopened gallon container of each color and type of coating and solvent/thinner applied during the course of the project to the Owner upon completion of the project.

PART 3 - EXECUTION

3.01 COATINGS

- A. General:
1. Coating application shall not proceed until the Owner's or Owner's Representative has received the VOC certifications specified in paragraph 1.04.A.4, the Owner or Owner's Representative has inspected the materials, and the coating manufacturer has trained the Contractor in the surface preparation, mixing and application of each coating system.
- B. Shop and Field Coats:
1. Shop applied prime coat: Except as otherwise specified, prime coats may be shop-applied or field-applied. Shop-applied primer shall be compatible with the specified coating system and shall be applied at the minimum dry film thickness recommended by the coating manufacturer. Product data sheets identifying the shop primer used shall be provided to the on-site coating application personnel. Adhesion tests shall be performed on the shop primer as specified in paragraph 3.01.B.3. Damaged, deteriorated, and poorly applied shop coatings that do not meet the requirements of Section 09960 shall be removed and the surfaces recoated. If the shop prime coat meets the

requirements of this Section, the field coating may consist of touching up the shop prime coat and then applying the finish coats to achieve the specified film thickness and continuity.

2. Field Coats: Field coats shall consist of one or more prime coats and one or more finish coats to build up the coating to the specified dry film thickness. Unless otherwise specified, finish coats shall not be applied until other work in the area is complete and until previous coats have been inspected.
3. Adhesion Confirmation: The Contractor shall perform an adhesion test after proper cure in accordance with ASTM D3359 to demonstrate that: (1) the shop applied prime coat adheres to the substrate; and (2) the specified field coatings adhere to the shop coat. Test results showing an adhesion rating of 5A on immersed surfaces and 4A or better on other surfaces shall be considered acceptable for coatings 5 mils or more in thickness (Method A). Test results showing an adhesion rating of 5B on immersed surfaces and 4B or better on other surfaces shall be considered acceptable for coating thicknesses less than 5 mils.

C. Application Location Requirements:

1. Equipment, Non-immersed: Items of equipment, or parts of equipment which are not immersed in service, shall be shop primed and then finish coated in the field after installation with the specified or acceptable color. If the shop primer requires top coating within a specified period of time, the equipment shall be finish coated in the shop and then touch-up painted after installation. If equipment removal and reinstallation is required for the project, touch-up coating work shall be performed in the field following installation.
2. Equipment, Immersed: Items of equipment, or parts and surfaces of equipment which are immersed when in service, with the exception of pumps and valves, shall have surface preparation and coating work performed in the field. Coating systems applied to immersed equipment shall be pinhole free.

3.02 PREPARATION

A. General:

1. Surface preparations for each type of surface shall be in accordance with the specific requirements of each Coating System Detail Sheet (CDS) and the manufacturer's requirements. In the event of a conflict, the more stringent requirement shall take precedence.
2. Surfaces to be coated shall be clean and dry. Before applying coating or surface treatments, oil, grease, dirt, rust, loose mill scale, old weathered coatings, and other foreign substances shall be removed. Oil and grease shall be removed before mechanical cleaning is started. Where mechanical cleaning is accomplished by blast cleaning, the abrasive used shall be washed, graded and free of contaminants which might interfere with the adhesion of the coatings. The air used for blast cleaning shall be sufficiently free of oil and moisture to not cause detrimental contamination of the surfaces to be coated.
3. Cleaning and coating shall be scheduled so that dust and spray from the cleaning process shall not fall on wet, newly coated surfaces. Hardware, hardware accessories, nameplates, data tags, machined surfaces, sprinkler heads, electrical fixtures, and similar uncoated items which are in contact with coated surfaces shall be removed or masked prior to surface preparation and painting operations. Following completion of coating, removed items shall be

- reinstalled. Equipment adjacent to walls shall be disconnected and moved to permit cleaning and painting of equipment and walls and, following painting, shall be replaced and reconnected.
4. Containment: The Contractor shall erect and maintain protective enclosures as required to ensure that surface preparation debris, including dust, is contained within the immediate work area. All costs associated with containment shall be paid by the Contractor.
 5. Dust and Contaminants: Protect substrate from excessive dust and airborne contaminants during coating application and curing. Use temporary dust barriers to close off areas being painted from areas where other work is being performed.
- B. Abrasive Blast Cleaning:
1. When abrasive blast cleaning is required to achieve the specified surface preparation the following requirements for blast cleaning materials and equipment shall be met:
 - a. Used or spent blast abrasive shall not be reused on this project.
 - b. The compressed air used for blast cleaning shall be filtered and shall contain no condensed water and no oil. Moisture traps shall be cleaned at least once every 4 hours or more frequently as required to prevent moisture from entering the supply air to the abrasive blasting equipment.
 - c. Oil separators shall be installed just downstream of compressor discharge valves and at the discharge of the blast pot discharges. These shall be checked on the same frequency as the moisture traps as defined in Item 2 above.
 - d. Regulators, gauges, filters, and separators shall be in use on compressor air lines to blasting nozzles times during this work.
 - e. An air dryer or desiccant filter drying unit shall be installed which dries the compressed air prior to blast pot connections.
 - f. The air dryer shall be used and maintained for the duration of surface preparation work.
 - g. The Contractor shall provide ventilation for airborne particulate evacuation (meeting pertinent safety standards) to optimize visibility for both blast cleaning and inspection of the substrate during surface preparation work.
 - h. If between final surface preparation work and coating system application, contamination of prepared and cleaned metallic substrates occurs, or if the prepared substrates' appearance darkens or changes color, re-cleaning by water blasting, re-blasting and abrasive blast cleaning shall be required until the specified degree of cleanliness is reclaimed.
 - i. The Contractor is responsible for dust control and for protection of mechanical, electrical, and other equipment adjacent to and surrounding the work area.
- C. Solvent Cleaning:
1. Any solvent wash, solvent wipe, or cleaner used, including but not limited to those used for surface preparation in accordance with SSPC SP-1 Solvent Cleaning shall be of the emulsifying type which emits no more than 340 g/l VOCs for AIM regions, 250 g/l for CARB regions and 100 g/l for SCAQMD

regions, contains no phosphates, is biodegradable, removes no zinc, and is compatible with the specified primer.

2. Clean white cloths and clean fluids shall be used in solvent cleaning.

D. Ferrous Metal Substrates:

1. Ferrous surfaces shall be prepared in accordance with applicable surface preparation specifications of SSPC/NACE specified for each coating system. Specific surface preparation requirements are stated on the CDS. The profile depth of the surface to be coated shall be in accordance with the CDS requirements and shall be measured by Method C of ASTM D4417. Blast particle size shall be selected by the Contractor to produce the specified surface profile. The solvent in solvent cleaning operations shall be as recommended by the coating manufacturer.

2. Preparation of ferrous metal surfaces shall be based upon comparison with SSPC-VIS1, and as described in the CDS for each coating system. If dry abrasive blast cleaning is selected and to facilitate inspection, the Contractor shall, on the first day of cleaning operations, abrasive blast metal panels to the standards specified. Plates shall measure a minimum of 8-1/2 inches by 11 inches. Panels meeting the requirements of the specifications shall be initialed by the Contractor and the Owner's Representative and coated with a clear non-yellowing finish. One of these panels shall be prepared for each type of abrasive blasting and shall be used as the comparison standard throughout the project.

3. Blast cleaning requirements for steel and ductile-iron substrates are as follows:

a. Ferrous steel piping shall be prepared in accordance with SSPC SP-6 and primed before installation.

b. Ductile-iron piping surfaces including fittings shall be prepared in accordance with NAPF 500-03, NAPF 500-03-04, and NAPF 50.

c. Remove traces of grit, dust, dirt, rust scale, friable material, loose corrosion products or embedded abrasive from substrate by vacuum cleaning prior to coating application.

d. Care must be taken to prevent contamination of the surface after blasting from worker's fingerprints, deleterious substances on workers' clothing, or from atmospheric conditions.

3.03 APPLICATION

A. Workmanship:

1. Coated surfaces shall be free from excessive runs, sags, drips, ridges, waves, laps, and brush marks. Coats shall be applied to produce an even film of uniform thickness completely coating corners and crevices. Minor and infrequent runs and sags which are within the total specified D.F.T. plus a few mils (no more than 10% more mils than the specified total D.F.T.) will be acceptable. However, frequent runs or sags which exceed these limits or otherwise will be detrimental to coating system performance shall not be accepted.

2. The Contractor's spray equipment shall be designed for application of the materials specified. Compressors shall have suitable traps and filters to remove water and oils from the air. Spray equipment shall be equipped with mechanical agitators, pressure gages, and pressure regulators, and properly sized spray tips.

3. Each coating application be applied evenly and sharply cut to line. Care shall be exercised to avoid overspray or spattering paint on surfaces not to be coated. Glass, hardware, floors, roofs, and other adjacent areas and installations shall be protected by taping, drop cloths, or other suitable measures.
 4. Coating applications method shall be as recommended by the coating manufacturer.
 5. Allow each coat to cure or dry thoroughly, according to the coating manufacturer's printed instructions, prior to recoating.
 6. Vary color for each successive coat for coating systems when possible.
 7. When coating complex steel shapes, prior to overall coating system application, stripe coat welds, edges of structural steel shapes, metal cut-outs, pits in steel surfaces, or rough surfaces with the prime coat. This involves applying a separate coat using brushes or rollers to ensure proper coverage. Stripe coat via spray application is not permitted.
- B. Coating Properties – Mixing and Thinning:
1. Coatings, when applied, shall provide a satisfactory film and smooth even surface. Glossy undercoats shall be lightly sanded to provide a surface suitable for the proper application and adhesion of subsequent coats. Coating materials shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coatings consisting of two or more components shall be mixed in accordance with the coating manufacturer's instructions. Where necessary to suit the conditions of the surface, temperature, weather and method of application, the coating may be thinned as recommended by the coating manufacturer immediately prior to use. The VOC of the coating as applied shall comply with prevailing air pollution control regulations. Unless otherwise specified, coatings shall not be reduced more than necessary to obtain the proper application characteristics. Thinner shall be as recommended by the coating manufacturer.
 2. Mixing of partial "kits" is strictly prohibited unless authorized in writing by the coating manufacturer and the Owner's Representative. This prohibition also applies to coatings mixed for touchup or repairs. If authorized to mix partial kits, the Contractor shall utilize containers with appropriate graduated markings/calibrated weight scales.
- C. Environmental Conditions:
1. Provide adequate heat, ventilation, and dehumidification to ensure that the coating manufacturer's environmental requirements are met and to ensure no loss of production days due to failure to meet coating manufacturer's environmental requirements.
 2. Provide sufficient and continuous ventilation and air movement across coated substrates to remove volatile constituents (solvent) throughout the manufacturer's published curing period.
 3. Air and surface temperatures: Prepare surfaces, apply and cure coatings within air and surface temperature range recommended by coating manufacturer.
 4. Relative humidity: Prepare surfaces, apply and cure coatings within relative humidity range in accordance with coating manufacturer's instructions.
 5. Dew Point: Do not apply coatings unless the temperature of the dew point is 5°F or greater than the temperature of the substrate.
 6. Precipitation: Do not apply coatings in rain, snow, fog, or mist.

7. Wind: Do not spray apply coatings when the wind direction and velocity are such that overspray may result in property damage.
- D. Protection of Coated Surfaces:
1. Items which have been coated shall not be handled, worked on, or otherwise disturbed, until the coating is completely dry and hard. After delivery at the site, and upon permanent erection or installation, shop-coated metalwork shall be recoated or retouched with specified coating when it is necessary to maintain the integrity of the film.
- E. Film Thickness and Continuity:
1. WFT of the first coat of the coating system and subsequent coats shall be verified by the Contractor, during application of each coat.
 2. Coatings shall be applied to the minimum dry film thickness specified as indicated on the CDS. Dry film thickness shall be determined using the appropriate industry standard for the substrate (SSPC-PA 2, SSPC-PA 9, or ASTM D1400). Coatings determined to be above the maximum dry film thickness as indicated on the CDS or the coating manufacturer's product data sheet, will be removed at the Owner's Representative's discretion.
 3. In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the Owner's Representative shall determine the minimum conductivity for smooth areas of like coating where the dry mil thickness has been accepted. This conductivity shall be the minimum required for these rough or irregular areas. Pinholes and holidays shall be recoated to the required coverage.
 4. The ability to obtain specified film thickness is generally compromised when brush or roller application methods are used and, therefore, more coats may be needed to be applied to achieve the specified dry film thickness.
 5. For concrete substrates, the Contractor shall apply a complete skim coat of the specified filler-surfacer material over the entire substrate prior to application of the coating system. This material shall be applied such that all open air voids and "bug holes" in the concrete substrate are completely filled prior to coating application.
- F. Special Requirements:
1. Before erection, the Contractor shall apply all but the final finish coat to interior surfaces of roof plates, roof rafters and supports, pipe hangers, piping in contact with hangers, and contact surfaces which are inaccessible after assembly. The final coat shall be applied after erection. Structural friction connections and high tensile bolts and nuts shall be coated after erection. Areas damaged during erection shall be hand-cleaned or power-tool cleaned and recoated with primer coat prior to the application of subsequent coats. Touch-up of surfaces shall be performed after installation. Surfaces to be coated shall be clean and dry at the time of application. Except for those to be filled with grout, the underside of equipment bases and supports that have not been galvanized shall be coated with at least two coats of primer specified for System #1 in the CDS prior to setting the equipment in place. Provide coating system terminations at leading edges and transitions to other substrates in accordance with the coating manufacturer's recommendations or detail drawings.

- G. Soluble Salt Contamination of Metal Substrates:
 - 1. Contractor shall test in accordance with SSPC Guide 15 metal substrates to be coated that have been exposed to sea water or coastal air or to industrial fallout of particulate or other sources of soluble chlorides (such as waste water exposure). If testing indicates chloride levels in excess of 25 ppm exist after the surface preparation has been completed, the Contractor shall re-clean and prepare these surfaces until chloride levels are below 25 ppm.
- H. Refer to the Finish Schedule in Section 09900 for coating details of architectural coating requirements.

3.04 INSPECTION AND TESTING BY AN INDEPENDENT THIRD PARTY

- A. The Owner's Representative reserves the right to engage the services of an independent third party to provide quality control inspection. Third party inspection is in addition to any inspection required to be performed by the Contractor and does not limit the Contractor's responsibility for quality workmanship or quality control as specified.
- B. Third party inspection will be performed in a manner which limits interference / inhibits the Contractor's operations. Whenever feasible, the third party inspections will be performed concurrently with the Contractor's required inspections.
- C. Testing Discrepancies: In the event that discrepancies occur relative to test methods or test results, the findings of the Independent Third Party shall be final. The Contractor shall not be entitled to additional monies for rework/additional work necessary to satisfy the requirements of the specification as a result of the Independent Third Parties findings.

3.05 FINAL INSPECTION

- A. Contractor shall conduct a final inspection to determine whether coating system work meets the requirements of the Specifications.
- B. The Owner's Representative will subsequently conduct a final inspection with the Contractor to determine the work is in conformance with requirements of the contract documents.
- C. Any rework required shall be marked. Such areas shall be re-cleaned and repaired as specified at no additional cost to the Owner's Representative.

3.06 CLEANUP

- A. Upon completion of the work, the Contractor shall remove and dispose of surplus materials, protective coverings, spent abrasive, and accumulated rubbish.
- B. All surfaces shall be thoroughly cleaned and any damage resulting from surface preparation or coating application shall be repaired.

END OF SECTION

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Section 09960

APPENDIX A

STANDARDS AND REFERENCES AND MANDATORY QUALITY CONTROL TESTING

I. STANDARDS AND REFERENCES

C. ASTM International (ASTM):

1. ASTM D16-11a Standard Terminology for Paint, Related Coatings, Materials and Applications
2. ASTM D3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
3. ASTM D4262 Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces
4. ASTM D4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
5. ASTM D4414 Standard Practice for Measurement of Wet Film Thickness by Notch Gages
6. ASTM D4417 Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
7. ASTM D4541 Standard Test Methods for Pull-Off Strength of Coatings on Metal Substrates Using Portable Adhesion Testers
8. ASTM D4787 Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates
9. ASTM D5162 Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
10. ASTM D7234 Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Adhesion Testers
11. ASTM E337 Standard Test Method for Measuring Humidity With a Psychrometer
12. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

D. Federal:

1. FS 595b: Federal Standard Colors

E. International Concrete Repair Institute (ICRI):

1. ICRI 310.2 Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

F. National Association of Corrosion Engineers International (NACE):

1. NACE Standard SP0188 Standard Recommended Practice – Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates
2. NACE Standard RP0288 Standard Recommended Practice, Inspection of Linings on Steel and Concrete

3. NACE Standard SP0892 Standard Recommended Practice, Linings Over Concrete in Immersion Service
4. NACE Publication TPC2 Coatings and Linings for Immersion Service
- G. National Association of Pipe Fabricators (NAPF):
 1. NAPF 500-03 Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings
- H. Occupational Safety and Health Administration (OSHA):
 1. OSHA Title 29, Part 1926 Safety and Health Standards for Construction
- I. Society for Protective Coatings (SSPC) ⁽¹⁾:
 1. SSPC-PA COM Paint Application Specifications and Guides (Commentary)
 2. SSPC-AB 1 Mineral and Slag Abrasives
 3. SSPC-PA 1 Shop, Field, and Maintenance Painting of Steel
 4. SSPC-PA 2, Level 3 Measurement of Dry Coating Thickness with Magnetic Gages
 5. SSPC-PA 9 Measurement of Dry Coating Thickness on Cementitious Substrates Using Ultrasonic Gages
 6. SSPC Technology Guide 6 Guide for Containing Debris Generated During Paint Removal Operations
 7. SSPC Technology Guide 7 Guide to the Disposal of Lead-Contaminated Surface Preparation Debris
 8. SSPC-PA Guide 10 A Guide to Safety and Health Requirements for Industrial Painting Projects
 9. SSPC-PA Guide 11 Protecting Edges, Crevices, and Irregular Steel Surfaces by Stripe Coating
 10. SSPC Technology Guide 12 Guide for Illumination of Industrial Painting Projects
 11. SSPC-PA Guide 15 Field Methods for Retrieval and Analysis of Soluble Salts on Steel and other Non Porous Substrates
 12. SSPC-PA Guide 17 Procedure for Determining Conformance to Steel Profile/Surface Roughness/Peak Count Requirements
 13. SSPC-PA Guide 19 Guide to Selecting Coatings for Use Over Galvanized Steel Substrates
 14. SSPC SP1 Solvent Cleaning
 15. SSPC SP2 Hand Tool Cleaning
 16. SSPC SP3 Power Tool Cleaning
 17. SSPC SP5 White Metal Blast Cleaning
 18. SSPC SP6 Commercial Blast Cleaning
 19. SSPC SP7 Brush-Off Blast Cleaning
 20. SSPC SP10 Near-White Blast Cleaning
 21. SSPC SP11 Power Tool Cleaning to Bare Metal
 22. SSPC SP 13 Surface Preparation of Concrete
 23. SSPC SP 14 Industrial Blast Cleaning
 24. SSPC SP 15 Commercial Grade Power Tool Cleaning

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|-----|----------------------|--|
| 25. | SSPC SP 16 | Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals |
| 26. | SSPC-TR 2/NACE 6G198 | Wet Abrasive Blast Cleaning |
| 27. | SSPC-TR3/NACE 6A192 | Dehumidification and Temperature Control During Surface Preparation, Application, and Curing for Coatings/Linings of Steel Tanks, Vessels, and Other Enclosed Spaces |
| 28. | SSPC-TU-3 | Overcoating |
| 29. | SSPC-VIS 1 | Visual Standard for Abrasive Blast Cleaned Steel |
| 30. | SSPC-VIS 3 | Visual Standard for Power and Hand – Tool Cleaned Steel |
| 31. | SSPC-VIS 4 | Visual Standards (Waterjetting) |
| 32. | SSPC-VIS 5 | Visual Standards (Wet Abrasive Blast Cleaning) |
| 33. | SSPC-WJ 1,2,3,4 | Water Jetting Surface preparation Standards |

II. MANDATORY QUALITY CONTROL TESTS

Test Requirement	Reference Standard	Interval / Frequency
Measure and Record Ambient and Surface Temperatures	N/A	During coating application and initial cure. Every 3 hours.
Measure and Record Relative Humidity and Dew Point	ASTM D 337	During coating application and initial cure. Every 3 hours.
Abrasive Cleanliness	SSPC AB-1 SSPC AB-2 ASTM D 4940	Each day abrasive blasting is performed. Immediately prior to start of abrasive blasting.
Compressed Air Cleanliness	ASTM D 4285	Each day compressed air is utilized for abrasive blasting, paint application, or to remove surface contamination; immediately prior to any of the indicated operations.

Test Requirement	Reference Standard	Interval / Frequency
Determining Level of Cleanliness (substrate condition after the specified surface preparation has been completed)	SSPC – VIS 1 SSPC – VIS 3 SSPC - VIS 4/NACE VIS 7 SSPC - VIS 5/NACE VIS 9 SSPC - SP 1 SSPC - SP 2 SSPC - SP 3 SSPC - SP 5/NACE No. 1 SSPC - SP 6/NACE No. 3 SSPC - SP 7/NACE No. 4 SSPC - SP 10/NACE No. 2 SSPC - SP 11 SSPC - SP 13/NACE No.6 SSPC - SP 14/NACE No.8 SSPC - SP 15 SSPC - SP 16 SSPC – WJ 1,2,3,4	Each day surface preparation is performed immediately prior to coating application.
Levels of Soluble Salt Contamination (steel and other nonporous substrates)	SSPC Technology Guide 15	Each day coating application is performed; immediately prior to coating application.
Surface pH (concrete or metal)	ASTM D 4262 (use 6.1 and 6.2 for metal)	Each day coating application is performed; immediately prior to coating application.
Measurement of Surface Profile (metal substrates)	ASTM D 4417	Each day surface preparation is performed. Upon completion of shift or task.
Measurement of Surface Profile (concrete substrates)	ASTM D 7682	Each day surface preparation is performed. Upon completion of shift or task.
Comparison of Surface Profile (concrete substrates)	ICRI 310.2	Each day surface preparation is performed. Upon completion of shift or task.
Moisture in Concrete (plastic sheet method)	ASTM D 4263	Upon completion of surface preparation. Whenever climatic conditions substantially change.
Relative Humidity (slabs/concrete floors)	ASTM F 2170	As recommended by coating/lining manufacturer.
Measure and Record Material Temperatures (all components)	N/A	Each day coating application is performed. Immediately prior to coating application.
Wet Film Thickness	ASTM D 4414	Each day coating application is performed. Hourly during coating application.

Test Requirement	Reference Standard	Interval / Frequency
Dry Film Thickness (ferrous metal/magnetic substrates)	SSPC-PA 2	After coating has properly cured. After each layer (component) of the specified coating system.
Dry Film Thickness (non-ferrous metal substrates)	ASTM D 1400	After coating has properly cured. After each layer (component) of the specified coating system.
Dry Film Thickness (cementitious substrates)	SSPC-PA 9	After coating has properly cured. After each layer (component) of the specified coating system.
Dry Film Thickness (destructive method – all substrates)	ASTM D 4138	Whenever verification as to the accuracy of other methods is deemed necessary.
Holiday Detection (conductive substrates)	NACE SPO 188	After coating system has properly cured. Once on entire surface and as necessary over repaired areas to verify effectiveness of the repair(s).
Holiday Detection (metal substrates)	ASTM D 5162	After coating system has properly cured. Once on entire surface and as necessary over repaired areas to verify effectiveness of the repair(s).
Adhesion Testing (metal substrates)	ASTM D 4541	After coating system has properly cured. Number of tests proportionate to surface area.
Adhesion Testing (concrete substrates)	ASTM D 7234	After coating system has properly cured. Number of tests proportionate to surface area.
Final Cure (solvent rub – organic coatings)	ASTM D 5402	After coating system has been cured per manufacturer's published recommendations.

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Section 09960

APPENDIX B – COATING DETAIL SHEETS

HIGH PERFORMANCE COATINGS

Coating Detail Sheet:

System No. 3

Coating Material:

Epoxy (cycloaliphatic amine or curing agents providing similar chemical resistance performance).

Surface:

Metal

Service Condition:

Immersed, nonpotable; non-immersed, corrosive environment, color required. (Not for Biogenic Sulfide Corrosion areas.)

Surface Preparation:

Ferrous Metal:

Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.5 to 3.0 mils.

Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning) or SSPC-SP-3 (Power Tool Cleaning). Damaged shop coating shall be cleaned in accordance with SSPC SP-5 (White Metal Blast Cleaning) to achieve a uniform surface profile of 2.5 to 3.0 mils and spot primed with the primer specified. Shop epoxy primed surfaces shall require light abrasive blasting or abrading to achieve a uniform surface profile of 1.0 to 1.5 mils in the intact shop primer prior to receiving finish coats if the maximum recoat time for the primer has been exceeded. For ductile iron surfaces, refer to the requirements in Section 09960, paragraph 3.02.D.

Non-ferrous and Galvanized Metal:

Non-ferrous and galvanized metal shall be prepared in accordance with SSPC SP-16 to achieve a 1.5 to 2.0 mil profile that is uniform. Galvanized steel with this coating system shall not be used in immersion service in wastewater.

Application:

Field

General:

Prime coat may be thinned and applied as recommended by the coating manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Ferrous Metal:

Prime coat shall be an epoxy primer compatible with the specified finish coats.

Non-ferrous and Galvanized Metal:

Non-ferrous and galvanized metal, non-immersed, shall be coated prior to the application of the prime coat with a grease emulsifying agent in accordance with the coating manufacturer's written instructions. Non-ferrous metal to be immersed shall not be painted. Galvanized metal shall not be immersed even if it is painted with this coating system.

Coating Detail Sheet:

System No. 3

System Thickness: 15 to 20 mils dry film.

Coatings:

Primer: One coat at coating manufacturer's recommended dry film thickness.

Finish: Two or more coats at coating manufacturer's recommended dry film thickness per coat to achieve the specified system thickness.

Approved Manufacturers:

1. All of California (California Air Resources Board) except SCAQMD:

System Manufacturer	First / Prime Coat(s)	Finish Coat(s)
PPG	Amercoat 253	Amercoat 253
Carboline	Carboguard 890	Carboguard 890
International	Bar-Rust 231	Bar-Rust 231
Sherwin Williams	CorCote HCR	CorCote HCR
Tnemec	Series 104	Series 104

END OF SYSTEM NO. 3

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APPENDIX A
GEO TECHNICAL REPORT



GEOTECHNICAL CONSULTANTS, INC.

Geotechnical Engineering • Geology • Hydrogeology

**GEOTECHNICAL REPORT
CARMEL MEADOWS GRAVITY SEWER
CARMEL, CALIFORNIA**

March 2014

Prepared for:

Kennedy/Jenks Consultants, Inc.
116 Lupfer Avenue, Suite B
Whitefish, MT 59937

Owner:

Carmel Area Wastewater District

Project No. SF13041



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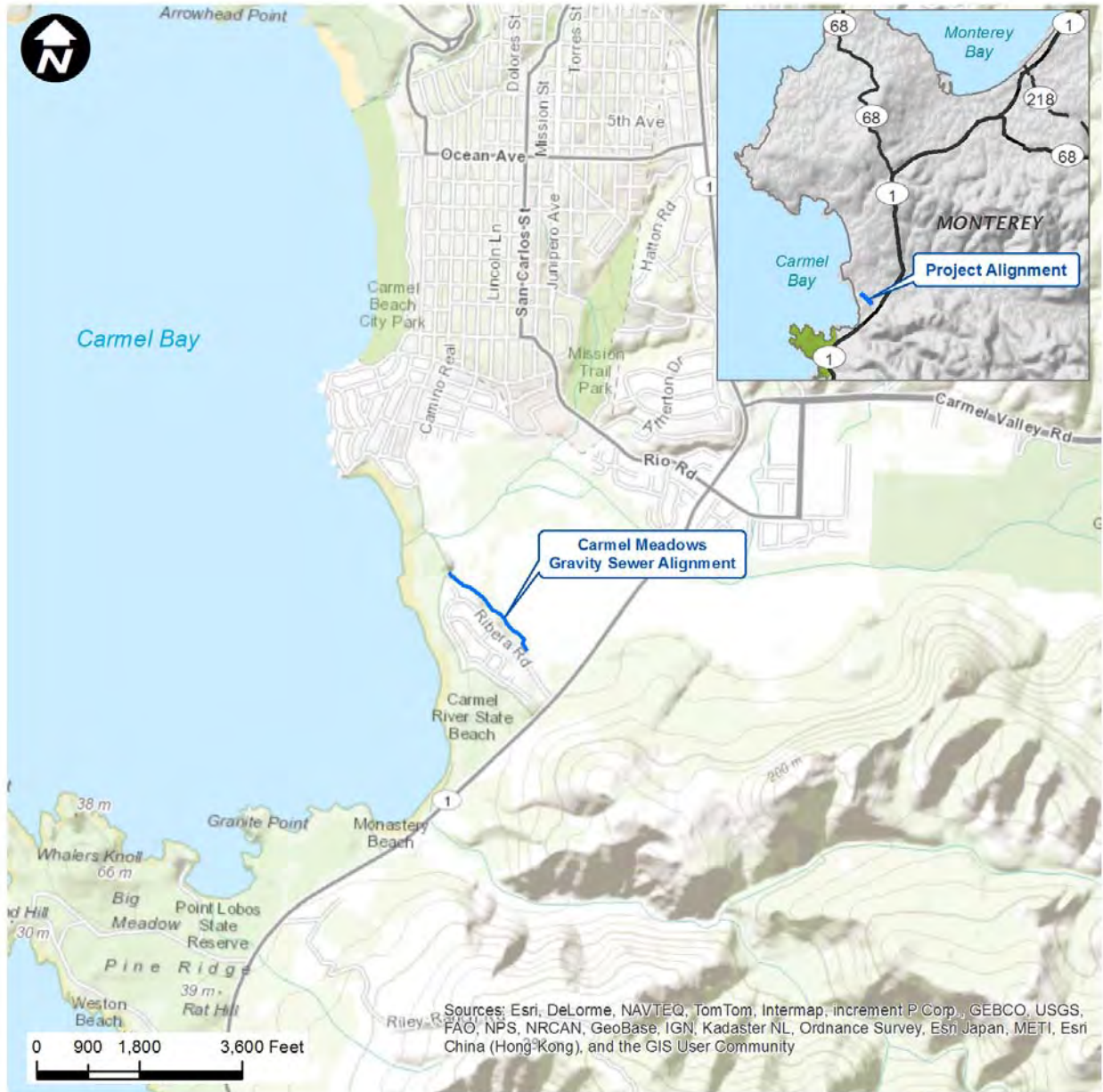
1. INTRODUCTION

1.1 PROJECT DESCRIPTION

This geotechnical report presents our geologic and geotechnical discussions, interpretations, and recommendations for the Carmel Area Wastewater District's (CAWD) Carmel Meadows Gravity Sewer. The Carmel Meadows gravity sewer is located to the northeast and downslope from Ribera Road between Mariposa Drive and Calle La Cruz in Carmel, California. The project location is shown on *Figure 1 – Project Location*. The existing sewer line is a 1,500-foot long, 6-inch diameter pipe that was installed approximately 60 years ago. The pipeline is comprised of a combination of ductile iron pipe, PVC pipe and vitrified clay pipe. It is routed along the sideslopes of hilly terrain. The pipeline is predominantly buried but is elevated across five reaches where it crosses narrow, steep re-entrant valleys.

We understand the proposed pipeline upgrade project involves replacing the ductile iron portion of the pipeline between approximately sanitary sewer manhole (SSMH) T603 and S615. This segment represents approximately 1,050 feet of the overall length, and includes sections across the five elevated reaches of the alignment. We understand the new pipeline will be 6-inch diameter restrained joint ductile iron pipe. The elevated portions of the new pipeline will be supported on new foundations. We previously prepared a geotechnical memorandum (GTC, 2013) that discussed observed movement of the sewer line and suitable construction techniques to rehabilitate or replace foundation supports based on site access, terrain and anticipated subsurface conditions.

**FIGURE 1
PROJECT LOCATION**





1.2 WORK PERFORMED

In accordance with our proposal dated October 15, 2013, we completed the scope of work described below:

- Field Exploration Program.** We explored subsurface conditions by means of performing seven limited-access borings (GTC-B-8 through GTC-B-14). (Borings GTC-B-1 through GTC-B-7 were performed at the CAWD Wastewater Treatment Plant and along the Calle La Cruz force main alignment.) The locations of our borings are shown on *Plate 1 – Geotechnical Exploration Map*. Exploration number, date of exploration, surface elevation and depth are summarized on *Table 1 – Summary of Geotechnical Explorations*. Elevations were estimated based on a topographic map of the site provided by Kennedy/Jenks Consultants. All elevations on *Table 1*, and referred to throughout this report, are relative elevations with respect to a project datum.

TABLE 1 – SUMMARY OF GEOTECHNICAL EXPLORATIONS

Boring	Date Performed	Approximate Surface Elevation (feet, Project Datum)	Depth (feet)
GTC-B-8	1/6/14	+13.5	7.5
GTC-B-9	1/6/14	+18.0	8.5
GTC-B-10	1/6/14	+29.0	6.7
GTC-B-11	1/7/14	+28.0	8.4
GTC-B-12	1/7/14	+30.5	5.0
GTC-B-13	1/7/14	+32.0	10.2
GTC-B-14	1/7/14	+25.0	3.6

We visually classified the soil during sampling. We recovered split-spoon (Standard Penetration Test) samples, and relatively undisturbed 2 inch and 2 ½ inch diameter sleeve samples using split-barrel samplers. Selected samples were transferred to a geotechnical laboratory for testing. Boring logs from this study are presented in *Appendix A – Supporting Geotechnical Data*.

- Laboratory Testing.** We performed tests to evaluate moisture, density, and grain size distribution on selected soil samples to measure pertinent index and engineering properties. The laboratory test results are presented in *Appendix A – Supporting Geotechnical Data* and on the boring logs on Plates A-1.8 through A-1.14 in *Appendix A*.



- **Engineering Analysis.** We analyzed subsurface conditions and field and laboratory test results, and reviewed regional and local geology and seismicity. Additionally, we analyzed the following geotechnical design issues:
 - Seismic hazards evaluation including strong ground shaking and seismically-induced landslides;
 - Allowable bearing capacities for new footing or pier foundations;
 - Allowable axial capacities of micropile foundations;
 - Base friction coefficients for new foundations;
 - Lateral earth pressures (active, passive, at rest, and seismic increment) against foundation elements;
 - Settlement estimates of new shallow foundations and micropile foundations; and
 - Earthwork recommendations for excavations and backfill, and compaction requirements.
- **Report.** We prepared this report presenting our geotechnical/geological findings, interpretations, conclusions, and recommendations for the design of the proposed project.



2. FINDINGS

2.1 SITE SETTING

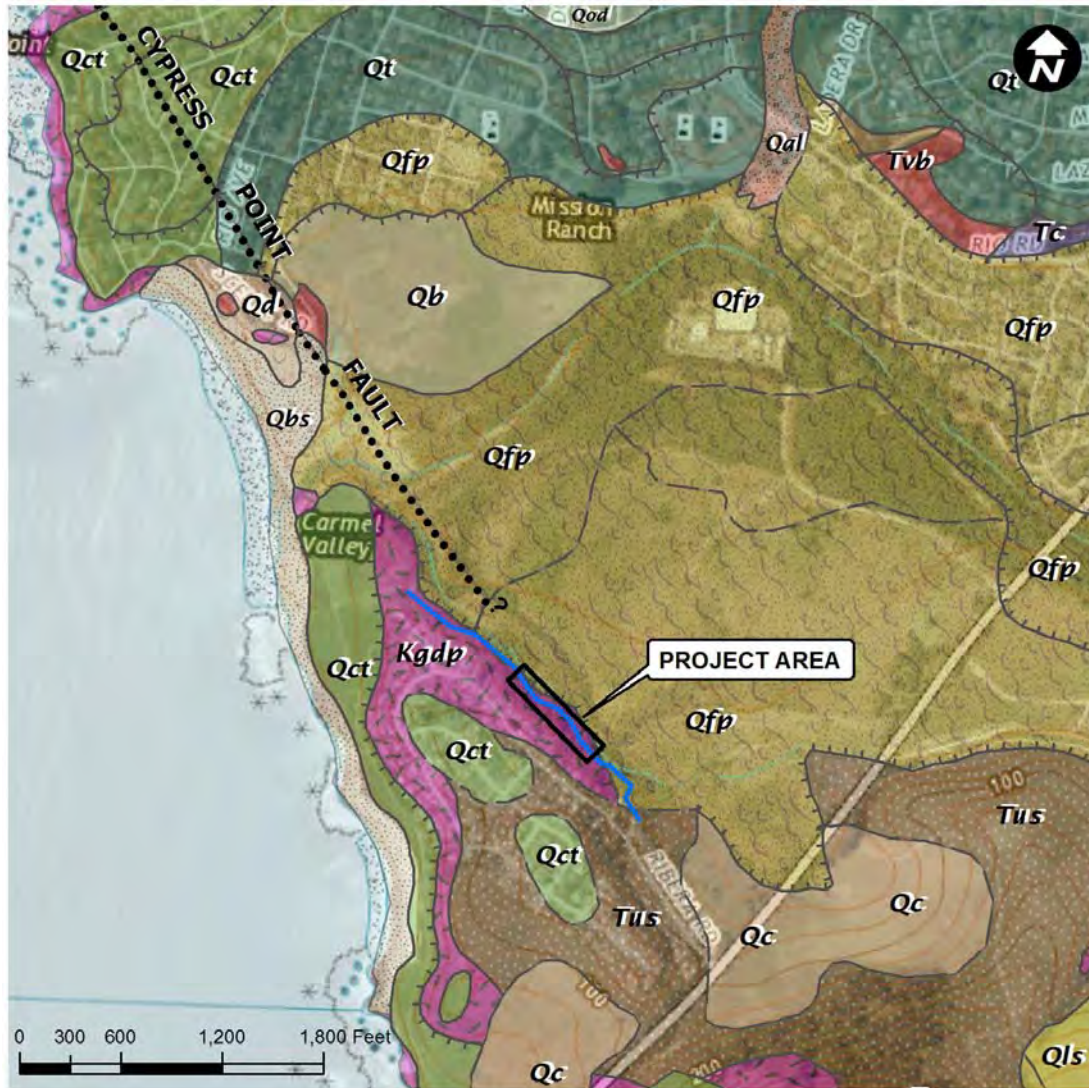
The Carmel Meadows gravity sewer is routed along the sideslopes of hilly terrain. The approximately 60 to 80-foot high hill declines steeply (locally up to 1:1 slopes) toward the northeast from the rear of the residential properties along Ribera Road to the Carmel River Lagoon. The hillslope is densely vegetated with trees, grasses and other plant undergrowth. The pipeline is predominantly buried but is elevated across five reaches where it crosses narrow, steep re-entrant valleys.

2.2 GEOLOGIC SETTING

The Carmel Meadows gravity sewer is located in the City of Carmel along the southern edge of the Carmel River Valley in Monterey County. The Carmel River Valley is located within the Coast Ranges Geomorphic Province of California, a geologically young and seismically active region with many elongate ranges and narrow valleys that approximately parallel the coast. The project area is located in the Santa Lucia Range within a structural block known as the Salinian block. The Salinian block in the project area is a sliver of Cretaceous granitic rock, bounded on the east by the San Andreas fault zone and on the west by the Palo Colorado - San Gregorio fault zone. The granitic bedrock is overlain primarily by Miocene to Holocene marine and non-marine sedimentary rocks that are typically folded and faulted into a series of generally northwest-southeast trending folds and faulted blocks, largely as a result of predominantly right-lateral strike-slip stresses related to movement along the San Andreas fault system.

The Carmel River Valley in the project area is bounded by hills and terraces underlain by Cretaceous granitic rock, Miocene marine sandstones and siltstones, and Quaternary terrace and dune deposits. The Carmel River Valley is underlain by Quaternary alluvium, floodplain deposits, and channel deposits. Near the coast, the valley has widened in to an estuarine environment and is partially underlain by estuarine deposits of silt and clay. Regional surficial deposits within the project vicinity are shown on *Figure 2 – Local Geology*.

**FIGURE 2
LOCAL GEOLOGY**



Geology Source: Modified from USGS, 1997. Geologic Map Of The Monterey and Seaside 7.5-Minute Quadrangles, Monterey County, California: A Digital Database, USGS Open-File Report 97-30.

LEGEND

Carmel Meadows Gravity Sewer Alignment

Geologic Contact Lines

- Geologic Contact, dashed where approximately located, dotted where concealed
- Inner edge of terrace deposits, barbs of terrace side of scarp
- Fault, dashed where approximately located, dotted where concealed

Geologic Units

- Qbs - Beach Sand Deposits
- Qd - Dune Sand Deposits
- Qb - Basin Deposits
- Qal - Alluvial Deposits
- Qfp - Undivided Flood Plain Deposits
- Qc - Colluvium
- Qls - Landslide Deposits

- Qod - Older Coastal Dunes
- Qct - Coastal Terrace Deposits
- Qt - Terrace Deposits
- Tus - Unnamed Sandstone
- Tm - Monterey Formation
- Tvb - Volcanic Rocks
- Tc - Carmelo Formation
- Kgd - Porphyrific Granodiorite of Monterey



2.3 LOCAL GEOLOGY

The project area is consistently underlain by colluvium with a thin layer of topsoil at the surface, and shallowly underlain by Salinian granitic bedrock consisting of porphyritic granodiorite. Descriptions of the units that may be encountered during construction activities are summarized below.

Colluvium (Qc). Colluvium consisting of a variable mixture of unconsolidated, heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel, deposited by slope wash and mass movement are found in the hillside areas bracketing the Carmel River Valley, most commonly thinly blanketing the hillslopes and within topographic swales (Clark et al., 1997). Holocene aged colluvium was found at the surface along the Carmel Meadows gravity sewer. Colluvium was found at depths ranging from 1.25 to 7.5 feet below ground surface (bgs). The depths of the colluvium at the boring locations are summarized in **Table 2 – Colluvium Depths**. Except for boring GTC-B-9 which was within a colluvial-filled swale, the depth of colluvium was less than 5 feet thick which is anticipated to be typical along the project alignment. The thickness of colluvium increased to 7.5 feet within the swale at the northwesterly end of the alignment (Reach No. 5). The colluvium generally consists of very loose to medium dense, dark gray to dark yellowish brown silty sand, sandy clay and sandy silt with varying amounts of gravel clasts. Borings GTC-B-8 and GTC-B-11 encountered a thin, 1.5- and 0.5-foot thick layer, respectively, of dark brown to light yellowish brown sand just above the underlying porphyritic granodiorite.

TABLE 2 – COLLUVIUM DEPTHS

Boring	Reach No.	Colluvium Depth (feet)
GTC-B-8	5	4.5
GTC-B-9	5	7.5
GTC-B-10	4	4.0
GTC-B-11	3	3.75
GTC-B-12	2	2.25
GTC-B-13	Between 1 and 2	4.75
GTC-B-14	1	1.25

Notes:

1. Reaches refer to the five elevated portions of the pipeline with Reach No. 5 at the northwest end and Reach No. 1 at the southeast end.



Porphyritic Granodiorite of Monterey (Kgdp). Porphyritic¹ granodiorite is mapped on the Monterey Peninsula and on the south side of Carmel where the Carmel Meadows gravity sewer runs parallel along the hillslope of a mapped granitic outcrop (Clark et al., 1997). The porphyritic granodiorite is light gray to moderate pink and medium grained with large orthoclase phenocrysts (3 to 10 cm long) (Clark et al., 1997). The granodiorite encountered in borings for this project was friable and highly to completely weathered below the thin layer of colluvium. The granodiorite became less weathered with depth, and it was difficult to drive the SPT sampler near the bottom of each of the borings.

2.4 SEISMIC SETTING

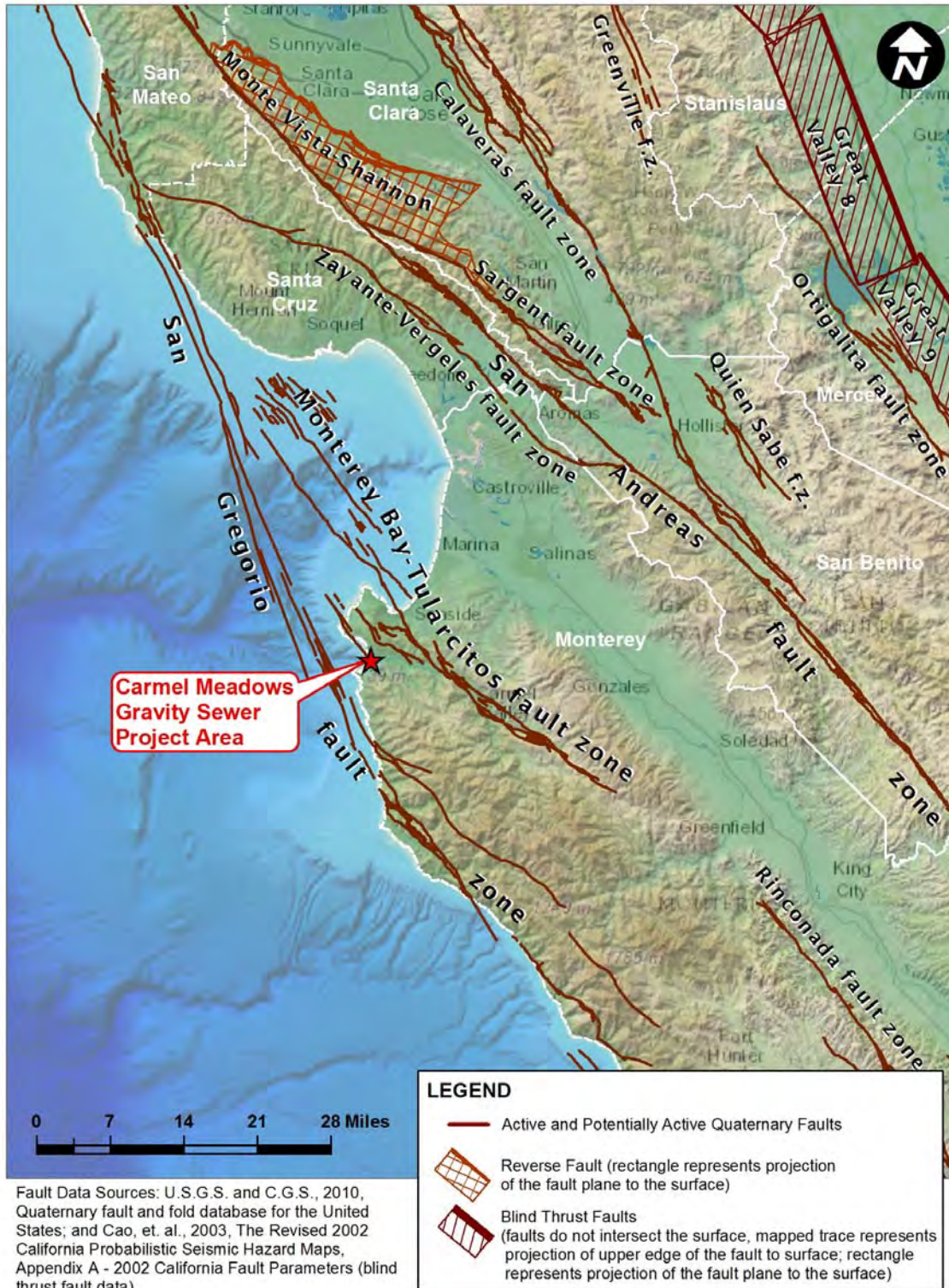
The site is in a seismically active region near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. The relative movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile zone extending from the San Gregorio fault in the southwest to the Great Valley Thrust Belt to the northeast. Strain produced by the relative motions of these plates is relieved by right lateral strike slip (dextral) faulting on the San Andreas fault zone and related faults (San Gregorio, Calaveras, Hayward), and by vertical reverse slip displacement on the Great Valley and other thrust faults in the central California area.

Strong ground shaking at the project site could occur as a result of an earthquake on any one of the active regional faults shown in **Figure 3– Regional Fault Map**. In the Monterey area, the right lateral motion between the North American and Pacific tectonic plates is primarily accommodated by three main fault structures within the broad transform boundary: the San Andreas fault zone, the Monterey Bay - Tularcitos fault zone, and the San Gregorio fault zone (**Figure 3**).

Movement of the North American and Pacific plates is primarily translated in the Monterey area as right lateral slip along the San Andreas fault zone, and right lateral and reverse slip movement along the Monterey Bay - Tularcitos and San Gregorio fault zones.

¹ Porphyritic is a textural description for a rock that has a distinct difference in the size of the crystals, with at least one group of crystals obviously larger than another group.

FIGURE 3
REGIONAL FAULT MAP





Active faults in California have been divided into activity categories by the California Geological Survey based on their predicted activity and ability to generate strong earthquakes; “Type A” faults which generally have higher and more well defined slip rates and well defined recurrence intervals, and “Type B” faults with well defined slip rates but poorly constrained recurrence intervals. “Type A” faults are commonly considered more active (generally with higher slip rates) and/or capable of generating larger earthquakes than “Type B” faults. The USGS has divided the major active faults into segments based on work by the USGS Working Group on California Earthquake Probabilities (WGCEP). Based on this segmentation, various fault rupture scenarios were developed that include earthquakes and rupture of segments of the individual faults in varying segment combinations, i.e. rupture of one segment by itself or rupture of two or more segments concurrently. These scenarios result in differing earthquake and fault parameters for each of the potential segment combinations.

Both “Type A” and “Type B” faults that are mapped in the vicinity of the project site are summarized in **Table 3 –Active and Potentially Active Faults**. The distance to significant active faults and fault segments, California Geological Survey (CGS) assigned fault type (“A” or “B”), and estimated maximum magnitude earthquake are summarized in **Table 3**.

The WGCEP concluded that there is a 62 percent probability of a strong earthquake ($M \geq 6.7$) occurring in the San Francisco Bay Region in a thirty year period between 2003 and 2032 (WGCEP, 2003). Additionally the 2007 WGCEP (WGCEP, 2008) has concluded that within the next 30 years the probability of a strong earthquake ($M \geq 6.7$) occurring on regional faults is as follows: 21% for the N. San Andreas fault zone, 7% for the Calaveras fault zone, and 6% for the San Gregorio fault.



TABLE 3 - ACTIVE AND POTENTIALLY ACTIVE FAULTS

Fault Name	Type ¹	Distance (Miles) ²	Estimated Max. Earthquake Magnitude ^{1,3}
Monterey Bay - Tularcitos fault zone	B	1.9	7.3
San Gregorio fault zone - Connected	B ⁴	3.5	7.5
Zayante - Vergeles fault zone	B	26.3	7.0
N. San Andreas fault zone (Varying rupture combinations of segments of the N. San Andreas with the Santa Cruz Mountain segment alone and with the Offshore, North Coast, and Peninsula segments)	A	30.5	7.1-7.9
San Andreas fault zone – Creeping segment	B	31.1	6.7
Calaveras fault zone (Varying rupture combinations of the Calaveras Southern segment alone and with the Northern and Central segments)	A	35.4	5.8-7.0
Calaveras fault zone (Varying rupture combinations of the Calaveras Central segment alone and with Northern segment)	A	39.8	6.4-7.0
Quien Sabe fault zone	B	40.4	6.6
Monte Vista – Shannon fault zone	B	46.5	6.7
N. San Andreas fault zone (Varying rupture combinations of segments of the N. San Andreas with the Peninsula segment alone and with the Offshore, and North Coast)	A	51.4	7.2-7.9

Notes:

1. Fault parameters from The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2) by the USGS (2008).
2. Fault-to-site distances based on the 2008 National Seismic Hazard Maps - Fault parameters website at http://geohazards.usgs.gov/cfusion/hazfaults_search/hf_search_main.cfm ; and the U.S.G.S. and C.G.S., 2010, Quaternary fault and fold database for the United States. Distance measured from the nearest point on the force main alignment.
3. Maximum Earthquake Magnitude – the maximum earthquake that appears capable of occurring under the presently known tectonic framework, using moment magnitude.
4. San Gregorio fault analyzed as a Type A fault by the 2007 Working Group on California Earthquake Probabilities.

2.5 LOCAL FAULTING

The closest active faults to the project site are the Hatton Canyon fault of the Monterey Bay - Tularcitos fault zone, located about 1.9 miles northeast of the gravity sewer alignment, and the San Gregorio fault zone, located approximately 3.5 miles west of the gravity sewer alignment. The southern end of the mapped trace of the Cypress Point fault is located approximately 400 feet northeast of the project and the fault trends approximately parallel to the gravity sewer alignment. The Cypress Point fault is not considered to be a significant seismic source. These faults are further described below:



Hatton Canyon Fault. The Hatton Canyon fault is part of the larger Monterey Bay - Tularcitos fault zone. The Monterey Bay-Tularcitos fault zone is a complex, generally northwest-striking zone up to 15 km wide of dextral, dextral-reverse, and thrust faults. Although there is documented evidence of Holocene displacement along the Hatton Canyon, Sylvan Thrust, and Tularcitos faults, the Monterey Bay - Tularcitos fault zone, in general, lacks detailed studies. Late Pleistocene and Holocene slip rates of the Monterey Bay - Tularcitos fault zone are poorly constrained with vertical slip rates ranging from 0.02 to 0.4 mm/yr and dextral strike-slip rates are not known (USGS, 2014). The Hatton Canyon fault, 1.9 miles northeast of the project alignment, consists of northwest-striking, near-vertical reverse faults that extend from Carmel Valley Road northwest to Point Joe. The Hatton Canyon fault has rotated terrace deposits, offset Monterey shale against fluvial terrace and landslide deposits, and in at least one locality offset Holocene colluvium (Clark et al., 1997).

San Gregorio Fault Zone. The San Gregorio fault zone is a structurally complex transpressional fault zone as much as 5 km wide that extends for about 230 km from the Big Sur region south of Monterey Bay to the north where it merges with the San Andreas fault system near Bolinas Bay north of San Francisco. The San Gregorio fault zone exhibits both right lateral (dextral) strike-slip and reverse slip motion with the cumulative strike-slip displacement since middle Miocene time reported to be between 115 km and 156 km and an unknown amount of west-vergent reverse displacement. The closest strand of the San Gregorio fault zone is located offshore, approximately 3.5 miles to the west of the project site.

Cypress Point Fault. The Cypress Point fault is the closest mapped fault to the project site (**Figure 2**). It is a short fault, approximately 3 to 6 km long, extending from Carmel River Valley northwest to the southern edge of Monterey Canyon (Clark et al., 1997; USGS, 2014). The motion and activity of the Cypress Point fault is poorly constrained, however mapping indicates that it is primarily right-lateral (dextral) with a minor vertical displacement. Geologic mapping indicates that fault movement may have resulted in an approximate 1 meter offset of a 102,000 year old terrace platform; however, the elevation difference across the fault of the terrace platform could also be the result of deposition on an irregular surface. The field studies to the south of the mapped trace of this fault failed to find any evidence of this fault extending southward of the Carmel River Valley (Clark et al., 1997). Due to the lack of evidence of recent faulting and the short length of this fault, it is not considered to be a ground rupture hazard or a significant seismic source by the 2007 WGCEP.



2.6 GROUNDWATER

Groundwater was not encountered in any of the borings for this investigation. Due to the project's location on a hillslope underlain shallowly by granitic bedrock, the upper colluvial soils may become temporarily saturated during heavy rains.



3. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings from our geotechnical exploration and engineering analysis, it is our opinion that the construction of the proposed pipeline improvements for the CAWD Carmel Meadows gravity sewer is geotechnically feasible. Key geotechnical/geologic conclusions and recommendations to be considered during project design include:

- Access to the pipeline is difficult, and the excavations and drilling for foundations will likely need to be conducted with hand-operated equipment. Limited-access equipment powered by hydraulic systems may be possible at the most northwesterly of the elevated pipeline sections (Reach 5).
- The pipeline traverses hilly terrain where the colluvium overlying the granodioritic bedrock is prone to landsliding and downslope creep.
- Depending upon the depth of excavation required, the bedrock may be difficult to excavate in some zones.

The conclusions and recommendations for geologic hazards and seismic design considerations, groundwater, foundations, lateral earth pressures, and earthwork are provided in the following sections of this report.

3.1 GEOLOGIC HAZARDS AND SEISMIC DESIGN CONSIDERATIONS

The primary geologic hazards along the alignment of the CAWD Carmel Meadows gravity sewer are strong ground shaking and landsliding. The potential for hazards related to fault rupture, liquefaction, lateral spread, and expansive soils is considered to be low to very low. These potential geologic hazards are discussed in the following sections.

3.1.1 Fault Rupture

While many potentially active faults exist within the Monterey Bay area, no active or potentially active faults are known to traverse the project site; consequently, the risk of hazards related to fault rupture/offset at the site is considered very low.

3.1.2 Strong Ground Shaking

The Carmel Meadows gravity sewer is in seismically active coastal California where multiple faults are located in relatively close proximity to the site as shown on **Figure 3** and presented in **Table 3**. The closest faults to the site are the Hatton Canyon fault of the Monterey Bay -



Tularcitos fault zone and the San Gregorio fault zone located approximately 1.9 miles northeast and 3.5 miles west of the site, respectively. Strong ground shaking at the site will result from a large earthquake on these or any of the regional faults presented in **Table 3**.

We anticipate that the project will be designed in accordance with the 2010 American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) “Minimum Design Loads for Buildings and Other Structures” (referred to hereafter as ASCE 7-10). ASCE 7-10 was adopted by the 2013 California Building Code effective as of January 1, 2014.

Based on the magnitude of the ASCE7-10 mapped spectral response, the proposed improvements will be assigned Seismic Design Category D per ASCE 7-10, Section 11.6. Recommended parameters for ASCE 7-10 code-based seismic design are presented in **Table 4 – ASCE 7-10 Seismic Design Parameters**. The seismic design parameters presented in **Table 4**, which are based on mapped 0.2-second short-period (S_s) and 1-second long-period (S_1) acceleration response spectra from Section 22 of ASCE7-10, may be used to develop mapped design response spectra and risk targeted response spectra in accordance with Section 11 of ASCE7-10.



TABLE 4 – ASCE 7-10 SEISMIC DESIGN PARAMETERS ¹

Site/Design Parameters	Seismic Design Category	D
	Site Class	B
Mapped Spectral Acceleration	PGA (g)	0.666
	S_S at 0.2-second (g)	1.634
	S_1 at 1-second (g)	0.624
Site Adjustment Factors	Site Coefficient F_{PGA}	1.0
	Site Coefficient F_a	1.0
	Site Coefficient F_v	1.0
	Seis. Risk Coeff. C_{RS}	0.909
	Seis. Risk Coeff. C_{R1}	0.895
Site Adjusted Spectral Acceleration	PGA_M (g)	0.666
	$S_{MS} = F_a \times S_S$ (g)	1.634
	$S_{M1} = F_v \times S_1$ (g)	0.624
Design Spectral Acceleration	PGA (g)	0.422
	$S_{DS} = 2/3 \times S_{MS}$ (g)	1.089
	$S_{D1} = 2/3 \times S_{M1}$ (g)	0.416

Notes:

1. The seismic design parameters were determined, and spectral response calculated, in accordance with ASCE 7-10 using the USGS web-based U.S. Seismic Design Maps tool (<http://geohazards.usgs.gov/designmaps/us/application.php>).

3.1.3 Liquefaction and Lateral Spread

Liquefaction is a phenomenon wherein a temporary, partial loss of shear strength occurs in a soil due to increases in pore pressure that result from the cyclic loading accompanying an earthquake. Saturated, loose to medium dense sands and silty sands are most susceptible to liquefaction, although documented field cases have shown that gravelly soils and certain fine grained soils are also capable of liquefying. Lateral spreading is one potential consequence of liquefaction, and is a seismically-induced ground deformation failure in which near surface soil layers typically break into blocks that progressively move downslope or toward a free face such as a stream channel, river embankment, or a shoreline.

The site is not underlain by deposits that are prone to liquefaction as it is on a hillside with shallow bedrock, and therefore the potential for liquefaction and lateral spread is very low.



3.1.4 Landsliding

The gradient of the hillside typically ranges from 2:1 to 1 ½:1 (horizontal to vertical), and locally up to 1:1. The underlying bedrock is competent and able to resist slope movement. However, the upper 5 to 10 feet of colluvial soil is subject to landsliding due to water saturation or earthquakes, downslope creep, and other erosional processes that transport material downslope. Pipelines or foundations passing through colluvial soils are susceptible to movement and/or increased pressures from moving soil.

3.1.5 Expansive Soils

Expansion and contraction of expansive soils in response to changes in moisture content can cause differential and cyclical movements that can cause damage and/or distress to structures and equipment. The on-site soils generally have low plasticity and low expansion potential. Provided import materials are not of high plasticity, the hazards associated with expansive soil movement are not significant for this project.

3.2 GROUNDWATER

We did not encounter groundwater during our subsurface program on January 6 and 7, 2014 although our field work was during a historically dry winter season. In fact, the soils were typically dry to damp. We would expect that the upper colluvial soils may become saturated during heavy rains as the water percolates through the soil and ponds on top of the relatively impermeable bedrock. These conditions could make construction more difficult during the rainy season. Foundations should not experience significant hydrostatic pressures from the saturated soils, however.

3.3 FOUNDATIONS

We evaluated several repair strategies during a feasibility evaluation of the project and provided a discussion, conclusions, recommendations, and photographs in a memorandum dated June 14, 2013 (GTC, 2013). Subsequently, we understand that it has been decided to replace the pipeline along the same alignment and at about the same elevation between approximately SSMH T603 and S615. The elevated sections of the pipe will be supported on new foundations. The span length between support locations will likely be increased.

Because of difficult site access, the excavations and drilling for foundations will likely need to be conducted with hand-operated equipment. Limited-access equipment powered by hydraulic



systems may be possible at the most northwesterly of the elevated pipeline sections (Reach 5). Therefore, we anticipate that the foundation systems for pipeline support will consist of either hand-excavated concrete block footings, hand-excavated piers, or micropile-supported pile caps.

The transition between the elevated portion of pipeline and the below-grade portion should be carefully considered during design. The first length(s) of buried pipe can also be prone to movement and these should be adequately supported on concrete saddles embedded into the bedrock.

3.3.1 Hand-Excavated Footings and Piers

Hand-excavated foundations are expected to consist of either concrete block footings that are large enough to incorporate the entire pipe-support structure, or individual piers of smaller plan dimension at each of the legs of the pipe-support structure. Concrete block footings or piers should be embedded below the upper colluvial soils into the underlying bedrock to provide foundation support and to resist lateral loads. The bedrock will have varying degrees of weathering, but should provide adequate support even if highly weathered. The excavations should be free of loose material and ponded water prior to placing reinforcing steel and pouring concrete.

For footings or piers bearing on clean bedrock, an allowable bearing capacity of 5,000 pounds per square foot (psf) may be used for dead plus live loads. The allowable bearing capacity may be increased by one-third when considering additional short-term seismic loading. These values of allowable bearing capacities are based on factors of safety of at least 3.0 against bearing failure.

Settlement of footings and piers bearing on clean bedrock should be negligible. Settlement, if any, should occur during, or immediately after, construction. The primary consideration will be downslope movement of the footing. Design recommendations for evaluating lateral loading are provided in *Section 3.4*.

3.3.2 Micropiles

Small-diameter micropiles (approximately 6- to 9-inch diameter) may be used if access is possible with either track-mounted drilling equipment or with limited-access portable hydraulic equipment within 200 feet of a truck-accessible roadway. Larger diameter drilled piers are not a viable foundation alternative due to the large size of the equipment needed to drill into the rock.



Micropiles gain their capacity through frictional resistance along the length of the shaft. An allowable unit grout-to-rock bond stress of 2,500 psf may be used to size the micropile. The adhesion along the portion of micropile in the colluvial soils should be ignored. Movement at the top of the micropile is estimated to be less than approximately ½ inch to mobilize the allowable bond stress.

Micropiles should be spaced at least three pile diameters center to center. Axial group reduction factors for allowable capacities can be provided for micropiles that are spaced more closely, upon request.

Vertical micropiles generally do not provide significant lateral load resistance (although high-strength permanent casing is sometimes added for this purpose). Therefore, we recommend battering the micropiles to resist lateral loading. The component of axial capacity in the direction of lateral loading may be used to resist lateral loads. Additional design recommendations for evaluating lateral loading are provided in *Section 3.4*.

The hard bedrock will likely make drilling progress slow with a high rate of drill bit wear.

3.4 LATERAL EARTH PRESSURES

Structural components that extend below ground surface, such as concrete footings and pier foundations, will experience lateral earth pressure from the soil. We recommend that foundations be designed using at-rest earth pressures to account for the tendency for the soil to creep downslope. Recommendations for the at-rest, passive, and seismic earth pressures, and coefficient of base friction to resist at-rest and seismic loads are provided on *Plate 2 – Design Lateral Earth Pressures*, and discussed in the following sections.

3.4.1 At-Rest Earth Pressure

At-rest pressures should be used to design the footings or pier foundations for static conditions. The at-rest pressures provided on Plate 2 account for a 1 ½ to 1 (horizontal to vertical) slope above the foundation element. The at-rest earth pressure may be calculated using a design equivalent fluid pressure (EFP) of 75 pcf and 35 pcf in the colluvium and bedrock, respectively.

3.4.2 Seismic Active Earth Pressure Increment

For seismic design, in addition to the at-rest pressures, design of footings or pier foundations should consider additional earth pressures imposed by earthquake-induced lateral pressures. The



distribution of the seismic earth pressure increment is illustrated on *Plate 2* where the maximum pressure increment should be taken as $20 \cdot D_c$ where D_c is the depth of colluvium. The seismic active earth pressure increment should be considered as an addition to any inertial lateral loads transferred from the superstructure into the foundation system.

3.4.3 *Passive Resistance*

Lateral loads on structures can be resisted by passive pressures that develop against the sides of footings or piers. Because of the tendency for the colluvial soils to erode and creep downslope, the passive pressure resistance from the colluvium should be ignored. Therefore, passive pressure resistance will be developed within the embedment depth into the underlying bedrock. An ultimate passive earth pressure of 5,000 psf may be used in the bedrock. Ultimate passive pressures may be used to assess resistance to seismic loading. For resisting long-term sustained lateral loads, a minimum factor of safety of 1.5 should be applied.

For hand-excavated piers, the effective width of passive pressure resistance will be larger than the diameter of the pier. The effective width may be assumed to be twice the diameter of the pier up to a maximum effective width of 5 feet.

3.4.4 *Base Friction*

Friction mobilized at the base of concrete foundations may be relied upon to resist lateral loads. An ultimate coefficient of friction of 0.60 may be considered at the interface of mass concrete and bedrock. An ultimate coefficient of base friction may be used to assess resistance to seismic loading. For resisting long-term sustained lateral loads, a minimum factor of safety of 1.5 should be applied. The passive earth pressure and base friction mobilized at the concrete-rock interface may be combined to resist lateral loading provided the passive resistance does not exceed two-thirds of the total resistance.

3.5 EARTHWORK RECOMMENDATIONS

Earthwork will include excavations for foundation support of elevated portions of the pipe, excavations for removal and replacement of buried portions of the pipe, pipe bedding and backfill, and finished grading and erosion protection. Because of access limitations, much of the work will be accomplished with hand-held equipment. Geotechnical considerations for earthwork are presented in the following sections.



3.5.1 Excavation Characteristics

Excavations will encounter colluvium consisting primarily of silty sand, sandy clay and sandy silt with varying amounts of gravel- and cobble-sized clasts, and granodiorite bedrock. The bedrock will likely be highly to completely weathered near the colluvium/bedrock contact, but may become quite strong and resistant at shallow depths. Bedrock may require methods commonly used to loosen and excavate hard rock (e.g. jackhammers and perhaps expansive chemical agents). For drilled foundations, the drilling progress may be slow with a high rate of drill bit wear.

Groundwater was not encountered during the subsurface exploration program in January 2014. Groundwater is not expected during excavation except in the event of rain, at which time the colluvium may become saturated due to the relatively impermeable bedrock underlying the site. For this reason, earthwork should be performed during the drier portions of the year.

Evaluation of the presence, or absence, and treatment of contaminated or hazardous materials was not part of this study. If such materials are encountered during excavation, proper handling and treatment during construction will depend on the contaminant type, concentration, and volatility of the contaminants.

3.5.2 Temporary Slopes, Shoring, and Bracing

Excavations for foundations and the pipeline may allow for unshored excavations with adequately sloped sidewalls. Deeper excavations may require a series of sloped and benched cut-backs, or require vertical walled shored or braced excavations to account for space constraints. At a minimum, excavations should be constructed in accordance with the current California Occupational Safety and Health Administration (OSHA) regulations (Title 8, California Code of Regulations) pertaining to excavations. Colluvium is typically “Type C” soil and bedrock is typically “Type A” soil per Title 8 definitions. All excavations should be closely monitored during construction to detect any evidence of instability.

Temporary shoring may be necessary to support construction excavations related to the project. The type and design of the shoring will depend on the depth of excavation and excavation bracing sequence. The design and installation of a suitable shoring and bracing system should be made the responsibility of the construction contractor. The shoring and bracing should accommodate surcharge loads that may be imposed by adjacent structures, soil stockpiles, or other construction-related activities.



3.5.3 General Fill

On-site material that is determined non-hazardous and that is free of debris and other unsuitable materials may be used as general fill. Excavation and redistribution of general fill materials will likely require monitoring and screening as necessary. Any zones containing excessive debris should be identified, segregated from the suitable material, and disposed of appropriately. Typically, soils used as general fill should have a low potential for expansion (i.e., plasticity index less than 15 and liquid limit less than 40), and should be relatively free of organic matter and other unsuitable materials, or rocks, broken concrete, or other solid materials greater than 4 inches in greatest dimension. Some fragments greater than 4 inches may also be incorporated into the fill provided that they are distributed in a manner that prevents nesting and so that the voids between large fragments are filled with finer material. The on-site materials are generally suitable for general fill, although some segregation of unsuitable materials may be required.

3.5.4 General Fill Placement and Compaction

General fill should be placed in layers no greater than 8 inches in uncompacted thickness, conditioned with water or allowed to dry to achieve a water content close to optimum, then mechanically compacted to at least 90 percent relative compaction based on ASTM D1557. All compaction should be performed using mechanical compaction means; flooding or jetting should not be used as a means to achieve compaction. The ASTM D1557 laboratory compaction tests should be performed at the time of construction to provide a proper basis for compaction control.

3.5.5 Pipe Bedding and Pipe Zone Backfill

Some of the on-site soils may be suitable for using for pipe bedding and pipe zone backfill. At a minimum, the material used for pipe bedding and pipe zone backfill should meet the requirements of general fill except that the maximum particle size should be no greater than 2 inches. Since much of the excavated material will be rocky, soils may need to be imported. Imported soil, if used, should consist of well-graded sand or a sand-gravel mixture. Maximum gravel size of imported material for pipe bedding and pipe zone backfill should be ½ inch and the bedding and pipe zone backfill material should have less than 12 percent passing the No. 200 sieve. Uniformly graded material such as pea gravel should not be used as pipe bedding material. Pipe bedding should have a minimum thickness of 6 inches beneath the pipe and the pipe zone backfill should extend to 6 inches above the pipe. All pipe bedding and pipe zone backfill should be placed to achieve uniform contact with the pipe and mechanically compacted to achieve a minimum relative compaction of 90 percent per ASTM D1557.



3.5.6 Utility Trench Backfill

Utility and pipe trenches should be backfilled above the pipe with general fill as outlined in *Sections 3.5.3 and 3.5.4.*

3.5.7 Slope Erosion Protection

Weathering and erosion of slopes over time should be expected as a result of runoff, wetting and drying cycles, animal burrowing and gravity. To improve the performance of slopes, planting should be accomplished as soon as practicable after the completion of construction, and coir or other heavy-duty erosion control mat should be used on the slope face. Vegetation should consist of a combination of shallow and deep-rooted plants. Native vegetation is generally desirable. If feasible, it is also desirable to divert water from flowing across disturbed areas until the establishment of plants. Slope areas that are not adequately vegetated should be covered with plastic sheeting during the rainy season.



4. CLOSURE

The conclusions and recommendations presented herein are professional opinions based on geotechnical and geologic data and the project as described. A review by this office of any foundation, excavation, grading plans and specifications, or other work product that relies on the content of this report, together with the opportunity to make supplemental recommendations is considered an integral part of this study. Should unanticipated conditions come to light during project development or should the project change from that described, we should be given the opportunity to review our recommendations.

The findings and professional opinions presented in this report are presented within the limits prescribed by the client, in accordance with generally accepted professional engineering and geologic practices. There is no other warranty, either express or implied.

Sincerely,
GEOTECHNICAL CONSULTANTS, INC.



Deron J. van Hoff 3/25/14
Deron J. van Hoff, P.E., G.E.
Vice President



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LEGEND

- - Carmel Meadows Gravity Sewer Alignment

Existing Pipe Support

Exploration


Geotechnical Boring by Geotechnical Consultants, Inc., conducted on January 6-7, 2014

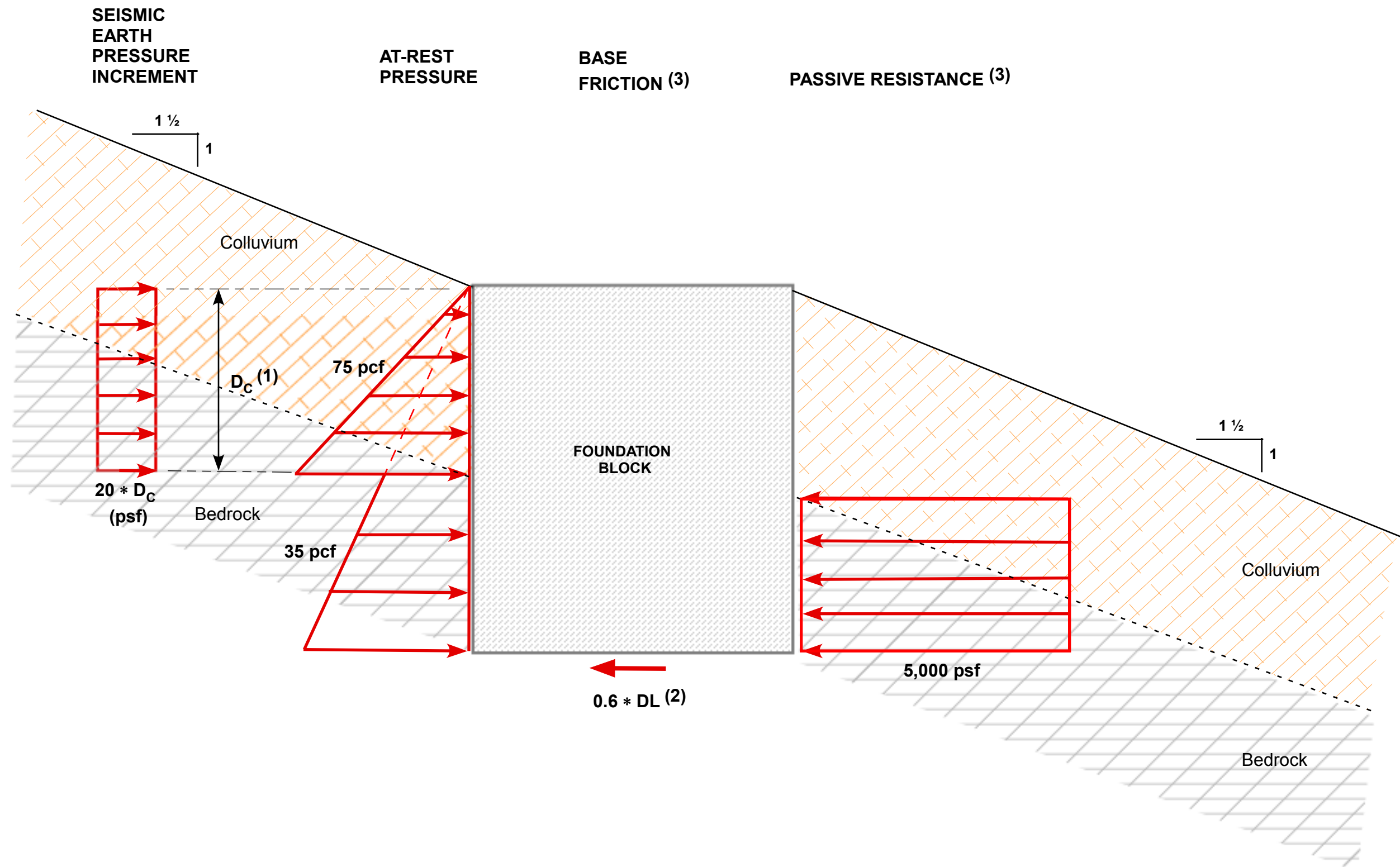
Contour Lines (feet, project datum)

5 foot contour interval

1 foot contour interval

Topographic Source: 2013, Kennedy/Jenks Consultants, Site Survey by Baseline Consulting, Carmel Meadows Gravity Sewer, Carmel Area Wastewater District, Carmel, California.

 <p>GEOTECHNICAL CONSULTANTS, INC. 500 Sansome St., Suite 402 San Francisco, CA 94111</p>	EXPLORATION LOCATION MAP	PLATE
	CAWD CARMEL MEADOWS GRAVITY SEWER CARMEL, CA	1
	MARCH 2014	SF13041



NOTES:

1. D_c = Depth of colluvium in feet.
2. DL = Dead load of structure.
3. Passive resistance and base friction are ultimate values.



GEOTECHNICAL CONSULTANTS, INC.
500 Sansome Street, Suite 402
San Francisco, CA 94111

DESIGN LATERAL EARTH PRESSURES

CAWD CARMEL MEADOWS GRAVITY SEWER
CARMEL, CA

MARCH 2014

PLATE

2

SF13041



APPENDIX A

SUPPORTING GEOTECHNICAL DATA



APPENDIX A SUPPORTING GEOTECHNICAL DATA

SUBSURFACE EXPLORATION

Subsurface exploration for our geotechnical study of CAWD Carmel Meadows Gravity Sewer took place between January 6 and 7, 2014. The subsurface exploration consisted of seven limited-access borings (GTC-B-8 through GTC-B-14). The borings were continuously sampled using successively smaller diameter samplers to the final depth. The borings were backfilled with soil cuttings upon completion. The following table shows the depth and approximate elevation of the explorations.

TABLE A-1 – SUMMARY OF GEOTECHNICAL EXPLORATIONS

Boring	Date Performed	Approximate Surface Elevation (feet, Project Datum)	Depth (feet)
GTC-B-8	1/6/14	+13.5	7.5
GTC-B-9	1/6/14	+18.0	8.5
GTC-B-10	1/6/14	+29.0	6.7
GTC-B-11	1/7/14	+28.0	8.4
GTC-B-12	1/7/14	+30.5	5.0
GTC-B-13	1/7/14	+32.0	10.2
GTC-B-14	1/7/14	+25.0	3.6

Locations of the subsurface explorations are shown on *Plate 1*. Logs of the borings are presented as Plate A-1.8 through Plate A-1.14. A legend to the logs is attached as Plate A-2.

The stratification lines shown on the boring logs represent the approximate boundaries between soil types; the actual transition may be gradual. The boring locations were estimated in the field by measuring from the pipeline and pipeline support locations. Surface elevations were estimated based on a topographic map of the site provided by Kennedy/Jenks Consultants. The locations and elevations of the borings should be considered accurate only to the degree implied by the method used.



SOIL SAMPLING METHODS

Soil sampling methods used during the exploration program were Standard Penetration Tests (SPTs), a 2-inch diameter split barrel sampler, and a 2.5-inch diameter split barrel sampler. Each of the samplers was 24 inches long.

SPTs were performed using a 2-inch outside diameter, 1.5-inch inside diameter steel sampler without liners. The sampler was driven by repeatedly dropping a 140-pound safety hammer approximately 30 inches onto the sampling rod to which the sampler was attached. The sampler was driven a total of 18 to 24 inches. The number of blows required to drive each 12-inch increment of the sampler is recorded on the drill hole logs. For an 18-inch drive, the blows over the initial 6 inches were ignored. Blow counts were recorded for the purpose of estimating relative soil densities.

Split barrel samplers were driven a total of 18 to 24 inches per ASTM D1586. The 2-inch sampler is 2.5 inches outside diameter and 2 inches inside diameter with three six-inch long stainless steel tubes with an inside diameter of 1.92 inches. The 2.5-inch sampler is 3 inches outside diameter and 2.5 inches inside diameter lined with three six-inch long stainless steel tubes with an inside diameter of 2.42 inches. The sampler was driven by repeatedly dropping a 140-pound safety hammer approximately 30 inches on the drill rod to which the sampler was attached. The number of blows required to drive each 12-inch increment of the sampler is recorded on the drill hole logs. For an 18-inch drive, the blows over the initial 6 inches were ignored.



LABORATORY TEST RESULTS

LABORATORY TESTING

Laboratory tests were performed on representative soil samples in order to define the engineering properties of the earth materials.

MOISTURE AND DENSITY DETERMINATIONS

Moisture content (per ASTM D2216) and dry density (per ASTM D7263) determinations were performed on representative samples to evaluate the natural water content and dry density of the soils encountered. The results are presented on the boring logs.

GRAIN SIZE DISTRIBUTION DATA (GS)

Grain-size distribution tests were conducted on representative samples. The tests were performed in accordance with ASTM D422 - Particle-Size Analysis of Soils. Results of these tests are included in this Appendix.

LOG OF DRILL HOLE



JOB NO.: SF13041

LOGGED BY: D. Agnew

DRILL HOLE NO.: GTC-B-8

PROJECT: CAWD Carmel Meadows Gravity Sewer

CHECKED BY: D. van Hoff

DRILLING DATE: January 6, 2014

LOCATION: Reach 5, between SSMH S615 and S616; Carmel, California

ELEVATION: Approx. 13.5 feet

DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
8					[Dotted pattern]	"COLLUVIUM (Qco)" SILTY SAND with GRAVEL (SM), dark gray, dry to damp, loose, abundant roots.						
8												
8												
11							95	4				GS (-#200=23%)
27												
5					[Crack pattern]	"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgdp)" PORPHYRITIC GRANODIORITE (R), light yellowish brown with reddish brown mottles, completely to highly weathered, friable.						
64						Highly weathered.						
50/5"												
93/9"												
50/4"												
<p>NOTES:</p> <ol style="list-style-type: none"> 1) Bottom of boring at 7.5 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/6/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent ($C_E=1.0$). 												
10												

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

LOG OF DRILL HOLE



JOB NO.: SF13041

LOGGED BY: D. Agnew

DRILL HOLE NO.: GTC-B-9

PROJECT: CAWD Carmel Meadows Gravity Sewer

CHECKED BY: D. van Hoff

DRILLING DATE: January 6, 2014

LOCATION: Reach 5, between SSMH S615 and S618; Carmel, California

ELEVATION: Approx. 18 feet

DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
		2				"COLLUVIUM (Qco)" SILTY SAND with GRAVEL (SM), dark yellowish brown, dry to damp, very loose, fine to coarse grained sand, gravel clasts primarily granodiorite, abundant roots and organics.						
		4										
		5										
		6										
5		19				Loose.						GS (#200=16%)
		84/11"				WELL GRADED SAND (SW), mottled dark brown and light yellowish brown, dry to damp, medium dense, fine to coarse grained sand, minor roots.						
		111/7"				"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgdp)" PORPHYRITIC GRANODIORITE (R), light yellowish brown with dark gray mottles, highly weathered, friable, abundant quartz veins.						
10						NOTES: 1) Bottom of boring at 8.5 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/6/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent (C _E =1.0).						

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

LOG OF DRILL HOLE



JOB NO.: SF13041

LOGGED BY: D. Agnew

DRILL HOLE NO.: GTC-B-10

PROJECT: CAWD Carmel Meadows Gravity Sewer

CHECKED BY: D. van Hoff

DRILLING DATE: January 6, 2014

LOCATION: Reach 4, between SSMH S616 and S622; Carmel, California

ELEVATION: Approx. 29 feet

DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
7						"COLLUVIUM (Qco)" SILTY SAND (SM), very dark gray, dry to damp, very loose, trace fine gravel, abundant roots.						
16						Loose.						
18						Medium dense, 1 inch diameter root.						
90/11"						CLAYEY SAND (SC), light olive gray, dry to damp, medium dense, abundant roots.	80	4				GS (-#200=29%)
5						"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgdp)" PORPHYRITIC GRANODIORITE (R), light yellowish brown, completely weathered, minor roots. Highly weathered, friable, minor roots.						
88												
110/9"												
						NOTES: 1) Bottom of boring at 6.7 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/6/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent ($C_E=1.0$).						
10												

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

LOG OF DRILL HOLE



JOB NO.: SF13041

LOGGED BY: D. Agnew

DRILL HOLE NO.: GTC-B-11

PROJECT: CAWD Carmel Meadows Gravity Sewer

CHECKED BY: D. van Hoff

DRILLING DATE: January 7, 2014

LOCATION: Reach 3, between SSMH S622 and T601; Carmel, California

ELEVATION: Approx. 28 feet

DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
29						"COLLUVIUM (Qco)" SILTY SAND (SM), dark grayish brown, dry to damp, medium dense, minor gravel, fine to medium grained sand, abundant roots and organics.						
24						Grayish brown.						GS (-#200=26%)
85						POORLY GRADED SAND (SP), very light yellowish brown, dry to damp, dense, fine grained sand.						
5		100/10.5"				"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgdp)" PORPHYRITIC GRANODIORITE (R), very light yellowish brown, completely to highly weathered, friable, thin reddish brown veins.						
94						Very light gray with reddish brown and olive mottling.						
86												
10						NOTES: 1) Bottom of boring at 8.4 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/7/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent ($C_E=1.0$).						

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

LOG OF DRILL HOLE



JOB NO.: SF13041

LOGGED BY: D. Agnew

DRILL HOLE NO.: GTC-B-12

PROJECT: CAWD Carmel Meadows Gravity Sewer

CHECKED BY: D. van Hoff

DRILLING DATE: January 7, 2014

LOCATION: Reach 2, northwest of SSMH T601; Carmel, California

ELEVATION: Approx. 30.5 feet

DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
		17				"COLLUVIUM (Qco)" SILTY SAND (SM), dark grayish brown, dry to damp, loose, minor roots. Dense.	97	10			GS (#200=19%)	
		53										
		114/10"				"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgdp)" PORPHYRITIC GRANODIORITE (R), reddish brown with dark gray and light gray mottles, highly weathered, friable. Light gray with olive and reddish brown mottling.	97	10			GS (#200=19%)	
		126/9"										
		108/10.5"				Light yellowish brown with dark gray and white mottling.						
5						NOTES: 1) Bottom of boring at 5.0 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/7/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent (C _E =1.0).						
10												

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

LOG OF DRILL HOLE



JOB NO.: SF13041
 PROJECT: CAWD Carmel Meadows Gravity Sewer
 LOCATION: Between Reaches 1 and 2, between SSMH T601 and T602; Carmel, California
 DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

LOGGED BY: D. Agnew
 CHECKED BY: D. van Hoff
 DRILL HOLE NO.: GTC-B-13
 DRILLING DATE: January 7, 2014
 ELEVATION: Approx. 32 feet
 DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
22						"COLLUVIUM (Qco)" SANDY CLAY (CL), light brown, dry to damp, medium dense, trace gravel, some sandy silt layers, minor roots.						
35												
49												
65						Dense.						
23						Medium dense.						
5						"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgd)" PORPHYRITIC GRANODIORITE (R), mottled light gray, brown, and reddish brown, completely weathered, friable.						
43												
52												
86						Dark gray with white mottles.						
57												
90/11"						Mottled light gray, brown, and reddish brown, large quartz and feldspar crystals.						
10		50/3"										
						NOTES: 1) Bottom of boring at 10.2 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/7/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent ($C_E=1.0$).						

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

LOG OF DRILL HOLE



JOB NO.: SF13041

LOGGED BY: D. Agnew

DRILL HOLE NO.: GTC-B-14

PROJECT: CAWD Carmel Meadows Gravity Sewer

CHECKED BY: D. van Hoff

DRILLING DATE: January 7, 2014

LOCATION: Reach 1, between SSMH T601 and T602; Carmel, California

ELEVATION: Approx. 25 feet

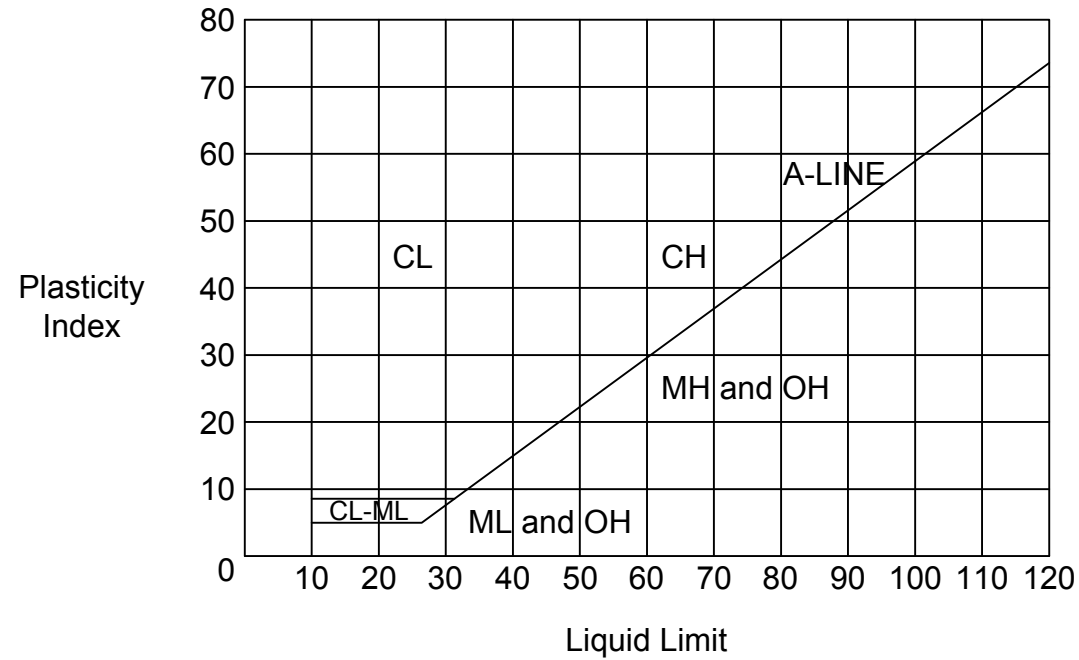
DRILLING METHOD: Continuous Drive Sampling, Rope and Cathead Hammer

DATUM: Project Datum

DEPTH (FEET)	SAMPLE	BLOW COUNT	TORVANE SHEAR STRENGTH (TSF)	POCKET PENETROMETER COMP. STRENGTH (TSF)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		UNDRAINED SHEAR STRENGTH (PSF)	ADDITIONAL TESTS
									LIQUID LIMIT (%)	PLASTIC LIMIT (%)		
		18				"COLLUVIUM (Qco)" SANDY SILT (ML), very dark gray, dry to damp, medium dense, abundant roots.						
		67				"PORPHYRITIC GRANODIORITE OF MONTEREY (Kgdp)" PORPHYRITIC GRANODIORITE (R), mottled light gray, light brown, and reddish brown, highly weathered, abundant olive gray crystals.						
		125/9"										
		102/10"										
5						NOTES: 1) Bottom of boring at 3.6 feet. 2) Groundwater not encountered. 3) Boring backfilled with soil cuttings on 1/7/14. 4) Hammer efficiency of manual hammer assumed to be 60 percent ($C_E=1.0$).						
10												

LOG_DRILL_HOLE_SF13041 - CARMEL MEADOWS.GPJ GTC.GDT 2/11/14

PLASTICITY CHART - Used for Classification of Fine Grained Soils



BLOW COUNT - The number of blows required to drive the sampler the last 12 inches of an 18-inch drive. When the sampler is not advanced the last 12 inches, i.e. 100 blows in 9 inches, the notation is 100/9". WOH (Weight of Hammer) denotes only the weight of the drive hammer was required to drive the sampler or zero blows.

ADDITIONAL TESTS -

- | | | |
|-------------------------------------|--------------------------------|--|
| C: Consolidation | GS: Grain Size Distribution | SU: Sulfate |
| CL: Chloride | OC: Organic Matter Content | TD: Triaxial Compression, Drained |
| CORR: Corrosion | pH: Hydrogen Ion Concentration | TDy: Triaxial Compression, Dynamic |
| CP: Compaction | PM: Permeability | TCU: Triaxial Compression, Consolidated Undrained |
| DS: Direct Shear | R: R-Value | TxUU: Triaxial Compression, Unconsolidated Undrained |
| EL: Elasticity Index | RS: Resistivity | UCS: Unconfined Compressive Strength Test |
| EX: Expansion | S: Swell | VS: Field Vane Shear Test |
| FC: Fines Content (#200 Sieve Wash) | SE: Sand Equivalent | |
| | SP: Specific Gravity | |

SAMPLE TYPES:

- | | |
|----------------------------------|-----------------------------------|
| MODIFIED CALIFORNIA SAMPLE | 2-INCH MODIFIED CALIFORNIA SAMPLE |
| DISTURBED SLEEVE | UNSUCCESSFUL 2-INCH SLEEVE |
| UNSUCCESSFUL SLEEVE | |
| SHELBY TUBE | |
| STANDARD PENETRATION | |
| STANDARD PENETRATION NO RECOVERY | |
| ROCK or SOIL CORE | |
| BULK SAMPLE | |

WATER LEVEL:

- | |
|--|
| STABILIZED or PARTIALLY STABILIZED GROUNDWATER LEVEL |
| UNSTABILIZED GROUNDWATER LEVEL |
| SEEPAGE LEVEL |

UNIFIED SOIL CLASSIFICATION SYSTEM

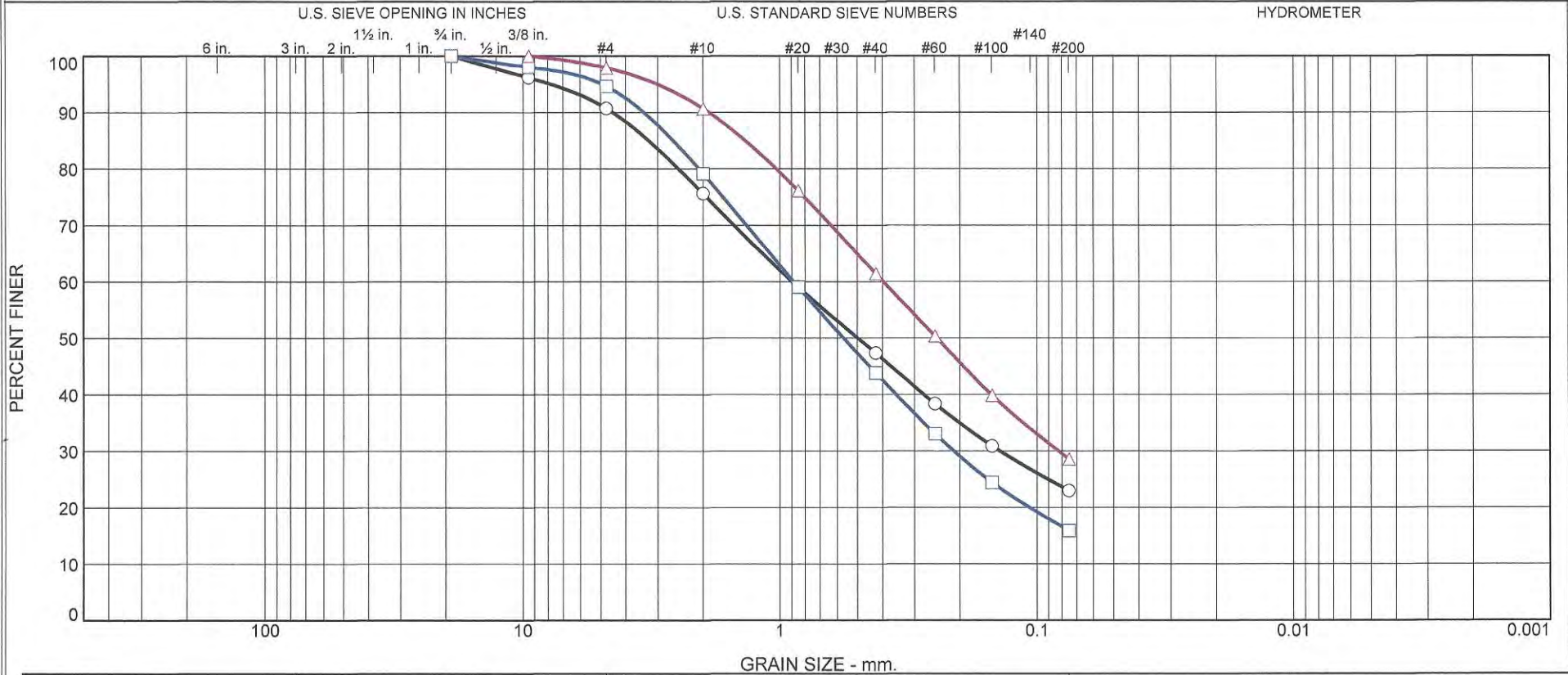
MAJOR DIVISION		GROUP SYMBOL	DESCRIPTION	GRAPHIC LOG
COARSE GRAINED SOILS Over 50% By Weight Coarser Than No.200 Sieve Size	GRAVELLY SOILS OVER 50% OF COARSE FRACTION LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELLY SOILS LITTLE OR NO FINES	GW well graded gravels or gravel-sand mixtures	
			GP poorly graded gravels or gravel-sand mixtures	
		GRAVELLY SOILS WITH FINES OVER 12% FINES	GM silty gravels or gravel-sand-silt mixtures	
			GC clayey gravels or gravel-sand-clay mixtures	
	SANDY SOILS OVER 50% OF COARSE FRACTION SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDY SOILS LITTLE OR NO FINES	SW well graded sands or gravelly sands	
			SP poorly graded sands or gravelly sands	
		SANDY SOILS WITH FINES OVER 12% FINES	SM silty sands or sand-silt mixtures	
			SC clayey sands or sand-clay mixtures	
FINE GRAINED SOILS Over 50% By Weight Finer Than No.200 Sieve Size	SILTY AND CLAYEY SOILS LIQUID LIMIT LESS THAN 50		ML inorganic silts, very fine sands, silty fine sands, clayey silts with slight plasticity	
			CL inorganic clays, gravelly, sandy, silty, or lean clays, of low to medium plasticity	
			OL organic clays or organic silts of low plasticity	
	SILTY AND CLAYEY SOILS LIQUID LIMIT GREATER THAN 50		MH inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH inorganic clays of high plasticity, fat clays		
		OH organic clays or organic silts of medium to high plasticity		
HIGHLY ORGANIC SOILS			Pt peat or other highly organic soil, organic content greater than 60%	
			trash fill-landfill refuse (not a part of unified soil classification system)	

LEGEND TO LOGS



GEOTECHNICAL CONSULTANTS, INC.
500 Sansome Street, Suite 402
San Francisco, CA 94111

Particle Size Distribution Report



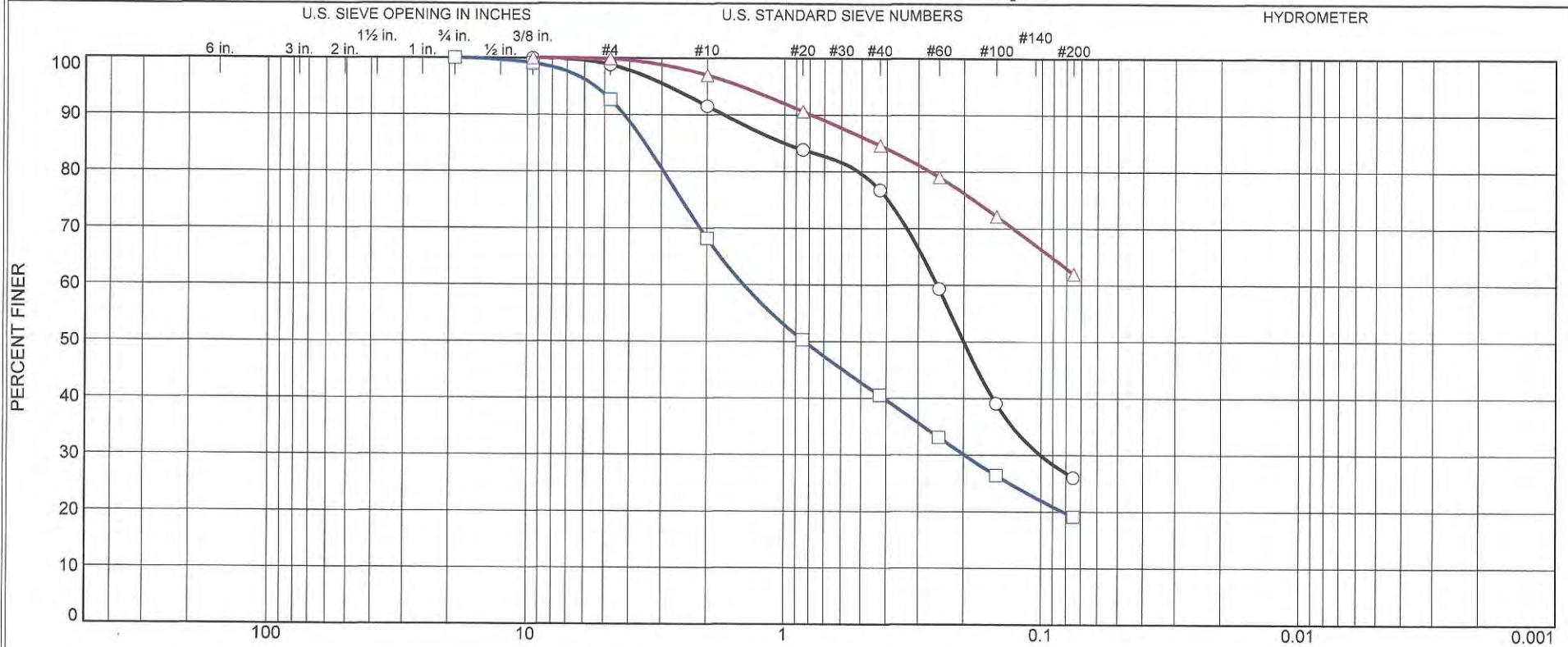
	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	9.3	15.1	28.3	24.3	23.0	
□	0.0	0.0	5.4	15.5	35.3	28.0	15.8	
△	0.0	0.0	2.1	7.3	29.2	32.9	28.5	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	GTC-B-8	3.5-4'		SM	Dark gray silty SAND w/organics.			
□	GTC-B-9	4.5-5'		SM	Dark brown silty SAND w/organics.			
△	GTC-B-10	3-3.5'		SC	Light gray clayey SAND.			

Client Geotechnical Consultants, Inc.	Soil Mechanics Lab	Oakland, California
Project CAWD Carmel Meadow Gravity Sewer		
Project No. SF13041 Figure		

Tested By: ○ MA □ MAQ △ MA

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.2	7.3	14.8	50.7	26.0	
□	0.0	0.0	7.4	24.5	27.6	21.4	19.1	
△	0.0	0.0	0.2	2.9	12.3	22.7	61.9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	GTC-B-11	2.5-3'		SM	Dark brown silty SAND-Micaceous.			
□	GTC-B-12	1.5-2'		SM	Dark gray silty SAND.			
△	GTC-B-13	1.5-2'		CL	Dark brown sandy CLAY.			

Client Geotechnical Consultants, Inc.
 Project CAWD Carmel Meadow Gravity Sewer
 Project No. SF13041 Figure

Soil Mechanics Lab
Oakland, California

EXHIBIT C

MINUTES
Carmel Highlands Land Use Advisory Committee
Monday, November 7, 2022



1. Meeting called to order by John Borelli at 4:04 pm

2. Roll Call

Members Present:

John Borelli, Holli Leon, Chip Moreland, Norm Leve, Doug Paul, Clyde Freedman, Dan Keig (7)

Members Absent:

None

3. Approval of Minutes:

A. October 17, 2022 minutes

Motion: Chip Moreland (LUAC Member's Name)

Second: John Borelli (LUAC Member's Name)

Ayes: Moreland, Borelli, Leon, Keig, Freedman (5)

Noes: 0

Absent: 0

Abstain: Paul, Leve (2)

4. **Public Comments:** The Committee will receive public comment on non-agenda items that are within the purview of the Committee at this time. The length of individual presentations may be limited by the Chair.

None

5. Scheduled Item(s)

6. **Other Items:**

A) Preliminary Courtesy Presentations by Applicants Regarding Potential Projects

None

B) Announcements

None

7. **Meeting Adjourned:** 6:50 pm

Minutes taken by: Holli Leon



Action by Land Use Advisory Committee Project Referral Sheet

Monterey County Housing & Community Development
1441 Schilling Place 2nd Floor
Salinas CA 93901
(831) 755-5025



Advisory Committee: Carmel Highlands

- 1. Project Name:** HEISLER KARL F & MICHELE A HEISLER TRS
File Number: PLN190184
Project Location: 90 CREST RD CARMEL
Assessor's Parcel Number(s): 241-231-010-000
Project Planner: SON PHAM-GALLARDO
Area Plan: CARMEL LAND USE PLAN
Project Description: Combined Development Permit consisting of: 1) Coastal Development Permit for a new test well and 2) Coastal Development Permit for the removal of 4 (four) protected trees (3 Pine & 1 Cypress).

Was the Owner/Applicant/Representative present at meeting? YES NO

(Please include the names of those present)

Was a County Staff/Representative present at meeting? Phil Angelo & Zoe Zepp (Name)

PUBLIC COMMENT: None

Name	Site Neighbor?		Issues / Concerns (suggested changes)
	YES	NO	

LUAC AREAS OF CONCERN

Concerns / Issues (e.g. site layout, neighborhood compatibility; visual impact, etc)	Policy/Ordinance Reference (If Known)	Suggested Changes - to address concerns (e.g. relocate; reduce height; move road access, etc)
None		

ADDITIONAL LUAC COMMENTS

None

RECOMMENDATION:

Motion by: John Borelli (LUAC Member's Name)

Second by: Chip Moreland (LUAC Member's Name)

- Support Project as proposed
- Support Project with changes
- Continue the Item

Reason for Continuance: No representation present

Continue to what date: _____



Ayes: Borelli, Leon, Moreland, Leve, Paul, Freedman, Keig (7)

Noes: 0

Absent: 0

Abstain: 0

Action by Land Use Advisory Committee Project Referral Sheet

Monterey County Housing & Community Development
1441 Schilling Place 2nd Floor
Salinas CA 93901
(831) 755-5025



Advisory Committee: Carmel Highlands

2. **Project Name:** CARMEL AREA WASTEWATER DISTRICT (VARIOUS OWNERS)
Item continued from 10/17/22 meeting
- File Number:** PLN220055
- Project Location:** 2733 & 2741 CALLE LA CRUZ AND
2765, 2775, 2785, 2795, 2805, 2815, 2825, 2835, 2845, 2855, 2865, 2875, 2885,
2895, 2905, 2915, 2925, 2935 & 2955 RIBERA RD CARMEL
- Assessor's Parcel Number(s):** 243-031-017-000, 243-031-018-000, 243-031-019-000, 243-031-020-000, 243-
031-022-000, 243-031-023-000, 243-031-024-000, 243-031-028-000, 243-031-
029-000, 243-031-030-000, 243-031-033-000, 243-031-034-000, 243-051-001,
243-051-002-000, 243-051-003-000, 243-051-004-000, 243-051-005-000,
243-051-006-000, 243-051-007-000, 243-051-008-000, 243-051-020-000,
243-051-021-000 & 243-051-022-000
- Project Planner:** PHIL ANGELO
- Area Plan:** CARMEL LAND USE PLAN
- Project Description:** Combined Development Permit consisting of: 1) Coastal Development Permit and Design Approval to allow a lift station and sewer replacement project consisting of a new below grade sewage lift station, installation of four residential scale sewage grinder pumps, and rehabilitation/replacement of approximately 1,600 linear feet of sewer line; 2) Coastal Development to allow development within 100 feet of Environmentally Sensitive Habitat Area (Coastal brambles); and 3) Coastal Development Permit to allow Development within 750 feet of known archaeological resources.

Was the Owner/Applicant/Representative present at meeting? YES X NO _____

(Please include the names of those present)

Rachel Lather & Barbara Buikema, Carmel Area Wastewater District

Steve Thomas

Rachel Lather made a presentation of the situation and the options

Was a County Staff/Representative present at meeting? Phil Angelo & Zoe Zepp (Name)

PUBLIC COMMENT:

Name	Site Neighbor?		Issues / Concerns (suggested changes)
	YES	NO	
David Scopp	X		Concerned Kennedy/Jenks memo stated the selected option is fatally flawed; they recommend replacement in kind. He is requesting third party analysis.
Deborah Lu	X		<ul style="list-style-type: none"> - Should be different consideration given since it is already there. - Concerned about integrity of hillside for further excavation. - Also, pumps and financial responsibility. - Often smells in a very unpleasant way.
Karen Helton [Per Rachel Lather, not inside the fence line, Carmel Area Wastewater District would repair/replace if damage staging could be moved]	X		<ul style="list-style-type: none"> - Around corner from Mariposa, concerned about disruption to her home & landscaping. Proposal uses lot across the street for the staging area. - Could County apply conditions to enhance this project? (County staff replied "No")
Gail Dryden	X		<ul style="list-style-type: none"> - Supports independent analysis to clarify options. - Would like to talk to someone who has a grinder pump. - Is the Coastal Commission involved? (County staff says it is up to Coastal Commission staff if they approve)
Charles Keller	X		<ul style="list-style-type: none"> - Has County looked into other options? - What kind of environmental review? (County staff has reviewed plan and concluded how to remedy issues. LUAC will make recommendations, then County staff decides)
Larry Purcell	X		<ul style="list-style-type: none"> - Why did 2013 study suggest this option was best? - The current proposal is flawed.
Keith Porter	X		<ul style="list-style-type: none"> - Saw Ribera Road pump station on site inspection. Thinks is was not representative because it was noon, not when people are using the system. - Access & maintenance concerns.



LUAC AREAS OF CONCERN

<p>Concerns / Issues (e.g. site layout, neighborhood compatibility; visual impact, etc)</p>	<p>Policy/Ordinance Reference (If Known)</p>	<p>Suggested Changes - to address concerns (e.g. relocate; reduce height; move road access, etc)</p>
<p>Were there other proposals in the design and what were they?</p>		<p>Many options considered: - Bandage of existing sewer - Replace as it currently (See Kennedy/Jenks report)</p>
<ul style="list-style-type: none"> - Hillside unstable - Lack of access for construction - Riparian habitat/lagoon 		<p>Proposal currently addresses these concerns.</p>
<p>Estimate of cost for independent third party study to opine on best course of action</p>		<ul style="list-style-type: none"> - \$100,000 - 6 months - Carmel Area Wastewater District to cover cost
<p>Would spot repairs be possible?</p>		<p>Already too many issues to be feasible.</p>
<p>200 feet of landslide would have to be dealt with if they were going to replace with in-kind sewer</p>		
<p>Other issues include horizontal directional drilling; could “frack out”</p>		
<p>Do any plan options require no pumps?</p>		<p>All options require pump.</p>
<p>Pump station at end of Mariposa creating odors & noise</p>		<p>During site inspection by John Borelli, Chip Moreland, others from neighborhood & Carmel Area Wastewater District, there were no odors or noise present at that time.</p>



ADDITIONAL LUAC COMMENTS

Recommended changes are:

- Independent third party analysis of alternatives
- Alternative #2 revisited from Kennedy/Jenks report
- Move Mariposa pump away from houses toward lagoon
- Landscape to camouflage any observable components at Mariposa
- Grinder pumps maintenance/replacement costs; financial/maintenance into perpetuity by Carmel Area Wastewater District
- Sound concerns shall be addressed & mitigated
- Odor concerns shall be addressed & mitigated

RECOMMENDATION:

Motion by: Doug Paul (LUAC Member's Name)

Second by: Dan Keig (LUAC Member's Name)

- Support Project as proposed
- Support Project with changes – refer to changes listed under “Additional LUAC Comments”
- Continue the Item

Reason for Continuance: _____

Continue to what date: _____

Ayes: Paul, Borelli, Leon, Keig, Freedman, Leve (6)

Noes: Moreland (1)

Absent: 0

Abstain: 0



CARMEL MEADOWS NEIGHBORS

VIA ELECTRONIC MAIL ONLY

November 1, 2022

Monterey County Housing and Community Development
 c/o Erik V. Lundquist, AICP, Director
 1441 Schilling Place, South 2nd Floor
 Salinas, CA 93901-4527
 Email: lundquist@co.montereyca.us



Carmel Unincorporated/Highlands Land Use Advisory Committee
 c/o John Borelli, Chair
 73 Fern Canyon Road
 Carmel, CA 93923
 Email: JohnjBorelli@gmail.com

Carmel Area Wastewater District
 c/o Daryl Lauer, Collections Superintendent
 3945 Rio Road
 Carmel-By-The-Sea, CA 93922
 Email: lauer@cawd.org

**Re: Carmel Area Wastewater District
 File No. PLN220055**

Dear Mr. Lundquist, Mr. Borelli, and Mr. Lauer:

We appreciate the efforts of Carmel Area Wastewater District (“CAWD”) to improve the sewage system in our neighborhood. Nevertheless, we respectfully oppose the current CAWD plan because it unfairly impacts numerous households and is not the most feasible alternative for the neighborhood. Therefore, we request that a third-party, independent engineering analysis be performed to evaluate the feasibility of alternative plans.

1. Background

The existing sewer line is a simple gravity line that flows west, requiring no pumps or control panels. In contrast, the proposed sewer line would pump wastewater east to the bottom of Mariposa Court, where it would combine with several other pipelines and get pumped up Mariposa Court to a line that flows west again. The new system would include the installation of grinder pumps on four properties—2795, 2805, 2815 and 2825 Ribera Road (together, the “Grinder Pump Properties”)—and a four-foot diameter by 13-foot-deep lift pump and control panel between two properties—2955 and 2935 Ribera Road (together, the “Lift Pump Properties”)—at the bottom (north end) of Mariposa

Re: Carmel Area Wastewater District

November 1, 2022

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Court. There would also be a sizable control panel for the lift pump at the end of Mariposa Court. The lift pump would service approximately 52 homes.

During the Carmel Unincorporated/Highlands Land Use Advisory Committee (“CULUAC”) meeting on October 17, 2022, CAWD estimated that construction would take approximately three months. In addition to the installation of the grinder pumps and lift pump, the construction would include over 2,000 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration as well as the rebuilding of underground and aerial sewer. The construction would cause audible noise and detectible odors. (Carmel Meadows Final ISMND.) And there would be a “temporary interruption of [sewage] service” to the residents. (SRT Consultants Memorandum dated August 27, 2019 (“SRT Consultants Memo”).)

During the October 17, 2022 meeting, CAWD Principal Engineer Rachel Lather represented that CAWD could replace the laterals on the approximately 13 north Ribera Road homes west of Mariposa Court. During the October 26, 2022 site meeting, however, CAWD retracted this offer.

While we appreciate CAWD’s efforts to improve the sewage system, the imminence of the reliability issues may have been exaggerated, and capacity may be the driving force.¹ In addition, as discussed below, CAWD consultants deemed the current plan “fatally flawed” and recommended replacing the current line instead.

¹ The HDR Engineering opinion letter dated February 5, 2003 concluded: “[I]t is our opinion that the above-grade sections of the pipeline can continue to be operational, and be safe from future catastrophic failure if the current topography of the area, and drainage conditions are maintained.”

The HDR Engineering opinion letter dated April 20, 2003 (“HDR Engineering Letter”) was primarily concerned with future capacity, not reliability. The letter concluded: “The existing sewer line is not in immediate danger of failing.” Further, “[t]he absence of problems with roots and the absence of obvious leakage at the joints suggest that the buried portions of the sewer are in reasonably good condition for their age. . . . [¶] It appears that the elevated sections of the current sewer are relatively stable and that future movement will take place slowly as the result of creep.” *To extend reliability, the HDR Engineering Letter recommended maintenance.*

The Kennedy/Jenks Consultants letter dated June 14, 2013 stated: “We are not aware of any incidents where the pipe needed to be repaired or replaced. Therefore, with regard to the serviceability of the existing pipeline, the system has performed well.”

The Kennedy/Jenks Consultants Final Technical Memorandum dated July 16, 2013 (“the Final Technical Memorandum”) concluded that there was “[v]ery little exterior corrosion on the 6-inch ductile iron pipeline. Furthermore, *“failure is not imminent”* for the framing support structures. (Italics added.) “From the video that was obtained the sewer appeared to be in good condition with a few cracks and general grit accumulation throughout. . . . This investigation failed to locate cracks on the exterior, *leading to the opinion that the pipe is sound.* What appear to be cracks on the interior may be formations created by scum accumulation.” Finally, the “concrete of the existing foundations appeared to be in good condition and did not show signs of deterioration that often include flaking or loss of integrity.” (Italics added.)

Re: Carmel Area Wastewater District
November 1, 2022
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2. The Plan Unnecessarily Impacts Residents Adversely.

The Mariposa Court lift pump may cause detectable odor, audible sound, and aesthetic nuisances for the Lift Pump Properties. Indeed, the SRT Consultants Memo recognizes that the pump will cause “impact to the adjacent residents.” During the October 17, 2022 CULUAC meeting, Ms. Lather stated that there could be intermittent detectible odors caused by the new pump. She described a pump in Santa Cruz that had odor issues but said that as long as the fluid is moving, it should not be a problem. Nevertheless, when the pump is backed up or other problems inevitably occur, there will be a sewage odor. There would also be a consistent audible noise. (Carmel Meadows Final ISMND.) Finally, the proposed site for the control panel at the bottom of Mariposa Court is obtrusive: it is the first thing seen upon arrival at the Lift Pump Properties and is an immediate reminder that there is a sewage pump below. We are concerned that these issues could devalue the Lift Pump Properties.

The sewage line servicing 2955 Ribera Road would not be repaired or replaced as part of this plan, yet the sewershed, control panel, and lift pump would be adjacent to this property. Thus, the full-time residents with young children would not enjoy the benefits of the new sewage system yet would incur a sizable portion of the costs, including the potential odor, sound, eyesore, and possible devaluation of their greatest asset.

We also oppose the installation of grinder pumps on the Grinder Pump Properties because it would require those households to assume the responsibility for maintenance and costs of a system that they do not desire, there may be odor and sound issues, and it could reduce the value of the properties.

The Grinder Pump Properties would incur the burden of maintaining the grinder pumps.² The grinder pumps have flashing lights and alarms that go off if the system malfunctions. The system requires flushing with water for 10 minutes before absences from the homes. With the current drought and high costs of water, residents attempt to monitor their water use. This burden of maintenance could pose practical problems for part-time residents.

In addition, the Grinder Pump Properties would unfairly incur costs associated with maintenance of the grinder pumps as well as increased electricity bills associated with the pumps. The life expectancy of the grinder pumps is only 15 years, and it appears that residents would be responsible for maintaining them and replacing them after failure. (Carmel Meadows Final ISMND.) In addition, the plans indicate that the deference period would terminate after changes in ownership.

² The SRT Consultants Memo states: “the ownership and maintenance of these pump stations need to be negotiated between the district and the homeowners prior to construction. A possible option would be for the district to install the pump stations, provide instructions/education, and maintain them at no cost to the homeowner for 3 to 5 years. After this transitional period, the residents would take ownership of the pump station and assume responsibility for their maintenance.”

Re: Carmel Area Wastewater District

November 1, 2022

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This financial responsibility is unfair, even with the proposed deference period for the maintenance responsibility.

Finally, construction would occur in many backyards and could damage landscaping.

3. The Current Plan May Not Be the Most Feasible, and We Therefore Request an Independent Feasibility Analysis.

While we are sympathetic to the fact that CAWD has spent time and money developing the current plan, it may not be the most feasible plan. In addition to the adverse impacts on residents described in this letter, the Kennedy/Jenks Consultants described the plan as “fatally flawed” and instead recommended removal and replacement of pipe in place.

Therefore, we respectfully request that a third-party, independent engineering analysis be performed to evaluate alternative plans, including the alternatives considered in the Final Technical Memorandum and the HDR Engineering Letter:

- Alternative 1: Spot Repairs to the Existing Gravity Sewer. This alternative would consist of repairing the highest risk areas of the pipeline. According to the Final Technical Memorandum, “[t]he only area where significant slope movement was observed was along Reach 4, between S622 [N of 2855 Ribera Rd.] and MH S616 [N of 2845 Ribera Rd.]” *This could be remedied with simple plate piles in the existing slope.* This is the least expensive option.
- Alternative 2: Removal and Replacement of Pipe in Place. This alternative would remove the entire section of pipe from T603 [N of 2925 Ribera Rd.] to manhole S615 [N of 2785 Ribera Rd.] where the pipe transitions from aerial to buried (approximately 1,300 LF of ductile iron pipe). The pipe would be replaced with new restrained joint pipe and engineered foundation within the current alignment. This is the second-least expensive option, and *it is option recommended in the Final Technical Memorandum.*
- Alternative 3: New Lift Station and Force Main. This appears to be the basis for the current plan. In addition to the installation of the lift station and grinder pumps, this alternative includes 2,230 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration (more than any other alternative, which would maximize interruptions in traffic flow). It would also require the rebuilding of 160 linear feet of sewer from T604 [2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial sewer from MH S618 [N of 2805 Ribera Rd.] to MH S615 [N of 2785 Ribera Rd.]. This is the third-most-expensive option for capital cost and is even more expensive when factoring in the annual O&M costs of approximately \$21,000 per year for operating and maintaining a pump

Re: Carmel Area Wastewater District

November 1, 2022

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station. The Final Technical Memorandum concluded that due to the high capital cost of Alternative 3, it is “fatally flawed resulting in removal from further analysis.”

- *We request that the analysis of this alternative include moving the lift station north and west or east, away from the Lift Pump Properties, and concealing the control station in order to alleviate all potential for odor, sound, and aesthetic issues.³ We also request that CAWD assume all responsibility and costs for any needed grinder pumps.*
- Alternative 4: Horizontal Directional Drill (HDD). This alternative would include a 2,000 linear foot HDD from T608 [Mariposa Ct.] to the Calle La Cruz wet well. The alignment would be a straight line beneath existing private property to the wet well. It would include re-sloping the sewer line to drain downhill from T604 [N of 2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial section from S618 [N of 2805 Ribera Rd.] to S615 [N of 2785 Ribera Rd.], to convey sewer from MH S617 [2805 Ribera Rd.]. This alternative is the most expensive alternative due to the easement acquisition and the high cost of horizontal directional drilling through bedrock.
- Gravity Sewer Options 1-4 Described in HDR Engineering Letter

In addition to the foregoing alternatives, the third-party analysis could include any other alternatives identified by the independent engineer.

4. Notice

Notice for the November 7, 2022 meeting was inadequate since, upon information and belief, only the properties on the north side of Ribera Road received notice. This does not include all of the affected properties, including 2940 Ribera Road, which is across from Mariposa Street and other properties impacted by construction.

5. Conclusion

We request that an independent, third-party analysis of alternatives be performed in order to provide a solution that better balances the interests of the CAWD, the county, the environment, and the neighborhood. The current plan unfairly burdens six homes: the Mariposa Court pump may reduce the value of the Lift Pump Properties because there may be odor and audible noise issues,

³ In fact, the SRT Consultants Memo recommends a siting north of Mariposa Court and away from the homes: “The advantage of this siting is that construction of the paved road can be avoided *and impact to the adjacent residents will be minimized.*” (Italics added.) The memo continues that the disadvantage of doing this would be that CAWD would have to undergo a longer permitting process and more mitigation requirements during construction. Thus, it appears that CAWD has prioritized convenience over impact to residents in choosing the location at the bottom of Mariposa Court.

Re: Carmel Area Wastewater District

May 9, 2011

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and the control panel will be an eyesore, and the Grinder Pump Properties would be unfairly burdened with the costs and responsibility of maintenance of the grinder pumps, and their properties may also be devalued. In addition, the Final Technical Memorandum concluded that current plan is fatally flawed and, instead, recommended Alternative 2 (Removal and Replacement of Pipe in Place).

Thank you for attention to this matter.

Respectfully,

David Schupp
Name: David Schupp

Kurt Porter
Name: Kurt Porter

Lori Porter
Name: Lori Porter

Tom Slavet
Name: Tom Slavet

Elizabeth Oka
Name: Elizabeth Oka

Ron JCA
Name: Ron JCA

Sue Barnes
Name: Sue Barnes

Stan and Gail Dryden
Name: Stan and Gail Dryden

Deborah A. Vieille
Name: Deborah A. Vieille

Deborah A. Vieille
Name: DEBORAH A. Vieille

Larry Pomeroy
Name: LARRY POMEROY

LARRY POMEROY CMA CHAIRMAN
Name: LARRY POMEROY CMA CHAIRMAN

Karen Helton
Name: Karen Helton

cc: Zoe Zepp, Associate Planner at County of Monterey (zeppz@co.monterey.ca.us)
Fionna Jensen, Associate Planner at County of Monterey (jensennf@co.monterey.ca.us)
Rachel Lather, Principal Engineer (Lather@cawd.org)

CARMEL MEADOWS NEIGHBORS

VIA ELECTRONIC MAIL ONLY

November 1, 2022

Monterey County Housing and Community Development
 c/o Erik V. Lundquist, AICP, Director
 1441 Schilling Place, South 2nd Floor
 Salinas, CA 93901-4527
 Email: lundquist@co.montereyca.us



Carmel Unincorporated/Highlands Land Use Advisory Committee
 c/o John Borelli, Chair
 73 Fern Canyon Road
 Carmel, CA 93923
 Email: JohnjBorelli@gmail.com

Carmel Area Wastewater District
 c/o Daryl Lauer, Collections Superintendent
 3945 Rio Road
 Carmel-By-The-Sea, CA 93922
 Email: lauer@cawd.org

**Re: Carmel Area Wastewater District
 File No. PLN220055**

Dear Mr. Lundquist, Mr. Borelli, and Mr. Lauer:

We appreciate the efforts of Carmel Area Wastewater District (“CAWD”) to improve the sewage system in our neighborhood. Nevertheless, we respectfully oppose the current CAWD plan because it unfairly impacts numerous households and is not the most feasible alternative for the neighborhood. Therefore, we request that a third-party, independent engineering analysis be performed to evaluate the feasibility of alternative plans.

1. Background

The existing sewer line is a simple gravity line that flows west, requiring no pumps or control panels. In contrast, the proposed sewer line would pump wastewater east to the bottom of Mariposa Court, where it would combine with several other pipelines and get pumped up Mariposa Court to a line that flows west again. The new system would include the installation of grinder pumps on four properties—2795, 2805, 2815 and 2825 Ribera Road (together, the “Grinder Pump Properties”)—and a four-foot diameter by 13-foot-deep lift pump and control panel between two properties—2955 and 2935 Ribera Road (together, the “Lift Pump Properties”)—at the bottom (north end) of Mariposa

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Court. There would also be a sizable control panel for the lift pump at the end of Mariposa Court. The lift pump would service approximately 52 homes.

During the Carmel Unincorporated/Highlands Land Use Advisory Committee (“CULUAC”) meeting on October 17, 2022, CAWD estimated that construction would take approximately three months. In addition to the installation of the grinder pumps and lift pump, the construction would include over 2,000 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration as well as the rebuilding of underground and aerial sewer. The construction would cause audible noise and detectible odors. (Carmel Meadows Final ISMND.) And there would be a “temporary interruption of [sewage] service” to the residents. (SRT Consultants Memorandum dated August 27, 2019 (“SRT Consultants Memo”).)

During the October 17, 2022 meeting, CAWD Principal Engineer Rachel Lather represented that CAWD could replace the laterals on the approximately 13 north Ribera Road homes west of Mariposa Court. During the October 26, 2022 site meeting, however, CAWD retracted this offer.

While we appreciate CAWD’s efforts to improve the sewage system, the imminence of the reliability issues may have been exaggerated, and capacity may be the driving force.¹ In addition, as discussed below, CAWD consultants deemed the current plan “fatally flawed” and recommended replacing the current line instead.

¹ The HDR Engineering opinion letter dated February 5, 2003 concluded: “[I]t is our opinion that the above-grade sections of the pipeline can continue to be operational, and be safe from future catastrophic failure if the current topography of the area, and drainage conditions are maintained.”

The HDR Engineering opinion letter dated April 20, 2003 (“HDR Engineering Letter”) was primarily concerned with future capacity, not reliability. The letter concluded: “The existing sewer line is not in immediate danger of failing.” Further, “[t]he absence of problems with roots and the absence of obvious leakage at the joints suggest that the buried portions of the sewer are in reasonably good condition for their age. . . . [¶] It appears that the elevated sections of the current sewer are relatively stable and that future movement will take place slowly as the result of creep.” *To extend reliability, the HDR Engineering Letter recommended maintenance.*

The Kennedy/Jenks Consultants letter dated June 14, 2013 stated: “We are not aware of any incidents where the pipe needed to be repaired or replaced. Therefore, with regard to the serviceability of the existing pipeline, the system has performed well.”

The Kennedy/Jenks Consultants Final Technical Memorandum dated July 16, 2013 (“the Final Technical Memorandum”) concluded that there was “[v]ery little exterior corrosion on the 6-inch ductile iron pipeline. Furthermore, *“failure is not imminent”* for the framing support structures. (Italics added.) “From the video that was obtained the sewer appeared to be in good condition with a few cracks and general grit accumulation throughout. . . . This investigation failed to locate cracks on the exterior, *leading to the opinion that the pipe is sound.* What appear to be cracks on the interior may be formations created by scum accumulation.” Finally, the “concrete of the existing foundations appeared to be in good condition and did not show signs of deterioration that often include flaking or loss of integrity.” (Italics added.)

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2. The Plan Unnecessarily Impacts Residents Adversely.

The Mariposa Court lift pump may cause detectable odor, audible sound, and aesthetic nuisances for the Lift Pump Properties. Indeed, the SRT Consultants Memo recognizes that the pump will cause “impact to the adjacent residents.” During the October 17, 2022 CULUAC meeting, Ms. Lather stated that there could be intermittent detectable odors caused by the new pump. She described a pump in Santa Cruz that had odor issues but said that as long as the fluid is moving, it should not be a problem. Nevertheless, when the pump is backed up or other problems inevitably occur, there will be a sewage odor. There would also be a consistent audible noise. (Carmel Meadows Final ISMND.) Finally, the proposed site for the control panel at the bottom of Mariposa Court is obtrusive: it is the first thing seen upon arrival at the Lift Pump Properties and is an immediate reminder that there is a sewage pump below. We are concerned that these issues could devalue the Lift Pump Properties.

The sewage line servicing 2955 Ribera Road would not be repaired or replaced as part of this plan, yet the sewershed, control panel, and lift pump would be adjacent to this property. Thus, the full-time residents with young children would not enjoy the benefits of the new sewage system yet would incur a sizable portion of the costs, including the potential odor, sound, eyesore, and possible devaluation of their greatest asset.

We also oppose the installation of grinder pumps on the Grinder Pump Properties because it would require those households to assume the responsibility for maintenance and costs of a system that they do not desire, there may be odor and sound issues, and it could reduce the value of the properties.

The Grinder Pump Properties would incur the burden of maintaining the grinder pumps.² The grinder pumps have flashing lights and alarms that go off if the system malfunctions. The system requires flushing with water for 10 minutes before absences from the homes. With the current drought and high costs of water, residents attempt to monitor their water use. This burden of maintenance could pose practical problems for part-time residents.

In addition, the Grinder Pump Properties would unfairly incur costs associated with maintenance of the grinder pumps as well as increased electricity bills associated with the pumps. The life expectancy of the grinder pumps is only 15 years, and it appears that residents would be responsible for maintaining them and replacing them after failure. (Carmel Meadows Final ISMND.) In addition, the plans indicate that the deference period would terminate after changes in ownership.

² The SRT Consultants Memo states: “the ownership and maintenance of these pump stations need to be negotiated between the district and the homeowners prior to construction. A possible option would be for the district to install the pump stations, provide instructions/education, and maintain them at no cost to the homeowner for 3 to 5 years. After this transitional period, the residents would take ownership of the pump station and assume responsibility for their maintenance.”

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This financial responsibility is unfair, even with the proposed deference period for the maintenance responsibility.

Finally, construction would occur in many backyards and could damage landscaping.

3. The Current Plan May Not Be the Most Feasible, and We Therefore Request an Independent Feasibility Analysis.

While we are sympathetic to the fact that CAWD has spent time and money developing the current plan, it may not be the most feasible plan. In addition to the adverse impacts on residents described in this letter, the Kennedy/Jenks Consultants described the plan as “fatally flawed” and instead recommended removal and replacement of pipe in place.

Therefore, we respectfully request that a third-party, independent engineering analysis be performed to evaluate alternative plans, including the alternatives considered in the Final Technical Memorandum and the HDR Engineering Letter:

- Alternative 1: Spot Repairs to the Existing Gravity Sewer. This alternative would consist of repairing the highest risk areas of the pipeline. According to the Final Technical Memorandum, “[t]he only area where significant slope movement was observed was along Reach 4, between S622 [N of 2855 Ribera Rd.] and MH S616 [N of 2845 Ribera Rd.]” *This could be remedied with simple plate piles in the existing slope.* This is the least expensive option.
- Alternative 2: Removal and Replacement of Pipe in Place. This alternative would remove the entire section of pipe from T603 [N of 2925 Ribera Rd.] to manhole S615 [N of 2785 Ribera Rd.] where the pipe transitions from aerial to buried (approximately 1,300 LF of ductile iron pipe). The pipe would be replaced with new restrained joint pipe and engineered foundation within the current alignment. This is the second-least expensive option, and *it is option recommended in the Final Technical Memorandum.*
- Alternative 3: New Lift Station and Force Main. This appears to be the basis for the current plan. In addition to the installation of the lift station and grinder pumps, this alternative includes 2,230 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration (more than any other alternative, which would maximize interruptions in traffic flow). It would also require the rebuilding of 160 linear feet of sewer from T604 [2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial sewer from MH S618 [N of 2805 Ribera Rd.] to MH S615 [N of 2785 Ribera Rd.]. This is the third-most-expensive option for capital cost and is even more expensive when factoring in the annual O&M costs of approximately \$21,000 per year for operating and maintaining a pump

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station. The Final Technical Memorandum concluded that due to the high capital cost of Alternative 3, it is “fatally flawed resulting in removal from further analysis.”

- *We request that the analysis of this alternative include moving the lift station north and west or east, away from the Lift Pump Properties, and concealing the control station in order to alleviate all potential for odor, sound, and aesthetic issues.³ We also request that CAWD assume all responsibility and costs for any needed grinder pumps.*
- Alternative 4: Horizontal Directional Drill (HDD). This alternative would include a 2,000 linear foot HDD from T608 [Mariposa Ct.] to the Calle La Cruz wet well. The alignment would be a straight line beneath existing private property to the wet well. It would include re-sloping the sewer line to drain downhill from T604 [N of 2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial section from S618 [N of 2805 Ribera Rd.] to S615 [N of 2785 Ribera Rd.], to convey sewer from MH S617 [2805 Ribera Rd.]. This alternative is the most expensive alternative due to the easement acquisition and the high cost of horizontal directional drilling through bedrock.
- Gravity Sewer Options 1-4 Described in HDR Engineering Letter

In addition to the foregoing alternatives, the third-party analysis could include any other alternatives identified by the independent engineer.

4. Notice

Notice for the November 7, 2022 meeting was inadequate since, upon information and belief, only the properties on the north side of Ribera Road received notice. This does not include all of the affected properties, including 2940 Ribera Road, which is across from Mariposa Street and other properties impacted by construction.

5. Conclusion

We request that an independent, third-party analysis of alternatives be performed in order to provide a solution that better balances the interests of the CAWD, the county, the environment, and the neighborhood. The current plan unfairly burdens six homes: the Mariposa Court pump may reduce the value of the Lift Pump Properties because there may be odor and audible noise issues,

³ In fact, the SRT Consultants Memo recommends a siting north of Mariposa Court and away from the homes: “The advantage of this siting is that construction of the paved road can be avoided *and impact to the adjacent residents will be minimized.*” (Italics added.) The memo continues that the disadvantage of doing this would be that CAWD would have to undergo a longer permitting process and more mitigation requirements during construction. Thus, it appears that CAWD has prioritized convenience over impact to residents in choosing the location at the bottom of Mariposa Court.

Re: Carmel Area Wastewater District

May 9, 2011

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and the control panel will be an eyesore, and the Grinder Pump Properties would be unfairly burdened with the costs and responsibility of maintenance of the grinder pumps, and their properties may also be devalued. In addition, the Final Technical Memorandum concluded that current plan is fatally flawed and, instead, recommended Alternative 2 (Removal and Replacement of Pipe in Place).

Thank you for attention to this matter.

Respectfully,

David Schupp
Name: David Schupp

Keith Porter
Name: Keith Porter

Lori Porter
Name: Lori Porter

Tom Slavet
Name: Tom Slavet

Elizabeth Oka
Name: Elizabeth Oka

Ron JCA
Name: Ron JCA

Sue Barnes
Name: Sue Barnes

Stan and Gail Dryden
Name: Stan and Gail Dryden

Deborah A. Vieille
Name: Deborah A. Vieille

Deborah A. Vieille
Name: DEBORAH A. Vieille

LARRY POMEY CMA CHAIRMAN
Name: LARRY POMEY CMA CHAIRMAN

Karen Helton
Name: Karen Helton

Chuck and Carol Keller
Name: Chuck and Carol Keller

cc: Zoe Zepp, Associate Planner at County of Monterey (zeppz@co.monterey.ca.us)
Fionna Jensen, Associate Planner at County of Monterey (jensennf@co.monterey.ca.us)
Rachel Lather, Principal Engineer (Lather@cawd.org)

Friedrich, Michele

From: Angelo, Philip
Sent: Tuesday, November 8, 2022 9:57 AM
To: Friedrich, Michele
Subject: FW: Ribera wastewater project (CAWD)
Attachments: sewerlinecomments.docx



Highlands LUAC Comments 3/3

Best,



Phil Angelo

Associate Planner

Monterey County - Housing & Community Development

1441 Schilling Place, South 2nd Floor

Direct: (831) 784-5731

AngeloP@co.monterey.ca.us

From: Lundquist, Erik <LundquistE@co.monterey.ca.us>
Sent: Wednesday, November 2, 2022 5:07 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Spencer, Craig <SpencerC@co.monterey.ca.us>; Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: FW: Ribera wastewater project (CAWD)

Phil

It looks like another letter was received, see attached.

Thank you

-Erik

Erik V. Lundquist, AICP
Director of Housing & Community Development
County of Monterey Housing & Community Development
831-755-5154 | lundquiste@co.monterey.ca.us



From: Gail Dryden <gddryden@gmail.com>

Sent: Wednesday, November 2, 2022 1:45 PM

To: Lundquist, Erik <LundquistE@co.monterey.ca.us>

Subject: Ribera wastewater project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

I had your email incorrect in the first email that went to several others.

This email pertains to File No. PLN220055.

Please find attached my comments.

Gail Dryden

homeowner, 2795 Ribera Road, Carmel, CA

--

A balanced diet is **dark** chocolate in both hands.

Comments from Gail (Stan) Dryden, homeowner at 2795 Ribera Road, Carmel, CA regarding the CAWD plan to replace the sewer line as per File No. PLN220055

We were notified of a meeting to introduce neighbors to the need for a sewer replacement line in April 2022. We attended the meeting via Zoom to have the plan explained and subsequently, David Lauer came to our property to show us what was planned. We were under the impression from the Zoom meeting and the site visit that this was the only acceptable way to replace the existing sewer line and that it was critically necessary to move forward with this as soon as possible.

We trusted the District in this finding. There is a term, "Trust, but verify." Thankfully, a neighbor, David Scopps, has done some research trying to verify the need and efficacy of this project. The project as presented to affected neighbors has been shown to be lacking in transparency and is most likely NOT the best solution for our neighborhood.

As outlined in the letter of October 31, 2022 signed by affected neighbors there are alternatives that need to be considered thoroughly before anything as disruptive and permanently obtrusive is undertaken. There are, at a minimum, three alternatives that need to be explored more completely by CAWD with notification and input from neighbors before a final plan is put forward.

In the spring I was lead to believe that this project was needed very soon and that there was no other good choice. Clearly, that is not the case. An up-to-date, independent analysis of the current situation is necessary prior to any sewer line construction work in our neighborhood.

Friedrich, Michele

From: Rachel Lather <Lather@cawd.org>
Sent: Friday, November 4, 2022 10:36 AM
To: JohnjBorelli@gmail.com
Cc: Buikema; Steve Thomas; Angelo, Philip
Subject: Carmel Meadows Pipeline Project - Highlands Land Use Advisory Committee

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

Dear Chair Borelli,

In an effort to provide the committee the opportunity to review the complete record of the Carmel Area Wastewater District's application PLN220055 and for the District to provide the full technical record referenced in an email correspondence sent on 11/1/22, from a resident to your committee and our staff, the District is requesting a postponement of the scheduled review of our application. Please let me know if this is possible so we can plan accordingly.

We look forward to the opportunity to present this critical infrastructure project to your committee in the near future.

Rachél Lather, MS, PE
Principal Engineer
(831)624-1248 (office)
831-917-1423



Friedrich, Michele

From: Angelo, Philip
Sent: Tuesday, November 8, 2022 9:55 AM
To: Friedrich, Michele
Subject: FW: CAWD PLN220055 Carmel Meadows Project
Attachments: PLN220055 CAWD Carmel Meadows Lift Station Project.pdf

Highlands LUAC Comments 2/3

Best,



Phil Angelo
Associate Planner
Monterey County - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Lundquist, Erik <LundquistE@co.monterey.ca.us>
Sent: Monday, November 7, 2022 7:12 AM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Zepp, Zoe <ZeppZ@co.monterey.ca.us>; Spencer, Craig <SpencerC@co.monterey.ca.us>; Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: FW: CAWD PLN220055 Carmel Meadows Project

FYI

From: Karen H <kmbhph.18@gmail.com>
Sent: Friday, November 4, 2022 4:06 PM
To: Lundquist, Erik <LundquistE@co.monterey.ca.us>; johnjborelli@gmail.com; lauer@cawd.org
Subject: CAWD PLN220055 Carmel Meadows Project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

[Note: This may be a duplicate email due to an error of one address. My apologies. KMBH.]

November 3, 2022

To: Monterey County Housing and Community Development

c/o Erik V. Lundquist, AICP, Director

1441 Schilling Place, South 2nd Floor
Salinas, CA. 93901-4527

Email: lundquiste@co.monterey.ca.us

Carmel Unincorporated/Highlands Land Use Advisory Committee

c/o John Borelli, Chair
73 Fern Canyon Road
Carmel, CA. 93923

Email: JohnJBorelli@gmail.com

Carmel Area Wastewater District
c/o Daryl Lauer, Collections Superintendent 3945 Rio Road
Carmel-by-the-Sea, CA. 93922

Email: lauer@cawd.org

Re: Carmel Area Wastewater District File No. PLN220055

Dear Mr. Lundquist, Mr. Borelli, and Mr. Lauer:

Thank you for this opportunity to express my appreciation of CAWD's efforts to offer us a state-of-the-art sewage system. However, while I appreciate the efforts, I am not convinced that the option chosen for replacement is the best one. Therefore, in addition to the contents of the letter of October 31, 2022, signed by Carmel Meadows neighbors, I would like to add some points not mentioned.

I will preface my comments below that I want to make clear that I do not object to the replacement or lack appreciation to the extent of maintenance that needs to be completed to make our sewage system safe, sustainable, and efficient in operation as well as considering the costs. There is a spectrum of considerations from lasting major maintenance and repairs on one end to full technologically innovative potential for a new state-of-the-art sewage system. For myself, I am for a balance on that spectrum.

If, as mentioned at the last meeting, failure of the system is imminent because of its aging infrastructure, then I would suggest it be shored up as soon as possible so that we can approach

1

the problem in a practical manner. If the system fails, why wasn't the problem addressed well before it came to the point of failure? Why were residents of Carmel Meadows not given options well before imminent failure was even mentioned? The liability, it would seem, would be on CAWD.

That said, I am also in complete agreement with the points made in the above-mentioned letter and have added my signature to it. I must say that I don't understand why CAWD has chosen such an expensive, intrusive, and intensive option to the maintenance/replacement of the Carmel Meadows sewage system. I wish that this proposal would have been more considerate of residents' daily lives when work is underway. I am also very distressed over the intrusion into resident properties (including mine) and the maintenance responsibilities that will be required by a few. These responsibilities should be with the utility company (CAWD) and not the users of those utilities beyond their own dedicated lines. We don't maintain P G & E power poles, or the phone companies' equipment, and select individuals should not be required to maintain the community's sewage system.

Additionally, this project, as proposed, would seriously disrupt the traffic flow of Ribera Road. Besides the residents' comings and goings, and even without this project, there are very few days at any given time in which construction workers, gardeners, maintenance professionals, and delivery trucks are not routinely driving, parking, and working in Carmel Meadows. Ribera Road is also a beach and trailhead access area. Tourist traffic ebbs and flows here as well. A 6- week to 3-month disruption of the current traffic situation will be incredibly disruptive.

Consider the Impact: Carmel Meadows is enjoyed by residents as a place of peace and quiet, consideration for others, and for the enjoyment of the incredibly beautiful environment that surrounds us. It seems that this particular project "Alternative 3: New Lift Station and Force Main" will disrupt lives in many ways.

1.

The short-term disruption might be tolerated to a degree; however, the permanent installation of grinder pumps and sewage lines in residents' backyards, with the requirement that they maintain them has the potential to lower property values and destroy the whole reason people desire to live in this neighborhood. Additionally, installing equipment that obscures the general environment enjoyed by residents (i.e., the Lift Station structure in Mariposa Court), or makes noise (pumps and grinders), or has the potential to cause foul odors near our homes will have the same general affect (who wants to buy a new responsibility when looking for a retirement home, a family home, or any number of other reasons for buying a new home)? It is unreasonable to expect residents to maintain any part of a sewage system other than that part which joins and serves their house only.

Staging Area will be a nuisance: The proposed staging area is a privately owned downhill-sloped lot that is currently covered with green and healthy ice plant. It is across Ribera Road from Mariposa Court. Trucks will be crossing back and forth in an area where traffic is most frequent. The very thought of this spot being used daily by trucks and large equipment will cause 8 hours of noise, mud and/or dust, potential debris flow and erosion onto the streets, destruction of critter habitat (from ants and

2.

spiders to quail and rabbits, etc.) who may decide to take up residence in or nearer to our homes. Vehicles will be tracking debris back and forth and across Ribera to Mariposa Court. In the meantime, residents, workers, and tourists will be making efforts to come and go from their driveways or parking spots and crossing the Staging location constantly during the day. The scar that will be left when the work is complete will be an unacceptable eyesore at the least, and an environmental disaster at its worst.

3. **"Minimal Excavation"** – The proposed trench for affected backyards is 3-feet wide by 3- 5 feet deep where the relocated and larger 8" pipe is to be installed, and for four residents the additional installation of grinder pumps. Tearing up our backyards and landscaping, even with the promise of full replacement "as it was before" nevertheless will potentially create breaks or obstruct landscape irrigation lines, destruction of fences, landscape & hardscape, disruption of owners' current or planned projects, potential unintended damage, and a general angst of uncertainty. Additionally, those residents with pets will have to have alternatives to their pets' care and supervision during workdays. These points seem unreasonable on many levels; and why would CAWD want these added costs and potential problems when the existing location of the sewer pipe obstructs no one's private property?

4. **Timing is Important** – Carmel Meadows is used by tourists using the trailheads of Carmel River State Park, part time owners, and vacation renters. Several times during the year traffic on Ribera Road ebbs and flows because of summer vacations, long holidays, and local events such as Car Week, Jazz Festival, golf tournaments, Laguna Seca events, etc. To add this project’s activities to Ribera Road traffic during these times would also be a huge disruption. With increased activities also come emergencies – accidents at Highway 1 and Ribera Road, obstructed routes to the trailheads, and resident emergencies: Our first responders must have access to all crises.
5. **Isn’t this one of the most expensive of the proposals?** As mentioned in the Carmel Meadows Neighbors letter of October 31, the “Alternative 2” proposal seems much more cost effective and practical. “Removal & Replacement of Pipe in Place” was, according to the letter, recommended in the Final Technical Memorandum. The current project, “Alternative 3: New Lift Station and Force Main” might be state-of-the-art, but at what cost? Some costs are unknown as mentioned above in #3. It also includes adding extra costs to homeowners for the care and maintenance of grinder pumps and sewage pipes – why should they bear the brunt of those incurred expenses? It also includes the obstruction of view with the not so unobtrusive Lift Station sitting in Mariposa Court. It includes possible foul odors and malfunctions of machinery.

In conclusion, I believe that, at the very least, the current proposal could be amended to offer better options so that destruction of residents’ properties can be avoided. While the technical engineering and technology of the proposed project are impressive, upon closer scrutiny of its impact, I respectfully request that CAWD choose a more practical, cost effective, environmental, AND neighborhood-friendly alternative to the current proposal.

Thank you for listening.

Respectfully,
Karen M. B. Helton

Carmel Meadows Resident

2925 Ribera Road, Carmel, CA. 93923

kmbhph.18@gmail.com

Karen M B Helton
Carmel Meadows Resident
2925 Ribera Road, Carmel, CA. 93923
Kmbhph.18@gmail.com

October 31, 2022

Monterey County Housing and Community Development
c/o Erik V. Lundquist, AICP, Director
1441 Schilling Place, South 2nd Floor
Salinas, CA. 93901-4527
Email: lundquist@co.monterey.ca.us

Carmel Unincorporated/Highlands Land Use Advisory Committee
c/o John Borelli, Chair
73 Fern Canyon Road
Carmel, CA. 93923
Email: JohnJBorelli@gmail.com

Carmel Area Wastewater District
c/o Daryl Lauer, Collections Superintendent
3945 Rio Road
Carmel-by-the-Sea, CA. 93922
Email: lauer@cawd.org

**Re: Carmel Area Wastewater District
File No. PLN220055**

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I will preface my comments below that I want to make clear that I do not object to the replacement or lack appreciation to the extent of maintenance that needs to be completed to make our sewage system safe, sustainable, and efficient in operation as well as considering the costs. There is a spectrum of considerations from lasting major maintenance and repairs on one end to full technologically innovative potential for a new state-of-the-art sewage system. For myself, I am for a balance on that spectrum.

If, as mentioned at the last meeting, failure of the system is imminent because of its aging infrastructure, then I would suggest it be shored up as soon as possible so that we can approach

the problem in a practical manner. If the system fails, why wasn't the problem addressed well before it came to the point of failure? Why were residents of Carmel Meadows not given options well before imminent failure was even mentioned? The liability, it would seem, would be on CAWD.

That said, I am also in complete agreement with the points made in the above-mentioned letter and have added my signature to it. I must say that I don't understand why CAWD has chosen such an expensive, intrusive, and intensive option to the maintenance/replacement of the Carmel Meadows sewage system. I wish that this proposal would have been more considerate of residents' daily lives when work is underway. I am also very distressed over the intrusion into resident properties (including mine) and the maintenance responsibilities that will be required by a few. These responsibilities should be with the utility company (CAWD) and not the users of those utilities beyond their own dedicated lines. We don't maintain P G & E power poles, or the phone companies' equipment, and select individuals should not be required to maintain the community's sewage system.

Additionally, this project, as proposed, would seriously disrupt the traffic flow of Ribera Road. Besides the residents' comings and goings, and even without this project, there are very few days at any given time in which construction workers, gardeners, maintenance professionals, and delivery trucks are not routinely driving, parking, and working in Carmel Meadows. Ribera Road is also a beach and trailhead access area. Tourist traffic ebbs and flows here as well. A 6-week to 3-month disruption of the current traffic situation will be incredibly disruptive.

Consider the Impact: Carmel Meadows is enjoyed by residents as a place of peace and quiet, consideration for others, and for the enjoyment of the incredibly beautiful environment that surrounds us. It seems that this particular project "Alternative 3: New Lift Station and Force Main" will disrupt lives in many ways.

1. The short-term disruption might be tolerated to a degree; however, the permanent installation of grinder pumps and sewage lines in residents' backyards, with the requirement that they maintain them has the potential to lower property values and destroy the whole reason people desire to live in this neighborhood. Additionally, installing equipment that obscures the general environment enjoyed by residents (i.e., the Lift Station structure in Mariposa Court), or makes noise (pumps and grinders), or has the potential to cause foul odors near our homes will have the same general affect (who wants to buy a new responsibility when looking for a retirement home, a family home, or any number of other reasons for buying a new home)? It is unreasonable to expect residents to maintain any part of a sewage system other than that part which joins and serves their house only.
2. **Staging Area will be a nuisance:** The proposed staging area is a privately owned downhill-sloped lot that is currently covered with green and healthy ice plant. It is across Ribera Road from Mariposa Court. Trucks will be crossing back and forth in an area where traffic is most frequent. The very thought of this spot being used daily by trucks and large equipment will cause 8 hours of noise, mud and/or dust, potential debris flow and erosion onto the streets, destruction of critter habitat (from ants and

spiders to quail and rabbits, etc.) who may decide to take up residence in or nearer to our homes. Vehicles will be tracking debris back and forth and across Ribera to Mariposa Court. In the meantime, residents, workers, and tourists will be making efforts to come and go from their driveways or parking spots and crossing the Staging location constantly during the day. The scar that will be left when the work is complete will be an unacceptable eyesore at the least, and an environmental disaster at its worst.

3. **“Minimal Excavation”** – The proposed trench for affected backyards is 3-feet wide by 3-5 feet deep where the relocated and larger 8” pipe is to be installed, and for four residents the additional installation of grinder pumps. Tearing up our backyards and landscaping, even with the promise of full replacement “as it was before” nevertheless will potentially create breaks or obstruct landscape irrigation lines, destruction of fences, landscape & hardscape, disruption of owners’ current or planned projects, potential unintended damage, and a general angst of uncertainty. Additionally, those residents with pets will have to have alternatives to their pets’ care and supervision during workdays. These points seem unreasonable on many levels; and why would CAWD want these added costs and potential problems when the existing location of the sewer pipe obstructs no one’s private property?
4. **Timing is Important** – Carmel Meadows is used by tourists using the trailheads of Carmel River State Park, part time owners, and vacation renters. Several times during the year traffic on Ribera Road ebbs and flows because of summer vacations, long holidays, and local events such as Car Week, Jazz Festival, golf tournaments, Laguna Seca events, etc. To add this project’s activities to Ribera Road traffic during these times would also be a huge disruption. With increased activities also come emergencies – accidents at Highway 1 and Ribera Road, obstructed routes to the trailheads, and resident emergencies: Our first responders must have access to all crises.
5. **Isn’t this one of the most expensive of the proposals?** As mentioned in the Carmel Meadows Neighbors letter of October 31, the “Alternative 2” proposal seems much more cost effective and practical. “Removal & Replacement of Pipe in Place” was, according to the letter, recommended in the Final Technical Memorandum. The current project, “Alternative 3: New Lift Station and Force Main” might be state-of-the-art, but at what cost? Some costs are unknown as mentioned above in #3. It also includes adding extra costs to homeowners for the care and maintenance of grinder pumps and sewage pipes – why should they bear the brunt of those incurred expenses? It also includes the obstruction of view with the not so unobtrusive Lift Station sitting in Mariposa Court. It includes possible foul odors and malfunctions of machinery.

In conclusion, I believe that, at the very least, the current proposal could be amended to offer better options so that destruction of residents’ properties can be avoided. While the technical engineering and technology of the proposed project are impressive, upon closer scrutiny of its impact, I respectfully request that CAWD choose a more practical, cost effective, environmental, AND neighborhood-friendly alternative to the current proposal.

Thank you for listening.

Respectfully,
Karen M. B. Helton



EXHIBIT D

VonLangen, Peter@Waterboards

From: Packard, Harvey@Waterboards
Sent: Friday, February 3, 2023 1:19 PM
To: VonLangen, Peter@Waterboards
Subject: RE: Carmel Meadows Project - draft letter for your use
Attachments: Letter to CAWD regarding Carmel Meadows.docx

Rachel, here's a draft. Sorry it's taking so long.

Thanks, Harvey

From: VonLangen, Peter@Waterboards <Peter.VonLangen@waterboards.ca.gov>
Sent: Friday, February 3, 2023 12:33 PM
To: Packard, Harvey@Waterboards <Harvey.Packard@waterboards.ca.gov>
Subject: RE: Carmel Meadows Project - draft letter for your use

Hi Harvey,
The letter looks good to me.
Thanks,
Peter

From: Packard, Harvey@Waterboards <Harvey.Packard@waterboards.ca.gov>
Sent: Friday, February 3, 2023 9:20 AM
To: VonLangen, Peter@Waterboards <Peter.VonLangen@waterboards.ca.gov>
Subject: RE: Carmel Meadows Project - draft letter for your use

Peter, please take a look at this draft. I'll get it out when you're done. thanks.

<R:\RB3\Shared\NPDES\Facilities\Monterey\Carmel Area Wastewater District\Letter to CAWD regarding Carmel Meadows.docx>

From: VonLangen, Peter@Waterboards <Peter.VonLangen@waterboards.ca.gov>
Sent: Tuesday, December 6, 2022 10:35 AM
To: Packard, Harvey@Waterboards <Harvey.Packard@waterboards.ca.gov>
Subject: FW: Carmel Meadows Project - draft letter for your use

Hi Harvey,
Want me to start on a similar letter for Carmel Meadows?
Thanks,
Peter

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, December 6, 2022 10:06 AM
To: VonLangen, Peter@Waterboards <Peter.VonLangen@waterboards.ca.gov>
Subject: Carmel Meadows Project - draft letter for your use

EXTERNAL:

I updated this letter based on the one for Pescadero. Hopefully this helps.

Rachél Lather, MS, PE
Principal Engineer
(831)624-1248 (office)
831-917-1423



VonLangen, Peter@Waterboards

From: Rachel Lather <Lather@cawd.org>
Sent: Wednesday, February 8, 2023 9:03 AM
To: VonLangen, Peter@Waterboards
Subject: RE: Draft letter for Carmel Meadows
Attachments: Letter to CAWD regarding Carmel Meadows.docx

EXTERNAL:

Yes. See attached

From: VonLangen, Peter@Waterboards <Peter.VonLangen@waterboards.ca.gov>
Sent: Wednesday, February 8, 2023 7:59 AM
To: Rachel Lather <Lather@cawd.org>
Subject: Draft letter for Carmel Meadows

This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Rachel,

Do you have any comments on the draft Harvey sent before finalizing and signature version?

Thanks,

Peter

VonLangen, Peter@Waterboards

From: Rachel Lather <Lather@cawd.org>
Sent: Wednesday, November 30, 2022 8:10 AM
To: VonLangen, Peter@Waterboards; Packard, Harvey@Waterboards; Olmos, Kristina@Waterboards
Cc: Barbara Buikema; Steve Thomas; Nicholas Panofsky
Subject: RE: Draft Letter re: Pescadero Road sewer re-routing
Attachments: Pescadero RWQCB Draft letter - rll 11_30_22.docx

EXTERNAL:

I somehow sent the version with the track changes still on it. Please use this one. Thanks.

From: Rachel Lather
Sent: Tuesday, November 29, 2022 3:14 PM
To: VonLangen, Peter@Waterboards <peter.vonlangen@waterboards.ca.gov>; Harvey.packard@waterboards.ca.gov; Olmos, Kristina@Waterboards <kristina.olmos@waterboards.ca.gov>
Cc: Barbara Buikema <Buikema@cawd.org>; Steve Thomas <steve@tbccommunications.com>; Nicholas Panofsky <npanofsky@mnsengineers.com>
Subject: Draft Letter re: Pescadero Road sewer re-routing

Peter and Harvey, attached is the draft we put together for you to use to provide us with a letter of support (hopefully) for our decision to relocated the sewer uphill of Pescadero Canyon. I had our field crew roughly stake the 20 foot wide alignment on either side of the pipe line. I photographed it and have attached photos and a location map for your information. Our Board of Directors meeting is December 8th and includes a tour of the site. Please let me know if you can help us demonstrate that the chosen alignment is our best choice. Thank you!

Rachél Lather, MS, PE
Principal Engineer
(831)624-1248 (office)
831-917-1423



VonLangen, Peter@Waterboards

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, November 15, 2022 6:04 PM
To: VonLangen, Peter@Waterboards
Cc: Packard, Harvey@Waterboards; Olmos, Kristina@Waterboards; Barbara Buikema
Subject: Re: Pescadero Canyon Sewer Relocation

EXTERNAL:

Thanks. I've been involved in the review and comments from CASA. I guess they are gearing up with new comments!

Sent from my iPhone

On Nov 15, 2022, at 4:46 PM, VonLangen, Peter@Waterboards
<Peter.VonLangen@waterboards.ca.gov> wrote:

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Hi Rachel,

Look forward to our discussion tomorrow morning and we support the efforts to protect water quality. We are in the process of putting requirements in NPDES permit renewals to address threats from climate change and this includes other infrastructure aspects such as collection systems. We also want to make sure you are aware of the draft Sanitary Sewer System Permit that is getting proposed to State Board for adoption on December 6th:

https://www.waterboards.ca.gov/water_issues/programs/sso/docs/2022/Proposed-Sanitary-Sewer-Systems-General-Order-October-28-2022.pdf

We recommend you look at the proposed permit to understand the requirements (if adopted) and this is opportunity to plan ahead, as you are already doing. For example, Attachment D, sections 8.1 through 8.4, requires enrollees to prioritize condition assessments for portions of their system located in steep terrain, environmental areas more vulnerable if system fails, and components of the system more vulnerable to climate change impacts. Then the enrollee must develop plan to address those portions of the system identified that need improvement.

Thanks,
Peter

Peter von Langen, Ph.D., P.G.
Engineering Geologist
Central Coast Water Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401
peter.vonlangen@waterboards.ca.gov
Phone 805-549-3688
Fax 805-543-0397



From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, November 8, 2022 10:29 AM
To: VonLangen, Peter@Waterboards <Peter.VonLangen@waterboards.ca.gov>
Cc: Packard, Harvey@Waterboards <Harvey.Packard@waterboards.ca.gov>; Olmos, Kristina@Waterboards <Kristina.Olmos@waterboards.ca.gov>; Barbara Buikema <Buikema@cawd.org>
Subject: Pescadero Canyon Sewer Relocation

EXTERNAL:

All, apparently trying to do the right thing is getting me in trouble in Carmel. This is yet another project that has the community in an uproar about needing ejector pumps to allow for the relocation of the sewer away from a water body. Once again, I am asking for a letter in support of our efforts. Attached is the Tech memo regarding the feasibility of relocating the sewer. We have 60% plans that are on hold until we figure out how to deal with the public and our Board of Directors. The Board wants us to leave the 14 or so homes on the existing sewer line so they don't need ejector pumps. Their laterals are around 80 years old so if we pipe burst the sewer and line the manholes (this would be difficult due to access limitations) there would still be spills from their laterals. Let me know if you'd accept that solution and I'll stop fighting about it....

Thank you all for your time and support with this.

Rachél Lather, MS, PE
Principal Engineer
(831)624-1248 (office)
831-917-1423



VonLangen, Peter@Waterboards

From: CAWD <+18316241248>
Sent: Thursday, February 2, 2023 12:32 PM
To: Packard, Harvey@Waterboards
Subject: Voice Mail (59 seconds)
Attachments: audio.mp3

Hi Harvey, this is Rochelle lather with Carmel Area Wastewater district. I know I'm not a priority as far as things are going on in your work world right now, but I'm calling you to ask you to please sign the letter for us on our Carmel Meadows project in the regional boards stand on that because we're going to the Planning Commission on March 8th and the planner that's putting together the report wants a copy of that and I don't have it. And so anyway that's they probably have a very short window of time for getting the packets together and he needs it for that. Anyway, my number is 831-624-1248. Thanks.

You received a voice mail from [CAWD](#).

Thank you for using Transcription! If you don't see a transcript above, it's because the audio quality was not clear enough to transcribe.

[Set Up Voice Mail](#)

From: [LATHER,RACHEL](#)
To: [Packard, Harvey@Waterboards](mailto:Packard,Harvey@Waterboards)
Subject: Voice Mail (58 seconds)
Date: Friday, February 3, 2023 11:19:48 AM

Hi, Harvey, it's Rochelle Lather. I'm calling from my home phone. My number is [REDACTED]. It's just getting a little tight for us because the planner at County of Monterey has to get his staff report down. And I'd like your letter to be included so that there's no question that, you know, that we could do another alignment through, you know, the existing alignment or anything like that on the Carmel Carmen. Sorry, Carmel Meadows project. Yeah. I'll e-mail you and if you want to send me the draft just so I can make sure there's no typos. So I'm not telling you that something was spelled wrong or whatever. That would be helpful because I know you guys are busy, so let me know. Bye.

You received a voice mail from [LATHER,RACHEL](#).

Thank you for using Transcription! If you don't see a transcript above, it's because the audio quality was not clear enough to transcribe.

[Set Up Voice Mail](#)

VonLangen, Peter@Waterboards

From: CAWD <+18316241248>
Sent: Thursday, January 5, 2023 11:45 AM
To: VonLangen, Peter@Waterboards
Subject: Voice Mail (41 seconds)
Attachments: audio.mp3

Hi, Peter. It's Rochelle from Carmel Area Wastewater district. I know you have more pressing items on your mind right now, but I was trying to find out what the status of the letter that you're producing for us about Carmel Meadows, what the status is. That would be very helpful. We have a meeting with Mary Adams tomorrow at 9:00 AM, but I at least want to tell her one's pending. We're going to talk to her about both those projects anyway. If you have a moment in between emergencies, my number is 831-624-1248. Thanks.

You received a voice mail from [CAWD](#).

Thank you for using Transcription! If you don't see a transcript above, it's because the audio quality was not clear enough to transcribe.

[Set Up Voice Mail](#)

EXHIBIT E

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
To: Rachel Lather; Yingying Cai
Sent: 8/10/2022 12:42:29 PM
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Rachael,

That would be okay.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Wednesday, August 10, 2022 12:31 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>; Yingying Cai <yingying.cai@wra-ca.com>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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I will send the signed application with the check attached, if that's OK.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Wednesday, August 10, 2022 12:11 PM
To: Rachel Lather <Lather@cawd.org>; Yingying Cai <yingying.cai@wra-ca.com>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Rachel,

I wouldn't edit the form but crossing it out or writing N/A should be fine.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Wednesday, August 10, 2022 12:06 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>; Yingying Cai <yingying.cai@wra-ca.com>

Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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The Coastal Application Form says "I acknowledge that I will need a Building Permit..." We are exempt from that. Can I delete that part of the statement? There are also no OWTS on the project. The approval is only for compliance with zoning regulations.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>

Sent: Tuesday, August 9, 2022 2:02 PM

To: Rachel Lather <Lather@cawd.org>; Yingying Cai <yingying.cai@wra-ca.com>

Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi,

From Yingyings response it doesn't sound like anything would be on slopes?

I do need the color and material finishes.

Best,



Phil Angelo

Associate Planner

he/him or they/them

County of Monterey - Housing & Community Development

1441 Schilling Place, South 2nd Floor

Direct: (831) 784-5731

AngeloP@co.monterey.ca.us

From: Angelo, Philip

Sent: Tuesday, August 9, 2022 2:00 PM

To: Rachel Lather <Lather@cawd.org>; Yingying Cai <yingying.cai@wra-ca.com>

Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

If it's anything that falls into the definition of development 20.06.310 and is on slopes in excess of 30% we would need to apply the permit:

20.06.310 DEVELOPMENT.

Development means, on land, in or under water:

1. placement or erection of any solid material or structure, including but not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line;
2. discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste;
3. grading, removing, dredging, mining, or extraction of any materials, including excavation and filling which requires environmental review pursuant to the Monterey County CEQA Guidelines.
4. change in the density or intensity of use of land, including but not limited to:
 - a) subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code);
 - b) lot line adjustments;
 - c) any other division of land, including lot splits; and,

- d) conditional certificates of compliance pursuant to the Subdivision Map Act;
5. change in the intensity of use of water, or of access thereto;
6. expansion or construction of water wells, surface water diversions, or septic systems, except for replacement thereof;
7. construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility;
8. removal or harvesting of major vegetation including land clearing pursuant to Chapter 16.12 and removal of natural vegetation specified in the applicable ordinances as requiring a coastal development permit. "Development" shall not include removal or harvesting of major vegetation for agricultural purposes, except in North County as per Section 20.144.080.A, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Zberg-Nejedly Forest Practice Act of 1973 (commencing with Section 45111);
9. any project within 750 feet of a known archaeological resource, as per sections shown on current County Resource Maps or other available information;
10. tree removal as per sections 20.144.050.A, 20.145.060.A, 20.146.060.A, and 20.147.050.A.
11. granting of transferable density credits pertaining to a lot in the critical viewshed of Big Sur, pursuant to Chapter 20.64.190.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, August 9, 2022 1:46 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>; Yingying Cai <yingying.cai@wra-ca.com>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

I was confused about the development on 30 % slopes, also. I don't believe there is anything being constructed on 30% slopes. We are removing above ground piping on 30 % slopes but not disturbing the ground. Yingying, please verify. The only above ground item is an electrical/scada panel. It's probably stainless steel but can be wrapped another color. I've done that before

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Tuesday, August 9, 2022 1:22 PM
To: Yingying Cai <yingying.cai@wra-ca.com>
Cc: Rachel Lather <Lather@cawd.org>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Yingying,

Link Received. Once the fee is paid I would be able to formally intake and route the CDP to the other departments for completeness review. (We previously circulated the Initial Study through our internal clearing house so I'm hoping they wouldn't have further comments, but we do need to send it). Two things I notices on the materials:

- The application forms indicate there's development on slopes in excess of 30%, but I'm not seeing that shown/quantified on the design development drawings. Is this shown somewhere? I think the findings required for this permit would be straightforward in this case, they're in 20.64.230.E.1., but we need the square footage/location to assess whether the permit for development on slopes is required and if so what the "impact" would be. If there's no development on slope in excess of 30% just let me know.
- The design approval form should include the finishes "colors and materials" for the structures that will be visible. I know it seems silly for a project like this, but I had a project where we had to scramble last minute to get the finish of a retaining wall so its easier if we have it up front. If the materials are prefab concrete and a metal grate a photo example or the photo from the brochure would work for this.

Best Regards,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Yingying Cai <yingying.cai@wra-ca.com>
Sent: Tuesday, August 9, 2022 12:48 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Rachel Lather <lather@cawd.org>
Subject: Re: Coastal Permitting Questions - Carmel Meadows Project

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Hello Philip,

I got a couple more documents from the engineer for the project (100% Design Sheets and Geotech Report).

Please use this [link](#) to download the documents. This folder includes all the documents you requested for the project except the construction plan that is being prepared.

Thanks,
Yingying

On Tue, Aug 9, 2022 at 12:41 PM Rachel Lather <Lather@cawd.org> wrote:
I'm getting the check cut now and will mail it to you.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Tuesday, August 9, 2022 12:40 PM
To: Rachel Lather <Lather@cawd.org>
Cc: Yingying Cai <yingying.cai@wra-ca.com>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Received, yes this appears to be the full archaeological report.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, August 9, 2022 12:31 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Yingying Cai <yingying.cai@wra-ca.com>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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I guess that's because it was confidential information. Let me know if this is the full study. If not, I'll ask Ling Ling to send it to you.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Tuesday, August 9, 2022 12:22 PM
To: Rachel Lather <Lather@cawd.org>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Rachael,

Thanks for sending the link. It looks like it only has the executive summary for the archaeological report, we would need the full report for the CDP submittal.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, August 9, 2022 12:06 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

[CEQA Notices - Carmel Area WasteWater District \(cawd.org\)](http://cawd.org)

You will find the information at this link. It includes the response to comments and the archaeologic report. It's 323 pages so I can't email it.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Tuesday, August 9, 2022 12:01 PM
To: Rachel Lather <Lather@cawd.org>

Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Rachel,

I have the Initial Study public draft with the attached biological report and arborist report, but I don't have the archaeological report or any responses to the County's comments on the Initial Study.

I've attached the invoice, you could pay online or mail a check to:

*HCD-Planning – Phil Angelo
1441 Schilling Place, South 2nd Floor
Salinas, CA 93901*

Please include PLN220055 and a contact number in case the cashiers at the front have questions processing the check. When the fee is paid, to formally submit please send all the materials from the checklist to me in PDF format.

Best Regards,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, August 9, 2022 11:16 AM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Thank you! I will. I have lots going on and I get a little impatient...been doing this too long. You do have the environmental reports for the Carmel Meadows project, right? Do I send the check to you?

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Tuesday, August 9, 2022 9:47 AM
To: Rachel Lather <Lather@cawd.org>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Rachel,

It would likely be in the same permit tier of approximately 12k. I tried to see if it could be reduced to a Coastal Administrative Permit (a lower tier of coastal development permit which is approximately 7k), but in the LDR zoning around Corona rd public utility facilities are a conditionally allowable use requiring a Coastal Development Permit (20.14.050.B.), so it doesn't appear like there's any way around it.

You may wish to reach out to management to see if staff could support a fee waiver or partial fee waiver for the project, as it's a consolidation removing people from septic.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Rachel Lather <Lather@cawd.org>
Sent: Tuesday, August 9, 2022 8:53 AM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

Regarding the fees, I have another project on Corona Road that is taking people off septic and building a collection system and pump station to send the sewage to our main. Are the fees going to be similar?

We thought fees would be waived but if they are going to be \$12K, the 30 homeowners will have to pony up the money to get a permit. We are trying to do an Assessment District to pay for the project but we need the permits before we can establish the Assessment District. This adds a new layer of difficulty to get the project going.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Monday, August 8, 2022 9:37 AM
To: Rachel Lather <Lather@cawd.org>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Rachel,

1. This is what County staff believes we need to address this issue at the hearing body. How would you address it?
2. Don't worry about the deeds for now.
3. I recommend reading the Coastal Implementation Plan zoning and section on the Carmel Area. Your environmental consultant may already be familiar with these as the Initial Study needed to address applicable land use plans and potential inconsistencies with local regulations intended for the protection of environmental resources.

Best,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731

From: Rachel Lather <Lather@cawd.org>
Sent: Monday, August 8, 2022 7:58 AM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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I understand #1 and still think that developing a construction plan without a contractor is a waste of time and money but we will give you one.

I respectfully object to #2- I have 25 years of experience in planning and public works combined and an easement is enough. Why burden property owners with sewer project requirements on their deed?

#3- I'll get the check, I was confused about the long list of permits when it is one pipeline being replaced, a pump station, and an aerial pipeline being removed by hand.

From: Angelo, Philip <AngeloP@co.monterey.ca.us>
Sent: Friday, August 5, 2022 5:29 PM
To: Rachel Lather <Lather@cawd.org>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Rachel,

I discussed the project a little with Anna today. To address your questions below:

1. As part of the Coastal Development Permit we're trying to assess temporary construction impacts to the surrounding neighborhood: noise, number of truck trips, duration of construction. We don't need a detailed breakdown of construction operations but we need general/preliminary information we can use to address any comments from the public or decision making bodies on whether there will be noise impacts, significant truck trips, and where stockpiling will go.
2. I believe I indicated to Yingying we would just need the easements for the coastal permit review, but may need the deeds for condition compliance. Typically a number of conditions require notices or agreements to be recorded on the properties affected by the project (a notice of permit approval, a mitigation monitoring agreement, etc). These apply to projects for both public agencies and private developers. I'll check with County counsel on whether these can only be recorded on the CAWD's property so we won't need the other grant deeds.
3. The number/type of permits come from the regulations from the Coastal Implementation Plan. The permitting requirements in the coastal zone require different permits for development and a number of different coastal resources (slopes, trees, sensitive habitats, etc.) that need to be listed out separately.

The processing and fee are the same regardless of the number of Coastal Development Permits listed. There are a number of exemptions within Title 20 (the zoning ordinance), but non-exempt development, which includes development within 100 feet of sensitive habitat, pulls the project out of being exempt. For this project, we would need a coastal development permit for the project scope, one for development within 750 of archaeological resources because of the positive/identified sites within the Carmel Meadows, and one for development within 100 feet of environmentally sensitive habitat (Coastal Brambles). If the slope map

requested in the application checklist shows there's no development on slopes in excess of 30% we would delete that permit from the project description.

I hope this helps, let us know if you need anything else.

Best Regards,



Phil Angelo
Associate Planner
he/him or they/them
County of Monterey - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Sent: Thursday, August 4, 2022 3:33 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Subject: FW: Coastal Permitting Questions - Carmel Meadows Project

Let's try to find a few minutes tomorrow to discuss this.

Thanks,

Anna V. Quenga, AICP
Principal Planner - Current Planning
Monterey County Housing and Community Development
1441 Schilling Place ~ South Building Second Floor
Salinas, CA 93901
(831) 755-5175 Direct (831) 757-9516 Fax
<https://www.co.monterey.ca.us/government/departments-a-h/housing-community-development/planning-services>

The Monterey County Housing and Community Development Department is currently operating with limited in-office staff to reduce risk of COVID-19 transfer to and between its workforce and our customers. During this time, responses may be delayed, but staff is checking email and will respond to you. If you have an urgent issue that requires immediate attention, please contact our main line at: [831-755-5025](tel:831-755-5025).

From: Rachel Lather <Lather@cawd.org>
Sent: Thursday, August 4, 2022 3:28 PM
To: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Thanks. The result of this will affect the fees and I'm waiting to get a check for fees from CAWD.

From: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Sent: Thursday, August 4, 2022 3:26 PM
To: Rachel Lather <Lather@cawd.org>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Rachel. Let me dig into this tomorrow and I'll follow up by the end of the day.

Sincerely,

Anna V. Quenga, AICP

Principal Planner - Current Planning
Monterey County Housing and Community Development
1441 Schilling Place ~ South Building Second Floor
Salinas, CA 93901
(831) 755-5175 Direct (831) 757-9516 Fax
<https://www.co.monterey.ca.us/government/departments-a-h/housing-community-development/planning-services>

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From: Rachel Lather <Lather@cawd.org>
Sent: Thursday, August 4, 2022 11:08 AM
To: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Anna, when would you have time to discuss my questions (see below)? Can we set up a Zoom or MS Teams meeting with you and Phillip? Usually a replacement sewer doesn't require so much scrutiny or even a permit. I do agree that the new pump station needs a permit but we are replacing a sewer in the backyards of peoples homes within our existing easement so that part is exempt. Please let me know and I will send you an invitation to meet. Thank you.

From: Lundquist, Erik <LundquistE@co.monterey.ca.us>
Sent: Tuesday, July 26, 2022 3:35 PM
To: Rachel Lather <Lather@cawd.org>
Cc: Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: RE: Coastal Permitting Questions - Carmel Meadows Project

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Hi Rachel

I was out of the Office last week so I am delayed in responding. That said, it might be best for the project planner and his supervisor Anna Quenga to meet with you to discuss your questions. I have copied her to this email.

I see that you copied Joe Sidor on the email. He is no longer working for the County so I have removed him.

Otherwise, if you have further questions let me know.

Thank you
-Erik

Erik V. Lundquist, AICP
Director of Housing & Community Development
County of Monterey Housing & Community Development
831-755-5154 | lundquiste@co.monterey.ca.us



From: Rachel Lather <Lather@cawd.org>

Sent: Wednesday, July 13, 2022 8:45 AM

To: Lundquist, Erik <LundquistE@co.monterey.ca.us>; Sidor, Joe (Joseph) x5262 <SidorJ@co.monterey.ca.us>

Subject: Coastal Permitting Questions - Carmel Meadows Project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

I understand that Erik has denied our request for a Coastal permit waiver for the Carmel Meadows project and I understand that it's due to funding issues. That's fine, I understand. I do have some concerns about what the planner is requesting us to provide. I think he's a new planner and is using a checklist that doesn't necessarily apply to public projects.

1. We can guess at what the construction staging plan will be but usually it is part of the contractor's responsibility. We cannot bid the project without the Coastal Permit so I don't have a contractor.
2. We have an easement for our pipeline through private property. I do not understand why we would need to provide copy of deeds for each property we are working on.
3. I looked at the list of costs and I don't understand why there's so many development permits listed. This is a replacement of a sewer pipeline in a sewer easement. I worked for Planning in Santa Cruz County and public works type projects are exempt from those, I thought.

I would like to discuss this with you. This is an important project to prevent sewage from spilling into the lagoon and I'd like to get it constructed this year. Thanks.

--

YINGYING CAI | Environmental Planner | o: [415.524.7485](tel:415.524.7485) x 857 c: [415.860.2338](tel:415.860.2338) | yingying.cai@wra-ca.com

WRA, Inc. | www.wra-ca.com | 4225 Hollis St., Emeryville, CA 94608 | San Rafael | San Diego | Petaluma | Fort Bragg | Denver

EXHIBIT F

Petition from Carmel Meadows Neighbors to CAWD Board of Directors

As Carmel Meadows residents, we, the undersigned, oppose CAWD's proposed Lift Station and Sewer Replacement Project (the "Project"). The Project unfairly burdens six Carmel Meadows residents for CAWD's benefits despite there being a better feasible alternative—simply replacing the current gravity line with a new gravity line—and CAWD has not provided an adequate response to their concerns.

The Project would negatively and unfairly impact some of our residents because it requires grinder pumps on four properties and a sewer pump close to two properties. This would interfere with those residents' enjoyment of their homes and may diminish the value of their properties.

From what we understand, CAWD's consultant engineers concluded that an early iteration of the Project was "*fatally flawed*" and that the replacement in kind alternative was the *best* alternative. We also understand that CAWD has prepared a full set of specs and bid documents for the replacement in kind alternative. In addition, Carmel Highlands Land Use Advisory Committee recommended that CAWD reconsider the replacement in kind alternative.

Nevertheless, despite repeated requests from our residents, CAWD has failed to provide a definitive bona fide justification to the valid inquiries as to why it abandoned the replacement in kind alternative in favor of the Project.

Therefore, we, the undersigned, request that the CAWD Board forego the Project and pursue the replacement in kind alternative.

PRINT NAME	ADDRESS	SIGNATURE
1. Diane Guinta	2730 Ribera Rd	Diane R. Guinta
2. DAVID MOORE	2855 " "	David Moore
3. DIANE MCKEAN	2875 Ribera Rd	Kiane McKean
4. Andrea Jung	2685 Ribera Rd.	Andrea Jung
5. MARK WHITE	3035 RIBERA	Mark White
6. DIANA BUSMAN	3045 RIBERA	Diana Busman
7. Steven Jungerberg	2830 Ribera	St J
8. Pamela Jungerberg	2830 Ribera Rd.	pamela
9. BRENN HOOT	2820 RIBERA RD	Brenn Hoot



done - stordahl signed

	PRINT NAME	ADDRESS	SIGNATURE
10.	KAREN BIRD	2800 RIBERA RD	Ka Bird
11.	COURTNEY DAY	2810 Ribera Rd	C Day
12.	Carolyn McGurn	2737 Calla Gray	Carolyn McGurn
13.	THOMAS O. MCGURN	2737 Calla Gray	Thomas McGurn
14.	SUSAN BARNES	2825 Ribera Rd	Susan Barnes
15.	Diane Stordahl	2774 Pradera	Diane Stordahl
16.	STEPHEN STORDAHL	2774 PRADERA RD	Stordahl
17.	Kimberly Birdsong	2767 Pradera Rd.	Kimberly Birdsong
18.	Debbie Larkin	2734 Pradera Rd	Debbie Larkin
19.	Nancy Knopp	2724 Pradera Rd.	Nancy & Knopp
20.	MITCH FERGUSON	2744 PRADERA RD	Mitch Ferguson
21.	Emily Craparo	2804 Pradera Rd.	Emily Craparo
22.	LINDA PETRIC BUNCH	27110 Arriba Way	Linda Petric Bunch
23.	JAMES T. BUNCH	" " "	James T. Bunch
24.	Roberta N. Sandde	27105 Arriba Way	Roberta N. Sandde
25.	HERMAN VAN GANSEN	2807 PRADERA RD	Herman Van Gansen
25.	Kimberly Sturges	2827 Pradera Rd	Kimberly Sturges
27.	MARILYN KOVAL	2827 PRADERA RD	Marilyn Koval
28.	JAY SINCLAIR	2867 PRADERA RD	Jay Sinclair
29.	Vivian Finch	2877 Pradera Rd	Vivian Finch
30.	Lloyd Finch	2871 Pradera Rd	Lloyd Finch
	VIVIAN FINCH		
	LLOYD FINCH		

Petition from Carmel Meadows Neighbors to CAWD Board of Directors

As Carmel Meadows residents, we, the undersigned, oppose CAWD's proposed Lift Station and Sewer Replacement Project (the "Project"). The Project unfairly burdens six Carmel Meadows residents for CAWD's benefits despite there being a better feasible alternative—simply replacing the current gravity line with a new gravity line—and CAWD has not provided an adequate response to their concerns.

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From what we understand, CAWD's consultant engineers concluded that an early iteration of the Project was "*fatally flawed*" and that the replacement in kind alternative was the *best* alternative. We also understand that CAWD has prepared a full set of specs and bid documents for the replacement in kind alternative. In addition, Carmel Highlands Land Use Advisory Committee recommended that CAWD reconsider the replacement in kind alternative.

Nevertheless, despite repeated requests from our residents, CAWD has failed to provide a definitive bona fide justification to the valid inquiries as to why it abandoned the replacement in kind alternative in favor of the Project.


Therefore, we, the undersigned, request that the CAWD Board forego the Project and pursue the replacement in kind alternative.

	PRINT NAME	ADDRESS	SIGNATURE
1.	Lori Porter	2935 Ribera	Lori Porter
2.	Keith Porter	2935 Ribera	Keith Porter
3.	Row Oka	2940 Ribera	Row Oka
4.	Elizabeth Oka	2940 Ribera	Elizabeth Oka
5.	Charles R Keller	2835 Ribera Rd	Charles R Keller
6.	Carol Keller	2835 Ribera Rd.	Carol J. Keller
7.	Donna Kusumoto	2915 Ribera Rd.	Donna Kusumoto
8.	Jennie England	2910 Ribera Rd.	Jennie England
9.	YOICHI KUSUMOTO	2915 RIBERA RD.	Yochi Kusumoto

PRINT NAME

ADDRESS

SIGNATURE

10.	Karen Helton	2925 Ribera Rd	
11.	PHIL HELTON	2925 RIBERA RD	
12.	Tobi Slavet	2955 Ribera Rd	

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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

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PRINT NAME

ADDRESS

SIGNATURE

1. Larry + Chris Adams	2780 Ribera Rd	
2. Barbara C. Ricciardi	2965 Ribera Rd.	
3. David Scupp	2955 Ribera Rd	
4. Werner Ju	2805 Ribera Rd.	
5. Deborah Ju	2805 Ribera Road	
6. Paul H Goldstein	2730 Ribera Rd	
7. David JEDINAK	2810 Ribera Rd	
8. Cora Malone	3025 Ribera	
9. Nibert CONNER	2960 Ribera	

	PRINT NAME	ADDRESS	SIGNATURE
10.	PETER D. LOCKHART	2734 PRADERA CARMIC CA 93923	<i>Peter D Lockhart</i>
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

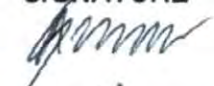

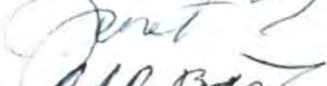


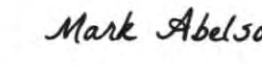
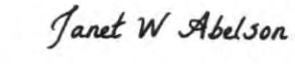
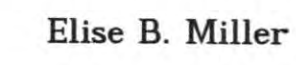

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PRINT NAME	ADDRESS	SIGNATURE
1. Alpesh Sheth	2975 Ribera Rd CARMEL CA 93923	
2. Benjamin Ruston - Julie J. Wood	2995 Ribera Rd Carmel CA 93923	
3. Janet Myer	3005 Ribera Rd. Carmel, CA 93923	
4. DANIEL BOGART	2895 RIBERA RD, CARMEL, CA 93923	
5. Nataliya Bogart		
6. Mary Dahl	2775 Ribera Rd. Carmel CA 93923	
7. Mark Abelson	2973 Cuesta Way	
8. Janet Abelson	2973 Cuesta Way	
9. Elise Miller	2955 Ribera Rd	

Petition from Carmel Meadows Neighbors to CAWD Board of Directors



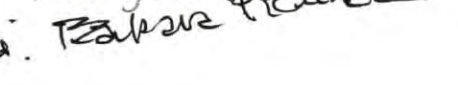

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1.	PRINT NAME	ADDRESS	SIGNATURE
	Margaret J Sineoff	3030 Ribera Road Carmel CA 95023	
2.	MARGARET SINEOFF Margaret Kylanter	2890 Ribera Road	
3.	Margaret Kylanter	2890 Ribera Road	
4.	Barbara Rainer	2747 Prater's Road	
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

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PRINT NAME	ADDRESS	SIGNATURE
1. Debara Goldberg	2837 Pradera Rd	Debra Goldberg
2. Dean Goldberg	2837 PRADERA RD	Dean Goldberg
3. Tybe Franklin	2942 Cresta Way	Tybe Franklin
4. Judd FRANKLIN	2942 Cresta Way	JF
5.		
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors




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	PRINT NAME	ADDRESS	SIGNATURE
1.	MARGO GREEN	2982 CUESTA WAY	
2.	Stanley Dryden	2795 Ribera Rd	
3.	Gail Dryden	2795 Ribera Road	
4.			
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

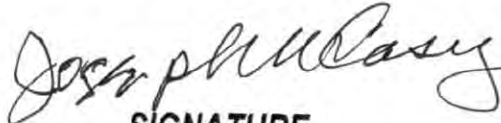
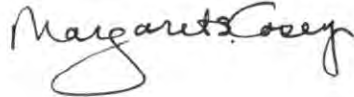
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Joseph M. Casey	3055 Ribera Rd	
2.	Margaret S. Casey	3055 Ribera Rd	
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors



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PRINT NAME	ADDRESS	SIGNATURE
1. RICHARD F. MACLEOD	2527 Ribera	
2. Kathy Drago	2790 Ribera	
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors


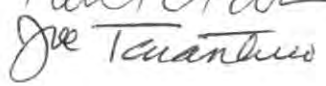
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PRINT NAME	ADDRESS	SIGNATURE
1. PAUL TARANTINO	2784 PRADERA CARMEL	
2. JOE TARANTINO	2784 PRADERA CARMEL	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Michael Besner	2845 RIBERA	Michael Besner
2.	MARGIE THOMAS	2845 RIBERA	Margie Thomas
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

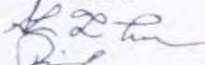

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	PRINT NAME	ADDRESS	SIGNATURE
1.	Shu Fen Lam	2718 Pradera Rd	
2.	Pui K. Lam	Carmel, CA 93923	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	PAUL CHASE	2847 Pradera Carmel	
2.	BILL CHASE	2847 PRADERA	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Maya Pechak	2640 Ribera Rd	
2.	Dr Jochen Pechak		
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	PRINT NAME	ADDRESS	SIGNATURE
1.	MARJORIE HERBERT	1751 CALLE LA CRUZ	
2.	J. Arthur Hatley	" " " "	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Maria Ostrakow	2650 Risque Rd	
2.	Maria Ostrakow	2650 RISKU RD	
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

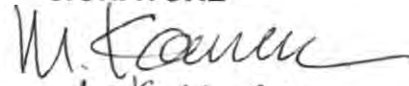
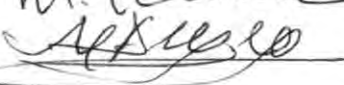
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	PRINT NAME	ADDRESS	SIGNATURE
1.	MICHAEL KAMM	2257 PRADERA RD	
2.	MARIA KAMM	2257 PRADERA RD	
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Step you'd sign & return to

Petition from Carmel Meadows Neighbors to CAWD Board of Directors

Joan Dryden
2795 Alhambra

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PRINT NAME	ADDRESS	SIGNATURE
1. KATHLEEN ANDERSON	2862 CUESTA WAY	<i>Kathleen M. Anderson</i>
2. Robert Anderson	CARMEL 2862 Cuesta Way	<i>Robert Anderson</i>
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors


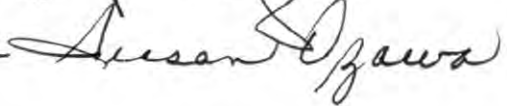
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Spencer Ozawa	2595 Ribera	
2.	Susan Ozawa	2595 Ribera	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Caroline Moyer	2983 Avesta	Caroline Moyer
2.		Way	
3.	David Moyer	2983 Avesta Way	LB Moyer
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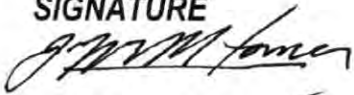
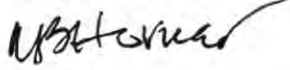
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	PRINT NAME	ADDRESS	SIGNATURE
1.	JEFFREY N. HORNER	27035 MEADOW WAY CARMEL, CA 93923	
2.	LUCIA B. HORNER	27035 MEADOW WAY CARMEL, CA 93923	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	ANDREW POPADILUK	2754 PRADERARD	
2.	SYLVIA MARIA POPADILUK	2754 PRADERARD CARMEL, CA 93923	Sylvia Maria Popadiluk
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	PRINT NAME	ADDRESS	SIGNATURE
1.	ELLEN TURBOW	2992 Cuesta Way Carmel, CA 93923	Ellen Turbow
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Robbin R. TORREY	2695 Ribera Rd. Carmel, CA 93923	Robbin R. Torrey
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Nancy Bennett	3000 Ribera Rd Carmel, CA 93923	Nancy Bennett
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Donna Garven	2705 Ribera Rd	
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From what we understand, CAWD's consultant engineers concluded that an early iteration of the Project was "*fatally flawed*" and that the replacement in kind alternative was the *best* alternative. We also understand that CAWD has prepared a full set of specs and bid documents for the replacement in kind alternative. In addition, Carmel Highlands Land Use Advisory Committee recommended that CAWD reconsider the replacement in kind alternative.

Nevertheless, despite repeated requests from our residents, CAWD has failed to provide a definitive bona fide justification to the valid inquiries as to why it abandoned the replacement in kind alternative in favor of the Project.

Therefore, we, the undersigned, request that the CAWD Board forego the Project and pursue the replacement in kind alternative.

	PRINT NAME	ADDRESS	SIGNATURE
1.	Deborah A Vieille	2815 Ribera Road Carmel.	93923 Deborah A Vieille
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

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	PRINT NAME	ADDRESS	SIGNATURE
1.	NANCY CATCHLOW	2510 RIBERA	Nancy G. Catchlow
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

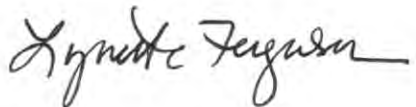
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	PRINT NAME	ADDRESS	SIGNATURE
1.	LYNETTE FERGUSON	2744 PRADERA RD CARMEL, CA 93923	
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	PRINT NAME	ADDRESS	SIGNATURE
1.	DONALD B. MCKEAN	2875 RIBERA RD CARMEL, CA, 93923	Donald B. McKean
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Karen Aznavoorian	2963 Cuesta Way	
2.		Carmel, Ca	
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

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	PRINT NAME	ADDRESS	SIGNATURE
1.	Loredana Casey	2919 Hillcrest Cir Carmel, CA 93923	Loredana Casey
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

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	PRINT NAME	ADDRESS	SIGNATURE
1.	LISA TREADWELL		
2.		2962 CUESTA WAY	Lisa A Treadwell
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	PRINT NAME	ADDRESS	SIGNATURE
1.	Marta & Tom Koepfer	3040 Ribera Road	
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Petition from Carmel Meadows Neighbors to CAWD Board of Directors

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Nevertheless, despite repeated requests from our residents, CAWD has failed to provide a definitive bona fide justification to the valid inquiries as to why it abandoned the replacement in kind alternative in favor of the Project.

Therefore, we, the undersigned, request that the CAWD Board forego the Project and pursue the replacement in kind alternative.

PRINT NAME	ADDRESS	SIGNATURE
1. Claire Odello Berry	3015 Ribera Rd Carmel	Claire Odello Berry
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Nevertheless, despite repeated requests from our residents, CAWD has failed to provide a definitive bona fide justification to the valid inquiries as to why it abandoned the replacement in kind alternative in favor of the Project.

Therefore, we, the undersigned, request that the CAWD Board forego the Project and pursue the replacement in kind alternative.


	PRINT NAME	ADDRESS	SIGNATURE
1.	JANICE JANSEN	2800 RIBERA RD CARMEL CA 93923	
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EXHIBIT G



CARMEL MEADOWS
ASSOCIATION

May 10, 2023

Phil Angelo, Associate Planner
County of Monterey
1441 Schilling Place, South 2nd Floor
Salinas, CA 93901-4527
AngeloP@co.monterey.ca.us

RE: CAWD CARMEL MEADOWS SEWER REPLACEMENT PROJECT

Dear Associate Planner Phil Angelo:

The Carmel Meadows residents expressed concern and a willingness to support the group of affected residents opposing the CAWD's proposed Lift Station and Sewer Replacement Project during our annual meeting on April 13, 2023. The Project unfairly burdens six residents for CAWD's benefit despite the existence of a better, more reliable, and feasible alternative - simply replacing the existing gravity line in kind.


The Project, as currently proposed, will negatively and unfairly impact six of our residents because it requires grinder pumps on four properties and a lift pump in very close proximity to two other properties. This scheme appears needlessly complex and relies on our tenuous electrical grid to keep the sewage flowing. The grinder pumps may even restrict the type of waste that is normally sent down the drain. This system has the potential of adversely affecting many of our residents' quality of life and will likely reduce the value of the affected properties.

From what we understand, CAWD's consulting engineers had concluded that an early iteration of the Project was "*fatally flawed*" and that replacement in kind was the *best* alternative. We understand that CAWD has even prepared a full set of specs and bid documents for the replacement in kind alternative. In addition, the Land Use Advisory Committee has recommended that CAWD reconsider in favor of the replacement in kind alternative.

We have been told that despite repeated requests by our residents, CAWD has yet to provide a definitive reply to their valid inquiries as to why it has abandoned the replacement in kind alternative in favor of the current Project.

We therefore respectfully request that CAWD reconsider in favor of the replacement in kind alternative.

Sincerely,

A handwritten signature in black ink that reads "Larry Purcell". The signature is written in a cursive, slightly slanted style.

Larry Purcell,
Carmel Meadows Association Board Chairman

Cc: Barbara Buikema, CAWD General Manager (buikema@cawd.org)
Ken White, CAWD Board President (white@cawd.org)
Michael Rachel, CAWD Board Member (rachel@cawd.org)
Bob Siegfried, CAWD Board Member (siegfried@cawd.org)
Kevan Urquhart, CAWD Board Member (urquhart@cawd.org)
Greg D'Ambrosio, CAWD Board Member (dambrosio@cawd.org)
Supervisor Mary Adams, District 5 (MooreS@co.monterey.ca.us)

EXHIBIT H

Krista M. Ostoich

ATTORNEY AT LAW

February 7, 2023

Ken White, Board President
Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93922
white@cawd.org

Michael Rachel, Member
Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93922
rachel@cawd.org

Bob Siegfried, Member
Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93922
siegfried@cawd.org

Kevan Urquhart, Member
Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93922
urquhart@cawd.org

Greg D'Ambrosio, Member
Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93922
dambrosio@cawd.org

RE: CARMEL MEADOWS LIFT STATION AND SEWER REPLACEMENT PROJECT

Dear Board President White and Members of the Board:

This office has been retained to represent neighbors in Carmel Meadows who will be negatively impacted by the Carmel Area Wastewater District's ("CAWD") proposed Lift Station and Sewer Replacement Project (the "Project"). These neighbors have reasonable concerns about CAWD's plan to replace the existing gravity sewer line north of Ribera Road with a pressurized line. Rather than flowing east to west, the new pressurized line would take a circuitous route and require the use of carbon-producing pumps, specifically grinder pumps on four properties ("Grinder Pump Properties") and a lift sewer pump in close proximity to two properties ("Sewer Pump Properties"). The Project would impose the burden of maintenance, expense, and inconvenience on the Grinder Pump Properties and noxious odor, noise, and visual impacts on the Sewer Pump Properties. Furthermore, it appears that residents would be forced to expend significant funds for new lateral connections.

While CAWD has argued that the proposed Project is the only feasible alternative, there

is a better option—simply replacing the current gravity sewer line with a new gravity sewer line (the “Replacement Option”). In fact, CAWD’s own engineering consultant, Kennedy/Jenks Consultants, recommended the Replacement Option (“2013 Study”),ⁱ and CAWD has already invested significant resources in that option, even preparing a full set of bid documents. The Replacement Option is less expensive when factoring in annual operation and maintenance costs, eliminates a carbon footprint, and avoids negative impacts on residents. In addition, it avoids the risk of expensive litigation. The record does not contain a compelling justification for the abandonment of the Replacement Option. Therefore, CAWD Board members risk violating their fiduciary duty by abandoning the Replacement Option and pursuing the proposed Project.

Carmel Meadows residents have repeatedly expressed their concerns to both CAWD and the County of Monterey (“County”), and the Carmel Highlands Land Use Advisory Committee (“LUAC”) recommended that their concerns be considered (See Attachment 1, 11/01/22 letter from neighbors; Attachment 2, 11/07/22 LUAC Minutes.) Unfortunately, the residents have not received any definitive responses to their valid inquiries as to why the Project is necessary and who will be responsible for certain associated expenses of the Project, including the long-term maintenance of the grinder pumps. Since CAWD has not adequately addressed the neighbors’ concerns and instead is threatening to circumvent the permitting process by declaring an emergency, my office was retained to represent their interests. My hope is that after reviewing this letter, you are willing to discuss my clients’ concerns with me directly.

1. The Proposed Project Would Substantially Burden Carmel Meadows Properties.

The Grinder Pump Property residents will incur the burden of maintenance, expense, and inconvenience associated with the grinder pumps. It appears that residents will be responsible for maintaining and replacing the grinder pumps after a period of time. Any repairs required by “mis-use” will be the financial responsibility of the homeowner. Residents will be responsible for the electrical service required to run the pumps. The grinder pumps must be flushed out with water for at least ten minutes before absences from the home. Finally, because the grinder pumps will not function without electricity, these residents will effectively be without sewer service every time the electricity fails. This winter has provided a reminder for our community about the unreliability of our electricity utility: there have been electrical outages in Carmel Meadows on at least four occasions during the past several months. It is unclear whether CAWD plans to install generators to ensure that these properties have sewer service during electrical outages, or if CAWD expects those residents to simply do without sewer services during electrical outages.

Moreover, CAWD has not even informed the Grinder Pump Property residents of the specifics of their responsibilities. While I have seen a draft Policy, there does not appear to be a final policy regarding grinder pumps. My clients do not know whether CAWD will own the grinder pumps and provide all maintenance over the life of the pumps, or whether the property owners will be required to cover the expense of maintenance. Additionally, it is common knowledge that grinder pumps must be replaced in 10-20 years. Will the property owners be responsible for installing new grinder pumps once the original grinder pumps need to be replaced? Finally, it is unclear whether residents would be forced to expend significant funds for new lateral connections. The property owners have a right to receive concrete information from

CAWD about the expected expenses that they will accrue as a result of CAWD's decision to pursue the proposed Project.

Similarly, the owners of the Sewer Pump Property residents are concerned about the proximity between the sewer pump and their residences. It appears that the sewer pump will be located mere feet from the Sewer Pump Properties.ⁱⁱ Thus, any noise or noxious odors emanating from the sewer pump will directly impact those residents. Furthermore, the unappealing aesthetic qualities of the sewer plant infrastructure and anxiety caused by mere knowledge of its proximity will interfere with the comfortable enjoyment of property.

Note that the operable Carmel Meadows Pump No. 2 is located a significant distance away from the closest residence. I assume the location was chosen so as not to impact the nearby residences with the noise and odors associated with lifting and moving raw sewage. If the proposed Project proceeds, CAWD needs to redesign the location of the sewer pump so that it does not impact any of the residences, as it did to protect the property owners when it constructed Carmel Meadows Pump No. 2. Otherwise, CAWD will be exposing itself to significant liability from impacted property owners.

2. The Replacement Option Is a Better Alternative.

In its public Discourse, CAWD has purported that the proposed Project is the only feasible option for continued sewer service at the affected properties. This is untrue. Our review of CAWD's background studies demonstrates that there is clearly another feasible option—the Replacement Option—which is less expensive, more environmentally friendly, and avoids negative impacts on residents. In fact, in the 2013 study, CAWD's own consultant concluded that the Replacement Option was the *best* alternative,ⁱⁱⁱ and CAWD has already invested significant resources in that option, even preparing a full set of bid documents.

From the information disclosed by CAWD in response to a Public Records Acts request, the 2013 Study contains the most recent assessment of the condition of the above-ground sewer line that is at issue. Based on that assessment, and the associated Geotechnical Investigation Memorandum, the Replacement Option was determined to be a better alternative to provide a long-term solution and a reliable sewer pipeline than the proposed Project.

The 2013 Study concluded that the proposed Project is “more expensive when factoring in the annual [operating and maintenance] costs of approximately \$21,000 per year for operating and maintaining a pump station. . . . [¶] Due to the high capital and O&M cost of [the proposed Project] . . . [this alternative is] *fatally flawed* resulting in removal from any further analysis.” (Italics added.)^{iv}

The Replacement Option eliminates a carbon footprint. In contrast to the Replacement Option, which relies on gravity, the proposed Project requires the use of four grinder pumps and a lift pump. Based on rough calculations, the proposed Project would contribute approximately 2,308 pounds of CO₂ per year, or 115,400 pounds of CO₂ in a 50-year period.^v I note that CAWD's mission statement provides that it is a “special district dedicated to the protection of the public health and the environment through the cost-effective collection and treatment of

wastewater and the return of clean water to the environment.” It is difficult to reconcile CAWD’s mission statement regarding its dedication to protecting the environment with the additional 2,308 pounds of CO2 emissions that CAWD proposes to release into the environment every year, in addition to wasted water due to the requirement of flushing out grinder pumps every time a Grinder Pump Property leaves town.

Finally, the Replacement Option would eliminate negative impacts on residents.

For the foregoing reasons, LUAC recommended that the Replacement Option be considered and, alternatively, if the proposed Project is nevertheless pursued, CAWD (1) move the lift pump away from houses toward the lagoon; (2) landscape to camouflage any observable components of the lift pump; (3) assume financial responsibility in perpetuity of the grinder pump maintenance and replacement costs; and (4) address and mitigate sound and odor concerns. (See Attachment 2, 11/07/22 LUAC Minutes.)

3. CAWD Board Members Risk Violating Their Fiduciary Duty by Pivoting to the Plan Because the Replacement Option Is a Better Alternative and There Is No Compelling Justification for Abandoning It.

As elected officials, each one of the CAWD Board members has a fiduciary duty to the property owners within the service area of CAWD. CAWD Board members have a duty to make reasonable efforts to ensure the proper use of public money for the benefit of the people government serves and to refrain from acts that undermine good governance. (See *County of San Bernardino v. Walsh* (2007) 158 Cal.App.4th 533; *City of Atascadero v. Merrill Lynch, Pierce, Fenner & Smith, Inc.* (1998) 68 Cal.App.4th 445.) In the context of this Project, this means that the CAWD Board members have a duty to make a reasonable effort to ensure there is a compelling justification for both expending more taxpayer funds on the proposed Project when a better alternative exists. Nevertheless, despite specific requests for the reasons for the abandonment of the Replacement Alternative in Public Records Act requests, CAWD has failed to provide a single compelling justification.

A. The 2019 Study Does Not Provide a Reasonable Justification for the Pivot.

Notwithstanding the conclusions of the 2013 Study, in an apparent attempt to justify the proposed Project, CAWD hired SRT Consultants to conduct a feasibility study on the proposed Project in 2019 (“2019 Study”).^{vi} Yet, the 2019 Study does not clarify why CAWD chose to abandon the Replacement Option and pursue the proposed Project.

Preliminarily, since the 2019 Study is a feasibility study of only the proposed Project, it does not analyze the viability of the Replacement Option. Therefore, it cannot provide a justification for abandoning the Replacement Option.

Moreover, the 2019 Study relied on the condition assessment performed as part of the 2013 Study, and no new condition assessment of the sewer pipeline was performed. Yet, the language used in the 2019 Study twists the results of the 2013 Study in what seems to be an attempt to denigrate the Replacement Option. For example, the 2019 Study, provides that the

2013 Study “identified horizontal and longitudinal cracks, heavy corrosion, settlement, and excessive joint deflection on the interceptor.”^{vii} In actuality, however, the 2013 Study provides that “[v]ery little exterior corrosion was found on the 6-inch ductile iron pipeline....”^{viii} The 2013 Study further concludes: “Area that appeared in the CCTV inspection to have cracks in the pipe wall were investigated on the exterior of the pipe. This investigation failed to locate cracks on the exterior, leading to an opinion that the pipe is sound. What appear to be cracks on the interior may be formations created by scum accumulation.”^{ix}

Neither study supports CAWD’s purported reasons for pushing the proposed Project instead of the Replacement Option. At the November 7, 2022 LUAC meeting for the Project, CAWD presented PowerPoint slides that concluded that the Replacement Option (Alternative 2 from 2013 Study) was disqualified. These slides list three apparent reasons for disqualification: (1) unstable hillside-requires rock bolting and plate piles; (2) lack of access for construction; and (3) riparian habitat/lagoon is currently at the base of pipeline supports. Since neither the 2013 Study nor the 2019 Study identified any of these reasons for disqualifying the Replacement Option, CAWD must disclose on what information it is basing its decision to proceed with the proposed Project before simply expecting my clients to expend significant funds for the new lateral connections, as well as accept the burden and impacts of the grinder and sewer pumps.

B. Moving the Sewer Lines Away from Waterways Appears to Be Pretext.

Another purported reason CAWD has given for why the proposed Project is preferable to the Replacement Option is that it moves the sewer lines away from the ocean and lagoon. While it is true that the Project would move a significant portion of the sewer line approximately 70 to 90 feet upslope from the lagoon, the proposed Project is completely dependent on the pumping of all of the rerouted sewer west to the Carmel Meadows Pump No. 2, which is located even closer to the ocean and lagoon than the current sewer line location. Carmel Meadows Pump No. 2 will be affected by sea level rise well before the proposed Project or the Replacement Option are affected. Once sea level rise affects Carmel Meadows Pump No. 2, both the proposed Project and the Replacement Option will require a complete redesign, and my clients will again be forced to invest significant resources into yet a new sewer replacement project.

If CAWD is concerned about sea level rise, it should design a project that actually protects infrastructure from sea rise. The proposed Project will have no more protection from sea level rise than the Replacement Option, and it is disingenuous for CAWD to try to push the proposed Project into development based on that faulty presumption.

C. CAWD’s Lack of Maintenance Is a Cause of the Need to Replace the Current Line, and Ease of Maintenance Is Not a Compelling Justification for the Project.

The HDR Engineering opinion letter dated February 5, 2003, concluded: “the above-grade sections of the pipeline can continue to be operational, and be safe from future catastrophic failure *if the current topography of the area, and drainage conditions are maintained.*” (Italics added).^x In assessing the condition of the foundation, the 2013 Study notes that the “most severe issue with the foundations is the corrosion of the C-channel supports at the foundation connections caused from long term rusting The level of corrosion observed on the C-

channels *would be greatly reduced if soil and plant matter was removed from the tops of the foundations.*” (Italics added.)^{xi} The foregoing language implicates CAWD’s failure to maintain its easement and infrastructure as the reason for ground movement or foundation corrosion.

My clients have paid their annual assessments to CAWD, which is supposed to cover CAWD’s maintenance of its easements and pipelines. It seems like CAWD has failed to responsibly utilize the funds allocated to it to maintain its easement and infrastructure adjacent to the Carmel River, and as a result, the infrastructure needs to be repaired. It is unjust and improper for CAWD to expect my clients to absorb the additional costs associated with the proposed Project, as well as deal with the impacts of the grinder pumps and sewer pump, when simple routine maintenance would have alleviated any problems associated with the current sewer line. CAWD’s ease of maintenance is not justification for choosing the proposed Project over the Replacement Option.

D. *CAWD’s General Manager Refused to Explain the Reason for the Pivot.*

Since nothing in the CAWD record seems to justify the pivot from the Replacement Option to the proposed Project, with all its expenses and impacts on property owners, I reached out directly to CAWD General Manager Barbara Buikema for more information. Ms. Buikema replied that she could not have that discussion without her attorney present. While I respect her right to have legal counsel present, it is difficult to understand CAWD’s refusal to clarify its reasoning behind the abrupt decision to pursue the proposed Project. This is especially concerning given CAWD’s comments that it may skip the permitting process by declaring an emergency in October 2022 and again during the CAWD Board meeting in January 2023.

4. Pursuing the Proposed Project Risks Expensive Litigation for CAWD.

A. The Proposed Project Constitutes a Nuisance.

Civil Code section 3479 provides in pertinent part, “Anything which is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property . . . is a nuisance.” Property owners have successfully utilized nuisance causes of action for an award of damages for loss of value to real property and personal discomfort due to odors emanating from sewage pumps. For example, in *Varjabedian v. City of Madera* (1978) 20 Cal.3d 285, the jury returned a verdict in favor of plaintiffs on a nuisance cause of action for damages caused by noxious odors emanating from defendant city’s sewage treatment plant, which was 600 feet from plaintiffs’ property. (*Id.* at pp. 289-290, citing *Kornoff v. Kingsburg Cotton Oil. Co.* (1955) 45 Cal.2d 265.)

Here, the effect of the sewage plant odor on the value of property would be even more significant than in the *Varjabedian* case because the lift pump would be adjacent to the Sewer Pump Properties, rather than 600 feet away, as in *Varjabedian*. Furthermore, while the intensity of the odors may range from a “smell” to “very bad” to “horrible,” “[e]ven when classified as mere ‘smell,’” the aroma would be offensive enough to destroy the comfort and enjoyment of his home and property. (*Varjabedian, supra*, 20 Cal.3d 285.) Additional effects of the sewage plant

on the property value would be caused by the unappealing aesthetic qualities of the sewer plant and its infrastructure, anxiety caused by mere knowledge of its proximity, or the audible sound.

B. The Proposed Project Constitute Inverse Condemnation.

Cal. Const. art. I, § 19 (formerly art. I, § 14) requires that just compensation be paid when private property is taken or damaged for public use. “Property is ‘taken or damaged’ within the meaning of article I, section 19 of the California Constitution, so as to give rise to a claim for inverse condemnation, when: (1) the property has been physically invaded in a tangible manner; (2) no physical invasion has occurred, but the property has been physically damaged; or (3) *an intangible intrusion onto the property has occurred which has caused no damage to the property but places a burden on the property that is direct, substantial, and peculiar to the property itself.*” (*Boxer v. City of Beverly Hills* (2016) 246 Cal.App.4th 1212, 1218, italics added, citing *Oliver v. AT&T Wireless Services* (1999) 76 Cal.App.4th 521, 530; accord, *San Diego Gas & Electric Co. v. Superior Court* (1996) 13 Cal.4th 893, 940 (San Diego Gas & Electric Co.); *Varjabedian, supra*, 20 Cal. 3d at p. 296.)

In *San Diego Gas & Electric Co., supra*, 13 Cal.4th at pp. 940-941, the California Supreme Court summarized its holding in *Varjabedian*, which has strikingly similar facts to here:

Thus in [*Varjabedian, supra*, 20 Cal.3d 285] the defendant city built a sewage treatment plant adjacent to and upwind from the plaintiffs' farm. The plaintiffs alleged that the plant emitted strong and offensive odors which the prevailing winds blew directly onto their property, rendering it uninhabitable. The trial court granted a motion for judgment on the pleadings as to the plaintiffs' cause of action for inverse condemnation on the ground that recovery on that theory required physical damage to the property. We reversed the judgment in that respect, holding that the plaintiffs could state a cause of action for inverse condemnation without alleging physical damage to the property. We reasoned that “If a plaintiff can establish that his property has suffered a ‘direct and peculiar and substantial’ burden as a result of recurring odors produced by a sewage facility . . . then the policy favoring distribution of the resulting loss of market value is strong [citation] and the likelihood that compensation will impede necessary public construction is relatively slight.” (*Id.* at p. 298.) Nauseous gases flowing repeatedly and directly onto the plaintiffs' land, we held, could constitute such a burden. The Courts of Appeal have applied the same test to inverse condemnation actions based on such intangible intrusions as jet aircraft noise (*Aaron v. City of Los Angeles* (1974) 40 Cal.App.3d 471, 493 [operation of municipal airport]) and traffic noise, dust, and loss of air and light (*Harding v. State of California ex rel. Dept. of Transportation* (1984) 159 Cal.App.3d 359, 367 [freeway construction].)

Thus, case law dictates that inverse condemnation lies even if there is no physical invasion or physical damage to the property. (See also *CUNA Mutual Life Ins. Co. v. Los Angeles County Metropolitan Transportation Authority* (2003) 108 Cal.App.4th 382, 400).

Here, both the Grinder Pump Properties and the Sewer Pump Properties would suffer a “direct and peculiar and substantial” burden as a result of CAWD’s proposed Project. The Sewer Pump Properties would be exposed to recurring odors produced by an upwind sewage facility. As the *Varjabedian* case held, nauseous gases flowing repeatedly and directly onto the plaintiffs’ land, constitute a “direct and peculiar and substantial” burden. The Grinder Pump Properties would suffer the “direct and peculiar and substantial” burdens of maintenance and replacement responsibilities and be without sewer service during power outages. Additionally, the Grinder Pump Properties have been singled out for this burden.

5. Conclusion

In conclusion, my clients have reasonable concerns about the proposed Project and have not received an adequate response to their concerns. The decisions CAWD makes today regarding the proposed Project are going to have long-lasting effects on my clients and their property values. I hope that this letter encourages you to reach out to me to set up a time to discuss the issues I have set forth herein. I think it would be productive and useful if we could create open lines of communication to discuss the issues at hand honestly.

Very truly yours,



Krista M. Ostoich, Esq

Cc: Barbara Buikema, General Manager;
Supervisor Mary Adams, District 5;
Phil Angelo, Monterey County Land Use Planner

ⁱ Kennedy/Jenks Consultants letter dated July 16, 2013.

ⁱⁱ The plans for the Project do not provide a definitive location for the sewer pump infrastructure and appear to depend on public right of ways and historic easements.

ⁱⁱⁱ Kennedy/Jenks Consultants letter dated July 16, 2013.

^{iv} Kennedy/Jenks Consultants letter dated July 16, 2013, at p. 9.

^v The proposed sewer pump is expected to serve 52 residences in Carmel Meadows. The average California household uses approximately 200 gallons of water per day, not including landscaping. Based on these figures, approximately 10,000 gallons per day would flow through the proposed sewer pump as part of the Project. The 2019 Study notes that the pump would move approximately 3,600 gallons per hour, which equates to two-and-one-half hours per day of pumping to accommodate the flow. Per year, the proposed sewer pump will consume 2,700 Kilowatt hours, which equates approximately 2,200 pounds of CO₂ emissions per year. Furthermore, based on the average state household water consumption of 200 gallons per day, the electricity required to for each of the four grinder pumps would contribute an additional 27 pounds of CO₂ emissions each year, totaling 108 pounds of CO₂ per year.

^{vi} 2013 HDR Report dated April 10, 2003, at p. 6.

^{vii} 2019 Carmel Meadows Feasibility Study dated April 27, 2019, at p. 1.

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- ^{viii} Kennedy/Jenks Consultants letter dated July 16, 2013, at p. 3.
^{ix} Kennedy/Jenks Consultants letter dated July 16, 2013, at p. 3.
^x Kennedy/Jenks Consultants letter dated July 16, 2013, at p. 4.
^{xi} Kennedy/Jenks Consultants letter dated July 16, 2013, at p. 4.

Attachment 1

CARMEL MEADOWS NEIGHBORS

VIA ELECTRONIC MAIL ONLY

November 1, 2022

Monterey County Housing and Community Development
c/o Erik V. Lundquist, AICP, Director
1441 Schilling Place, South 2nd Floor
Salinas, CA 93901-4527
Email: lundquist@co.montereyca.us

Carmel Unincorporated/Highlands Land Use Advisory Committee
c/o John Borelli, Chair
73 Fern Canyon Road
Carmel, CA 93923
Email: JohnjBorelli@gmail.com

Carmel Area Wastewater District
c/o Daryl Lauer, Collections Superintendent
3945 Rio Road
Carmel-By-The-Sea, CA 93922
Email: lauer@cawd.org

**Re: Carmel Area Wastewater District
File No. PLN220055**

Dear Mr. Lundquist, Mr. Borelli, and Mr. Lauer:

We appreciate the efforts of Carmel Area Wastewater District (“CAWD”) to improve the sewage system in our neighborhood. Nevertheless, we respectfully oppose the current CAWD plan because it unfairly impacts numerous households and is not the most feasible alternative for the neighborhood. Therefore, we request that a third-party, independent engineering analysis be performed to evaluate the feasibility of alternative plans.

1. Background

The existing sewer line is a simple gravity line that flows west, requiring no pumps or control panels. In contrast, the proposed sewer line would pump wastewater east to the bottom of Mariposa Court, where it would combine with several other pipelines and get pumped up Mariposa Court to a line that flows west again. The new system would include the installation of grinder pumps on four properties—2795, 2805, 2815 and 2825 Ribera Road (together, the “Grinder Pump Properties”)—and a four-foot diameter by 13-foot-deep lift pump and control panel between two properties—2955 and 2935 Ribera Road (together, the “Lift Pump Properties”)—at the bottom (north end) of Mariposa

Re: Carmel Area Wastewater District

November 1, 2022

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Court. There would also be a sizable control panel for the lift pump at the end of Mariposa Court. The lift pump would service approximately 52 homes.

During the Carmel Unincorporated/Highlands Land Use Advisory Committee (“CULUAC”) meeting on October 17, 2022, CAWD estimated that construction would take approximately three months. In addition to the installation of the grinder pumps and lift pump, the construction would include over 2,000 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration as well as the rebuilding of underground and aerial sewer. The construction would cause audible noise and detectible odors. (Carmel Meadows Final ISMND.) And there would be a “temporary interruption of [sewage] service” to the residents. (SRT Consultants Memorandum dated August 27, 2019 (“SRT Consultants Memo”).)

During the October 17, 2022 meeting, CAWD Principal Engineer Rachel Lather represented that CAWD could replace the laterals on the approximately 13 north Ribera Road homes west of Mariposa Court. During the October 26, 2022 site meeting, however, CAWD retracted this offer.

While we appreciate CAWD’s efforts to improve the sewage system, the imminence of the reliability issues may have been exaggerated, and capacity may be the driving force.¹ In addition, as discussed below, CAWD consultants deemed the current plan “fatally flawed” and recommended replacing the current line instead.

¹ The HDR Engineering opinion letter dated February 5, 2003 concluded: “[I]t is our opinion that the above-grade sections of the pipeline can continue to be operational, and be safe from future catastrophic failure if the current topography of the area, and drainage conditions are maintained.”

The HDR Engineering opinion letter dated April 20, 2003 (“HDR Engineering Letter”) was primarily concerned with future capacity, not reliability. The letter concluded: “The existing sewer line is not in immediate danger of failing.” Further, “[t]he absence of problems with roots and the absence of obvious leakage at the joints suggest that the buried portions of the sewer are in reasonably good condition for their age. . . . [¶] It appears that the elevated sections of the current sewer are relatively stable and that future movement will take place slowly as the result of creep.” *To extend reliability, the HDR Engineering Letter recommended maintenance.*

The Kennedy/Jenks Consultants letter dated June 14, 2013 stated: “We are not aware of any incidents where the pipe needed to be repaired or replaced. Therefore, with regard to the serviceability of the existing pipeline, the system has performed well.”

The Kennedy/Jenks Consultants Final Technical Memorandum dated July 16, 2013 (“the Final Technical Memorandum”) concluded that there was “[v]ery little exterior corrosion on the 6-inch ductile iron pipeline. Furthermore, *“failure is not imminent”* for the framing support structures. (Italics added.) “From the video that was obtained the sewer appeared to be in good condition with a few cracks and general grit accumulation throughout. . . . This investigation failed to locate cracks on the exterior, *leading to the opinion that the pipe is sound.* What appear to be cracks on the interior may be formations created by scum accumulation.” Finally, the “concrete of the existing foundations appeared to be in good condition and did not show signs of deterioration that often include flaking or loss of integrity.” (Italics added.)

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2. The Plan Unnecessarily Impacts Residents Adversely.

The Mariposa Court lift pump may cause detectable odor, audible sound, and aesthetic nuisances for the Lift Pump Properties. Indeed, the SRT Consultants Memo recognizes that the pump will cause “impact to the adjacent residents.” During the October 17, 2022 CULUAC meeting, Ms. Lather stated that there could be intermittent detectable odors caused by the new pump. She described a pump in Santa Cruz that had odor issues but said that as long as the fluid is moving, it should not be a problem. Nevertheless, when the pump is backed up or other problems inevitably occur, there will be a sewage odor. There would also be a consistent audible noise. (Carmel Meadows Final ISMND.) Finally, the proposed site for the control panel at the bottom of Mariposa Court is obtrusive: it is the first thing seen upon arrival at the Lift Pump Properties and is an immediate reminder that there is a sewage pump below. We are concerned that these issues could devalue the Lift Pump Properties.

The sewage line servicing 2955 Ribera Road would not be repaired or replaced as part of this plan, yet the sewershed, control panel, and lift pump would be adjacent to this property. Thus, the full-time residents with young children would not enjoy the benefits of the new sewage system yet would incur a sizable portion of the costs, including the potential odor, sound, eyesore, and possible devaluation of their greatest asset.

We also oppose the installation of grinder pumps on the Grinder Pump Properties because it would require those households to assume the responsibility for maintenance and costs of a system that they do not desire, there may be odor and sound issues, and it could reduce the value of the properties.

The Grinder Pump Properties would incur the burden of maintaining the grinder pumps.² The grinder pumps have flashing lights and alarms that go off if the system malfunctions. The system requires flushing with water for 10 minutes before absences from the homes. With the current drought and high costs of water, residents attempt to monitor their water use. This burden of maintenance could pose practical problems for part-time residents.

In addition, the Grinder Pump Properties would unfairly incur costs associated with maintenance of the grinder pumps as well as increased electricity bills associated with the pumps. The life expectancy of the grinder pumps is only 15 years, and it appears that residents would be responsible for maintaining them and replacing them after failure. (Carmel Meadows Final ISMND.) In addition, the plans indicate that the deference period would terminate after changes in ownership.

² The SRT Consultants Memo states: “the ownership and maintenance of these pump stations need to be negotiated between the district and the homeowners prior to construction. A possible option would be for the district to install the pump stations, provide instructions/education, and maintain them at no cost to the homeowner for 3 to 5 years. After this transitional period, the residents would take ownership of the pump station and assume responsibility for their maintenance.”

Re: Carmel Area Wastewater District

November 1, 2022

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This financial responsibility is unfair, even with the proposed deference period for the maintenance responsibility.

Finally, construction would occur in many backyards and could damage landscaping.

3. The Current Plan May Not Be the Most Feasible, and We Therefore Request an Independent Feasibility Analysis.

While we are sympathetic to the fact that CAWD has spent time and money developing the current plan, it may not be the most feasible plan. In addition to the adverse impacts on residents described in this letter, the Kennedy/Jenks Consultants described the plan as “fatally flawed” and instead recommended removal and replacement of pipe in place.

Therefore, we respectfully request that a third-party, independent engineering analysis be performed to evaluate alternative plans, including the alternatives considered in the Final Technical Memorandum and the HDR Engineering Letter:

- Alternative 1: Spot Repairs to the Existing Gravity Sewer. This alternative would consist of repairing the highest risk areas of the pipeline. According to the Final Technical Memorandum, “[t]he only area where significant slope movement was observed was along Reach 4, between S622 [N of 2855 Ribera Rd.] and MH S616 [N of 2845 Ribera Rd.]” *This could be remedied with simple plate piles in the existing slope.* This is the least expensive option.
- Alternative 2: Removal and Replacement of Pipe in Place. This alternative would remove the entire section of pipe from T603 [N of 2925 Ribera Rd.] to manhole S615 [N of 2785 Ribera Rd.] where the pipe transitions from aerial to buried (approximately 1,300 LF of ductile iron pipe). The pipe would be replaced with new restrained joint pipe and engineered foundation within the current alignment. This is the second-least expensive option, and *it is option recommended in the Final Technical Memorandum.*
- Alternative 3: New Lift Station and Force Main. This appears to be the basis for the current plan. In addition to the installation of the lift station and grinder pumps, this alternative includes 2,230 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration (more than any other alternative, which would maximize interruptions in traffic flow). It would also require the rebuilding of 160 linear feet of sewer from T604 [2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial sewer from MH S618 [N of 2805 Ribera Rd.] to MH S615 [N of 2785 Ribera Rd.]. This is the third-most-expensive option for capital cost and is even more expensive when factoring in the annual O&M costs of approximately \$21,000 per year for operating and maintaining a pump

Re: Carmel Area Wastewater District

November 1, 2022

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station. The Final Technical Memorandum concluded that due to the high capital cost of Alternative 3, it is “fatally flawed resulting in removal from further analysis.”

- *We request that the analysis of this alternative include moving the lift station north and west or east, away from the Lift Pump Properties, and concealing the control station in order to alleviate all potential for odor, sound, and aesthetic issues.³ We also request that CAWD assume all responsibility and costs for any needed grinder pumps.*
- Alternative 4: Horizontal Directional Drill (HDD). This alternative would include a 2,000 linear foot HDD from T608 [Mariposa Ct.] to the Calle La Cruz wet well. The alignment would be a straight line beneath existing private property to the wet well. It would include re-sloping the sewer line to drain downhill from T604 [N of 2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial section from S618 [N of 2805 Ribera Rd.] to S615 [N of 2785 Ribera Rd.], to convey sewer from MH S617 [2805 Ribera Rd.]. This alternative is the most expensive alternative due to the easement acquisition and the high cost of horizontal directional drilling through bedrock.
- Gravity Sewer Options 1-4 Described in HDR Engineering Letter

In addition to the foregoing alternatives, the third-party analysis could include any other alternatives identified by the independent engineer.

4. Notice

Notice for the November 7, 2022 meeting was inadequate since, upon information and belief, only the properties on the north side of Ribera Road received notice. This does not include all of the affected properties, including 2940 Ribera Road, which is across from Mariposa Street and other properties impacted by construction.

5. Conclusion

We request that an independent, third-party analysis of alternatives be performed in order to provide a solution that better balances the interests of the CAWD, the county, the environment, and the neighborhood. The current plan unfairly burdens six homes: the Mariposa Court pump may reduce the value of the Lift Pump Properties because there may be odor and audible noise issues,

³ In fact, the SRT Consultants Memo recommends a siting north of Mariposa Court and away from the homes: “The advantage of this siting is that construction of the paved road can be avoided *and impact to the adjacent residents will be minimized.*” (Italics added.) The memo continues that the disadvantage of doing this would be that CAWD would have to undergo a longer permitting process and more mitigation requirements during construction. Thus, it appears that CAWD has prioritized convenience over impact to residents in choosing the location at the bottom of Mariposa Court.

Re: Carmel Area Wastewater District

May 9, 2011

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and the control panel will be an eyesore, and the Grinder Pump Properties would be unfairly burdened with the costs and responsibility of maintenance of the grinder pumps, and their properties may also be devalued. In addition, the Final Technical Memorandum concluded that current plan is fatally flawed and, instead, recommended Alternative 2 (Removal and Replacement of Pipe in Place).

Thank you for attention to this matter.

Respectfully,

David Schupp
Name: David Schupp

Kathy Porter
Name: Kathy Porter

Lori Porter
Name: Lori Porter

Tom Slavet
Name: Tom Slavet

Elizabeth Oka
Name: Elizabeth Oka

Rita JCA
Name: Rita JCA

Sue Barnes
Name: Sue Barnes

Stan and Gail Dryden
Name: Stan and Gail Dryden

Deborah A. Vieille
Name: Deborah A. Vieille

Deborah A. Vieille
Name: DEBORAH A. Vieille

Larry Pomeroy
Name: LARRY POMEROY

LARRY POMEROY CMA CHAIRMAN
Name: LARRY POMEROY CMA CHAIRMAN

Karen Helton
Name: Karen Helton

Chuck and Carol Keller

cc: Zoe Zepp, Associate Planner at County of Monterey (zeppz@co.monterey.ca.us)
Fionna Jensen, Associate Planner at County of Monterey (jensennf@co.monterey.ca.us)
Rachel Lather, Principal Engineer (Lather@cawd.org)

Attachment 2

MINUTES
Carmel Highlands Land Use Advisory Committee
Monday, November 7, 2022



1. Meeting called to order by John Borelli at 4:04 pm

2. Roll Call

Members Present:

John Borelli, Holli Leon, Chip Moreland, Norm Leve, Doug Paul, Clyde Freedman, Dan Keig (7)

Members Absent:

None

3. Approval of Minutes:

A. October 17, 2022 minutes

Motion: Chip Moreland (LUAC Member's Name)

Second: John Borelli (LUAC Member's Name)

Ayes: Moreland, Borelli, Leon, Keig, Freedman (5)

Noes: 0

Absent: 0

Abstain: Paul, Leve (2)

4. **Public Comments:** The Committee will receive public comment on non-agenda items that are within the purview of the Committee at this time. The length of individual presentations may be limited by the Chair.

None

5. Scheduled Item(s)

6. **Other Items:**

A) Preliminary Courtesy Presentations by Applicants Regarding Potential Projects

None

B) Announcements

None

7. **Meeting Adjourned:** 6:50 pm

Minutes taken by: Holli Leon



Action by Land Use Advisory Committee Project Referral Sheet

Monterey County Housing & Community Development
1441 Schilling Place 2nd Floor
Salinas CA 93901
(831) 755-5025



Advisory Committee: Carmel Highlands

1. **Project Name:** HEISLER KARL F & MICHELE A HEISLER TRS
File Number: PLN190184
Project Location: 90 CREST RD CARMEL
Assessor's Parcel Number(s): 241-231-010-000
Project Planner: SON PHAM-GALLARDO
Area Plan: CARMEL LAND USE PLAN
Project Description: Combined Development Permit consisting of: 1) Coastal Development Permit for a new test well and 2) Coastal Development Permit for the removal of 4 (four) protected trees (3 Pine & 1 Cypress).

Was the Owner/Applicant/Representative present at meeting? YES NO

(Please include the names of those present)

Was a County Staff/Representative present at meeting? Phil Angelo & Zoe Zepp (Name)

PUBLIC COMMENT: None

Name	Site Neighbor?		Issues / Concerns (suggested changes)
	YES	NO	

LUAC AREAS OF CONCERN

Concerns / Issues (e.g. site layout, neighborhood compatibility; visual impact, etc)	Policy/Ordinance Reference (If Known)	Suggested Changes - to address concerns (e.g. relocate; reduce height; move road access, etc)
None		

ADDITIONAL LUAC COMMENTS

None

RECOMMENDATION:

Motion by: John Borelli (LUAC Member's Name)

Second by: Chip Moreland (LUAC Member's Name)

Support Project as proposed

Support Project with changes

Continue the Item

Reason for Continuance: No representation present

Continue to what date: _____



Ayes: Borelli, Leon, Moreland, Leve, Paul, Freedman, Keig (7)

Noes: 0

Absent: 0

Abstain: 0

Action by Land Use Advisory Committee Project Referral Sheet

Monterey County Housing & Community Development
1441 Schilling Place 2nd Floor
Salinas CA 93901
(831) 755-5025



Advisory Committee: Carmel Highlands

2. **Project Name:** CARMEL AREA WASTEWATER DISTRICT (VARIOUS OWNERS)
Item continued from 10/17/22 meeting
- File Number:** PLN220055
- Project Location:** 2733 & 2741 CALLE LA CRUZ AND
2765, 2775, 2785, 2795, 2805, 2815, 2825, 2835, 2845, 2855, 2865, 2875, 2885,
2895, 2905, 2915, 2925, 2935 & 2955 RIBERA RD CARMEL
- Assessor's Parcel Number(s):** 243-031-017-000, 243-031-018-000, 243-031-019-000, 243-031-020-000, 243-
031-022-000, 243-031-023-000, 243-031-024-000, 243-031-028-000, 243-031-
029-000, 243-031-030-000, 243-031-033-000, 243-031-034-000, 243-051-001,
243-051-002-000, 243-051-003-000, 243-051-004-000, 243-051-005-000,
243-051-006-000, 243-051-007-000, 243-051-008-000, 243-051-020-000,
243-051-021-000 & 243-051-022-000
- Project Planner:** PHIL ANGELO
- Area Plan:** CARMEL LAND USE PLAN
- Project Description:** Combined Development Permit consisting of: 1) Coastal Development Permit and Design Approval to allow a lift station and sewer replacement project consisting of a new below grade sewage lift station, installation of four residential scale sewage grinder pumps, and rehabilitation/replacement of approximately 1,600 linear feet of sewer line; 2) Coastal Development to allow development within 100 feet of Environmentally Sensitive Habitat Area (Coastal brambles); and 3) Coastal Development Permit to allow Development within 750 feet of known archaeological resources.

Was the Owner/Applicant/Representative present at meeting? YES X NO _____

(Please include the names of those present)

Rachel Lather & Barbara Buikema, Carmel Area Wastewater District

Steve Thomas

Rachel Lather made a presentation of the situation and the options

Was a County Staff/Representative present at meeting? Phil Angelo & Zoe Zepp (Name)

PUBLIC COMMENT:

Name	Site Neighbor?		Issues / Concerns (suggested changes)
	YES	NO	
David Scopp	X		Concerned Kennedy/Jenks memo stated the selected option is fatally flawed; they recommend replacement in kind. He is requesting third party analysis.
Deborah Lu	X		<ul style="list-style-type: none"> - Should be different consideration given since it is already there. - Concerned about integrity of hillside for further excavation. - Also, pumps and financial responsibility. - Often smells in a very unpleasant way.
Karen Helton [Per Rachel Lather, not inside the fence line, Carmel Area Wastewater District would repair/replace if damage staging could be moved]	X		<ul style="list-style-type: none"> - Around corner from Mariposa, concerned about disruption to her home & landscaping. Proposal uses lot across the street for the staging area. - Could County apply conditions to enhance this project? (County staff replied "No")
Gail Dryden	X		<ul style="list-style-type: none"> - Supports independent analysis to clarify options. - Would like to talk to someone who has a grinder pump. - Is the Coastal Commission involved? (County staff says it is up to Coastal Commission staff if they approve)
Charles Keller	X		<ul style="list-style-type: none"> - Has County looked into other options? - What kind of environmental review? (County staff has reviewed plan and concluded how to remedy issues. LUAC will make recommendations, then County staff decides)
Larry Purcell	X		<ul style="list-style-type: none"> - Why did 2013 study suggest this option was best? - The current proposal is flawed.
Keith Porter	X		<ul style="list-style-type: none"> - Saw Ribera Road pump station on site inspection. Thinks is was not representative because it was noon, not when people are using the system. - Access & maintenance concerns.



LUAC AREAS OF CONCERN

<p>Concerns / Issues (e.g. site layout, neighborhood compatibility; visual impact, etc)</p>	<p>Policy/Ordinance Reference (If Known)</p>	<p>Suggested Changes - to address concerns (e.g. relocate; reduce height; move road access, etc)</p>
<p>Were there other proposals in the design and what were they?</p>		<p>Many options considered: - Bandage of existing sewer - Replace as it currently (See Kennedy/Jenks report)</p>
<ul style="list-style-type: none"> - Hillside unstable - Lack of access for construction - Riparian habitat/lagoon 		<p>Proposal currently addresses these concerns.</p>
<p>Estimate of cost for independent third party study to opine on best course of action</p>		<ul style="list-style-type: none"> - \$100,000 - 6 months - Carmel Area Wastewater District to cover cost
<p>Would spot repairs be possible?</p>		<p>Already too many issues to be feasible.</p>
<p>200 feet of landslide would have to be dealt with if they were going to replace with in-kind sewer</p>		
<p>Other issues include horizontal directional drilling; could “frack out”</p>		
<p>Do any plan options require no pumps?</p>		<p>All options require pump.</p>
<p>Pump station at end of Mariposa creating odors & noise</p>		<p>During site inspection by John Borelli, Chip Moreland, others from neighborhood & Carmel Area Wastewater District, there were no odors or noise present at that time.</p>



ADDITIONAL LUAC COMMENTS

Recommended changes are:

- Independent third party analysis of alternatives
- Alternative #2 revisited from Kennedy/Jenks report
- Move Mariposa pump away from houses toward lagoon
- Landscape to camouflage any observable components at Mariposa
- Grinder pumps maintenance/replacement costs; financial/maintenance into perpetuity by Carmel Area Wastewater District
- Sound concerns shall be addressed & mitigated
- Odor concerns shall be addressed & mitigated

RECOMMENDATION:

Motion by: Doug Paul (LUAC Member's Name)

Second by: Dan Keig (LUAC Member's Name)

- Support Project as proposed
- Support Project with changes – refer to changes listed under “Additional LUAC Comments”
- Continue the Item

Reason for Continuance: _____

Continue to what date: _____

Ayes: Paul, Borelli, Leon, Keig, Freedman, Leve (6)

Noes: Moreland (1)

Absent: 0

Abstain: 0



CARMEL MEADOWS NEIGHBORS

VIA ELECTRONIC MAIL ONLY

November 1, 2022

Monterey County Housing and Community Development
 c/o Erik V. Lundquist, AICP, Director
 1441 Schilling Place, South 2nd Floor
 Salinas, CA 93901-4527
 Email: lundquist@co.montereyca.us



Carmel Unincorporated/Highlands Land Use Advisory Committee
 c/o John Borelli, Chair
 73 Fern Canyon Road
 Carmel, CA 93923
 Email: JohnjBorelli@gmail.com

Carmel Area Wastewater District
 c/o Daryl Lauer, Collections Superintendent
 3945 Rio Road
 Carmel-By-The-Sea, CA 93922
 Email: lauer@cawd.org

**Re: Carmel Area Wastewater District
 File No. PLN220055**

Dear Mr. Lundquist, Mr. Borelli, and Mr. Lauer:

We appreciate the efforts of Carmel Area Wastewater District (“CAWD”) to improve the sewage system in our neighborhood. Nevertheless, we respectfully oppose the current CAWD plan because it unfairly impacts numerous households and is not the most feasible alternative for the neighborhood. Therefore, we request that a third-party, independent engineering analysis be performed to evaluate the feasibility of alternative plans.

1. Background

The existing sewer line is a simple gravity line that flows west, requiring no pumps or control panels. In contrast, the proposed sewer line would pump wastewater east to the bottom of Mariposa Court, where it would combine with several other pipelines and get pumped up Mariposa Court to a line that flows west again. The new system would include the installation of grinder pumps on four properties—2795, 2805, 2815 and 2825 Ribera Road (together, the “Grinder Pump Properties”)—and a four-foot diameter by 13-foot-deep lift pump and control panel between two properties—2955 and 2935 Ribera Road (together, the “Lift Pump Properties”)—at the bottom (north end) of Mariposa

Re: Carmel Area Wastewater District

November 1, 2022

Page 2

Court. There would also be a sizable control panel for the lift pump at the end of Mariposa Court. The lift pump would service approximately 52 homes.

During the Carmel Unincorporated/Highlands Land Use Advisory Committee (“CULUAC”) meeting on October 17, 2022, CAWD estimated that construction would take approximately three months. In addition to the installation of the grinder pumps and lift pump, the construction would include over 2,000 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration as well as the rebuilding of underground and aerial sewer. The construction would cause audible noise and detectible odors. (Carmel Meadows Final ISMND.) And there would be a “temporary interruption of [sewage] service” to the residents. (SRT Consultants Memorandum dated August 27, 2019 (“SRT Consultants Memo”).)

During the October 17, 2022 meeting, CAWD Principal Engineer Rachel Lather represented that CAWD could replace the laterals on the approximately 13 north Ribera Road homes west of Mariposa Court. During the October 26, 2022 site meeting, however, CAWD retracted this offer.

While we appreciate CAWD’s efforts to improve the sewage system, the imminence of the reliability issues may have been exaggerated, and capacity may be the driving force.¹ In addition, as discussed below, CAWD consultants deemed the current plan “fatally flawed” and recommended replacing the current line instead.

¹ The HDR Engineering opinion letter dated February 5, 2003 concluded: “[I]t is our opinion that the above-grade sections of the pipeline can continue to be operational, and be safe from future catastrophic failure if the current topography of the area, and drainage conditions are maintained.”

The HDR Engineering opinion letter dated April 20, 2003 (“HDR Engineering Letter”) was primarily concerned with future capacity, not reliability. The letter concluded: “The existing sewer line is not in immediate danger of failing.” Further, “[t]he absence of problems with roots and the absence of obvious leakage at the joints suggest that the buried portions of the sewer are in reasonably good condition for their age. . . . [¶] It appears that the elevated sections of the current sewer are relatively stable and that future movement will take place slowly as the result of creep.” *To extend reliability, the HDR Engineering Letter recommended maintenance.*

The Kennedy/Jenks Consultants letter dated June 14, 2013 stated: “We are not aware of any incidents where the pipe needed to be repaired or replaced. Therefore, with regard to the serviceability of the existing pipeline, the system has performed well.”

The Kennedy/Jenks Consultants Final Technical Memorandum dated July 16, 2013 (“the Final Technical Memorandum”) concluded that there was “[v]ery little exterior corrosion on the 6-inch ductile iron pipeline. Furthermore, *“failure is not imminent”* for the framing support structures. (Italics added.) “From the video that was obtained the sewer appeared to be in good condition with a few cracks and general grit accumulation throughout. . . . This investigation failed to locate cracks on the exterior, *leading to the opinion that the pipe is sound.* What appear to be cracks on the interior may be formations created by scum accumulation.” Finally, the “concrete of the existing foundations appeared to be in good condition and did not show signs of deterioration that often include flaking or loss of integrity.” (Italics added.)

Re: Carmel Area Wastewater District
November 1, 2022
Page 3

2. The Plan Unnecessarily Impacts Residents Adversely.

The Mariposa Court lift pump may cause detectable odor, audible sound, and aesthetic nuisances for the Lift Pump Properties. Indeed, the SRT Consultants Memo recognizes that the pump will cause “impact to the adjacent residents.” During the October 17, 2022 CULUAC meeting, Ms. Lather stated that there could be intermittent detectible odors caused by the new pump. She described a pump in Santa Cruz that had odor issues but said that as long as the fluid is moving, it should not be a problem. Nevertheless, when the pump is backed up or other problems inevitably occur, there will be a sewage odor. There would also be a consistent audible noise. (Carmel Meadows Final ISMND.) Finally, the proposed site for the control panel at the bottom of Mariposa Court is obtrusive: it is the first thing seen upon arrival at the Lift Pump Properties and is an immediate reminder that there is a sewage pump below. We are concerned that these issues could devalue the Lift Pump Properties.

The sewage line servicing 2955 Ribera Road would not be repaired or replaced as part of this plan, yet the sewershed, control panel, and lift pump would be adjacent to this property. Thus, the full-time residents with young children would not enjoy the benefits of the new sewage system yet would incur a sizable portion of the costs, including the potential odor, sound, eyesore, and possible devaluation of their greatest asset.

We also oppose the installation of grinder pumps on the Grinder Pump Properties because it would require those households to assume the responsibility for maintenance and costs of a system that they do not desire, there may be odor and sound issues, and it could reduce the value of the properties.

The Grinder Pump Properties would incur the burden of maintaining the grinder pumps.² The grinder pumps have flashing lights and alarms that go off if the system malfunctions. The system requires flushing with water for 10 minutes before absences from the homes. With the current drought and high costs of water, residents attempt to monitor their water use. This burden of maintenance could pose practical problems for part-time residents.

In addition, the Grinder Pump Properties would unfairly incur costs associated with maintenance of the grinder pumps as well as increased electricity bills associated with the pumps. The life expectancy of the grinder pumps is only 15 years, and it appears that residents would be responsible for maintaining them and replacing them after failure. (Carmel Meadows Final ISMND.) In addition, the plans indicate that the deference period would terminate after changes in ownership.

² The SRT Consultants Memo states: “the ownership and maintenance of these pump stations need to be negotiated between the district and the homeowners prior to construction. A possible option would be for the district to install the pump stations, provide instructions/education, and maintain them at no cost to the homeowner for 3 to 5 years. After this transitional period, the residents would take ownership of the pump station and assume responsibility for their maintenance.”

Re: Carmel Area Wastewater District

November 1, 2022

Page 4

This financial responsibility is unfair, even with the proposed deference period for the maintenance responsibility.

Finally, construction would occur in many backyards and could damage landscaping.

3. The Current Plan May Not Be the Most Feasible, and We Therefore Request an Independent Feasibility Analysis.

While we are sympathetic to the fact that CAWD has spent time and money developing the current plan, it may not be the most feasible plan. In addition to the adverse impacts on residents described in this letter, the Kennedy/Jenks Consultants described the plan as “fatally flawed” and instead recommended removal and replacement of pipe in place.

Therefore, we respectfully request that a third-party, independent engineering analysis be performed to evaluate alternative plans, including the alternatives considered in the Final Technical Memorandum and the HDR Engineering Letter:

- Alternative 1: Spot Repairs to the Existing Gravity Sewer. This alternative would consist of repairing the highest risk areas of the pipeline. According to the Final Technical Memorandum, “[t]he only area where significant slope movement was observed was along Reach 4, between S622 [N of 2855 Ribera Rd.] and MH S616 [N of 2845 Ribera Rd.]” *This could be remedied with simple plate piles in the existing slope.* This is the least expensive option.
- Alternative 2: Removal and Replacement of Pipe in Place. This alternative would remove the entire section of pipe from T603 [N of 2925 Ribera Rd.] to manhole S615 [N of 2785 Ribera Rd.] where the pipe transitions from aerial to buried (approximately 1,300 LF of ductile iron pipe). The pipe would be replaced with new restrained joint pipe and engineered foundation within the current alignment. This is the second-least expensive option, and *it is option recommended in the Final Technical Memorandum.*
- Alternative 3: New Lift Station and Force Main. This appears to be the basis for the current plan. In addition to the installation of the lift station and grinder pumps, this alternative includes 2,230 linear foot alignment of 4-inch diameter HDPE pipe that would require a 4-foot-wide pavement restoration (more than any other alternative, which would maximize interruptions in traffic flow). It would also require the rebuilding of 160 linear feet of sewer from T604 [2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial sewer from MH S618 [N of 2805 Ribera Rd.] to MH S615 [N of 2785 Ribera Rd.]. This is the third-most-expensive option for capital cost and is even more expensive when factoring in the annual O&M costs of approximately \$21,000 per year for operating and maintaining a pump

Re: Carmel Area Wastewater District

November 1, 2022

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station. The Final Technical Memorandum concluded that due to the high capital cost of Alternative 3, it is “fatally flawed resulting in removal from further analysis.”

- *We request that the analysis of this alternative include moving the lift station north and west or east, away from the Lift Pump Properties, and concealing the control station in order to alleviate all potential for odor, sound, and aesthetic issues.³ We also request that CAWD assume all responsibility and costs for any needed grinder pumps.*
- Alternative 4: Horizontal Directional Drill (HDD). This alternative would include a 2,000 linear foot HDD from T608 [Mariposa Ct.] to the Calle La Cruz wet well. The alignment would be a straight line beneath existing private property to the wet well. It would include re-sloping the sewer line to drain downhill from T604 [N of 2925 Ribera Rd.] to T608 [Mariposa Ct.] and replacement of the aerial section from S618 [N of 2805 Ribera Rd.] to S615 [N of 2785 Ribera Rd.], to convey sewer from MH S617 [2805 Ribera Rd.]. This alternative is the most expensive alternative due to the easement acquisition and the high cost of horizontal directional drilling through bedrock.
- Gravity Sewer Options 1-4 Described in HDR Engineering Letter

In addition to the foregoing alternatives, the third-party analysis could include any other alternatives identified by the independent engineer.

4. Notice

Notice for the November 7, 2022 meeting was inadequate since, upon information and belief, only the properties on the north side of Ribera Road received notice. This does not include all of the affected properties, including 2940 Ribera Road, which is across from Mariposa Street and other properties impacted by construction.

5. Conclusion

We request that an independent, third-party analysis of alternatives be performed in order to provide a solution that better balances the interests of the CAWD, the county, the environment, and the neighborhood. The current plan unfairly burdens six homes: the Mariposa Court pump may reduce the value of the Lift Pump Properties because there may be odor and audible noise issues,

³ In fact, the SRT Consultants Memo recommends a siting north of Mariposa Court and away from the homes: “The advantage of this siting is that construction of the paved road can be avoided *and impact to the adjacent residents will be minimized.*” (Italics added.) The memo continues that the disadvantage of doing this would be that CAWD would have to undergo a longer permitting process and more mitigation requirements during construction. Thus, it appears that CAWD has prioritized convenience over impact to residents in choosing the location at the bottom of Mariposa Court.

Re: Carmel Area Wastewater District

May 9, 2011

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and the control panel will be an eyesore, and the Grinder Pump Properties would be unfairly burdened with the costs and responsibility of maintenance of the grinder pumps, and their properties may also be devalued. In addition, the Final Technical Memorandum concluded that current plan is fatally flawed and, instead, recommended Alternative 2 (Removal and Replacement of Pipe in Place).

Thank you for attention to this matter.

Respectfully,

David Schupp
Name: David Schupp

Kurt Porter
Name: Kurt Porter

Lori Porter
Name: Lori Porter

Tom Slavet
Name: Tom Slavet

Elizabeth Oka
Name: Elizabeth Oka

Ron JCA
Name: Ron JCA

Sue Barnes
Name: Sue Barnes

Stan and Gail Dryden
Name: Stan and Gail Dryden

Deborah A. Vieille
Name: Deborah A. Vieille

Deborah A. Vieille
Name: DEBORAH A. Vieille

Larry Pomeroy
Name: LARRY POMEROY

LARRY POMEROY CMA CHAIRMAN
Name: LARRY POMEROY CMA CHAIRMAN

Karen Helton
Name: Karen Helton

cc: Zoe Zepp, Associate Planner at County of Monterey (zeppz@co.monterey.ca.us)
Fionna Jensen, Associate Planner at County of Monterey (jensennf@co.monterey.ca.us)
Rachel Lather, Principal Engineer (Lather@cawd.org)

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 73 Fern Canyon Road
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November 1, 2022

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Re: Carmel Area Wastewater District

May 9, 2011

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Thank you for attention to this matter.

Respectfully,

David Lepp
Name: David Lepp

Kurtz Pat
Name: Kurtz Pat

Lori Porter
Name: Lori Porter

Tom Slavet
Name: Tom Slavet

Elizabeth Oka
Name: Elizabeth Oka

Ron JCA
Name: Ron JCA

Sue Barnes
Name: Sue Barnes

Stan and Gail Dryden
Name: Stan and Gail Dryden

Deborah Ju
Name: Deborah Ju

Trborah A-Vieille
Name: DEBORAH A. Vieille

LARRY
Name: LARRY

KAREN HELTON
Name: KAREN HELTON

Chuck and Carol Keller
Name: Chuck and Carol Keller

cc: Zoe Zepp, Associate Planner at County of Monterey (zeppz@co.monterey.ca.us)
Fionna Jensen, Associate Planner at County of Monterey (jensennf@co.monterey.ca.us)
Rachel Lather, Principal Engineer (Lather@cawd.org)

Friedrich, Michele

From: Angelo, Philip
Sent: Tuesday, November 8, 2022 9:57 AM
To: Friedrich, Michele
Subject: FW: Ribera wastewater project (CAWD)
Attachments: sewerlinecomments.docx



Highlands LUAC Comments 3/3

Best,



Phil Angelo

Associate Planner

Monterey County - Housing & Community Development

1441 Schilling Place, South 2nd Floor

Direct: (831) 784-5731

AngeloP@co.monterey.ca.us

From: Lundquist, Erik <LundquistE@co.monterey.ca.us>
Sent: Wednesday, November 2, 2022 5:07 PM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Spencer, Craig <SpencerC@co.monterey.ca.us>; Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: FW: Ribera wastewater project (CAWD)

Phil

It looks like another letter was received, see attached.

Thank you
-Erik

Erik V. Lundquist, AICP
Director of Housing & Community Development
County of Monterey Housing & Community Development
831-755-5154 | lundquiste@co.monterey.ca.us



From: Gail Dryden <gddryden@gmail.com>

Sent: Wednesday, November 2, 2022 1:45 PM

To: Lundquist, Erik <LundquistE@co.monterey.ca.us>

Subject: Ribera wastewater project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

I had your email incorrect in the first email that went to several others.

This email pertains to File No. PLN220055.

Please find attached my comments.

Gail Dryden

homeowner, 2795 Ribera Road, Carmel, CA

--

A balanced diet is **dark** chocolate in both hands.

Comments from Gail (Stan) Dryden, homeowner at 2795 Ribera Road, Carmel, CA regarding the CAWD plan to replace the sewer line as per File No. PLN220055

We were notified of a meeting to introduce neighbors to the need for a sewer replacement line in April 2022. We attended the meeting via Zoom to have the plan explained and subsequently, David Lauer came to our property to show us what was planned. We were under the impression from the Zoom meeting and the site visit that this was the only acceptable way to replace the existing sewer line and that it was critically necessary to move forward with this as soon as possible.

We trusted the District in this finding. There is a term, "Trust, but verify." Thankfully, a neighbor, David Scopps, has done some research trying to verify the need and efficacy of this project. The project as presented to affected neighbors has been shown to be lacking in transparency and is most likely NOT the best solution for our neighborhood.

As outlined in the letter of October 31, 2022 signed by affected neighbors there are alternatives that need to be considered thoroughly before anything as disruptive and permanently obtrusive is undertaken. There are, at a minimum, three alternatives that need to be explored more completely by CAWD with notification and input from neighbors before a final plan is put forward.

In the spring I was lead to believe that this project was needed very soon and that there was no other good choice. Clearly, that is not the case. An up-to-date, independent analysis of the current situation is necessary prior to any sewer line construction work in our neighborhood.

Friedrich, Michele

From: Rachel Lather <Lather@cawd.org>
Sent: Friday, November 4, 2022 10:36 AM
To: JohnjBorelli@gmail.com
Cc: Buikema; Steve Thomas; Angelo, Philip
Subject: Carmel Meadows Pipeline Project - Highlands Land Use Advisory Committee

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

Dear Chair Borelli,

In an effort to provide the committee the opportunity to review the complete record of the Carmel Area Wastewater District's application PLN220055 and for the District to provide the full technical record referenced in an email correspondence sent on 11/1/22, from a resident to your committee and our staff, the District is requesting a postponement of the scheduled review of our application. Please let me know if this is possible so we can plan accordingly.

We look forward to the opportunity to present this critical infrastructure project to your committee in the near future.

Rachél Lather, MS, PE
Principal Engineer
(831)624-1248 (office)
831-917-1423



Friedrich, Michele

From: Angelo, Philip
Sent: Tuesday, November 8, 2022 9:55 AM
To: Friedrich, Michele
Subject: FW: CAWD PLN220055 Carmel Meadows Project
Attachments: PLN220055 CAWD Carmel Meadows Lift Station Project.pdf

Highlands LUAC Comments 2/3

Best,



Phil Angelo
Associate Planner
Monterey County - Housing & Community Development
1441 Schilling Place, South 2nd Floor
Direct: (831) 784-5731
AngeloP@co.monterey.ca.us

From: Lundquist, Erik <LundquistE@co.monterey.ca.us>
Sent: Monday, November 7, 2022 7:12 AM
To: Angelo, Philip <AngeloP@co.monterey.ca.us>
Cc: Zepp, Zoe <ZeppZ@co.monterey.ca.us>; Spencer, Craig <SpencerC@co.monterey.ca.us>; Quenga, Anna V. <QuengaAV@co.monterey.ca.us>
Subject: FW: CAWD PLN220055 Carmel Meadows Project

FYI

From: Karen H <kmbhph.18@gmail.com>
Sent: Friday, November 4, 2022 4:06 PM
To: Lundquist, Erik <LundquistE@co.monterey.ca.us>; johnjborelli@gmail.com; lauer@cawd.org
Subject: CAWD PLN220055 Carmel Meadows Project

[CAUTION: This email originated from outside of the County. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

[Note: This may be a duplicate email due to an error of one address. My apologies. KMBH.]

November 3, 2022

To: Monterey County Housing and Community Development

c/o Erik V. Lundquist, AICP, Director

1441 Schilling Place, South 2nd Floor
Salinas, CA. 93901-4527

Email: lundquiste@co.monterey.ca.us

Carmel Unincorporated/Highlands Land Use Advisory Committee

c/o John Borelli, Chair
73 Fern Canyon Road
Carmel, CA. 93923

Email: JohnJBorelli@gmail.com

Carmel Area Wastewater District
c/o Daryl Lauer, Collections Superintendent 3945 Rio Road
Carmel-by-the-Sea, CA. 93922

Email: lauer@cawd.org

Re: Carmel Area Wastewater District File No. PLN220055

Dear Mr. Lundquist, Mr. Borelli, and Mr. Lauer:

Thank you for this opportunity to express my appreciation of CAWD's efforts to offer us a state-of-the-art sewage system. However, while I appreciate the efforts, I am not convinced that the option chosen for replacement is the best one. Therefore, in addition to the contents of the letter of October 31, 2022, signed by Carmel Meadows neighbors, I would like to add some points not mentioned.

I will preface my comments below that I want to make clear that I do not object to the replacement or lack appreciation to the extent of maintenance that needs to be completed to make our sewage system safe, sustainable, and efficient in operation as well as considering the costs. There is a spectrum of considerations from lasting major maintenance and repairs on one end to full technologically innovative potential for a new state-of-the-art sewage system. For myself, I am for a balance on that spectrum.

If, as mentioned at the last meeting, failure of the system is imminent because of its aging infrastructure, then I would suggest it be shored up as soon as possible so that we can approach

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the problem in a practical manner. If the system fails, why wasn't the problem addressed well before it came to the point of failure? Why were residents of Carmel Meadows not given options well before imminent failure was even mentioned? The liability, it would seem, would be on CAWD.

That said, I am also in complete agreement with the points made in the above-mentioned letter and have added my signature to it. I must say that I don't understand why CAWD has chosen such an expensive, intrusive, and intensive option to the maintenance/replacement of the Carmel Meadows sewage system. I wish that this proposal would have been more considerate of residents' daily lives when work is underway. I am also very distressed over the intrusion into resident properties (including mine) and the maintenance responsibilities that will be required by a few. These responsibilities should be with the utility company (CAWD) and not the users of those utilities beyond their own dedicated lines. We don't maintain P G & E power poles, or the phone companies' equipment, and select individuals should not be required to maintain the community's sewage system.

Additionally, this project, as proposed, would seriously disrupt the traffic flow of Ribera Road. Besides the residents' comings and goings, and even without this project, there are very few days at any given time in which construction workers, gardeners, maintenance professionals, and delivery trucks are not routinely driving, parking, and working in Carmel Meadows. Ribera Road is also a beach and trailhead access area. Tourist traffic ebbs and flows here as well. A 6- week to 3-month disruption of the current traffic situation will be incredibly disruptive.

Consider the Impact: Carmel Meadows is enjoyed by residents as a place of peace and quiet, consideration for others, and for the enjoyment of the incredibly beautiful environment that surrounds us. It seems that this particular project "Alternative 3: New Lift Station and Force Main" will disrupt lives in many ways.

1.

The short-term disruption might be tolerated to a degree; however, the permanent installation of grinder pumps and sewage lines in residents' backyards, with the requirement that they maintain them has the potential to lower property values and destroy the whole reason people desire to live in this neighborhood. Additionally, installing equipment that obscures the general environment enjoyed by residents (i.e., the Lift Station structure in Mariposa Court), or makes noise (pumps and grinders), or has the potential to cause foul odors near our homes will have the same general affect (who wants to buy a new responsibility when looking for a retirement home, a family home, or any number of other reasons for buying a new home)? It is unreasonable to expect residents to maintain any part of a sewage system other than that part which joins and serves their house only.

Staging Area will be a nuisance: The proposed staging area is a privately owned downhill-sloped lot that is currently covered with green and healthy ice plant. It is across Ribera Road from Mariposa Court. Trucks will be crossing back and forth in an area where traffic is most frequent. The very thought of this spot being used daily by trucks and large equipment will cause 8 hours of noise, mud and/or dust, potential debris flow and erosion onto the streets, destruction of critter habitat (from ants and

2.

spiders to quail and rabbits, etc.) who may decide to take up residence in or nearer to our homes. Vehicles will be tracking debris back and forth and across Ribera to Mariposa Court. In the meantime, residents, workers, and tourists will be making efforts to come and go from their driveways or parking spots and crossing the Staging location constantly during the day. The scar that will be left when the work is complete will be an unacceptable eyesore at the least, and an environmental disaster at its worst.

3. **"Minimal Excavation"** – The proposed trench for affected backyards is 3-feet wide by 3- 5 feet deep where the relocated and larger 8" pipe is to be installed, and for four residents the additional installation of grinder pumps. Tearing up our backyards and landscaping, even with the promise of full replacement "as it was before" nevertheless will potentially create breaks or obstruct landscape irrigation lines, destruction of fences, landscape & hardscape, disruption of owners' current or planned projects, potential unintended damage, and a general angst of uncertainty. Additionally, those residents with pets will have to have alternatives to their pets' care and supervision during workdays. These points seem unreasonable on many levels; and why would CAWD want these added costs and potential problems when the existing location of the sewer pipe obstructs no one's private property?

4. **Timing is Important** – Carmel Meadows is used by tourists using the trailheads of Carmel River State Park, part time owners, and vacation renters. Several times during the year traffic on Ribera Road ebbs and flows because of summer vacations, long holidays, and local events such as Car Week, Jazz Festival, golf tournaments, Laguna Seca events, etc. To add this project’s activities to Ribera Road traffic during these times would also be a huge disruption. With increased activities also come emergencies – accidents at Highway 1 and Ribera Road, obstructed routes to the trailheads, and resident emergencies: Our first responders must have access to all crises.
5. **Isn’t this one of the most expensive of the proposals?** As mentioned in the Carmel Meadows Neighbors letter of October 31, the “Alternative 2” proposal seems much more cost effective and practical. “Removal & Replacement of Pipe in Place” was, according to the letter, recommended in the Final Technical Memorandum. The current project, “Alternative 3: New Lift Station and Force Main” might be state-of-the-art, but at what cost? Some costs are unknown as mentioned above in #3. It also includes adding extra costs to homeowners for the care and maintenance of grinder pumps and sewage pipes – why should they bear the brunt of those incurred expenses? It also includes the obstruction of view with the not so unobtrusive Lift Station sitting in Mariposa Court. It includes possible foul odors and malfunctions of machinery.

In conclusion, I believe that, at the very least, the current proposal could be amended to offer better options so that destruction of residents’ properties can be avoided. While the technical engineering and technology of the proposed project are impressive, upon closer scrutiny of its impact, I respectfully request that CAWD choose a more practical, cost effective, environmental, AND neighborhood-friendly alternative to the current proposal.

Thank you for listening.

Respectfully,
Karen M. B. Helton

Carmel Meadows Resident

2925 Ribera Road, Carmel, CA. 93923

kmbhph.18@gmail.com

Karen M B Helton
Carmel Meadows Resident
2925 Ribera Road, Carmel, CA. 93923
Kmbhph.18@gmail.com

October 31, 2022

Monterey County Housing and Community Development
c/o Erik V. Lundquist, AICP, Director
1441 Schilling Place, South 2nd Floor
Salinas, CA. 93901-4527
Email: lundquist@co.monterey.ca.us

Carmel Unincorporated/Highlands Land Use Advisory Committee
c/o John Borelli, Chair
73 Fern Canyon Road
Carmel, CA. 93923
Email: JohnjBorelli@gmail.com

Carmel Area Wastewater District
c/o Daryl Lauer, Collections Superintendent
3945 Rio Road
Carmel-by-the-Sea, CA. 93922
Email: lauer@cawd.org

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