SECTION 31 23 19

DEWATERING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes all work related to dewatering and groundwater control. All work in this Section shall be considered as Incidental Work, to the completion of the Work in which it pertains. The cost of this work shall be Incidental Work and shall be accounted for, in accordance with the General Conditions.

B. This Section specifies the general requirements for furnishing all labor, materials, equipment and operations necessary if dewatering is involved, and the handling and treating of groundwater prior to discharge.

C. Any groundwater intrusion into the excavated area shall be pumped and disposed off site by the Contractor and per requirements of City applicable codes and regulations. In the event that groundwater is encountered, excavation must stop in the affected area and the conditions and submittals of this Section must be met prior to resuming work within the affected area.

D. This Section includes the following topics:

1. Submittals
2. General Requirements
3. Sewer Discharge Requirements
4. Discharge to the SFPUC Water Pollution Control Plant (WPCP)
5. Dewatering System
6. Site Dewatering
7. Contractor’s Dewatering Plan
8. Analyses of Groundwater Discharge
9. Notification of Intent to Dewater at Each Point of Discharge

E. Related Documents and Sections:

1. Section 01 41 00 – Regulatory Requirements
2. Section 01 35 49 - Minimum Environmental Procedures
3. Section 01 35 50 - Additional Environmental Procedures

F. Payment: With the exception of the chemical/environmental testing of the groundwater (if needed), all work in this Section shall be incidental to mobilization (Bid Item SW-26, Mobilization), unless noted otherwise. If needed chemical/environmental testing of the groundwater will be paid through to the Allowance for Unforeseen Environmental Conditions (Bid Item SW-29).

G. Liquidated Damages: In addition to any regulatory fines, should the Contractor fail to implement the dewatering criteria as per this Section, or promptly take all required remedial actions to the City's satisfaction herein, the City Representative reserves

the right to issue environmental non-compliance notices, have the necessary work performed by others, assess fines of one thousand dollars ($1,000.00) per non-compliance occurrence or per event, or to deduct or withhold all monies required therefore as permitted under the Contract Documents.

1.2 APPLICABLE CODES AND STANDARDS

A. National Pollution Discharge Elimination System (NPDES) permit

B. Regional Water Quality Control Board (RWQCB) regulations

C. San Francisco Public Utilities Commission (SFPUC) permit and regulations

1.3 SUBMITTALS

A. Pursuant to the provisions of Section 01 33 00 – Submittal Procedures, the Contractor shall submit the following if groundwater is encountered.

1. Dewatering Plan in accordance with Articles 1.7, 1.8, and 1.9 herein.
2. Monthly Updates of dewatering activities and analytical results of the discharged water in accordance with Article 1.6 herein
3. Copies of the sewer discharge permit from the San Francisco Public Utilities Commission (SFPUC), Wastewater Enterprise Collection Systems Division (SFPUC-WECSD)
4. Groundwater analytical results as per Part 1.10 of this Section.
5. Notifications for sewer discharge for each discharge point as per Part 1.11 of this Section.

1.4 GENERAL REQUIREMENTS

A. Sewer Batch Wastewater Discharge Permit

1. The Contractor shall obtain the sewer discharge permit from the San Francisco Public Utilities Commission (SFPUC), Wastewater Enterprise Collection Systems Division (SFPUC-WECSD). The Contractor shall obtain the sewer discharge permit by submitting a dewatering control plan along with the permit application. https://sfwater.org/modules/showdocument.aspx?documentid=2327
2. The Contractor is wholly responsible for obtaining the sewer discharge permit in a timely manner. The City will not honor any claims from the Contractor, arising from delays in obtaining the sewer discharge permit.
3. The Contractor shall submit monthly updates of dewatering activities and conduct the water quality sampling and submit analytical results of the discharged water, in accordance with the requirements of the sewer discharge permit.

B. Groundwater Controls

1. The Contractor shall design, furnish install and maintain, and operate dewatering systems and controls as required to control water levels and hydrostatic pressures at least 3 feet below the bottom of excavation during excavation and other construction operations.

2. Methods of groundwater discharge, conveying, and transmission to onsite and offsite locations shall meet the approval of the City regulations and other governmental authorities having jurisdiction. The Contractor shall provide all temporary holding tanks required for sedimentation of soil particles and treatment of other contaminants.

3. The Contractor shall conduct chemical testing of groundwater pumped into temporary holding tanks. The Contractor shall submit results of tests to City Representative for evaluation. The Contractor shall not discharge any water until the test results have been reviewed and approved by the City Representative.

4. The Contractor is responsible for the continuous control of groundwater at all times during the course of the construction, including Saturdays, Sundays, holidays work stoppages, during periods of labor strikes and during periods of work stoppages.

5. Unless otherwise specified in this Specification, the Contractor shall schedule and conduct its work in a way that will not cause interference and temporary disruptions to the existing utilities and services. Existing utilities and services include but are not limited to sewers, water mains, gas lines, electrical lines, telephone lines, telecommunication lines and the normal flow of traffic.

C. Prohibition of flows and unauthorized discharges to the San Francisco Bay

1. The City clearly and unequivocally prohibits the Contractor from discharging any flows to the San Francisco Bay, without authority from the San Francisco Bay Regional Water Quality Control Board (RWQCB). Neither the City nor the Contractor has authorized permission or has received a permit from the RWQCB to discharge into the Bay.

2. The Contractor shall be responsible for providing all necessary means to handle, carry through, or divert all flows properly, all flows including storm flows and unforeseen sub-drains. The Contractor shall be responsible in preventing backup or bypassing unauthorized discharge to the Bay, and preventing flooding damage to property.

3. The RWQCB has the power, derived from the Porter-Cologne Water Quality Control Act, to impose up to twenty-five Thousand Dollars ($25,000) per day (or portion thereof) fine for bypassing of sewerage flows and unauthorized discharges to the San Francisco Bay.

4. In addition, provisions of the Clean Water Act, Section 3.09 “Federal Enforcement” state that any civil and criminal violations of the Act may result in a fine of up to a maximum of One Hundred Thousand Dollars ($100,000) per day, plus imprisonment for anyone who knowingly violates the regulations. The Contractor shall be responsible for any violation of Regional Board requirements caused by his or her operations. The City will pass on all such penalties to the Contractor.

5. If an overflow and an authorized discharge to the bay occurs because of the Contractor’s operations or neglect, and any fine is levied against the City, the fine will be considered direct damages caused by the Contractor. The City

will recover such monetary sums from the Contractor's progressive payments and final payment.

6. The Contractor shall comply with all applicable provisions of the Phase II Stormwater Regulations of the Clean Water Act (CWA). The Contractor's Dewatering Plan shall be implemented in conjunction with the Stormwater Pollution Prevention guidelines

D. Handling and Disposing of Sanitary Sewage, Groundwater and Infiltrated Flows

1. The Contractor shall make allowances for seasonal and daily fluctuations in the sewer flow when dewatering or controlling ground water control within the project limits.

2. Flow information may be obtained from the DPW/BOE Hydraulic Section at 49 S. Van Ness Avenue, Suite 800, San Francisco.

3. The Contractor shall not impede or obstruct any wet weather flow anywhere in the sewer system. The Contractor shall not begin disruption of a sewer without the City Representative's approval.

E. Work Within Existing Sewers

1. The Contractor shall comply with California Code of Regulations, General Industry Safety Orders, Article 108, and Title 8, Sections 5156 through 5159 when entering and working in existing sewers.

2. It is the responsibility of the Contractor to provide all equipment or assistance to make the confined space safe for entry by the City Representative or his/her representative per the California Code of Regulations, Title 8; General Industry Safety Orders entitled "Confined Spaces".

F. Construction of Flow Diversion

1. The Contractor may construct open or close conduits, wholly within the excavation for flow diversions at places where sewers cross the excavation. Existing sewer flows shall be maintained at all times.

1.5 SEWER DISCHARGE REQUIREMENTS

A. Discharges to the sewerage system shall meet the requirements of the following:

1. Article 4.1 San Francisco Public Works Code; Industrial Waste Ordinance, No. 116-97

2. DPW Order No. 158,170 for wastewater discharges into the City's sewerage system.

3. Requirements for Batch Wastewater Discharges - the San Francisco Public Utilities Commission, Wastewater Enterprise Collection Systems Division (SFPUC-WECSD).

4. The Construction Dewatering Site Discharge Limits of the Southeast Water Pollution Control Plant (SEWPCP)

B. The Contractor is permitted to discharge uncontaminated wastewater into the City's sewerage system after obtaining approvals as follows:

1. Submit, obtain approval and abide by the Dewatering Plan. The City Representative will forward the Dewatering Plan, to the San Francisco Public Utilities Commission (PUC). The City Representative will only approve the

Plans after the regulatory agencies approve the Plans. The Contractor shall be responsible for correcting any deficiencies to the Plan.

2. Obtaining the sewer discharge permit. Contact Tomio Takeshita of SFPUC/CSD at (415) 695-7369.

C. The Contractor is advised that the Public Utilities Commission has authority to order immediate cessation of discharge(s) to the sewerage system. The Contractor is solely responsible for all costs associated with cessation discharges, and any and all costs for delay in operations.

D. Should the existing groundwater be uncontaminated, and subsequently become contaminated due to the Contractor's operations, all costs related to satisfactory cleanup and disposal shall be the responsibility of the Contractor. Such costs shall include re-design, re-construction, pretreatment and, sewer service permit and usage fees costs necessary to satisfy the above requirements.

1.6 DISCHARGE TO THE WATER POLLUTION CONTROL PLANT (SEWPCP)

A. The Contractor shall adhere to the Construction Dewatering Site Discharge Limits of the Water Pollution Control Plant (WPCP), which includes, but is not limited to:

1. Limit the maximum discharge flow from the project to less than 285,000 GPD (200 GPM over a continuous 24-hr period). For intermittent dewatering (e.g. daytime only), the dewatering flow rate shall not exceed 300 GPM.

2. Collect and analyze discharge flows from each site for chloride concentration. To be performed by the Contractor in presence of the City Representative.

3. The ability to terminate discharge to the SEWPCP collection system, upon request, and provide storage and/or bypass alternatives.

B. Monthly Updates: Provide monthly updates to the Water Pollution Control Division (WPCD), regarding the status of all construction dewatering in the collection system. This shall include:

1. Previous and planned dewatering schedule

2. Start and stop of each discharge

3. Measured flow rates in gallons per minute (GPM) and volumes in gallons per day (GPD)

4. Field measurements of chloride concentrations

5. Method(s) of dewatering

C. For variances of the limits prescribed above, coordination through the WPCD, information, notification, and reporting contact WPCD.

1.7 SITE DEWATERING

A. Unless otherwise directed by the City Representative, the Contractor shall discharge all dewatered groundwater to the sewer system through settling tank(s), with sediment traps and oil/water separators. The Contractor may select its own dewatering system. The Contractor shall furnish, install and operate sufficient equipment to allow all dewatering flows to reside in the settling tanks for a minimum

of one hour. The system shall include all required pumps, hoses, fittings and accessories as necessary to contain and handle the dewatering flows.

B. The Contractor shall employ a professional Civil Engineer, Geotechnical Engineer, Certifies Engineering Geologist or Certified Hydro geologist registered in the state of California to design and operate the dewatering system to:

1. Prevent direct discharge into the City's Sewer System
2. Prevent loss of ground as water is removed
3. Avoid inducing settlement or damage existing facilities, completed work, or adjacent property
4. Relieve artesian pressures and resultant uplift of excavation bottom.
5. Ensure dry conditions at the final lines and grades of the bottom of the excavation
6. Control all odors emanating from the dewatering system
7. After treatment through the dewatering system, discharge the flow(s) directly into the catch basin or sewerage. Discharges shall neither flood the streets and/or other surfaces, nor affect adjacent residences and businesses. Dewatering operations shall neither cause a dust nuisance, nor a health menace, nor create muck deposits.

C. The Contractor shall provide and maintain at all times during construction, ample means and adequate devices with which to promptly dewater and properly dispose of all water one meter (3 feet) below the deepest excavation until backfill has been completed. The Contractor shall continuously control water during construction, including weekends and holidays and during periods of work stoppages, regardless of source, and until backfilled to final grade. The Contractor shall also provide adequate backup systems to maintain control of water.

D. The Contractor shall design, furnish, install, test, operation, meter the flow, monitor and maintain the dewatering system including all discharge piping and connections at point of discharge. The Contractor shall be responsible to design a system that shall ensure that the excavation and removal of underground obstructions occurs in a dry environment. Hydrostatic pressure shall be properly relieved to prevent excessive seepage of water into the excavation, which may create instability to the sides and bottom of the excavation.

E. Uptake lines to the settling tank(s) shall be screened and set in the excavation to minimize uptake of sediment and/or other contaminants. Outflow from the settling tank(s) shall be by gravity only, no pumping. The outflow capacity shall be sufficient to accommodate the rate of inflow while meeting applicable discharge standards. The Contractor shall provide a sufficient number of properly configured settling tanks to prevent any delay to his/her operation.

F. The Contractor shall have sufficient redundancy in the treatment system and standby units to safeguard against breakthrough of the primary units and to keep the excavation free of water in event of component failure. Standby pumping equipment shall be maintained on the jobsite.

G. The Contractor shall furnish multiple systems to handle flows at each discharge location he or she proposes to discharge. The groundwater shall be discharged at locations approved by the City Representative.

H. Dewatering shall commence after dewatering plan has been reviewed and approved by the City Representative, when groundwater is first encountered, and shall be continuous until such times as water can be allowed to rise.

I. The Contractor shall provide 100% emergency power backup with automatic startup and switchover in the event of electric power failure.

J. The Contractor shall include worksite traffic controls at the dewatering locations that enter into vehicular or pedestrian pathway

K. The Contractor shall restore all facilities to conditions prior to construction and to the satisfaction of the City Representative. Demobilization of the dewatering system includes the following:

1. Cleaning the settling tank(s) to a level acceptable to the tank vendor
2. Removal and containerizing all tank(s) sediment
3. Sediment sample collection as necessary for proper sediment disposal
4. Load, transport and disposal of sediment and floatable waste,
5. Return of the tank as per the vendor's requirements.
6. Remove all temporary lines and related connections upon completion of the work

1.8 CONTRACTOR'S DEWATERING PLAN

A. As a condition of the commencing site work under this Contract, the Contractor shall submit to the City Representative, a written plan for dewatering, including obtaining all required permits. Review and approval of the Contractor's dewatering plan by City Representative shall not relieve the Contractor of the responsibility for the adequacy of the dewatering system to achieve the specified result.

B. Thirty (30) days prior to commencing excavation or prior to the planned start of work affecting the flow in any major sewer, the Contractor shall submit to the City Representative six (6) copies of a detailed Dewatering Plan for approval. The Contractor shall also send a copy of the Dewatering Plan to the San Francisco Public Utilities Commission (SFPUC), Wastewater Enterprise Collection Systems Division (SFPUC-WECSD). The Contractor shall provide evidence to the City Representative that the above agencies have approved the dewatering plan. The dewatering plan shall fulfill the sewer discharge requirements of the City.

C. The dewatering plan shall include:

1. Drawings of the proposed groundwater control system showing locations, dimensions and relationships of elements of each system
2. Description of the proposed groundwater control system but not limited to, equipment, standby equipment and power supply
3. Method of handling, treating, dewatering and disposing of sanitary, groundwater and tidewater flow
4. Design calculations demonstrating adequacy of proposed dewatering system and components
5. Schedule of installation

6. Statement of the Contractor's awareness and intent to comply with the City's sewer discharge requirements as per the Industrial Waste Ordinance Article 4.1 Section 127-Reporting and Sampling Requirements the certification statement shall be as follows:

   I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7. Procedures for notification, testing for chlorides and reporting requirements with the Construction Dewatering Site Discharge Limits of the Southeast Water Pollution Control Plant (SEWPCP)
8. Flow rates and sewer discharge volumes
9. Proposed points of discharge to the sewer
10. Details of the system operation plan and its portability
11. Contingency plans for interruption or failure of the proposed groundwater control system
12. Disposal plan for the settled wastes, and floatable and oily wastes
13. The sewer discharge permit

D. The dewatering plan shall be designed, stamped and signed by a licensed Civil Engineer registered with the State of California. By approving the plan, the City does not accept responsibility for the adequate thereof nor any damages to public or private property that may result. All such responsibility shall rest with the Contractor and its engineer or consultant.

E. If the dewatering system is modified during installation or operation, the Contractor shall revise or amend, and resubmit the dewatering plan to the City Representative for review and approval. Review and approval of the Contractor's amended dewatering plan by City Representative shall not relieve the Contractor of the responsibility for the adequacy of the dewatering system to achieve the specified result.

1.9 ANALYSES OF GROUNDWATER DISCHARGE

A. In the presence of the City Representative, the Contractor shall collect groundwater samples at each point of discharge for chemical analyses and send, and shall pay for the analyses of the samples at a State of California accredited laboratory. The analytical parameters for each sample, and frequency of collection shall be as per:

1. The sewer discharge permit from the San Francisco Public Utilities Commission (SFPUC), Wastewater Enterprise Collection Systems Division (SFPUC-WECSD).
2. Industrial Waste Ordinance No. 116.97 (Chapter X (Public Works Code), Part II, San Francisco Municipal Code, Article 4.1)

3. DPW Order No. 158,170 for wastewater discharges into the City's sewerage system.

4. The requirements for Batch Wastewater Discharges of the San Francisco Public Utilities Commission (SFPUC), Wastewater Enterprise Collection Systems Division (SFPUC-WECSD).

5. The Construction Dewatering Site Discharge Limits of the Southeast Water Pollution Control Plant (SEWPCP).

B. Schedule the time required to sample, and to obtain the analytical results. The standard turnaround time to obtain the analytical results shall be ten (10) working days. Provide the analytical data to the City Representative, within two working days of receipt of results.

1.10 NOTIFICATION OF INTENT TO DEWATER AT EACH POINT OF DISCHARGE

A. Provide written notification of its intent to dewater within at least three (3) full working days prior to beginning the discharge for each discharge point. Present notification of intent to dewater at regularly scheduled progress meetings. This notification is a requirement of the SFPUC, and will be forwarded to City Representative. Notification shall include:

1. The location (station location)

2. Time of day

3. Estimated duration rate (GPM)

4. Estimated volume (GPD) of dewatering

B. During dewatering episodes, daily complete, and submit a basic form, which documents the specifics regarding the dewatering activity: location, time, duration and volume.

C. In the event that the settling tank configuration requires the addition of an oil/water separator, make the change within two (2) full working days from the time of notification by the City Representative.

D. Treat water collected by dewatering operations prior to discharge as required by regulatory agencies.

E. Discharge water as required by the discharge permit and in a manner that will not cause erosion or flooding, or otherwise damage existing facilities, completed work or adjacent properties.

PART 2 – PRODUCTS

2.1 FILL MATERIALS

A. The Contractor shall provide all materials and equipment, including but not limited to:

1. Pipe, fittings, valves, pumps, tools, meters, fuel and all other appurtenances in suitable and adequate quantities as required to perform the groundwater control work.

PART 3 – EXECUTION

3.1 HYDROSTATIC PRESSURE RELIEF

A. Where deep excavations are made, the Contractor shall maintain a safe hydrostatic pressure level directly below the excavated areas. Where by mud or similarly impermeable material is found below final excavation subgrade, the Contractor must design a pressure relief system to lower the water pressures in the strata below the bay mud to safe levels to prevent blowout or instability of the base of the excavation.

B. The Contractor shall also be responsible for preventing all hydrostatic pressure build-up under newly placed slabs and walls until the concrete has attained its 28-day compressive strength.

C. Reducing the hydrostatic pressure will no longer be necessary when:

1. Backfilling of the excavated areas has been completed above groundwater elevation.

2. The construction has been completed sufficiently that the Contractor can demonstrate to the City Representative that the reactions from the completed portion of the structure can safely and adequately resist all potential uplift pressures.

D. The Contractor shall accept full responsibility for any damage, which may result from not maintaining adequate hydrostatic relief as specified during construction.

E. If at any time the hydrostatic pressure exceeds safe limits, the Contractor shall take immediate steps to reduce the hydrostatic pressure to safe limits. Any damage, which may result either to the Contractor or City as a direct result of excessive hydrostatic pressure, shall be corrected by, and at the expense of the Contractor.

END OF SECTION