SECTION 01 14 00

WORK SEQUENCE AND RESTRICTIONS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-24- City to review; Big to do items – add in proposed work restrictions once shutdown windows for construction activities are further developed.

2020-01-28- Work for shutdowns will be allowance based. Joe provided additions to Part 4- City to review.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Requirements for sequencing and scheduling Work affecting the existing site and FACILITY, work restrictions and coordination between construction staff and operations and maintenance (O&M) staff.

~~B. Related Sections: The following list of related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the CONTRACTOR to see that the completed Work complies accurately with the Contract Documents.~~

~~1. Section 01 31 19 – Project Meetings~~
~~2. Section 01 32 16 – Progress Schedules and Reports~~
~~3. Section 01 35 23 – Site Safety Requirements~~
~~4. Section 01 35 53 – Site Security Requirements~~
~~5. Section 01 50 00 – Temporary Facilities and Controls~~
~~6. Section 01 78 23 – Operation and Maintenance Data~~
~~7. Section 01 91 14 – Testing, Training, and Facility Start Up~~

1.02 SUBMITTALS

A. CONTRACTOR shall develop and submit documents for all planned interruptions affecting existing treatment processes before each anticipated interruption. Documentation shall include a completed version of the Process Shutdown Request (PSR) template form attached as supplement at the end of this Section.

1.03 GENERAL CONSTRAINTS ON SEQUENCE AND SCHEDULING WORK

A. The San José-Santa Clara Regional Wastewater Facility (FACILITY) is the City of San José's only means of treating domestic and industrial wastewater prior to discharging into the San Francisco Bay. Impairing the operational capabilities of the FACILITY may result in serious environmental damage and monetary fines. CONTRACTOR shall conduct work in a manner that will not impair the operational capabilities of the essential elements of treatment process or reduce the capacity of the FACILITY below levels sufficient to treat the quantity of wastewater to permissible levels as specified in the FACILITY's permits, except as provided in this Section.

B. CONTRACTOR shall include costs in the bid price for compliance with the specific limitations and constraints pertaining to maintaining the operational capacity of the FACILITY, including but not limited to:

1. Reduced construction efficiency and productivity.
2. Overtime costs for performing work outside of normal work hours, if required.
3. Work related to temporary facilities needed to maintain FACILITY operations.
4. Preparation and revision of schedule and planned Sequence of Work.
5. Design and construction of temporary bracing, underpinning, or special sequencing necessary to support or brace existing structures.

C. Hours of work:

1. Normal work hours are from 7:00 A.M.-5:00 P.M. weekdays, no work during the weekend or during CITY observed holidays. Obtain written approval from the ENGINEER prior to initiating work hours outside of the hours allowed by this Contract.
2. CONTRACTOR shall request work-hour variations, in writing, a minimum of seven (7) days prior to the start of the proposed work period.

1.04 FACILITY ACCESS

A. Limited Entrance: The proposed locations for the Project Site are within the gated and locked area. Access to the construction site is through the FACILITY Main Gate for ingress/egress or other gate as designated by ENGINEER. Material hauling truck ingress is through the FACILITY Main Gate or a gate as designated by ENGINEER.

B. Maintain restricted access to the FACILITY at all times through the use of gates, fences or other approved means. CONTRACTOR shall comply with all security procedures outlined in Section 01 35 53 – Site Security Requirements.

C. CONTRACTOR's general construction access shall be as indicated on the Drawings. Construction access via other gates or roads may be allowed for special circumstances and must receive written approval from ENGINEER before doing so.

D. Operations and Maintenance access: Provide and maintain safe, continuous access to process control equipment and chemical deliveries for FACILITY operations staff and other personnel contracted to perform Work at the FACILITY.

E. CONTRACTOR is required to relocate or reset existing site fencing as required to perform the Work, in order to maintain the integrity of the fence and gates at all times during the contract period. Any such relocation or reset shall be pre-approved in advance by ENGINEER.

F. CONTRACTOR shall be aware that FACILITY operations and maintenance staff and FACILITY site visitors frequently travel on the FACILITY's roads as pedestrians, on bicycles, in carts, in cars and trucks. All work shall be planned in accordance with all restrictions indicated in the Contract Documents, all applicable FACILITY rules, regulations, posted signage, policies, and procedures and as necessary to accommodate safe working conditions for all on the site. CONTRACTOR shall be aware that the rate of the material hauling operation and other transportation activities within the site may be impacted by normal activity on the site.

1.05 CONTRACTOR'S STAGING AREA

A. A designated staging area as close to the construction site as practicable, will be confirmed at the time of the pre-construction meeting for use by the CONTRACTOR for staging construction operations.

B. Maintain the staging area and construction site during construction in a manner that will not unnecessarily obstruct roads or access to other facilities. CONTRACTOR shall proceed with his work in an orderly manner, maintaining the construction site free of debris and unnecessary equipment or materials.

1.06 INTERRUPTION OF TREATMENT PROCESS

A. The ENGINEER will coordinate the approval of the PSRs based on the FACILITY's ability to reliably meet capacity demands.

1. CONTRACTOR shall indicate required shutdowns of existing facilities or interruptions of existing operations on the Project's Progress Schedule. Shutdowns will be permitted to the extent that existing operations of the FACILITY will not be jeopardized, and when constraints identified in this section have been satisfied.
2. CONTRACTOR shall submit a completed PSR form and associated documentation to the ENGINEER at least 28 days prior to the planned date of shutdown.
3. Following receipt of a notice of planned shutdown, ENGINEER will notify CONTRACTOR as to the feasibility of the requested date and duration of the activity.
4. The ENGINEER will maintain the ability to cancel a scheduled PSR on the day of the scheduled shutdown due to operational constraints.

B. CONTRACTOR shall minimize shutdown times by thorough advanced planning. CONTRACTOR shall confirm required equipment, materials and labor is on hand a minimum of three (3) calendar days before commencing a shutdown.

C. CONTRACTOR shall not begin shutdowns or alterations of existing facilities until ENGINEER'S written permission has been received.

D. CONTRACTOR shall provide temporary pumping, plugs, power, lighting, controls, instrumentation, and safety devices when required to minimize treatment process interruptions and comply with shutdown constraints specified in this Section.

1.07 PROCESS SHUTDOWN REQUEST (PSR)

A. CONTRACTOR shall review the instructions and template form attached at the end of this Section.

B. CONTRACTOR shall prepare and submit a PSR for the following conditions:

1. Shutdowns, diversions, and tie-ins to the existing FACILITY.

2. Power interruption and tie-ins.
3. Switch over between temporary and permanent facilities, equipment, piping, and electrical and instrumentation systems.
4. Process constraints requiring interruption of operating processes, roadways, or utilities.
5. Other Work not specifically listed in the Contract Documents as determined necessary by the CONTRACTOR, FACILITY, and/or ENGINEER.

C. CONTRACTOR shall submit a detailed schedule for the work covered by each PSR.

D. CONTRACTOR shall create and maintain a log of all PSRs. The log should include dates of when the PSR was submitted, approved/rejected, date and duration of the proposed shutdown. This log shall be available for review during the construction progress meetings.

E. No consideration will be given to claims of additional time and cost associated to preparing PSRs required to complete Work in a manner that supports proper operation of the FACILITY and compliance with effluent discharge requirements.

1.08 REQUIREMENTS FOR MAINTAINING CONTINUOUS OPERATION OF EXISTING FACILITIES

A. Continuous operation of facilities is of critical importance. CONTRACTOR shall schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.

B. The CONTRACTOR shall cooperate fully with FACILITY's personnel for existing facilities. The FACILITY may restrict the time and duration of shutdowns, and other disruptions to FACILITY operations.

C. ~~The CONTRACTOR shall perform all necessary Work, as detailed in these specifications, in such manner as not to interfere in any way with normal FACILITY operations.~~ Wherever the CONTRACTOR finds it necessary to involve temporary operating arrangements and/or modify existing equipment in pursuit of Work required under the Contract, CONTRACTOR shall give adequate written notice as described in this Section to the ENGINEER, to allow coordination of FACILITY operating procedures.

D. Facilities or conditions required to keep the FACILITY operational include, but are not limited to, the following:
1. Electrical power including transformers, distribution wiring, and motor control centers.
2. Piping for conveyance of wastewater, chemical, and utilities between treatment units.
3. Chemical storage, metering, conveyance, and control facilities.
4. Plant water.
5. Plant air (process air and instrument air).
6. Laboratory facilities.
7. Office, toilets, and washrooms.
8. Fencing and gates, site security.
9. Lighting.
10. Heating, ventilation, and air conditioning.
11. Distributed Control System (DCS).
12. Instrumentation, meters, controls, and telemetry equipment.

13. Safety equipment and features.
14. Parking for FACILITY's employees and vehicles required for operation and maintenance of the FACILITY.
15. Telephone system, all communication systems.
16. Sewers and Storm drainage.
17. Natural gas service, digester gas
18. South Bay Water Recycling piping and equipment.
19. All truck deliveries for chemicals and material to the plant
20. Septage Disposal Facilities

E. Unless otherwise approved in writing by PSR, CONTRACTOR shall conduct the Work and provide temporary services and facilities required to keep the FACILITY continuously operational.

F. If construction cannot be completed according to the allowable shutdown constraints, CONTRACTOR shall provide a temporary bypass plan for review to the ENGINEER before bypass pumping is permitted to allow for uninterrupted operations.
1. For each bypass pumping operation, the CONTRACTOR shall furnish and install, ready for use, pump(s) suitable for conveying the quantity and type of flow required. The pump(s) shall be installed as a complete stand-alone system. Power for operation of the pump(s) shall be provided by the CONTRACTOR. The CONTRACTOR shall provide a minimum of 50 percent standby pumping capacity on site and be ready to operate in the event of failure of the operating temporary pump(s).
2. CONTRACTOR personnel shall be on site 24 hours per day to operate and maintain the bypass pumping system while in use. Maintenance shall include, but not limited to, refueling, de-ragging and preventative maintenance.
3. CONTRACTOR personnel shall provide all necessary support facilities including additional standby equipment and tools to ensure continuous 24-hour/7-days a week operation of temporary facilities as long as required. Such additional equipment, materials and labor shall be in compliance with FACILITY policy and procedures.

G. CONTRACTOR shall not close lines, open or close valves, or take other action that would affect the operation or existing systems, except as specifically required by the Contract Documents and after authorization by ENGINEER and CITY.

H. Do not remove or demolish existing facilities required to keep the existing FACILITY operation at the capacities specified until the existing facilities are replaced by temporary, new or upgraded facilities or equipment. The replacement facilities shall have been tested and demonstrated to be operational prior to removing or demolishing existing facilities.

I. If any of the normal FACILITY operations listed above are rendered inoperative during construction, the CONTRACTOR shall immediately undertake emergency repair work to restore FACILITY operation as directed by the ENGINEER. This emergency repair work shall be completed as soon as practicably possible.

1.09 SHUTDOWN CONSTRAINTS

A. A shutdown is defined as either Major or Minor based on the impact to treatment plant operations. Most shutdowns can be categorized based on the period of time during which a normal treatment function and activity of the FACILITY cannot take place. However, there

are various other factors that can affect the impact of a shutdown. The category of shutdown (Major vs Minor) shall be at the sole discretion of the ENGINEER.

B. All work requiring shutdown of FACILITY treatment processes or interruptions of FACILITY operations shall normally be done during low flow periods, which are between 5:00 a.m. to 8:00 a.m. on weekdays and between May 15 and October 15 unless otherwise specified by FACILITY.

C. Shutdown Requirements:
   1. Minor Shutdowns:
      a. Minor shutdowns shall be used for localized tie-ins or isolation of utilities, electrical, and communication relocations or other work that does not interrupt treatment processes.
      b. Minor shutdowns shall not be longer than two (2) hours in duration unless otherwise approved in writing by the ENGINEER.
      c. Minor shutdowns require 72 hours notification and an approved PSR.
      d. Minor shutdowns shall not be performed by the CONTRACTOR until the CONTRACTOR has received written authorization from the ENGINEER.
   2. Major Shutdowns:
      a. Major shutdowns will be used where complete or partial a treatment process shutdown is required, regardless of duration.
      b. Major shutdowns require a minimum of 28 calendar days advanced notification and an approved PSR.
      c. CONTRACTOR shall submit a PSR for each major shutdown. PSR shall be in accordance with the PSR form at the end of this Section. The PSR shall include contingency measures and provisions for returning the system to service in the event that shutdown and work progress difficulties are encountered.
      d. Major shutdowns shall not be performed by the CONTRACTOR until the CONTRACTOR has received written authorization from the ENGINEER.

1.10 UTILITIES

A. CONTRACTOR shall maintain electrical, telephone, water, gas, sanitary facilities, and other utilities within existing facilities in service. CONTRACTOR shall provide temporary utilities when necessary.

B. CONTRACTOR shall provide at least 2 business days advance notice to and utilize services of Underground Services Alert (USA) for location and marking of underground utilities operated by utility agencies other than the FACILITY. USA contact number is 811 or 1-800-227-2600.

1.11 ODOR CONTROL

A. Construction activities are not to be the source of nuisance odors, either due to the CONTRACTOR's activity or exposing noxious sources.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 COORDINATION OF WORK

A. CONTRACTOR shall maintain overall coordination of execution of Work.

B. CONTRACTOR shall obtain construction schedules from subcontractors and suppliers and assume responsibility for correctness.

C. CONTRACTOR shall incorporate schedules from subcontractors and suppliers into Progress Schedule to plan for and comply with sequencing constraints.

3.02 WORK BY OTHERS

A. CONTRACTOR shall coordinate all work with current and ongoing work at the site.

B. Where proper execution of the Work depends upon work by others, inspect and promptly report discrepancies and defects to the ENGINEER.

3.03 REQUIREMENTS FOR EXECUTION OF WORK

A. Operating processes, systems, individual equipment items or controls shall be isolated, dewatered, decommissioned, de-energized, or depressurized only by the CITY's Operations staff in accordance with the approved shutdown plan and schedule.

B. Any additional pumping required to perform the shutdown shall be the CONTRACTOR’s responsibility. Existing piping or structures may not completely drain and the CONTRACTOR may be required to pump any remaining process fluids from pipes or structures. Any additional time required for pumping shall be coordinated with the shutdown period.

C. If the planned circumstances under which the outage was to be conducted change, the ENGINEER shall have the right to cancel or terminate an outage when the potential for a safety hazard or violation of the discharge permit exists.

D. The ENGINEER retains the authority to terminate any scheduled shutdown the day of the scheduled shutdown.

E. Pursuant to shutdown requirements specified herein, the ENGINEER shall be notified in writing in advance of any planned outage in any area. If requested by the ENGINEER, the CONTRACTOR shall send a representative to a pre-outage meeting with CITY’s Operations and ENGINEER's staff to plan activities during the requested outage.

F. Sequence, schedule, and coordinate work in and around the activities of other CONTRACTORS on the site to avoid obstruction of work access and interference with, or delay of, the work of other CONTRACTORS on the site.

G. Provide temporary pumping, piping, power (including portable generators as required), lighting, controls, instrumentation, communication systems, and safety devices required to comply with the constraints specified in this Section.

H. Confirm required equipment, materials, and labor will be on site a minimum of 3 days before commencing any work covered in a PSR.

I. Establish temporary erosion and sediment controls prior to commencing any clearing, grading, or excavation that may result in discharges to waters of the State.

J. Do not begin shutdowns or alterations of existing facilities until receiving ENGINEER's approval of the corresponding PSR.

K. Unless otherwise specified, normal daily operation and maintenance of the existing treatment facilities will be performed by FACILITY personnel. Whenever operational functions on existing facilities or new facilities which affect operating systems are required to permit construction operations, these functions will also be performed by FACILITY personnel. CONTRACTOR shall not operate valves, gates or other operating systems in the FACILITY for existing or accepted Work that is part of or may affect FACILITY operations.

L. Locate temporary facilities in a manner that minimizes interference to CITY's operation and maintenance personnel.

M. Unless otherwise specified, install temporary pipelines of the same size as its connection to the existing FACILITY at the downstream end of the pipeline.

N. Provide piping of suitable material for the material being conveyed.

O. Provide submittals on proposed temporary pumping facilities, temporary plugs, and temporary electrical and instrumentation components necessary to maintain existing facilities.

P. Dewater and promptly clean existing structures and pipelines temporarily removed from the operation where required.

Q. Dimensions for all existing structures, piping, paving, and other nonstructural items are approximate. The CONTRACTOR shall field verify all dimensions and conditions and report any discrepancies to the ENGINEER a minimum of 14 days in advance of any construction in the area.

R. Discrepancies between coordinates, bearings and lengths and stationing shall be resolved in the following order of precedence:
   1. Coordinates
   2. Bearing and lengths
   3. Stationing

3.04 WORK SEQUENCE AND CONSTRAINTS

A. General:
   1. CONTRACTOR shall utilize the description of critical events in the Work Sequence in this Section as a guideline for scheduling and completing the Work.
   2. The Work Sequence and Constraints presented herein do not include all items affecting the completion of the Work but are intended to describe in general the critical events necessary to minimize disruptions of the existing facilities.

3.05 PROCESS SHUT DOWN REQUEST (PSR)

A. General:

1. A Process Shut Down Request (PSR) is needed whenever CONTRACTORS activities temporarily impact the usual duties of the FACILITY staff. A PSR is a detailed document submitted by the CONTRACTOR for the purpose of requesting process shutdown(s), utility tie-in(s), work in areas that may risk unanticipated outages, or flow diversions to accommodate construction activities during a project. Such activities may include (but are not limited to) new tie-ins to utilities or structures, mechanical modifications to process piping or equipment, demolition, bulkhead installation, cleaning processes, tie-ins to the distributed control system (DCS).
2. The purpose of the PSR is to provide a detailed plan for the San José-Santa Clara Regional Wastewater Facility (FACILITY) and ENGINEER that describes specific aspects of the work, a shutdown, diversion, or tie-in including its purpose, time of execution, and anticipated impacts on the treatment or business processes. The PSR shall include information from each trade (such as mechanical, electrical, plumbing, HVAC) associated with the particular task requiring a shutdown, diversion, or tie-in. Information within the PSR will be used by the FACILITY for defining operational procedures and methods to safely and successfully assist the CONTRACTOR in performing the Work activities.

B. Submittal Process and Acceptance:

1. Pre-PSR Meeting (as needed)
   a. The CONTRACTOR initiates the PSR process by requesting a pre-PSR meeting with the ENGINEER to discuss the nature of the shutdown, diversion, or tie-in, and to gather the information necessary to complete the PSR form. The requirement for a pre-PSR meeting may be waived by the ENGINEER if the nature of the work is deemed to be minor. The CONTRACTOR shall complete the Process Shutdown Request Form (attached) and submit to the ENGINEER for approval following the pre-PSR meeting. The ENGINEER will distribute the PSR to appropriate FACILITY staff for review and approval.
   b. The CONTRACTOR may request the ENGINEER to conduct a walk-through of facilities impacted by the proposed shutdown. This walk-through can precede the pre-PSR meeting and can serve to identify specific equipment or systems that will be impacted.
2. PSR Content:
   a. The CONTRACTOR shall describe the nature of the work within the PSR form. The description will include details of all relevant trades associated with the required shutdown, diversion, or tie-in. If any of the trades are subcontracted, the CONTRACTOR shall be responsible for making the subcontractor provide and include the specific details required by that trade for the associated shutdown, diversion, or tie-in.
   b. The CONTRACTOR shall provide sufficient details on process isolation, work sequencing, and safety (i.e., control of significant hazards unique to the shutdown, diversion, or tie-in) to demonstrate an understanding of the Work and how it will be completed within the associated constraints, and the Work's impact on the treatment process. The CONTRACTOR will provide sufficient qualified manpower resources to survey existing as-built drawings, and to conduct surveys of the existing utilities, subsystems, and systems to be impacted by the PSR
   c. The PSR will be reviewed for completeness, accuracy, compliance with the construction schedule, constraints defined in Contract Documents, and confirm

that the requested shutdown, diversion, or tie-in does not negatively affect the operations or other concurrent activities at the FACILITY. Additional information may be requested from CONTRACTOR to understand the nature of the Work and method for completing the Work activities. The ENGINEER will return the PSR to the CONTRACTOR for revision if any of these criteria are not met. Once the PSR is acceptable to all parties, the PSR will be accepted by signature, and copies distributed by ENGINEER to the FACILITY staff and CONTRACTOR.

3. PSR Submittal Timing:
   a. Each Major PSR must be approved a minimum of seven (7) calendar days in advance of the Work activities defined in the PSR. CONTRACTOR shall allow a minimum of twenty-one (21) calendar days from the time of submission to the FACILITY for acceptance of the PSR. Therefore, the CONTRACTOR shall submit the first/original Major PSR a minimum of twenty-eight (28) calendar days prior to the associated shutdown, diversion, or tie-in unless a longer period of time is specifically called out in the specifications for a particular activity.
   b. Minor PSR's shall be submitted by CONTRACTOR a minimum of 72 hours in advance.

C. Identification, Scheduling and Tracking:
   1. The CONTRACTOR shall submit a preliminary list of anticipated PSRs with the preliminary schedule submission. Within 7 calendar days of the submission of the list of anticipated PSRs, the CONTRACTOR shall attend a meeting with the ENGINEER to review and identify any major shutdowns that may require extended planning. Scheduled PSRs shall be incorporated as tasks on the established baseline schedule, as well as the 3-week progress schedules prepared by the CONTRACTOR throughout the construction period. Scheduled PSRs shall be dated to coincide with the construction activities. Updates to this list shall be made throughout the duration of the project as new PSRs are identified.
   2. In addition to this list, the CONTRACTOR shall keep a PSR log for the purpose of tracking active PSRs. This log shall be updated weekly and available for review at the regularly scheduled construction progress meetings.

D. PSR Process Detail:
   1. STEP 1. CONTRACTOR identifies PSRs needed on Log and Baseline Schedule.
      a. CONTRACTOR submits a preliminary list of anticipated project PSRs identified but not limited to those shutdowns, diversions, or tie-ins described in the Contract Documents in a log/spreadsheet. Incorporate Major PSRs as tasks in Baseline Schedule. PSRs are scheduled to coincide with the appropriate construction activities.
      b. CONTRACTOR reviews the preliminary PSR list with the ENGINEER within 7 calendar days of submission to evaluate the number, complexity, and scale of the requested shutdowns and to identify PSRs that may require more planning lead time than the minimum 28 calendar days prescribed in paragraph 3.05 B of this Section.
   2. STEP 2. Pre-PSR Meeting
      a. CONTRACTOR requests a Pre-PSR Meeting with the ENGINEER to discuss the nature of each requested shutdown, diversion, or tie-in, and to gather the information necessary to complete the PSR Form. The pre-PSR meeting may be waived by the ENGINEER if the work is deemed to be minor.
   3. STEP 3. Submits PSR.

a. CONTRACTOR completes the PSR Form and submits it electronically through the DCMS system to the ENGINEER for review.

4. STEP 4. PSR Review Meeting.
   a. ENGINEER evaluates the completeness of the submittal and distributes a hard copy of the submitted PSR Form to the appropriate FACILITY staff for review and approval. Additional information may be requested from CONTRACTOR to better understand the nature of and method for completing the Work. The assigned Lead Subject Matter Expert (LSME) shall be responsible for coordinating any associated shutdown procedures for use by O&M staff.
5. STEP 5. PSR finalized.
   a. Once the PSR is agreed to by all parties, the PSR will be finalized by signature. Copies are distributed to the FACILITY Operations and Maintenance staff, ENGINEER, and CONTRACTOR.
6. STEP 6. Complete Readiness Checklist.
   a. CONTRACTOR verifies everything is ready for the work.
7. STEP 7. Complete Safety Checklist.
   a. CONTRACTOR completes a Job Hazard Analysis. The Job Hazard Analysis shall be summarized on a form prepared by the CONTRACTOR and reviewed by ENGINEER.
8. STEP 8. Complete work.
   a. CONTRACTOR completes the work.
9. STEP 9. CONTRACTOR updates PSR Log and Progress Schedules.

PART 4 ADDITIONAL REQUIREMENTS

4.01 REPLACE PARAGRAPH 1.03 C.1 OF SECTION 01 14 00 WITH:

A. Normal field work hours are from 6:00 A.M.-5:00 P.M. weekdays, no work during the weekend or during CITY observed holidays. Obtain written approval from the ENGINEER prior to initiating field work hours outside of the hours allowed by this Contract.

B. ~~With approval, CITY will allow field work outside the work hours for some observed holidays, shutdowns, tie ins, and other Construction activities requiring longer work durations.~~

C. CONTRACTOR will have 24/7 access to the site.

4.02 MODIFY PARAGRAPH 3.04 OF SECTION 01 14 00 WITH THE ADDITION:

A. The CONTRACTOR shall incorporate the following Work Sequence and Constraints of critical events for scheduling and completing the Work. For each instance of a sequence or constraint of critical events, a new PSR shall be developed and approved by the City.

1. 10" Spreckles Force Mains – to re-route each 10" Spreckles Force Main, each pipeline can be taken out of service individually. Both pipelines shall only be taken out of service while flows are redirected. Both pipelines shall not be taken out of service at the same time for construction or tie-ins.
2. 48" Santa Clara Force Main – to re-route the 48" Santa Clara Force Main, this pipeline may be taken out of service for a maximum of 12 hours at a time.

3. 24" Lamplighter Force Main – to re-route the 24" Lamplighter Force Main, this pipeline may be taken out of service for a maximum of 12 hours at a time.
4. 36" Milpitas Force Main - in order to re-route the 36" Milpitas Force Main, this pipeline may be taken out of service for a maximum of 12 hours at a time.
5. 48" WBW - in order to re-route the 48" WBW, this pipeline may be taken out of service for a maximum of 12 hours at a time.
6. Various Drains that are collected into the Recycle Pump Station: to collect or re-route various drain lines, each pipeline may be taken out of service for a maximum of 12 hours. Where appropriate, these lines shall be coordinated, so they are taken out of service together.
7. Electrical and/or DCS Shutdowns – when electrical connections or tie-ins are required and/or DCS connections or tie-ins are required, power service or communications may be taken out of service for a maximum of 4 hours.
8. Additional services, including pipelines, electrical, and DCS communications, must be coordinated with the City on a case by case basis.
9. The following scope may only be constructed once HW3 has passed Acceptance Testing:
   a. Headworks 1 scope.
   b. California Structure pipelines that connect to Headworks 1.
   c. Other scope as agreed upon between the City and Design-Builder. Scope that may be included in this item are
      1) Milpitas Structure, Pie Structure, Coffin Structure, and Santa Clara No. 1 Structure.
      2) Raw Sewage Distribution Structure.
      3) South Loop pipeline work, including meter replacement.

4.03 MODIFY PARAGRAPH 3.05.C ~~FOR PSR LOG UNDER 3.05 C.2~~ OF SECTION 01 14 00 WITH THE ADDITION:

A. The Maintenance of Operations During Construction documents are a listing of potential tie-ins and interconnections and will work in conjunction with ~~will be substituted with~~ the PSR log identified in 3.05 C.2.

~~FOR 1.08 C OF SECTION 01 1400, DELETE AND REPLACE WITH:~~

~~E. The CONTRACTOR shall perform all necessary Work, as detailed in these specifications, in such manner that limits impacts to FACILITY operations. Wherever the CONTRACTOR finds it necessary to involve temporary operating arrangements and/or modify existing equipment in pursuit of Work required under the Contract, CONTRACTOR shall give adequate written notice as described in this Section to the ENGINEER, to allow coordination of FACILITY operating procedures.~~

Process Shutdown Request

Project Name | Project ID

PSR # | Task Title *(Provide <10 word title)*: | Submittal Date: *(Not less than 28 days prior to work)*

SCHEDULE OF WORK ACTIVITY START: *(Date/Time)* | END: (Date/Time)

REQUESTOR:

PRIMARY POINT OF CONTACT: | PHONE/PAGER:

SECONDARY POINT OF CONTACT: | PHONE/PAGER:

NOTIFY ☐ Control Room, Phone. Outside Entity ☐ Security, Phone

BUILDING/AREA: | LOCATION OF WORK FLOOR/LEVEL:

DESCRIPTION OF WORK: *(Provide sufficient details on process isolation, work sequencing, and safety (i.e., control of significant hazards unique to the work) to demonstrate an understanding of the work and how it will be completed within the constraints, and its impact on the processes and Facility.)*

Task Summary:

Processes Affected:

Trades Affected:

Other Entities Affected

Entity Contact Info

WORK PLAN:

Work Sequencing:

Process Isolation:

Spill Prevention Plan:

Contingency Plans:

CITY Work:

CRITICAL EQUIPMENT/TOOLS: *(pumps and discharge hoses with correct fittings, blind flanges and pipe plugs, no-hub fittings, properly sized electrical service components, generators, portable lighting, chlorine for potable water pipe breaks, etc.)*

☐	Acoustic Ceiling/or Walls Access	☐	Excavation Permit	☐	Lock Out/Tag Out
☐	Chemical Use Approval	☐	Fire Sprinkler Impairment	☐	Life Safety Systems
☐	Confined Space Permit	☐	Flammable Materials	☐	Roof Protocol
☐	Critical Lift Plan	☐	Flush / Discharge	☐	Work After Dark
☐	Energized Electrical Work	☐	High Pressure Test	☐	
☐	Elect. Panel Schedules	☐	Hot Work/Open Flame	☐	

EXISTING SERVICE(S) AT RISK:

☐	Breathing Air	☐	Elect Normal	☐	Safety Showers	☐	VAX/DATA
☐	Chemical Distribution	☐	Fire Protection	☐	DCS / SCADA	☐	Compliance: Air
☐	Facility Water	☐	HVAC	☐	Security	☐	Compliance: NPDES
☐	Plant Water	☐	Inert Gas	☐	Solvent Drain	☐	
☐	Communication	☐	Instrument - Air	☐	Specialty Gases	☐	
☐	Domestic Drain	☐	Life Safety System	☐	Storm Drain	☐	
☐	Elect-Bus Duct	☐	Natural Gas	☐	Telephones	☐	
☐	Elect Emergency	☐	Process Access	☐	UPS	☐	

REVIEWER'S INSTRUCTIONS / COMMENTS:

Project Name Project ID

PSR # Task Title *(Provide <10 word title)*: Submittal Date: *(No later than 28 days prior to work)*

SCHEDULE OF WORK ACTIVITY START: *(Date/Time)* END: (Date/Time)

REQUESTOR:

PRIMARY POINT OF CONTACT: PHONE/PAGER:

SECONDARY POINT OF CONTACT: PHONE/PAGER:

NOTIFY ☐ Control Room, Phone. Outside Entity ☐ Security, Phone

BUILDING/AREA: LOCATION OF WORK FLOOR/LEVEL:

☐ PRE-JOB BRIEFING MUST BE COMPLETED PRIOR TO COMMENCING WORK:

	Full Name (printed)	Signature	Phone	Date
CONTRACTOR				
CM				
LSME				
SME (Operations)				
SME (Maintenance)				
SME (Power & Air)				
SME (Instrumentation)				
SME (Electrical)				
DIV. MGR. Facility Maintenance				
DIV. MGR. Energy & Automation				
DIV. MGR. Facility Operations				

As Applicable

Note: The PSR is considered Approved by signature of the Division Manager, Facility Operations, or his/her designee.

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-10-09– City suggested to remove part 4.04 and confirmed this section.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Requirements for conducting conferences and meetings for the purposes of addressing issues related to the Work, reviewing and coordinating progress of the Work and other matters of common interest, and includes the following:

1. Qualifications of Meeting Participants
2. Preconstruction Conference
3. Progress Meetings
4. Pre-installation Meetings
5. Post Construction Meeting
6. Partnering Meetings (as applicable) (Compare to Hawkins Contract)

Commented [AE1]: Covered equally or more in Hawkins; Remove from this spec.

B. The CONTRACTOR, or his authorized representative, shall attend all Project related meetings as indicated by the Contract. The CONTRACTOR's representatives, as a minimum, shall include the Project Manager and Superintendent.

C. The CONTRACTOR shall provide all pertinent reports, copies of reports, and other documents for each meeting as may be required by this or other sections of the Contract.

D. Related Sections

1. Section 01 32 16 - Progress Schedules and Reports
2. Section 01 33 00 - Submittal Procedures
3. Section 01 91 14 – Testing, Training, and Facility Start-up

1.02 QUALIFICATIONS OF MEETING PARTICIPANTS

A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of entity each represents

1.03 PRECONSTRUCTION CONFERENCE

A. Fifteen (15) days after Award of Contract, (OR as soon as possible after the award and execution of the Contract and before any Work at the site is started), ENGINEER will schedule a preconstruction conference.

B. After the conference, ENGINEER will issue the Notice to Proceed. The applicable Contract Time requirements will begin to run on the day indicated in the Notice to Proceed for the Work covered in such Notice.

C. Attendees will include: CONTRACTOR's superintendent, ENGINEER, representatives of utilities, major subcontractors, CITY and others involved in performance of the Work.

D. ENGINEER will preside at conference and shall prepare and distribute the meeting agenda and minutes.

E. Purpose of Conference includes, but will not be limited to: To establish working understanding between parties and to discuss Construction Schedule, shop drawing and other submittals, , lines of communication and chains of command, cost breakdown of major lump sum items, processing of submittals and applications for payment, maintaining required records, wage and personnel records and reporting requirements, testing requirements, field decisions and change orders, use of premises, permits, security, housekeeping, assignments for safety and first aid, major equipment deliveries, critical work sequencing, and other subjects pertinent to execution of the Work.

F. Agenda may include:
   1. Adequacy of distribution of Contract Documents
   2. Distribution and discussion of list of major subcontractors and suppliers
   3. Proposed progress schedules and critical construction sequencing
   4. Major equipment deliveries and priorities
   5. Project coordination
   6. Designation of responsible personnel
   7. Procedures and Processing of:
   8. Field decisions
   9. Proposal requests
   10. Submittals
   11. Change Orders
   12. Applications for Payment
   13. Record Documents
   14. Use of Premises:
   15. Office, construction, and storage areas
   16. CITY's requirements
   17. Construction facilities, controls and construction aids
   18. Temporary utilities
   19. Safety and first aid procedures
   20. Security procedures
   21. Housekeeping procedures

22. Warranties or warranty items

1.04 CONSTRUCTION PROGRESS MEETINGS (Discuss with city/check with Hawkins Contract, Appendix 5, section 5.4.2.)

Commented [AE2]: City wants DB to preside for the progress the meetings and do the meeting notes.

A. Progress meetings will be conducted weekly or as agreed upon in a mutually agreed place.

B. ENGINEER will distribute to each anticipated participant written notice and agenda of each meeting at least the day prior to the meeting

C. CONTRACTOR shall prepare and distribute 3-week look-ahead schedule at or prior to the meeting as detailed under Section 01 32 16 – Progress Schedules and Reports.

D. Attendees will include: CONTRACTOR's superintendent, CITY, ENGINEER and subcontractors, as appropriate. CITY representation will include operations and maintenance personnel or others, as required.

E. ENGINEER will preside at meetings.

F. Purpose of Progress Meetings: To discuss Project status, expedite work of subcontractors or other organizations that are not meeting scheduled progress, resolve conflicts, and coordinate and expedite execution of the Work

G. Review progress of the Work, updated Progress Schedule, narrative report, Application for Payment, record documents, and additional items of current interest that are pertinent to execution of the Work

H. Agenda topics shall include, but are not limited to:
   1. Report on construction progress
   2. Work schedule and sequencing requirements, delays to critical path and mitigation plan
   3. Coordination of building trades
   4. Coordination with RWF, other Contracts and public utilities
   5. Submittal review status
   6. Requests for Information review status
   7. Notifications by CONTRACTOR
   8. Proposed Contract Modifications and Change Orders
   9. Safety
   10. Quality Assurance
   11. General business

I. CONTRACTOR shall provide schedules, logs and other construction activity data in support of the issues discussed and recorded in meeting minutes.

J. Discuss potential problems, which may include scheduled progress and corrective measures and discuss solutions to such problems.

K. ENGINEER will record meeting minutes and distribute copies of minutes within four (4) days of meeting to participants and interested parties.

1.05 PRE-INSTALLATION MEETINGS

A. When required in individual Specification sections or prior to a requested process shut down, convene at Site prior to commencing the Work of that section.

B. Require attendance of Superintendent, manufacturers and installers, affected subcontractors, and other entities directly affecting, or affected by, the Work of that section.

C. CONTRACTOR shall distribute to each anticipated participant written notice and agenda of each meeting at least four (4) days before meeting.

D. Schedule meeting at least seven (7) days in advance of installation

E. Conduct meetings in CONTRACTOR's field office or other mutually agreed upon place.

F. Invite CITY and ENGINEER.

G. CONTRACTOR shall preside at meetings.

H. CONTRACTOR shall record meeting minutes and distribute copies of minutes within three (3) days of meeting to participants and interested parties.

1.06 FACILITY STARTUP MEETINGS

A. Schedule and attend a minimum of two FACILITY startup meetings. The first of such meetings shall be held prior to submitting the Facility Startup and Testing Plan, as specified in Section 01 91 14 – Testing, Training and Facility Start-up, and shall include preliminary discussions regarding such plan.

B. Agenda items shall include, but not be limited to, content of Facility Startup and Testing Plan, coordination needed between various parties in attendance, and potential problems associated with startup.

C. Attendees will include: CONTRACTOR's superintendent, subcontractors and equipment manufacturer's representatives whom CONTRACTOR deems to be directly involved in FACILITY startup, ENGINEER, and others as required by Contract Documents or as deemed necessary by ENGINEER.

1.07 POST CONSTRUCTION MEETING

A. Prior to warranty expiration, meet with and inspect the Work with CITY staff and ENGINEER.

B. Inspect the Work and draft list of items to be completed or corrected.

C. Review service and maintenance contracts and take appropriate corrective action when necessary.

D. Complete or correct defective work and extend correction period accordingly.

E. Require attendance of Superintendent, appropriate manufacturers and installers of major units of constructions, and subcontractors.

1.08 OTHER MEETINGS

A. In accordance with Contract Documents and as may be required by ENGINEER or requested by CONTRACTOR.

B. ENGINEER reserves the right to call additional site meetings, or to request attendance of particular personnel at any meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ADDITIONAL REQUIREMENTS

4.01 FOR PRECONSTRUCTION CONFERENCE UNDER 1.03 OF SECTION 01 31 19

A. Coordinate with Section 6.2 of the Design-Build Contract (Construction Commencement Date)

4.02 FOR CONSTRUCTION PROGRESS MEETINGS UNDER 1.04 OF SECTION 01 31 19

A. This part is not required. Follow the requirements in Appendix 5, Section 5.4.2 of the Design-Build Contract.

4.03 DAILY COORDINATION MEETINGS

A. CONTRACTOR -will schedule and conduct daily progress meetings to review safety, general work coordination, collection of daily reports, workforce for the day, and other matters needing discussion and resolution.

B. Attendees will include:
1. CONTRACTOR (Design-Builder).
2. Subcontractor's representative with full authority to make decisions on behalf of Subcontractor.
3. ENGINEER
4. Others as appropriate.

4.04 SAFETY MEETINGS

A. Monthly ~~Mass~~ Safety Meeting:
1. Attend monthly mass safety meetings to be held at Site or as directed by CONTRACTOR.
2. Meeting agenda shall include but not be limited to:
a. Overall site safety performance.
b. Safety issues.

Commented [RJ3]: This suggested change is now back in.

c. Project Field Safety Instructions reviews as required.
d. Safety recognitions.
e. Upcoming medium/high risk work activities.
f. Safety Program Tracking progress.
g. Other items deemed necessary by CONTRACTOR.

3. Employees working onsite shall attend.

B. Safety Committee Meetings:

1. Subcontractor shall designate one craft level employee to participate in Project's Safety Committee.
2. Committee shall meet monthly, or as directed by CONTRACTOR, to conduct Project-wide safety audits, discuss pertinent safety concerns, or other items deemed necessary for Project safety.

C. Site Safety Drills: Held at Site as directed by CONTRACTOR and attended by staff.

~~4.04 EXECUTION PLAN~~

~~Execution Plan of the Work from Subcontractor shall describe at a minimum the following:~~

- ~~What safety risks are identified and how they will be mitigated through the course of the Work in accordance with Field Safety Instructions.~~
- ~~Overview of the Work and phases of the Work.~~
- ~~Detailed description of the Work in each phase.~~
- ~~Manpower and equipment utilized to perform the Work described by areas and crafts.~~
- ~~Deliveries, lay down area, and other areas needed to perform the Work along with durations and phases.~~
- ~~Installation of the Work by areas and phases in accordance with project schedule.~~
- ~~Quality Control of the Work for each discipline involved with the scope of work per requirements of Section 01 45 16.13, Subcontractor Quality Control.~~
- ~~Coordination of other Subcontractors' work needed to perform the Work.~~
- ~~CONTRACTOR assistance in specific areas of the Work.~~

~~CONTRACTOR will determine if Execution Plan will be required to be submitted prior to performing work or in phases in addition to level of detail required.~~

~~A. Informational Submittal: Execution Plan submitted 30 days after execution of the Subcontract or purchase order.~~

Commented [AE4]: Put this in subs PO

END OF SECTION

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SECTION 01 32 16

PROGRESS SCHEDULES AND REPORTS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

Clause 1.02.D For projects which have an estimated construction cost of $10 million or less, revise this clause to read as follows.

Scheduler: Dedicated part time to this project, located on-site for all scheduling meetings. Scheduler will attend in person all project meetings called for as specified in Section 01 31 19.

Remember to calculate and include an appropriate ~~persiod~~period for the Weather Day Allowance in SECTION 00 73 03 of the Specifications.

2020-01-09: This is was new version which supersedes the other versions given to Jacobs. File name is: 01 32 16 PROGRESS SCHEDULES AND REPORTS v3.

2020-01-23: This specification updated per latest v3 spec from City and includes Jacobs assumed changes to this version of this master specification Headworks DB GMP assumptions. City to review.

Commented [RJ1]: This was added in latest version by City. We have schedule in GCs at ½ time. Okay per out discussions.

PART 1 GENERAL

1.01 SUMMARY

Commented [RJ2]: Note to City. We propose to make changes in body of document and probably not do this all in Part 4 as we did in last version.

A. Section includes: preparation, submittal, and maintenance of computerized progress schedule and reports, contract time adjustments, and payment requests, including the following:
   1. Preliminary Schedule: Schedule development plan that includes proposed organization, coding structure, work breakdown structure, planned sequence of operations, and reporting requirements.
   2. Baseline Schedule (including Narrative Report).
   3. Short Term (3 Week Look Ahead) Schedule.
   4. Schedule Updates (including Narrative and Baseline Comparison Reports).
   5. Schedule Revisions.
   6. Time Impact Analyses.
   7. Final Schedule Submittal.

B. Related sections:
   1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

2. It is the CONTRACTOR's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of CONTRACTOR's Work.
3. ~~The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the CONTRACTOR to see that the completed Work complies accurately with the Contract Documents.~~
   a. ~~DIVISION 00.~~
   b. ~~Section 01 14 00 – Work Sequence and Restrictions~~
   c. ~~Section 01 29 00 – Payment Procedures.~~
   d. ~~Section 01 31 19 – Project Meetings.~~
   e. ~~Section 01 33 00 – Submittal Procedures.~~
   f. ~~Section 01 77 00 – Close Out Procedures~~
   g. ~~Section 01 78 23 – Operations and Maintenance Data~~
   h. ~~Section 01 91 14 – Testing, Training, and Facility Start Up~~

Commented [RJ3]: Per Geoff, okay to delete this, typical all Div-01.

1.02 CONTRACTOR'S REPRESENTATIVE QUALIFICATIONS

A. Designate, in writing and within 5 calendar days after Notice to Proceed, person responsible for preparation, maintenance, updating, and revision of all schedules. The designated person, Scheduler, is responsible for all scheduling activities called for in this specification ~~and shall not have any other duties or repsonsibilites on the project~~. The CONTRACTOR's Project Manager, the CONTRACTOR's General Superintendent and the CONTRACTOR's Safety Officer are excluded as being the Scheduler.

Commented [RJ4]: This sentence is new. We will have Craig and Kevin both working on schedule items. Staff may have other duties. Schueduler is budgeted at an average of ½ time for entire project.

B. Qualifications of responsible person:
   1. CONTRACTOR shall designate an authorized representative who will be responsible for the preparation, updates and maintenance of the Project Schedule and shall have complete authority to act on behalf of the CONTRACTOR in fulfilling the requirements of this specification.
   2. The CONTRACTOR shall employ a trained and experienced construction scheduling person knowledgeable in construction Work sequencing, productivity and scheduling. This person shall have a minimum of (5~~10~~) years' experience in preparation of complex construction schedules for projects of similar value, size, and complexity by using the scheduling software system.
   3. Knowledge of critical path method (CPM) scheduling and precedent diagram methodology while utilizing Oracle Primavera P6 Project Management Professional software, recent versions.

C. ~~References: Submit written reference of 3 project Owners who have personal experience with this scheduler on previous projects as the Lead Scheduler and person responsible for developing the Baseline Schedule, updating and maintaining the project schedules for the complete duration of the projects. Identify project Owner name, address, telephone number, email address, project name, and cost.~~

Commented [RJ5]: Craig is our lead scheduler and has been accepted by City. No references necessary so we deleted this.

~~D.~~C. Scheduler will~~: Dedicated to this project, preferably located on site~~. ~~Scheduler shall~~ attend ~~in person~~ all project meetings called for as specified in this Section and Section 01 31 19. Project Scheduler will only attend the Preconstruction Meeting and Construction Progress Meetings. For the Construction Progress Meetings, Scheduler will attend one time per month in person and attend all other Construction Progress

Commented [RJ6]: Scheduler is in GC for ½ time and will not be on site.

Meetings remotely.

~~E.~~D. ENGINEER reserves the right to disapprove scheduler when submitted by CONTRACTOR if not qualified.

1.03 SCHEDULING FORMAT AND SOFTWARE

A. Schedule format: Utilize (CPM) format, precedent diagram methodology.

B. Prepare computerized schedule utilizing Oracle Primavera P6 Project Management Professional software. Provide the native XER file for all submittals required under this Section.~~,~~

~~C. Provide 1 licensed copy of the Oracle Primavera P6 Project Management Professional scheduling software, version 17, to the engineer, registered in the Engineer's name, for the duration of the project, within 15 days of Notice To Proceed.~~

~~D.~~C. ~~The provided copy of the software shall be a standalone version for installation on a standalone computer.~~

Commented [RJ7]: This is new. CDM has software. Costs are not in Cost model, so this deleted C and D.

1.04 SCHEDULE PREPARATION

A. Preparation and submittal of Baseline and Progress Schedule represents CONTRACTOR's intention to execute the Work within specified time and constraints.

B. Not Used.~~CONTRACTOR's bid covers all costs associated with the execution of the Work in accordance with the Baseline Schedule and accepted Progress Schedule updates~~.

Commented [RJ8]: This is not correct for a design-build contract.

C. Prepare schedule utilizing Precedence Diagramming Method.

D. Prepare schedule utilizing activity durations in terms of working days. Do not exceed 20 working day duration on activities except concrete curing, submittal review, and equipment fabrication and deliveries. Where duration of continuous work exceeds 20 working days, subdivide activities by location, stationing, or other sub-element of the Work. Coordinate holidays and Furlough calendars to be observed with the CITY and incorporate them into the schedule as non-working days.~~, as referenced in Section 01 14 00 – WORK SEQUENCE AND RESTRICTIONS .~~

Commented [BJ9]: Add new Part 4 or modify here. Add language for project management items, deliverables, submittals, permit activities, design completion, other procurement actions, general sitework items, commissioning, reporting that are in this DB contract.

E. Failure to include an activity required for execution of the Work does not excuse CONTRACTOR from completing the Work and portions there of within specified times and at price specified in Agreement. Contract requirements are not waived by failure of CONTRACTOR to include required schedule constraints, sequences, or milestones in schedule. Contract requirements are not waived by ENGINEER's acceptance of the schedule. In event of conflict between accepted schedule and Contract requirements, terms of Contract govern at all times, unless requirements are waived in writing by ENGINEER.

F. Reference schedule to working days with beginning of Contract Time as Day "1."

G. Contract float is for the mutual benefit of both CITY and CONTRACTOR. Changes to the

project that can be accomplished within this available period of float may be made by ENGINEER without extending the Contract Time, by utilizing float. Time extensions will not be granted nor delay damages owed until Work extends beyond currently accepted Contract completion date. Likewise, CONTRACTOR may utilize float to offset delays other than delays caused by CITY. Mutual use of float can continue until all available float shown by schedule has been utilized by either CITY or CONTRACTOR, or both. At that time, extensions of the Contract Time will be granted by ENGINEER for valid CITY-caused or third party-caused delays which affect the planned completion date and which have been properly documented and demonstrated by CONTRACTOR.

H. Schedule logic: Assembled to show order in which CONTRACTOR proposes to carry out Work, indicate restrictions of access, availability of Work areas, and availability and use of manpower, materials, and equipment. Form basis for assembly of schedule logic on the following criteria:
   1. Which activities must be completed before subsequent activities can be started?
   2. Which activities can be performed concurrently?
   3. Which activities must be started immediately following completed activities?
   4. What major facility, equipment or manpower restrictions are required for sequencing these activities?

I. Non-sequestering of float: Pursuant to float sharing requirements of Contract, schedule submittals can be rejected for, use of float suppression techniques such as preferential sequencing or logic, special lead or lag logic restraints, extended activity durations or imposed dates.

J. Imposed dates, hidden logic are prohibited: Do not use imposed dates or hidden logic in preparation of schedule.

K. Major subcontractor sign off: Provide written confirmation of concurrence from all major subcontractors on site with all schedule submittals. Term “major subcontractor” as used in this Section means any subcontractor, at any tier, with a subcontract worth 15 percent or more of the total cost of the Work.

Commented [RJ10]: This item added. I modified to 15% to just be Electrical and Kiewit.

L. Interim milestone dates, operational constraints: In event there are interim milestone dates and/or operational constraints set forth in Contract, show them on schedule. Do not use Zero Total Float constraint or Mandatory Finish Date on such Contract requirements.

M. Schedule windows for CITY-furnished, CONTRACTOR-installed equipment or materials: Obtain from ENGINEER anticipated delivery dates of CITY’s furnished equipment or materials. Show these dates in the schedule in same manner indicated by ENGINEER.

N. Cost Loading: All Schedules
   1. ~~Only on site construction activities~~ Design, construction, commission to the schedule values or contract value.
   2. The sum total of all cost loaded activities equal to the current value of the contract
   3. ~~Payment for mobilization or equipment delivered to the site, not yet incorporated into the work.~~

Commented [BJ11]: Payment milestones will be identified within the SOV. We have a number of triggers on equipment

   4. ~~1.05 Owner acceptance of the Baseline Schedule creates the Schedule of Values required as specified in Section 01 29 00 - Payment Procedures.~~

Commented [RJ12]: 01 29 00 not used and is covered elsewhere in contract. SOV already submitted and in contract. SOV payment request needs to be approved before City pays.

~~5. Provide updated Schedule of Values as the monthly Payment Application as specified in Section 01 29 00 - Payment Procedures~~

~~6. Payments will not be made until monthly updated Schedule of Values is accepted.~~

1.05 SUBMITTAL OF PROGRESS SCHEDULES AND REPORTS

A. Submit Preliminary Schedule. No more than 15 calendar days after Notice to Proceed or Notice to Proceed (whichever occurs sooner),~~,~~ submit the Preliminary Schedule containing the following:

1. The Project's critical path at a summary level.
2. Conceptual cash flow report for the total project.
3. All procurement ~~activities,~~activities.
4. All the contract deliveries and milestones
5. ENGINEER review time
6. Scheduled activities for the period of Limited Notice to Proceed or Notice to Proceed (whichever occurs sooner) up to 90 days thereafter.

~~7. Schedule of costs:~~

~~a. Schedule of Values as specified in Section 01 29 00 for first 90 calendar days of Work and at a summary level for the entire project.~~

~~b. Submittal and acceptance of Preliminary Schedule is condition precedent to making of progress payments as specified in Section 01 29 00, and payments for mobilization costs otherwise provided for in the Contract.~~

~~c. Proceed with pay item Work after Preliminary Schedule and schedule of costs have been accepted by Owner.~~

Commented [RJ13]: Not using 01 29 00 so not needed. Covered in Contract.

B. Additionally, the CONTRACTOR shall:

1. Meet with ~~Engineer~~ ENGINEER within 7 calendar days after receipt by ENGINEER~~Engineer~~ of Preliminary Schedule to review and make necessary adjustments. Submit revised preliminary schedule within 15 calendar days after meeting.
2. Submit schedule of manpower as a spreadsheet histogram. ~~and costs for all activities with revised Preliminary Schedule~~. Provide realistic and level manpower ~~and costs~~ so as not to have unusual manpower requirements.
3. Incorporate unchanged, the accepted Preliminary Schedule as first 90 calendar days of activity in CONTRACTOR~~Contractor~~'s Baseline Schedule
4. Update Preliminary Schedule monthly during first 90 calendar days after Notice to Proceed. Use Preliminary Schedule as the payment ~~application as specified in Section 01 29 00~~.

Commented [BJ14]: Cost loading described above.

C. Submit Baseline Schedule and Baseline ~~Narrative~~Narrative Report.

1. No more than 30~~45~~ calendar days after Notice to Proceed or Notice to Proceed (whichever occurs sooner),~~,~~ submit the Baseline Schedule for all Work of the project. Show sequence and interdependence of all activities required for complete performance of all Work, beginning with date of Limited Notice to Proceed or Notice to Proceed (whichever occurs sooner) and concluding with date of final completion of Contract.

2. Acceptance of the Baseline Schedule by ENGINEER is a condition precedent to making payments ~~as specified in Section 01 29 00~~ after the first 90 calendar days after Notice to Proceed. The Baseline Schedule will be reviewed by ENGINEER, revised by CONTRACTOR accordingly, and accepted by ENGINEER within 30 calendar days of ~~re~~submittal.
3. Baseline ~~Narrarative~~Narrative Report to address the following Schedule Development Data:
   a. All calendars developed within the schedule software applicable to the Project Schedule showing the proposed number of working days per week. Include where necessary a description of which calendars apply to which activities.
   b. The holidays to be observed during the life of the Contract by day, month, and year
   ~~c. The planned number of shifts per day~~
   ~~d.~~c. ~~The number of hours per shift~~
   ~~e.~~d. The major construction equipment to be used on the Site
   ~~f.~~e. Long lead procurement items.
   ~~g.~~f. A written description the nature of the critical path of activities identified for the Project Schedule through project completion.
4. The detailed schedule shall be able to be viewed at the summary level which consolidates groups of activities associated with Major Items of Work shown on Baseline Schedule. Summary Schedule is intended to give an overall indication of the project schedule without a large amount of detail

D. Submit, on a monthly basis, updated progress schedule, schedule impact analysis, and narratives. Baseline schedule will only be updated and submitted in the event of a Contract adjustment. Submit final schedule update as specified in section 1.~~17~~15.

   Monthly Update Narrative Report - A written Narrative Report shall be submitted in conjunction with all Schedule Submittals containing the following:

1. Schedule report indicating each activity on the Critical Path that it has been:
   a. Completed during this reporting period., with Actual Start and Actual Finish Dates provided for each activity.
   b. In progress this reporting period, with Actual Start Dates provided for each activity.~~.~~
   c. Scheduled next reporting period.
2. Analysis of critical path describing:
   a. The nature of the critical path.
   b. Impact on other activities, milestones and completion dates.
   c. Recommendations for recovery of the delays.
3. Current and anticipated delays and/or early completions.
   1) Cause of the delay and/or early completion.
   2) Corrective action and schedule adjustments to correct the delay.
   3) Impact of the delay and/or early completion on other activities, milestones and completion dates (e.g. number of days behind or ahead of schedule)
4. Change in activity descriptions, activity ID's, construction sequence, logic changes, relationship changes and/or duration changes and the rationale associated with each change that required the change to be made.
5. Pending issues and status of other items:

Commented [RJ15]: This is covered in contract. City agreed that 01 29 00 will not be used.

Commented [RJ16]: There is no 1.17.

a. Permits.
b. Contract modifications.
c. Time extension requests.
d. Long lead procurement items.

6. Added/deleted activities.
7. Other project or scheduling concerns.

E. Submit revised schedules and time impact analyses as specified in sections 1.14 and 1.15.C.

Commented [RJ17]: Back check reference #s after final edits.

F. Submit, on a monthly basis, one (1) electronic copy in PDF format ~~and two (2) hard copy print outs in Bar chart format on 24" x 36" media format of schedules~~ for the following items:

1. A complete ~~Construction~~ Schedule showing all ~~activites~~activities.
2. A separate ~~plot~~ pdf filtered to show Critical Path activities.
3. A Summary Schedule view consolidating groups of activities associated with Major Items of Work.
4. ~~In conjunction with the Submittals, prepare and submit a schedule summary cost report, by cost account, totaling the entire Contract Sum.~~

Commented [RJ18]: Not plotter in trailers. City said they could produce full-size plots when necessary.

Commented [BJ19]: Not necessary and not included in assumptions.

1.06 1.06 NETWORK DETAILS AND GRAPHICAL OUTPUT

A. Not used. ~~Produce a clear, legible, and accurate calendar based, time scaled, and graphical network diagram. Group activities related to the same physical areas of the Work. Produce the network diagram based upon the early start of all activities.~~

Commented [RJ20]: Okay per meeting.

B. Include for each activity, the description, activity number, estimated duration in working days, total float, and all activity relationship lines.

C. Illustrate order and interdependence of activities and sequence in which Work is planned to be accomplished. Incorporate the basic concept of the precedence diagram network method to show how the start of one (1) activity is dependent upon the start or completion of preceding activities and its completion restricts the start of following activities.

D. Indicate the critical path for the project.

E. Delineate the specified contract duration and identify the planned completion of the Work as a milestone. Show the time period between the planned and Contract completion dates, if any, as an activity identified as project float unless a Change Order is issued to officially change the Contract completion date.

F. Identify system shutdown dates, system tie-in dates, specified interim completion or milestone dates and contract completion date as milestones.

G. Include, in addition to construction activities:

1. Submission dates and review periods for major submittals.
2. Any activity by CITY that may affect progress or required completion dates.

3. Equipment and long-lead material deliveries over 8 weeks.
4. Approvals required by regulatory agencies or other third parties.

H. Identify the execution of the following as applicable:
1. Mobilization.
2. All required submittals and submittal review times showing 30-calendar day duration for such activities in baseline schedules.
3. All required designs and design review times showing contractual ~~30~~ calendar day durations for such activities in baseline schedules.
4. Equipment and materials procurement/fabrication/delivery.
5. Excavation.
6. Shoring
7. Scaffolding
8. Backfill and compaction.
9. Dewatering.
10. Grading, subbase, base, paving, and curb and gutters.
11. Fencing and landscaping.
12. Concrete, including installation of forms and reinforcement, placement of concrete, curing, stripping, finishing, and patching.
13. Masonry.
14. Metal fastenings, framing, structures, and fabrications.
15. Wood structures, finish carpentry, architectural woodwork, and plastic and Fiberglass fabrications.
16. Waterproofing and dampproofing, insulation, roofing and flashing, and sealants.
17. Doors and windows, including hardware and glazing.
18. Finishes including coating and painting, flooring, ceiling, and wall covering.
19. Building specialties.
20. Process equipment, including identification of ordering lead-time, factory testing, and installation.
21. Pumps and drives, including identification of ordering lead time, factory testing, and installation.
22. Conveying equipment including hoists and cranes, conveyor systems, and materials handling equipment, including identification of ordering lead-time and installation.
23. Other mechanical equipment including fans and heating, ventilating, and air conditioning equipment.
24. Trenching, pipe laying, and trench backfill and compaction.
25. Piping, fittings and appurtenances, including identification of ordering and fabrication lead time, layout, installation and testing.
26. Valves, gates, and operators, including identification of order lead-time, installation, and testing.
27. Plumbing specialties.
28. Electric transmission, service, and distribution equipment, including identification of ordering lead-time, factory testing, independent 3rd party field testing, and energization dates. .
29. Other electrical work including lighting, heating and cooling, and special systems, including identification of ordering lead-time.

Commented [BJ21]: Modified this. Design review times are not 30-calendar days in contract – it varies.

30. Critical electrical submittals including short circuit study, any other coordinating reports or submittals and ~~utlitiy~~utility ~~serice~~service agreement dates, as applicable.
31. Instrumentation and controls, including identification of ordering lead-time, all submittals which require ~~engineer's~~ ENGINEER's approval and factory testing .
32. Testing: Including Preliminary testing of equipment, instrumentation, and controls.
33. Testing, Start Up and ~~Comissioning~~Commissioning activities of all process and electrical equipment and process facilities as follows:
    a. Manufacturer's services
    b. Factory Testing
    c. ~~Acitivities~~Activities related to Installation ~~Certifcations~~Certifications
    d. Submission of Operations and ~~Maintenace~~Maintenance manuals
    ~~e. Pre Operational Testing~~
    ~~f.~~e. Functional Testing
    ~~g.~~f. ~~Operational~~ Acceptance Testing
34. Substantial completion.
35. Punch list work.
36. Close out Documents
37. Record Documents/As-builts record Documents
38. Operation and maintenance training.
39. Demobilization.

Commented [RJ22]: Not using this term.

1.07 MANPOWER SCHEDULES

A. After Baseline Schedule has been submitted and accepted by ENGINEER, submit a schedule histogram depicting total craft manpower and craft manpower for CONTRACTOR's own labor forces and those of each major subcontractor. Submit this manpower schedule electronically using CITY's Web-based document management system.

B. Format:
    1. Schedule histogram depicting total craft manpower and craft manpower for CONTRACTOR~~Contractor~~'s own labor forces and those of each major subcontractor.
    2. Submit electronically using CITY's Web-based document management ~~on a computer disk~~ in Excel format~~, with 1 paper copy~~.

C. Progress payments after the first 90 calendar days after Notice to Proceed ~~will~~ may not be made until manpower schedule is provided.

Commented [RJ23]: Must wait till after final design to further develop the histograms and after each sub is hired

1.08 EQUIPMENT SCHEDULES

A. Due date: After Preliminary Baseline Schedule has been submitted and accepted by ~~Owner~~ENGINEER.

Commented [RJ24]: Not sure why City is switching to Owner, but I suspect it is different spec. writer.

B. Format:
    1. Tabular report listing each major piece of construction equipment to be used in performing the Work.
    2. Include major equipment for CONTRACTOR~~Contractor~~ and each subcontractor.
    3. Submit electronically using CITY's Web-based document management~~on a computer~~

~~disk in~~ Excel format ~~with 1 paper copy~~.

C. Progress payments after the first 90 calendar days after Notice to Proceed ~~will~~ may not be made until equipment schedule is provided.

1.09 WEATHER DAY ALLOWANCE

A. Include as a separate identifiable activity on the critical path, an activity labeled "Weather days Allowance." Insert this activity at the end of the schedule.

B. The Contract Time includes a weather day allowance of [~~XX~~24] working days. No extension in Contract Time will be allowed for working days lost up to this weather day allowance due to weather conditions. ENGINEER shall document all non-working days.

C. Insert an activity in critical path to reflect weather day occurrences when weather days are experienced and accepted by ENGINEER. Identify this activity as a weather delay.

D. Reduce duration of Weather Days Allowance activity as weather delays or other environmental delays such as nesting birds or burrowing owls are experienced and inserted into the Schedule. Remaining weather days in Weather Days Allowance at completion of project is considered float.

E. Weather conditions that prevent or inhibit the CONTRACTOR~~Contractor~~'s performance of the Work and affect the Critical Path indicated on the Schedule shall be referred to as a Weather Day. A Weather Day is defined as the CONTRACTOR ~~Contractor~~ being unable to perform at least 4 hours of work on the Critical Path. The CONTRACTOR ~~Contractor~~ shall provide a written notice to the ENGINEER ~~Engineer~~ of the occurrence of a weather day within 2 days after the onset of such weather and shall describe in reasonable detail the type of weather encountered and the Work interfered with or interrupted. A schedule update will not suffice as a written notice. The ~~Engineer~~ ENGINEER will determine if the weather day constitutes a use of a portion of the Weather Day Allowance. After use of all the Weather Day Allowance, the ~~Engineer~~ ENGINEER will determine if the ~~Contractor~~ CONTRACTOR is entitled to an extension of the Contract Time due to weather conditions. Weather days are considered excusable delay as defined in this Section.

1.10 TIME EXTENSIONS FOR SEVERE WEATHER

A. Upon written request from the CONTRACTOR, the ENGINEER may suspend the counting of contract time, herein called time extension, for the CONTRACTOR's convenience during unusually severe weather. The CONTRACTOR's request for time extension due to severe weather delays shall clearly demonstrate that the weather conditions are "unusually severe," would not have been reasonably anticipated given the normal prevalent weather conditions in the locality of the work, that such conditions adversely affected 50 percent or more of the CONTRACTOR's workday and delayed work critical to the timely completion of the project.

1.11 REVIEW AND ACCEPTANCE OF SCHEDULES

A. ENGINEER will review Baseline Schedules, Schedule Updates, Schedule Revisions and Time Impact Analyses to ascertain compliance with specified project constraints, compliance with milestone dates, reasonableness of durations and sequence, accurate

Commented [RJ25]: Need to make this clear that this is for weather and potential delays from nesting birds, burrowing owls, etc.

Commented [RJ26]: Must strike. 1.15 defines excusable this as time only Need to coordinate with City and contract on delays from birds, etc.

Commented [BJ27]: We'll need to work this spec section and contract language together.

inter-relationships, and completeness.

B. ENGINEER will issue written comments following completion of review of Baseline Schedule to accommodate a 30-calendar day approval window of the Baseline Schedule. ~~Written comments on review of Schedule Updates and Schedule Revisions and Time Impact Analyses will be returned to CONTRACTOR within 15 calendar days after receipt by ENGINEER via CITY Web-based document management system.~~

C. If ~~Engineer~~ ENGINEER requests a meeting, the ~~Contractor~~ CONTRACTOR and all major subcontractors must participate in the meeting with ~~Engineer~~ENGINEER.

D. Revise and resubmit schedule within 7 calendar days after meeting.

E. Revise and resubmit schedule in accordance with ENGINEER's comments to accommodate a 30-calendar day approval window of the Baseline Schedule.

F. When schedule reflects ENGINEER's and CONTRACTOR's agreement of project approach and sequence, schedule will be accepted by ENGINEER. ~~Engineer's submittal review response for schedule submittal will be "Receipt Acknowledged - Filed for Record" including applicable comments.~~

G. Use accepted schedule for planning, organizing, and directing the work and for reporting progress.

H. Acceptance of the schedules by the ~~Owner~~ ENGINEER is for general conformance with the Contract Documents and for ~~Owner's~~ ENGINEERS's planning information, and does not relieve the ~~Contractor~~ CONTRACTOR of ~~sole~~ responsibility for planning, coordinating, and executing the Work within the contract completion dates. Omissions and errors in the accepted schedules shall not excuse performance less than that required by the Contract Documents. Acceptance by the ~~Owner~~ CONTRACTOR in no way constitutes an evaluation or validation of the ~~Contractor's~~ CONTRACTOR'S plan, sequence or means, methods, and techniques of construction.

~~H.~~I. Written comments on review of Schedule Updates will be returned to CONTRACTOR within 7 calendar days after receipt by ENGINEER. Schedule Revisions and Time Impact Analyses will be returned to CONTRACTOR within 15 calendar days after receipt by ENGINEER. All ENGINEER comments will be returned via CITY Web-based document management system.

1.12 UPDATING THE SCHEDULE

A. Update the schedule monthly for Construction Schedule Progress and Report submittals. Submit a written report of significant changes. Submit a detailed written list of all changes to the previous schedule submittal contained in the Schedule Update including; analysis of critical path, current and anticipated delays, changes in duration, logic or sequencing, pending issues, added or deleted activities, and any other project concerns.

B. Submit updated schedule under Submittal of Progress Schedules.

C. Prepare update using most recent accepted version of schedule. Include:
   1. Actual start dates of activities that have been started.
   2. Actual finish dates of activities that have been completed.
   3. Percentage of completion of activities that have been started but not finished.

Commented [BJ28]: B is about 2 unique deliverables. I moved the second part of B. down to new paragraph I.

Commented [RJ29]: Submittal section covers this do not repeat here.

Commented [RJ30]: We are working with City and they control key items as well.

4. Actual dates on which milestones were achieved.
5. Baseline Start and Finish dates which were approved by ENGINEER.
6. Update activities by inputting the forecast remaining durations.
7. Use retained logic in preparing Schedule Updates.
8. Revisions to the schedule shall be noted using a code that identifies changes that are to be reviewed and approved. Outstanding comments shall be reviewed at progress meetings.

D. Identify overall progress of each Major Item of Work in the Summary Schedule.

E. Should monthly Schedule Update show project completion earlier than current contract completion date show early completion time as schedule activity, identified as "Project Float".

F. Should monthly Schedule Update show project completion later than current contract completion date, prepare and submit a Schedule Revision in accordance with the Revisions to Schedule within ~~90~~30 days.

Commented [BJ31]: Review with City. We typically only require a Schedule Revision periodically. This is best for City and Jacobs. Suggest requiring Schedule Revision quarterly.

G. Early completion schedules are generally not acceptable to CITY but may be accepted as convenience to the CONTRACTOR under the following conditions:
   1. The CONTRACTOR must submit a written request outlining the specific reasons for using the early completion schedule.
   2. The CONTRACTOR acknowledges and agrees in writing that the proposed reduction in time represents Project time already paid for by the CITY as part of the CONTRACT, and is available to both the CONTRACTOR and the CITY for mitigation of impacts to the project from any source. The CONTRACTOR shall not be entitled to any increase in Contract Price for failure to achieve the early completion and the CONTRACTOR waives all claims to same.
   3. Early completion schedule shall not be based on expedited approvals, inspection, or the relaxing of construction constraints by the ENGINEER.

1.13 REVISIONS TO SCHEDULE

A. Submit Revised Schedule and Narrative within ~~5~~ 30 days:
   1. When delay in completion of any activity or group of activities indicates an overrun of the Contract Time or milestone dates by 30 working days, CONTRACTOR must submit a schedule recovery ~~within 48 hours after request by the ENGINEER.~~ The CONTRACTOR's schedule recovery must show how the CONTRACTOR intends to make up the lost time with more workers, additional shifts, overtime, weekends, as needed.
   2. When delays in submittals, deliveries, or work stoppages are encountered making necessary the re-planning or rescheduling of activities.
   3. When the schedule does not represent the actual progress of activities.
   4. When any change to the sequence of activities, the completion date for major portions of the work, or when changes occur which affect the critical path.
   5. When Contract modification necessitates schedule revision, submit schedule analysis of change order work with cost proposal.

Commented [RJ32]: 48 hours is not realistic

Commented [BJ33R32]: We only want to produce if we are more than 30 days behind. Once we are that far behind, we'll hold numerous meetings with all subs and vendors and need 30 days to produce a recovery schedule.

B. Submit revised schedule and materials as specified under Submittals of Progress Schedules.

1. Make revisions on most recently accepted version of Baseline and Progress schedule.
2. Create a separate submittal for Schedule Revisions.
   a. Comply with schedule updates as specified in this Section.
   b. Do not submit with Schedule Updates.

C. Schedule revisions will not be reflected as approved in the schedule until after the revision is accepted by the ENGINEER. This includes Schedule Revisions submitted for the purpose of mitigating a CONTRACTOR-caused project delay (Recovery Schedule).

1.14 SHORT TERM (3 WEEK LOOK AHEAD) SCHEDULE

A. Submit to ENGINEER, in conjunction with weekly progress meeting, a progress schedule showing the activities completed during the previous week and the schedule of activities for the following three (3) weeks.

B. Use the logic and conform to the status of the current progress schedule when producing a Short Term Schedule in CPM schedule or a bar chart format. In the event that the Short Term Schedule no longer conforms to the current schedule, CONTRACTOR may be required to revise the schedule.

C. The activity designations used in the Short Term Schedule must be consistent with those used in the Baseline Schedule and the monthly~~Monthly~~ Schedule Updates. .

Commented [BJ34]: Create Item D4 to state the 3 Week Look Ahead may be a unique format. Many contractors prefer to review 3 week look ahead in Excel. That helps electrical subs, instrumentation subs prepare their own information. Clearly the overall schedule is in P6 but the 3 Week Look Ahead format should be as best determined by contractor.

D. Format shall contain:
   1. ~~all~~ All listed activities shall be derived directly from the Accepted Baseline or accepted Monthly Progress Schedule and may have more details than listed in P6 schedule~~.~~
   2. Applicable~~all listed~~ activities shall have the corresponding Activity ID from the Accepted Baseline of accepted Monthly Progress Schedule.
   3. ~~I~~Listed activities which are shown to have commenced or been completed in the past week, shall list the Actual Start Date and/or Actual Finish Date for each activity.
   ~~3.~~4. Short Term schedules can be spreadsheet based and provided as a spreadsheet file or pdf.

~~E. Contractor and Engineer must agree on the format of the Short Term Schedule. Submit the native XER file for Short Term Schedule to the Engineer on wekly basis. .~~

1.15 ADJUSTMENT OF CONTRACT TIMES

A. Contract Time will be adjusted only for causes specified in Contract Documents.
   1. Non-excusable delay: Non-excusable delays include actions or inactions of the CONTRACTOR, or events for which the CONTRACTOR has assumed contractual responsibility (including actions or inactions of subcontractors, suppliers, or material manufacturers at any tier) that would independently delay the completion of the Work beyond the current Contract completion date). No time extensions will be granted for non-excusable delays.
   2. Excusable delay: Events which are unforeseeable, outside the control of, and without the fault or negligence of either the CITY or the CONTRACTOR (or any party for whom

either is responsible), which would independently delay the completion of the Work beyond the current Contract completion date. The CONTRACTOR is entitled to a time extension only. ~~No other damages will be approved~~.

3. Compensable delay: Actions or inactions of the CITY, or events for which the CITY has assumed contractual responsibility, which would independently delay the completion of the Work beyond the current Contract completion date. The CONTRACTOR is entitled to a time extension and delay damages.
4. Concurrent delay: Concurrent delay is any combination of the above 3 types of delay occurring on the same calendar date.
   a. Exception to concurrent delay: Cases where the combination consists of 2 or more instances of the same type of delay occurring on the same calendar date. When one cause of delay is CITY -caused or caused by an event which is beyond the control and without the fault or negligence of either the CITY or the CONTRACTOR and the other CONTRACTOR-caused, the CONTRACTOR is entitled only to a time extension and no delay damages.

Commented [RJ35]: Not per contract.

Commented [BJ36R35]: Time and costs is Compensable Delay shown in item 3 below.

B. If the CONTRACTOR believes that the CITY has impacted its work, such that the project completion date will be delayed, the CONTRACTOR must submit proof demonstrating the delay to the critical path. This proof, in the form of a Time Impact Analysis, may entitle the CONTRACTOR to an adjustment of Contract Time.

C. Time impact analysis:
   1. Use the most recently accepted Baseline and Progress schedule update that is current relative to the time frame of the delay event (change order, third party delay, or other CITY -caused delay). Represent the delay event in the schedule by:
      a. Inserting new activities associated with the delay event into the schedule.
      b. Revising activity logic.
      c. Revising activity durations.
   2. If the project schedule's critical path and completion date are impacted as a result of adding this delay event to the schedule, a time extension equal to the magnitude of the impact may be warranted.
   3. The Time Impact Analysis submittal must include the following information:
      a. A fragment of the portion of the schedule affected by the delay event.
      b. A narrative explanation of the delay issue and how it impacted the schedule.
      c. A media containing the schedule file used to perform the Time Impact Analysis.

D. Indicate clearly that the CONTRACTOR has used, in full, all project float available for the work involved in the request, including any float that may exist between the CONTRACTOR's planned completion date and the Contract completion date. Utilize the most recently accepted version of the Baseline and Progress schedule at the time of the alleged delay, and all other relevant information, to determine the adjustment of the Contract Time.

E. Adjustment of the Contract Times will be granted only when the Contract Float has been fully utilized and only when the revised date of completion of the Work has been pushed beyond the Contract completion date. Adjustment of the Contract Times will be made only for the number of days that the planned completion of the work has been extended.

F. Actual delays in activities which do not affect the critical path work or which do not move the CONTRACTOR's planned completion date beyond the Contract completion date will

not be the basis for an adjustment to the Contract Time.

G. If completion of the project occurs within the specified Contract Time, the CONTRACTOR is not entitled to job-site or home office overhead beyond the CONTRACTOR's originally planned occupancy of the site.

H. Notify ENGINEER of a request for Contract Time adjustment. Submit request as specified with Contract Documents. In cases where the CONTRACTOR does not submit a request for Contract Time adjustment for a specific change order, delay, or CONTRACTOR request within ~~5~~ 30 calendar days of delay or impact, then it is mutually agreed that the particular change order, delay, or CONTRACTOR request has no time impact on the Contract completion date and no time extension is required.

Commented [RJ37]: Do you always know this within 5 calendar days? That could be 2-3 work days.

I. ENGINEER will respond within 15~~30~~ calendar days after receipt of a Contract Time adjustment, request any supporting evidence, review the facts, and advise the CONTRACTOR in writing.

Commented [BJ38]: 15 days was already identified in original paragraph 1.25.B.

J. CONTRACTOR shall include activities and logic to reflect delaying events and circumstances in each monthly Progress Schedule update and shall develop Time Impact Analyses for items which are determined to extend the Critical Path of the project. It is understood that inclusion of these activities and logic do not reflect or coincide with any Contract Time adjustment until such time that ENGINEER has made a final determination.

K. When ENGINEER has not yet made a final determination as to the adjustment of the Contract Time, and the parties are unable to agree as to the amount of the adjustment to be reflected in the Progress Schedule, reflect that amount of time adjustment in the Progress Schedule as ENGINEER may accept as appropriate for such interim purpose.

L. Upon final determination as to any adjustment of the Contract Time, provide an update to the most recently Approved Baseline Schedule and all future monthly Progress Schedule updates to reflect the agreed to Contract Time adjustment and represent the activities and logic stemming from the delaying event(s) as approved by ENGINEER.

1.16 FINAL SCHEDULE SUBMITTAL

A. The final Schedule Update becomes the As-Built Schedule:
   1. The As-Built Schedule reflects the exact manner in which the project was constructed by reflecting actual start and completion dates for all activities accomplished on the project.
   2. CONTRACTOR's Project Manager and scheduler shall sign and certify the As-Built Schedule as being an accurate record of the way the project was actually constructed.
   3. ~~Retainage will not be released until final Schedule Update is provided.~~

Commented [BJ39]: We have a mechanism to release retainage after our project starts up HW3. We come back and do more construction work. Our final schedule is 6 months after HW3 is online.

Both City and Jacobs will need a legal review if this stays. I'm not certain this is in alignment with California Public Contract Codes.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ADDITIONAL REQUIREMENTS

Commented [RJ40]: Propose to remove all of part 4 and include in lauguage above. These were from last round of edits.

4.01 DELETE 1.02.C AND REPLACE WITH

A. Project Scheduler will only attend the Preconstruction Meeting and Construction Progress Meetings. For the Construction Progress Meetings, Scheduler will attend one time per month in person and attend all other Construction Progress Meetings remotely.

4.02 ADD THE FOLLOWING TO END OF 1.04.D

A. Activities for project management, design, deliverables, submittals, permits, procurement, sitework, demolition, concrete curing, temporary works, testing, and reports maybe need to be longer than 20 days, when mutually agreed by the ENGINEER and CONTRACTOR additional activities may be longer than 20-working days.

4.03 ADD THE FOLLOWING 1.05.E

A. It is understood and agreed by the ENGINEER and CONTRACTOR that the preliminary schedule and baseline schedule have been prepared during the Preliminary Services Period. By execution of the Amended and Restated Design-Build Contract, the preliminary schedule and baseline schedule are accepted.

END OF SECTION

SECTION 01 32 33

PHOTOGRAPHS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-10-09- City confirmed this section

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies progress photographs to be provided for pre-construction, during construction, and post-construction.

~~B. Related Sections:~~

~~1. Section 01 33 00 – Submittal Procedures~~

~~2. Section 01 35 25 – Web Based Design and Construction Management System (DCMS)~~

Commented [RJ1]: Geoff said we could take this out, typical all.

1.02 SUBMITTALS

1. Submit Pre-construction, Construction and Post-construction video and photographs as indicated in this Section.

1.03 DIGITAL IMAGES

A. All phases of the project including preconstruction, construction progress and post construction shall be documented photographically.

B. ENGINEER shall have the right to select the subject matter and vantage point from which photographs are to be taken.

C. Archive images using a commercially available photo management system or Web Based Design and Construction Management System (DCMS)~~DCMS~~.

D. Label each disc with the following information:
   1. Project Name and number
   2. CITY's name
   3. Date images were taken

4. CONTRACTOR'S name
5. Brief description of photos

E. All photographs shall be digital and with a minimum resolution of 2592x1944 pixels (5megapixels) and a minimum 24-bit, millions of color.

F. When supported by the camera's functionality, the date stamp shall be displayed on each image.

G. All photographs shall be stored in .jpeg file format.

1.04 PRECONSTRUCTION PHOTOGRAPHS

A. Before construction may start and before the CONTRACTOR may begin any work that may cause site disturbance, CONTRACTOR shall provide and deliver to ENGINEER digital still photographs to provide site coverage on a compact disc (CD) or Digital Video Disc (DVD) with proper labeling.

B. Photographs shall be acceptable to the ~~Construction Manager~~Engineer prior to commencing work.

C. Preconstruction Photographs of the site and any adjacent areas may serve as a basis for determining subsequent damage due to the CONTRACTOR's operations.

1.05 PRE-CONSTRUCTION VIDEO

A. Prior to commencement of construction, the CONTRACTOR and ~~Construction Manager~~Engineer, accompanied by a professional Videographer hired by the CONTRACTOR shall survey the site including all entrance roads, parking and storage areas and any other areas that will be affected by construction, and video record existing facilities and conditions. Video shall be in digital format with adequate resolution to produce sharp and clear images with accurate colors and free of distortion. Audio commentary shall be provided describing the areas and items viewed and direction with additional commentary as requested by the ENGINEER.

B. Video-audio recording shall be acceptable to the ENGINEER prior to commencing work.

1.06 CONSTRUCTION PHOTOGRAPHS

A. Photographs during construction shall demonstrate progress, showing ~~every~~ key aspects of the site and any adjacent areas, including interiors and exteriors or new or impacted areas or structures.

~~B. Photographs shall also be taken prior to demolition, during demolition and at other significant stages of construction.~~

~~C.~~B. On a ~~weekly~~ monthly basis, take a minimum of ~~forty~~ hundred (~~40~~100) photographs.

~~D.~~C. Every month provide ENGINEER with an acceptable electronic submittal containing photographs taken during the past month.

~~E.~~D. The CD or DVD shall have the proper labeling as indicated in Section 1.03.

Commented [AE2]: JR: Best if we can define based on this particular project rather than a minimum – do you really want 100?

1.07 POST CONSTRUCTION PHOTOGRAPHS

A. Upon issuance of Substantial Completion, CONTRACTOR shall provide and deliver to ENGINEER as many digital still photographs as necessary to document completed work on a CD or DVD with proper labeling.

B. These photographs should be identical or similar to the subject matter and vantage point as the photographs taken during preconstruction. These photos may be compared to preconstruction images and may be used to determine subsequent damage due to CONTRACTOR's operations.

PART 2 PRODUCTS (**NOT USED**)

PART 3 EXECUTION (**NOT USED**)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

2019-09-10- This is a custom specification- still under development- City to review the spec and the list of submittals

PART 1 GENERAL

1.01 DEFINITIONS

A. Manufacturer's Instructions: Instructions, stipulations, directions, and recommendations that are issued in printed form by the manufacturer of a product addressing handling, installation, erection, and application of the product.

B. Shop Drawings: Drawings, diagrams, schedules, and other data specially prepared for the Work to illustrate some portion of the Work.

C. Product Data: Illustrations, standard schedules, performance charts, brochures, diagrams, and other information to illustrate materials or equipment for some portion of the Work. Product Data will also include engineering calculations and related information, where specified.

D. Samples: Physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.

E. Special Samples: Physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged, and will be incorporated in the Work.

F. Preliminary Submittal Registry: Subcontractor or Supplier created list of required submittals, including: applicable specification(s), proposed grouping or packaging of individual documents, and anticipated date(s) of submission, submitted to Design-Builder for approval and incorporation into the Master Submittal Registry.

G. Master Submittal Registry: Design-Builder maintained list of required submittals, including: applicable specification(s), approved grouping or packaging of individual documents, and anticipated date(s) of submission; to provide a tracking and scheduling control logic for Work.

H. Submittal Package: Documentation, packaged in a single PDF file, pertaining to one or more specified requirements (submittals), including a completed copy of Section 01 33 00, Supplement 1, Transmittal of Contractor's Submittal Form, specification markups, or an itemized statement, indicating: 1) All submittals transmitted within the PDF file, 2) Page location of submittals transmitted, 3) Omissions, exceptions, and/or deviations from Contract Documents, and 4) Changes made between revisions.

I. Submittals: Documents required to be submitted that convey information about systems, equipment, materials, products, and administrative matters. Submittals include the following Submittal Types:

Commented [RJ1]: Need to update based on Contract where the procedures of Critical, semi-critical, and non-critical were developed.
Plan is to use EADOC for submittal process with no hard copies.

Commented [BJ2]: No edits needed but suggest we all clarify some terminology with City. We like calling this the Submittal Register and it includes all items required by our specifications. Our prime DB Contract has numerous requirements, as do our subcontracts. The contracts does not use the word "deliverable" but we typically call DB Contract or subcontract requirements a Deliverable List. That is how we separate items required by a contract vs items required by specifications. Is City okay with that approach?

Commented [BJ3]: I assume we should change this back to CONTRACTOR to be consistent with other Div 01 sections.

This same comment applies throughout this document.

1. Action Submittal: Written and/or graphic information submitted by Subcontractor or Supplier that requires Design-Builder's approval.
2. Informational Submittal: Information submitted by Subcontractor or Supplier that requires Design-Builder's review and determination that submitted information is in accordance with the Conditions of the Subcontract or purchase order.

J. Deferred Submittals: Information in accordance with 2016 CBC, submitted for portions of design that were not provided to the Authority Having Jurisdiction (AHJ) at time of permit application and that require finalization of design, documentation of life safety equipment and systems, and other submittals for permanent construction requiring preparation by Subcontractor's registered design professional. Deferred submittals to the AHJ include Design-Builder's review documentation that submittal has been found to be in conformance with required codes and Project's design criteria. Deferred submittals are for documentation or approval by the AHJ prior to installation of that portion of the Work. Deferred Submittals include the following Submittal Types:
   1. Deferred Action Submittal: Final design, prepared and stamped by Subcontractor's or Supplier's registered design professional, of systems, components, equipment, building and non-building structures, structural elements, as well as supports and anchorage, required to complete Project. Deferred action submittals shall include, but not be limited to shop drawings.
   2. Deferred Informational Submittal: Final design, prepared and stamped by Subcontractor's or Supplier's registered design professional, of systems, components, equipment, structural elements, as well as supports and anchorage, required to complete the Project. Deferred informational submittals shall include, but not be limited to, calculations.

1.02 PROCEDURES

A. Preliminary Submittal Registry:
   1. Within 30 days from execution of Subcontract or Purchase Order; submit Subcontractor's or Supplier's Preliminary Submittal Registry of anticipated submittals to Design-Builder.
      a. Include items of work that will require approval, review, and other required comments, decisions or input to be received from Design-Builder before materials have been procured.
      b. Design-Builder will incorporate the Subcontractor's or Supplier's approved Preliminary Submittal Registry into the Master Submittal Registry to provide a tracking and scheduling control logic for Work.
   2. Formatting: Submit in MS Excel file type format.

B. Submittals:
   1. Transmitting to Design-Builder: Transmit all submittals electronically via the Project's designated Records Management Software, unless specified or directed otherwise.
      a. Records Management Software: City EADOC System.

b. Design-Builder can assist in instructing Subcontractor or Supplier personnel to use the Records Management Software.

2. Submittal Packaging:
   a. Complete the Section 01 33 00, Supplement 1, Transmittal of Contractor's Submittal Form and include as page 1 of each Submittal Package.
   b. Unless otherwise directed, multiple submittals may be packaged under a single Section 01 33 00, Supplement 1, Transmittal of Contractor's Submittal Form if the following conditions are met:
      1) Submittals are required by the same specification section.
      2) Submittals are clearly separated, marked, or delineated.
   c. Review each submittal for completeness and conformance with Contract Documents, Subcontract Agreements and/or Purchase Orders.
   d. Submittal Packages shall be revised and resubmitted until all submittals included achieve an Approved (APP) or Meets Project Criteria (MPC) review status, unless otherwise directed by Design-Builder.
3. Submittal Numbering and Naming:
   a. Number and Name submittals as follows: (A)-(B)-(C) Title.
      1) (A) equals eight digit number that represents the Specification Section Number. For spec sections with only six digits, include two trailing zeros (.00).
      2) (B) equals sequential ~~Submittal Number.~~auto number generated by the Records Management System (EADOC) with .1 and so on.
      ~~3)~~ (C) equals ~~sequential Revision Number, prefixed with "R";~~ revisions that will be numbered automatically by the Records Management System with .1 and so on.
      ~~4)~~3) (Title) equals descriptive submittal title;
   b. Examples:
      1) ~~03 30 00 001 R2~~03.30.00.00-1.1 Mix Designs: Indicates the second revision of the first submittal package submitted under Section 03 30 00 Cast-In-Place Concrete, titled "Mix Designs."
      2) ~~05 05 23 005 R0~~05.05.23.01-5 NDT Procedures: indicates the initial version of the fifth submittal package submitted under Section 05 05 23, Welding, titled "NDT Procedures."
4. Submittal Formatting:
   a. Submit documents in Portable Document Format (PDF) file type format, unless specified or requested otherwise, with the following properties:
      1) Document resolution sufficient to print legibly on 8.5-inch by 11-inch, 11-inch by 17-inch, or 22-inch by 34-inch standard copy, as applicable.
      2) Written table of contents and PDF bookmarking to major sections of the document if greater than 20 pages in length.
      3) Open to page 1 of the PDF document in "Fit to Page" view.
      4) Open to page 1 of the PDF document with the Bookmarks Panel visible and in "Fit to Page" view if greater than 20 pages in length.

Commented [BJ4]: Jacobs requests City to revise EADOC settings to make the 2 or 3 digits with leading zeros.

b. Clearly indicate, by highlight, markup, or notation, each of the following:
   1) Include page(s) from specification. Highlight or note what the submittal represents. Failure to include will result in rejection of submittal information.
   2) Specified data, options, deviations, and/or exceptions submitted,
   3) Corrections and/or changes made for each resubmittal.
   4) Information that does not apply and is not for Design-Builder review.

c. Provide authorization to reproduce and distribute each submittal as many times as necessary for Project documentation.

5. Resubmittals:
   a. Complete a new Section 01 33 00, Supplement 1, Transmittal of Contractor's Submittal Form and include as page 1 of each transmitted resubmittal.
   b. Resubmittals shall replace the previous submittal in its entirety.
   c. Information that has been altered, added, or removed from the previous submittal shall be clearly noted on the Section 01 33 00, Supplement 1, Transmittal of Contractor's Submittal Form and called out within the submittal document.
      1) Failure to clearly identify altered, added, or removed information may result in rejection of submitted information.
      2) Design-Builder will review only resubmittal information clearly identified as changed from the previous submittal.

6. Hardcopy Submittals:
   a. Complete and electronically submit a Transmittal of Contractor's Submittal Form (Section 01 33 00, Supplement 1) in advance of delivery to the Design-Builder to create an electronic record of the submittal.
   b. Unless otherwise specified or directed, submit five identical, single-sided, collated hardcopy sets.
      1) Include a signed copy of the Transmittal of Contractor's Submittal Form (Section 01 33 00, Supplement 1) with each hardcopy set.
      2) Paper size shall be 8.5-inch by 11-inch, 11-inch by 17-inch, or 22-inch by 34-inch standard copy, as applicable.
      3) Hardcopy sets shall be bound in a manner that facilitates removal and replacement of individual pages.
   c. Clearly indicate, by highlight, markup, or notation, each of the following:
      1) Specified data, options, deviations, and/or exceptions submitted,
      2) Corrections and/or changes made for each resubmittal.
   d. Provide authorization to reproduce and distribute each submittal as many times as necessary for Project documentation.
   ~~d.~~e. Hardcopy Submittals are only allowed for O&M Manuals, Samples or as otherwise approved by the ~~Design-Builder~~CONTRACTOR.

7. Furnish submittals and resubmittals in sufficient time for review and approval action without delaying the Project. No adjustment of contract time or price will be authorized due to:
   a. Failure to transmit submittals sufficiently in advance of the Work to permit processing.
   b. Delays in progress of Work caused by submittal processing, rejection, subsequent resubmittal(s), and/or processing of deferred submittals by the AHJ.
8. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Subcontract or Purchase Order Agreement.
9. Coordinate each submittal with fabrication, purchasing, testing, delivery of other submittals, and related activities requiring sequential activity.
10. Review each submittal and check for compliance with Contract Documents, Subcontract Agreement, and/or Purchase Order prior to transmitting to Design-Builder.

1.03 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual specification sections.

B. Shop Drawings:
   1. Identify and Indicate:
      a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
      b. Equipment and Component Title: Identical to title shown on Drawings.
      c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
      d. Project-specific information drawn accurately to scale.
   2. Provide manufacturer's standard schematic drawings and diagrams, modified as follows:
      a. Delete information that is not applicable to the Work.
      b. Supplement standard information to provide information specifically applicable to the Work.

C. Product Data:
   1. Prepare and submit product data as specified in individual specifications.
   2. Foreign Manufacturers: Unless otherwise specified in individual specifications, include names and addresses of at least two companies that maintain technical service representatives close to Project.

D. Samples:
   1. Provide two identical samples unless otherwise specified in individual specifications.

2. Mount, display, or package samples in a manner that facilitates review of quality.
3. Without obstructing critical elements of sample from quality review, label samples with the following information:
   a. Submittal Number.
   b. Manufacturer name.
   c. Model number.
   d. Material.
   e. Sample source.
4. Manufacturer's Color Chart: Provide units or sections of units showing full range of colors, textures, and patterns available.
5. Full-size Samples:
   a. Provide size as indicated in individual specification section.
   b. Prepare from same materials to be used for the Work.
   c. Cure and finish samples in manner specified.
   d. Provide sample that is physically identical to product proposed for use.

1.04 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by individual specification sections.

B. Certificates:
1. Certificates shall be signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Welding Certificates: Prepare and submit in accordance with individual specification sections.
3. Installer Certifications: Prepare written statements, prepared by manufacturer, on manufacturer's letterhead, certifying installer complies with requirements as specified in individual specification section.
4. Material Tests: Standard form prepared by qualified testing agency indicating and interpreting test results of material for compliance with requirements.
5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.
6. Manufacturer's Certificate of Proper Installation: In accordance with Section 01 43 33, Manufacturers' Field Services.

C. Manufacturer's Instructions: Submit written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.

D. Operation and Maintenance Data: Prepare and submit in accordance with Section 01 78 23, Operation and Maintenance Data.

E. Special Guarantees: Prepare and submit supplier's written guarantee as required in individual specification sections.

F. Test, Evaluation, and Inspection Reports:
   1. Shall contain signature of person responsible for test or report.
   2. Factory Reports:
      a. Include the following information:
         1) Project Title and Number.
         2) Specification Section.
         3) Product Identification.
         4) Type of Inspection or Test with Referenced Standard or Code.
         5) Date and Time of Test.
         6) Date Report Issued.
         7) Name and Signature of Authorized Person.
      b. Test Results: If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
      c. Interpretation of Test Results, when Requested by Design-Builder.
      d. Other Items as Identified in Individual Specification Sections.
   3. Field Reports:
      a. Include the following information:
         1) Project Title and Number.
         2) Specification Section.
         3) Product Identification.
         4) Type of Inspection or Test with Referenced Standard or Code.
         5) Date and Time of Test.
         6) Record of Temperature and Weather Conditions.
         7) Testing Laboratory Data:
            a) Testing Laboratory Name.
            b) Address.
            c) Telephone Number.
            d) Name and Signature of Laboratory Inspector.
         8) Date Report Issued.
         9) Name and Signature of Authorized Person.
         10) Test Results: If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
         11) Interpretation of Test Results, when Requested by Design-Builder.
         12) Other Items as Identified in Individual Specification Sections.

G. Training Data: Prepare and submit in accordance with Section 01 43 33, Manufacturers' Field Services.

1.05 DEFERRED SUBMITTALS

A. See Drawings for list of deferred submittals.

B. Subcontractor or Supplier shall submit design drawings and product data related to permanent construction.
   1. Written and graphic information.
   2. Drawings.
   3. Cut sheets.
   4. Data sheets.
   5. Action and informational submittals requested in individual specification section.

C. Action and informational submittals for deferred submittals shall be prepared and submitted in accordance with Articles Action Submittals and Informational Submittals listed above.

D. Prior to installation of indicated structural or nonstructural element, equipment, distribution system, or component or its anchorage, submit required supporting data and drawings for review and acceptance by Design-Builder. Documentation of review and approval provided on comment form, along with completed submittal, will be filed with permitting agency by Design-Builder and approved by permitting agency prior to installation.

1.06 ASSET MANAGEMENT DATA

A. Submit ~~five paper copies and~~ one electronic copy in the latest Excel format of the Asset Management spreadsheet for each piece of equipment, instrumentation, electrical component, and panel.

B. The Asset Management spreadsheet shall include the data shown on the blank Asset Management Forms contained in this section.

1.01 MANUFACTURER'S INSTRUCTIONS

A. Submit manufacturer's instructions whenever made available by manufacturers and when installation, erection, or application in accordance with manufacturer's instructions is required by the Specifications.

B. Submit manufacturer's instructions prior to installation, erection, or application of equipment and other project components. Submit manufacturer's instructions in accordance with requirements for Product Data.

1.07 DESIGN-BUILDER'S REVIEW

A. General:
   1. Design-Builder's review of submittals shall not release Subcontractor or Supplier from Subcontractor's or Supplier's responsibility for performance or

requirements of Contract Documents, Subcontract Agreements, and/or Purchase Orders.

2. Design-Builder's review shall not release the Subcontractor or Supplier from fulfilling the purpose of installation nor from the Subcontractor's or Supplier's liability to replace defective work.
3. Do not consider submittals as Contract Documents. The purpose of submittals is to demonstrate how the Subcontractor or Supplier intends to conform to the design concepts.
4. Design-Builder's review of shop drawings, samples, or test procedures will be only for conformance with design concepts and for compliance with information given in Contract Documents. Design-Builder's review does not extend to:
   a. Accuracy of dimensions, quantities, or performance of equipment and systems designed by Subcontractor or Supplier.
   b. Subcontractor's or Supplier's means, methods, techniques, sequences, or procedures except when specified, indicated on Drawings, or required by Contract Documents.

B. Processing Time:
1. Time for review begins when the Design-Builder receives the submittal.
2. The Design-Builder will act upon submittals and transmit responses to the Subcontractor or Supplier not later than 30 days after receipt, unless otherwise specified.
3. Resubmittals will be subject to same review time.
4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals or by processing of deferred submittals by AHJ.

C. Review Statuses:
1. Incomplete Submittals: Submittals not in accordance with packaging, formatting, and certification requirements shall be immediately returned to the Subcontractor or Supplier for revision without Design-Builder's review.
2. Submittals Not Subject to Review (NSR): Submittals not required by Contract Documents, and not specifically requested, will be designated Not Subject to Review (NSR) and returned without Design-Builder's review.
3. Action Submittals and Informational Submittals:
   a. Design-Builder will review, comment, stamp, and distribute as noted:
      1) Approved (APP): Subcontractor or Supplier may incorporate product(s) or implement Work covered by submittal. For informational submittals, APP represents the submittal meets project criteria and the Subcontractor or Supplier may incorporate product(s) or implement Work covered by submittal, if applicable.
      2) ~~Approved as Noted~~Partially Approved, and Resubmit (~~AAN~~PAR): Subcontractor or Supplier may incorporate product(s) or implement Work covered by Submittal, in accordance with Design-Builder's notations. For informational submittals, PAR represents

Commented [BJ5]: Jacobs requests the City revised the EADOC disposition listing to match APP, PAR, and RAR.

the submittal meets project criteria and the Subcontractor or Supplier may incorporate product(s) or implement Work covered by submittal, if applicable, in accordance with Design-Builder's notations.

3) Revise and Resubmit (RAR): Subcontractor or Supplier may not incorporate product(s) or implement Work covered by submittal. For informational submittals, RAR represents the submittal does not meets project criteria and the Subcontractor or Supplier may not incorporate product(s) or implement Work covered by submittal, if applicable.

~~4. Informational Submittals:~~

~~a. Design-Builder will review, comment, and distribute as noted:~~

~~1) Meets Project Criteria (MPC): Subcontractor or Supplier may incorporate product(s) or implement Work covered by submittal, if applicable.~~

~~2) Meets Project Criteria with Incorporation of Comments (MWI): Subcontractor or Supplier may incorporate product(s) or implement Work covered by submittal, if applicable, in accordance with Design-Builder's notations.~~

~~3) Does Not Meet Project Criteria (DNM): Revise and resubmit. Subcontractor or Supplier may not incorporate product(s) or implement Work covered by submittal, if applicable.~~

1.08 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this specification.
   1. Transmittal of Contractor's Submittal Form.
   2. Asset Management Forms.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SUBMITTAL NUMBER:	*THIS LINE FOR DESIGN-BUILDER USE*
SPECIFICATION SECTION:	
TITLE / DESCRIPTION:	
REVISION NUMBER:	
REVISION DATE:	
SUBMITTED BY (CONTRACTOR):	

DESCRIPTION OF ITEM(S) SUBMITTED	SPEC / PARA #	DWG #	VARIATION TO SUBCONTRACT?	
			NO	YES
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐

Itemize all inclusions in this submittal by specification / paragraph number (e.g. 1.03.A.1 Mix Designs) or, attach a marked-up copy of the applicable specification section, clearly identifying all inclusions. Clearly indicate exceptions, deviations, and / or revision changes.

CONTRACTOR'S NOTES TO DESIGN-BUILDER:

CERTIFICATION STATEMENT

☐ CONTRACTOR certifies that this submittal: (i) complies with requirements of Contract Documents and Subcontract Agreement / Purchase Order in preparation, review, and submission, and (ii) is complete and in accordance with Contract Documents and requirements of law, regulations, and governing agencies.

CERTIFIED BY (CONTRACTOR'S REPRESENTATIVE)

NAME, TITLE: DATE:

FOR DESIGN-BUILDER USE:

REVIEW STATUS:	
RETURNED DATE:	

DESIGN-BUILDER'S ENGINEER REVIEW AND APPROVAL OF THIS SUBMITTAL ARE EXPRESSLY LIMITED AS PROVIDED IN THE CONTRACT DOCUMENTS AND ARE ONLY TO DETERMINE CONFORMANCE WITH INFORMATION GIVEN IN THE CONTRACT DOCUMENTS AND COMPATIBILITY WITH THE DESIGN CONCEPT FOR THE COMPLETED PROJECT AS A FUNCTIONING WHOLE, AS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR IS, AND DESIGN-BUILDER IS NOT, RESPONSIBLE FOR ALL MATTERS RELATING TO FABRICATION, SHIPPING, HANDLING, STORAGE, ASSEMBLY, INSTALLATION, CONSTRUCTION (INCLUDING ALL SAFETY ASPECTS OF PERFORMING THE WORK), AND FOR COORDINATING THE WORK.

DESIGN-BUILDER COMMENTS:

SECTION 01 33 23

RECORD DRAWINGS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-11-26- Incorporated changes from the latest version that City provided on 11/14/19

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies furnishing record drawings to the CITY.

B. Record Drawings shall be prepared in conformance with Section 5-1.04A Record Drawings of the July 1992 City of San Jose Standard Specifications and as specified herein.

C. Record drawings shall refer to those documents maintained and annotated by the CONTRACTOR during construction, and are defined as:

1. A neatly and legibly marked set of contract drawings showing the final location of piping, equipment, electrical conduits, outlet boxes, and cables.
2. Record drawings shall reflect all changes and revisions made in the ~~project specification and~~ project drawings during the construction process, and shall reflect the exact dimension, geometry, and location of all elements of the work completed under the contract.
3. Additional documents such as schedules, lists, drawings and electrical and instrumentation diagrams included in the specifications.
4. CONTRACTOR layout and installation drawings.
5. Red Line Drawing is applicable/required for Design Bid Build contracts.

~~D. Related Sections:~~

~~1. Section 01 29 00 – Payment Procedures~~
~~2. Section 01 33 00 – Submittal Procedures~~
~~3. Section 01 77 00 – Closeout Procedures~~
~~4. Section 5-1.04A of the July 1992 City of San Jose Standard Specifications~~

Commented [AE1]: JR: City may change to term as-built.

Commented [AE2]: JR: Confirm no conflicts with this and contract.

Commented [RJ3]: What is City looking for here? Diagrams in specifications is unusual?

1.02 SUBMITTALS

A. The following information shall be provided in accordance with Section 01 33 00 – Submittal Procedures.

B. The ENGINEER may review the status of record drawings at any time, but specific progress payments (Section 01 29 00) will be tied to production and upkeep of drawings. The CONTRACTOR shall provide one complete reviewable full-size set of record drawings to be reviewed at the CONTRACTOR's premises by the ENGINEER at the following periods:

1. Prior to progress billing as a percentage of total contract price:
   a. 25 percent
   b. 50 percent
   c. 75 percent
   d. 90 percent
2. At the completion of Work, prior to final payment, CONTRACTOR shall prepare one set of full-sized record drawings (a.k.a. 'red lines') reflecting field changes noted by the CONTRACTOR and the ENGINEER. ~~This set of drawings shall be delivered to the ENGINEER for use by others to prepare the final electronic version of the Record Drawings for the Project.~~

PART 2 PRODUCTS

2.01 GENERAL

A. Unless otherwise specified, record drawings shall be full size and maintained in a clean, dry, and legible condition.

B. Record drawings shall not be used for construction purposes. These shall be a separate set available for review by the ENGINEER during normal working hours at the CONTRACTOR's field office.

C. CONTRACTOR shall record actual revisions to the Work and maintain one set of the following Project Record Documents on site:

1. Contract Drawings, Specifications, and Addenda
2. Change Orders, Field Orders and other written notices
3. Shop drawings, product data and samples
4. Records of surveying and layout work
5. Project Record Drawings

~~D. Marking on the record drawings shall be kept current and shall be done at the time the material and equipment are installed. Annotations to these record documents shall be made with an erasable colored pencil conforming to the following color code:~~

~~1. Additions: Red~~
~~2. Deletions: Red~~
~~3. Comments: Red~~
~~4.6. Dimensions: Red~~

Commented [AE4]: JR: Will be using RFIs and pdfs on computers.

~~E.~~D. All record drawings shall be completed and delivered to the ENGINEER prior to final payment for and acceptance of the Work. Maintenance and submittal of updated record drawings shall be a condition of full payment of progress billings.

~~F.~~E. All contract process drawings, piping schematics, and diagram drawings shall be corrected to represent the installed orientation of equipment and appurtenances.

PART 3 EXECUTION

3.01 RECORDING

A. The CONTRACTOR shall record information concurrently with construction progress. No work shall be concealed until the required information is recorded.

B. CONTRACTOR shall record all revisions on Project Record Documents concurrent with construction progress and store separately from the documents used for construction:
   1. ENGINEER shall supply a set of Contract drawings. CONTRACTOR shall mark thereon all revisions as the Work progresses in order to produce a set of ~~as-built~~record drawings.
   2. CONTRACTOR shall note any changes made during construction by any of CONTRACTOR'S forces or any Subcontractors.
   3. CONTRACTOR shall dimension the locations of buried or concealed work, especially piping and conduit, with reference to exposed structures.
   4. CONTRACTOR shall dimension the installed locations of concealed service lines on the site or within the structure by reference from the center line of the service to structure column lines or other main finished faces or other structural points easily identified and located in the finished Work.

      A completion certificate shall not be issued until the ~~as-built~~record drawings are completed/submitted/reviewed/accepted by the ~~City~~ENGINEER, and the CONTRACTOR has satisfied all requirements for Substantial Completion and Final Completion of the Work.

C. Unless otherwise directed by the ENGINEER, the following actual construction items shall be recorded on the drawings:
   1. Depth of foundation elements in relation to ground elevation.
   2. Measured horizontal and vertical locations of underground yard piping, electrical conduit and duct bank, utilities, and appurtenances, referenced to permanent surface improvements.
   3. Measured location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimensions and details.
   5. Changes made to the Work caused by site conditions, by pre-purchased equipment Vendors, supplemental drawings and instructions, addenda, change orders, the CITY and/or directions of regulatory authorities.
   6. Details not shown on the original contract drawings.
   7. Type, name and model number of all valves,

D. CONTRACTOR shall remove Professional Engineer seal from all documents.

3.02 DELIVERY TO ENGINEER

A. Record drawings will be used to verify and document progress at the stipulated stages of construction per paragraph 1.02 B. 1 of this Section. Work not included in the record drawings will not be included for payment in those progress payment requests.

~~B. The CONTRACTOR, at project closeout or for record information submitted earlier as required by specifications, shall submit a Transmittal of Record Documents, which shall include the following:~~

~~1. Project title~~

~~2. Date~~

~~3. CONTRACTOR's name and address~~

~~4. Title and number of each record document~~

~~5. Statement indicating completion of record information for specific areas or; if for project closeout, that the documentation is completed and in compliance with contract requirements.~~

~~6. Signature of the CONTRACTOR or the CONTRACTOR's authorized representative.~~

Commented [AE5]: JR: Information in EADOC.

3.03 PAYMENT

A. Payment for record drawings shall be as outlined above and in Section 01 29 00 – Payment Procedures.

PART 4 ADDITIONAL REQUIREMENTS

4.01 DELETE PART 1.02.B.2 UNDER SECTION 01 33 23

A. This part is not required. Follow the requirements in Appendix 5, Section 5.4.5 of the Design-Build Contract.

4.02 DELETE PART 2.01.C UNDER SECTION 01 33 23

END OF SECTION

SECTION 01 35 23

~~PLANT~~ FACILITY SAFETY REQUIREMENTS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- Under review by City

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Safety requirements applicable to the Work.

B. Section 7-1.09 Public Safety of the July 1992 City of San Jose Standard Specifications (page 7-17) shall have this specification added to address Construction Safety at the San José-Santa Clara Regional Wastewater Facility (FACILITY).

1.02 CONSTRUCTION SAFETY

A. CONTRACTOR's Responsibility

Attention is directed to Sections 7-1.01E, "Trench Safety", 7-1.06, "Safety & Health Provisions", 7-1.09, "Public Safety", 7-1.12, "Responsibility for Damage," and 7-1.121 "Protection of Contractor's Work & Property" of the July 1992 City of San Jose Standard Specifications.

The CONTRACTOR shall be solely and completely responsible for conditions of the job site, including safely of all persons, including employees and property, during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor, the California Occupational Safety and Health Act (OSHA), and all other applicable Federal, State and local laws, ordinances, codes, the requirements set forth below, and any regulations that may be detailed in other parts of these documents. Where any of these are in conflict, the more stringent requirement shall be followed. The CONTRACTOR's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth herein.

1. The CONTRACTOR shall develop and maintain, for the duration of this Contract, a safety program that will effectively incorporate and implement all required safety

provisions. The CONTRACTOR shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.

2. The duty of the ENGINEER to conduct construction review of the CONTRACTOR's performance is not intended to include a review or approval of the adequacy of the CONTRACTOR's safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.
3. The CONTRACTOR, as part of this safety program, shall maintain at his office or other well-known place at the job site, safety equipment applicable to the work as prescribed by the aforementioned authorities, all articles necessary for giving first aid to the injured, and shall demonstrate an understanding of the FACILITY procedures established for emergency care of persons who may be injured on the job site.
4. If a claim is made by anyone against the CONTRACTOR or any subcontractor on account of any accident, the CONTRACTOR shall promptly report the facts in writing to the ENGINEER, giving full details of the claim. Such notice shall be in addition to any other notice requirements which may apply to such claims.

B. FACILITY Safety Orientation

Each CONTRACTOR and subcontractor shall be required to attend a pre-construction meeting to receive a Safety Orientation by the Environmental Services Department Safety Officer regarding FACILITY safety issues and measures. Alternatively, CONTRACTOR may substitute the witnessed viewing of a Facility Safety Video provided by ENGINEER. The viewing of the video shall be evidenced by an appropriate attendance sheet signed by a CONTRACTOR management representative. Evidence of this witnessed viewing of the video shall be required as a condition of issuing a Facility security badge to access the site. Contractor understands and agrees that certain locations, operations and materials may require supplemental safety briefings/orientations prior to work being allowed to proceed.

C. Incident or Accident Emergency at the FACILITY

In the event of an accident or incident during construction, CONTRACTOR shall immediately notify the FACILITY Computer Room. FACILITY Computer Room shall call 911 for accident involving bodily injury, fire hazard, damage to gas piping, flooding and similar occurrences, requiring an immediate emergency response. CONTRACTOR shall also comply with all CAL-OSHA notification requirements.

The FACILITY Emergency Control Center is in the Computer Room located inside the Administration Building. Computer Room Staff can be reached 24 hours day and night at phone number 408-635-4000.

D. FACILITIES Operation

CONTRACTOR personnel shall not operate, by any means, existing FACILITIES. CONTRACTOR shall submit 72-hour advanced notice to ENGINEER for any required FACILITY change in operation including valve lockup and tagging for system shutdown for each individual project. CITY staff will execute the shutdown after the request has been approved.

E. Training & Certificates

CONTRACTOR personnel shall have sufficient training and certificates in performing work such as confined space entry, asbestos material removal, welding, diving, heavy

equipment operation, and others. Up-to-date certificates for all personnel performing such work shall be provided to ENGINEER or FACILITY area supervisor before the start of the work.

F. Equipment Operation

All cranes and hoists, forklifts, confined space rescue equipment, gas monitors, diving gear, and welding tools or other equipment shall be certified or verified (tested or calibrated) for their operability and rated capacity. CONTRACTOR shall present those certificates to ENGINEER and FACILITY area supervisor before the start of the work.

G. Confined Space Entry

No confined-space entry is allowed unless specifically approved by the ENGINEER. A CONTRACTOR planning a confined-space entry on FACILITY grounds must submit a copy of the company's confined-space program to the ENGINEER. CONTRACTOR must be prepared to follow California Code of Regulations (CCR), Title 8, Sections 5156, 5157 and 5158 governing confined space entry, as well as the procedures followed by FACILITY personnel as described in the Environmental Services Department's Confined Space Program, which can be obtained upon request from ENGINEER. CONTRACTOR is responsible for supplying own certified rescuer and rescuing equipment at no additional cost to the CITY. The cost for rescue services should be included in the CONTRACTOR's bid price. CONTRACTOR must notify the ENGINEER and the FACILITY Emergency Control Center of the time and date prior to confined space entry.

Any diving in a confined space must comply with California Code of Regulations (CCR), Title 8, Section 6056, Subchapter 7, Group 26- Diving Operations and with Association of Diving Contractors (ADC) Consensus Standards. Any diving in a confined space must also comply with Environmental Services Department's Hazardous Energy Control Program otherwise referred to as Lock Out Tag Out (LO/TO), which can be obtained upon request from CITY Hot Work Responsibilities

H. Hot Work Responsibilities

Fire resulting from hot work could significantly affect FACILITY operations. Hot work includes brazing, cutting, grinding, soldering, torch-applied roofing, and welding. No hot work is permitted without authorization from the ENGINEER. A signed hot work permit must be issued by the responsible CITY party. Specific firefighting equipment and protection gear will be required at the hot work site before any work can be started. Refer to the Environmental Services Department's Hot Work Safety Program, which can be obtained upon request from CITY.

I. Fall Prevention

CONTRACTOR working at heights, on ladders or using fall protection equipment shall submit to ENGINEER a Fall Prevention Program that is equivalent to or more restrictive than the Environmental Services Department's Fall Prevention Program, which can be obtained upon request from CITY.

1.03 SUBMITTALS

A. Pursuant to Section 01 33 00, submit, as applicable, after the Award of Contract:

1. Health and Safety Plan (HSP)

a. The CONTRACTOR or CONTRACTOR's representative shall prepare a site-specific Health and Safety Plan (HSP). At the minimum, the HSP shall address the following:

1. Job Hazard Analysis (JHA) which in tabular form identifies job tasks and associated hazards and methods in which the CONTRACTOR will abate or control those hazards.
2. CONTRACTOR's plan to protect workers (such as providing personnel training, personal protective equipment, and respiratory protective devices) while working in the presence of contaminated or hazardous materials.
3. Establishment of exclusionary site work zones and security measures
4. Implementing and conducting dust control measures, ambient air monitoring for health and safety purposes, and administering contingency plans, if necessary

b. The HSP shall be prepared, signed, and submitted for ENGINEER review.

c. The HSP shall be reviewed and signed by the CONTRACTOR and all personnel, including subcontractors, who will be engaged in or overseeing Work in the construction zones

d. A copy of the HSP shall be reviewed by all personnel working in the construction areas, including personnel not employed by the CONTRACTOR or his subcontractors.

e. The HSP shall be conformed to the requirements of all local, state, and federal ordinances, rules, regulations, and guidelines concerning occupational health and safety issues, including OSHA regulation 29 Code of Federal Regulations (CFR) 1910.120.

2. Mandatory Safety Program: Injury and Illness Prevention Program (IIPP) or Safety Work Plan.
3. Material Safety Data Sheets (MSDS's): Any hazardous material brought onto the FACILITY site by CONTRACTOR or subcontractors.
4. Hot Work Program: For welding, torching, cutting, brazing, etc., around combustible or hazardous materials.
5. Confined Space Program: For confined space entry.
6. Fall Prevention Program: For working on ladders, at heights or using fall protection equipment.
7. Training Certificate or License: Asbestos removal, welding, diving, and heavy equipment operation (for cranes, forklifts, etc.), confined-space entry and rescue, etc.
8. Calculations: Seismic design for equipment support, shoring for deep soil excavation, adequacy check of existing floor and structures for support of moving loads, etc.

PART 2 NOT USED

PART 3 NOT USED

PART 4 ADDITIONAL REQUIREMENTS

4.01 FOR HEALTH AND SAFETY PLAN (HSP) UNDER 1.03 A.1 OF SECTION 01 35 23

A. This has already been submitted and approved. Updates will be provided to ENGINEER.

END OF SECTION

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SECTION 01 35 25

WEB-BASED DESIGN AND CONSTRUCTION MANAGEMENT SYSTEM

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- Changes confirmed by City- DONE

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the basic requirement for the CONTRACTOR to use the CITY's enterprise web-based Design and Construction Management System ("DCMS" or "the System") to manage all project communications, workflows and document submittals.

1.02 THE SYSTEM

A. The CITY has entered into a multi-year agreement with Bentley Systems Inc. to provide DCMS software to support its CIP Program. This software, known as 'EADOC' will be used by the Construction team for electronic submittal and receipt of all data and documents throughout the duration of the Contract. The System will provide shared access to current plans and specifications and will enable custom configuration of document sharing between various members of the project team. The web-based software is accessible 24/7 to an unlimited number of users. The DCMS will facilitate information sharing and expedite many of the CITY's existing work flow processes.

B. Use and Operation of the System:

1. The CITY's CIP Program Administrator is responsible for overall administration of the EADOC system, including project configuration at the organization level, initial training for the Project team (in conjunction with EADOC Support as necessary) and establishment of initial user accounts and settings.

2. The CONTRACTOR shall also designate an Administrator who shall be responsible for further assignment and administration of user accounts for its organization, subcontractors and vendors. Subcontractors and suppliers will be given access to the System through the CONTRACTOR.

3. The CONTRACTOR shall use EADOC for electronic submittal and receipt of all data and documents throughout the duration of the Contract.

4. The System is required for use by all participants in the project including the CITY, the CIP Program Consultant, the construction manager, consulting engineers, CONTRACTOR, and all other users authorized by the CITY.

5. There is no cost to the CONTRACTOR or other authorized users for access to or the use of EADOC.

Commented [RJ1]: **Need city to provide us final copy for our records.**

6. The System will operate on a proprietary system that will be administered by CITY. The joint use of this System will facilitate electronic exchange of information, automation of key processes, and overall management of the Contract.

7. The System shall be the primary means of Project information submission and management. When required by ENGINEER or its representatives, paper documents shall also be provided.

C. Additional Data and System Operating Requirements:

1. Document storage by authorized organizations and individual users is via an internet site.

2. User access to project information (based on permissions) is through a single login.

3. We browser access is compatible with, at a minimum, Internet Explorer 8 and newer and Google Chrome.

Commented [RJ2]: **Need to have this work with latest versions.**

4. The ENGINEER will provide more specific information on user protocols as available.

PART 2 NOT USED

PART 3 NOT USED

PART 4 ADDITIONAL REQUIREMENTS

4.01 ADMINISTRATIVE APPROVAL

A. ENGINEER will provide administrative rights to CONTRACTOR to enable CONTRACTOR to approve submittals.

END OF SECTION

SECTION 01 35 43 .01

AIR QUALITY AND GREENHOUSE GAS EMISSIONS MEASURES

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

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2019-11-27- Incorporated changes from the lastet version that City provided on 11/14/2019.

2020-01-23: City provided a new version on 12.16.19 which is the same as the previous version.

PART 1 GENERAL

1.01 SUMMARY

A. The CONTRACTOR shall not initiate work activities at the project site, including equipment mobilization, until the ENGINEER has provided written notice to proceed (NTP).

B. Whenever the CONTRACTOR is negligent in implementing the measures described in this section, the ENGINEER may direct the CONTRACTOR to implement the measures. If the CONTRACTOR does not immediately comply with the direction, the ENGINEER has the authority to suspend all or part of the work for as long as deemed necessary until the CONTRACTOR implements the measures above to the ENGINEER's satisfaction. ~~at no additional cost to the CITY~~ The CITY may implement these measures and charge the CONTRACTOR by deducting the cost from any partial payments to the CONTRACTOR as costs incurred by the CITY.

1.02 REFERENCES

Bay Area Air Quality Management District (BAAQMD): 2017 Clean Air Plan is the standard document which is refrenced in this section.

PART 2 PRODUCTS

2.01 AIR QUALITY CONSERVATION PRODUCTS

A. The CONTRACTOR shall provide the materials necessary to implement the measures listed in this section.

PART 3 EXECUTION

3.01 BASIC CONSTRUCTION CONTROL MEASURES

A. Implement the following measures within RWF to avoid conflicting with the BAAQMD 2017 Clean Air Plan:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day to reduce visible dust emissions, unless otherwise approved by the ENGINEER due to wet weather conditions.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 10 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage noting that idling time shall not exceed five minutes will be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.
8. CITY will p~~P~~ost a publicly visible sign with the Code Enforcement telephone number (408) 535 7770 as the contact at the CITY regarding dust complaints. The Air District's phone number shall also be visible.

PART 4 ADDITIONAL REQUIREMENTS

4.01 FOR WATERING EXPOSED SURFACES UNDER 1.02 A.1 OF SECTION 01 35 43.01

A. Coordinate watering with multiple City projects.

4.02 REPLACE PARAGRAPH 1.02 A.8 OF SECTION 01 35 43.01 WITH:

A. The CITY will provide and install a publicly visible sign with the Code Enforcement telephone number (408) 535 7770 as the contact at the CITY regarding dust complaints. The Air District's phone number shall also be visible.

END OF SECTION

SECTION 01 35 43.02

TRAFFIC AND TRANSPORTATION MITIGATION

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

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2019-09-24: City requested we add this to our Div01 specifications. Confirm how this works with City PSR process? Confirm how flagger costs will be developed in cost model.

2019-11-27: City provided the latest version on 11/14/2019. Nothing has been changed compared to the previous version

2020-01-23: City provided a new version on 12/16/19 which is the same as the previous version. Jacobs made some changes in part 1.01.B. City to confirm.

PART 1 GENERAL

1.01 GENERAL MEASURES

A. The CONTRACTOR shall comply with all federal, state, local and any governing authority regarding their construction traffic operations.

B. The CONTRACTOR shall have ~~qualified~~ flaggers present onsite daily if required by the Traffic Control Plan.

Commented [RJ1]: Under discussion as an allowance. Appendix 8 of contract proposed modification has this as a cost of work item and not as a GC cost.

C. The CONTRACTOR parking shall be limited to designated areas within the project site. No CONTRACTOR parking or other construction uses (e.g. queuing/staging haul trucks, staging or offloading equipment or materials) are allowed on adjacent City streets or sidewalks.

D. The CONTRACTOR shall adhere to the CITY established access locations and haul routes for construction trucks and staging areas.

1.02 IMPLEMENT COORDINATED TRANSPORTATION MANAGEMENT PLAN [PROJECT C-TR]

A. The CONTRACTOR shall create and implement a Traffic Control Plan that meets the requirements of this Section. To the extent applicable, the Traffic Control Plan shall also conform to Caltrans *Manual of Traffic Controls for Construction and Maintenance Work Areas*. The CONTRACTOR shall submit the Traffic Control Plan to the ENGINEER for review and approval at least 10 working days prior to the start of construction activities. CONTRACTOR shall coordinate with the ENGINEER and other project CONTRACTORS in developing circulation and detour plans that include safety features (e.g., signage and flaggers). CONTRACTOR's plan shall be

Commented [RJ2]: Need a copy to confirm the level of effort to comply.

coordinated with the overall FACILITY Traffic Management Plan, which will be provided to CONTRACTOR by ENGINEER. The Traffic Control Plan shall include:

1. Full and partial roadways closures
2. Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control devices
3. Bicycle/Pedestrian detour plans, where applicable
4. Parking along public roadways
5. Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites

B. In the event that more than one construction contract is issued for work in the same vicinity (i.e., ¼-mile), the CONTRACTOR, with the assistance of the CITY, shall coordinate the Traffic Control Plans to address overlapping construction schedules and activities, truck arrivals and departures, lane closures and detours to minimize impacts to public roads.

Commented [RJ3]: Best way to coordinate between ourselves as both Contractor and Engineer? Should we add in City PSR process here?

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 35 43.03

CULTURAL AND HISTORIC RESOURCES MITIGATION

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

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2019-11-27- Incorporated changes from the latest version that City provided on 11/14/2019

2020-01-23: City provided a new version on 12/16/19 with no changes compared to the previous version.

PART 1 GENERAL (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 Training:

A. All CONTRACTOR personnel must complete the environmental training provided by the CITY that discusses the nature of cultural resources and potential materials that may be encountered. In addition, the CONTRACTOR personnel must take a combined environmental and safety quiz based on the information presented in the training and submit the completed quiz to the ENGINEER. If new construction personnel are added to the project, the CONTRACTOR shall ensure that new personnel receive the appropriate training and complete the quiz before they start working.

3.02 ACCIDENTAL DISCOVERY OF ARCHAEOLOGICAL RESOURCES

A. If archaeological or historic resources are discovered during construction, the CONTRACTOR shall immediately stop all activities within 100 feet of the discovery, notify the ENGINEER, and install fencing or staking to prevent vehicles, equipment or personnel from entering the area. No photos shall be taken.

B. The CONTRACTOR shall retain a Secretary of the Interior-qualified archeologist to inspect the findings within 24-hours of discovery.

C. If required by the nature of the unanticipated discovery encountered and as directed by ENGINEER, the CONTRACTOR shall relocate operations and adjust their construction schedule to allow implementation of appropriate historical, paleontological, or archaeological management procedures by the CITY.

D. The CONTRACTOR shall not resume work in the affected area until authorization is received from the ENGINEER.

3.03 ACCIDENTAL DISCOVERY OF HUMAN REMAINS

A. In the event of an unanticipated discovery of human remains during construction, the CONTRACTOR shall immediately stop all activities within 100 feet of the discovery, notify the ENGINEER, and install fencing or staking to prevent vehicles, equipment or personnel from entering the area, so no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains occurs. No photos shall be taken.

B. The ENGINEER shall notify the Santa Clara County Coroner to determine whether or not the remains are Native American.

C. If no satisfactory agreement can be reached as to the disposition of the remains pursuant to State law, the CONTRACTOR shall re-inter the human remains and items associated with Native American burials on the property in a location identified by the CITY and qualified archaeologist (generally a location not subject to further subsurface disturbance).

D. The CONTRACTOR shall not resume work in the affected area until authorization is received from the ENGINEER.

PART 4 ADDITIONAL REQUIREMENTS (NOT USED)

END OF SECTION

SECTION 01 35 43.04

BIOLOGICAL RESOURCES MITIGATION

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

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2019-11-27- Incorporated changes from the latest version that City provided on 11/14/2019.

2020-01-23- City provided a new version on 1/10/2020 with minor changes that are applied here.

PART 1 GENERAL

1.01 SUMMARY

A. All personnel, equipment, project related-vehicles, and materials shall avoid designated environmentally sensitive features.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 TRAINING:

A. All CONTRACTOR personnel must complete the environmental training provided by the CITY. The training will include a description, representative photographs, and legal status of each special-status species and habitat, and the penalties for not complying with biological mitigation requirements. In addition, CONTRACTOR personnel must take a combined environmental and safety quiz based on the information presented in the online training and submit the completed quiz to the ENGINEER. If new construction personnel are added to the project, the CONTRACTOR shall ensure that new personnel receive the appropriate online training and complete the quiz before they start working.

Commented [AE1]: Added in the new version that City provided on 1/10/2020

B. The ENGINEER will provide a copy of all of the PROJECT's environmental permits and CEQA documentation to the CONTRACTOR if applicable. The CONTRACTOR shall provide copies of these to all SUBCONTRACTORS. The CONTRACTOR shall make copies of all the environmental permits and CEQA document readily available at the PROJECT site and will present copies of the permits to the CITY or regulatory agency representatives upon request.

3.02 GENERAL MEASURES

A. The CONTRACTOR shall maintain a clean work area and provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be removed from the project site and placed in a closed container from which garbage shall be removed, at minimum, weekly to prevent attraction of wildlife to the site.

B. Smoking is restricted to designated areas or within a closed vehicle.

C. Personnel shall not feed or otherwise attract fish or wildlife to the project area.

D. No pets or firearms shall be allowed in the construction limits.

E. The CONTRACTOR shall not handle, disturb, move or harass any wildlife or nests. Contact the ENGINEER if wildlife or nests are encountered.

F. Any CONTRACTOR employee who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped shall immediately report the incident to the ENGINEER. The ENGINEER will notify the appropriate resource agencies.

~~G. The CITY shall perform pre-construction biological surveys, including inspection of protective fencing. The CONTRACTOR shall not initiate work activities at the project site, including equipment mobilization, until the ENGINEER has provided written notice to proceed (NTP).~~

Commented [RJ2]: CDM through ESA to provide biological services for this project.

~~H.~~G. The CONTRACTOR shall provide written notice to the ENGINEER prior to all fencing installation and removal to ensure that the ENGINEER has the option to be present during installation and removal of all fencing.

~~I.~~H. The CONTRACTOR shall inspect fencing (or related) materials a minimum of once per week to confirm it is secure and being properly maintained.

~~J.~~I. Any fencing work includes the CONTRACTOR furnishing and installing fencing, inspecting and maintaining fencing during construction, and removal of fencing when construction is complete.

~~K.~~J. The CONTRACTOR shall direct all drainage from areas where chemical spills could occur away from sensitive habitat and wildlife.

3.03 VEHICLES AND EQUIPMENT

A. Off-road travel by project-related vehicles and construction equipment shall be restricted to designated routes in the construction work area.

B. Vehicles or construction equipment maintenance shall be performed in designated staging areas. No fueling, cleaning, or maintenance of equipment and vehicles shall take place within any areas where an accidental spill could potentially discharge into stream, sensitive habitat, or storm drain inlet.

3.04 NESTING BIRD PROTECTION MEASURES

A. The CONTRACTOR shall not disturb active nests containing nesting birds, eggs, and/or young.

1. If active nests are encountered during construction, work must stop, and the ENGINEER should be notified immediately. A survey must be performed by the ~~CONTRACTORS~~ ENGINEER's qualified biologist before construction work can proceed.

Commented [RJ3]: Not added to DB scope. City will do with ESA and City staff. No costs added.

B. If surveys identify evidence of active nests, the CONTRACTOR shall install visible fencing to establish the limits of the exclusion zone at the direction of the qualified biologist.

1. A minimum 300-foot no-disturbance exclusion zone shall be established around any active raptor nests located during the nesting season (February 1 through August 31).
2. A minimum 100 foot no-disturbance exclusion zone shall be established around any active passerine nests located during the nesting season (February 1 through August 31).
3. At a minimum, fencing should be 3 to 4 feet high, with stakes or posts every 6 to 10 feet for sturdy support.

C. The qualified biologist will determine if consultation with the California Department of Fish and Wildlife and/or US Fish and Wildlife Service is required.

3.05 BURROWLING OWL PROTECTION MEASURES

A. The CONTRACTOR shall not disturb burrowing owls and any occupied burrows or nests.

B. If burrowing owls are encountered during construction, work must stop, and the ENGINEER should be notified immediately. A survey must be performed by the CONTRACTORS qualified biologist before construction work can proceed.

C. If surveys identify evidence of western burrowing owls within 250-feet of the Project area, the CONTRACTOR shall:

1. Establish a 250-foot exclusion zone around the occupied burrow or nest, as directed by the qualified biologist.
2. Avoid the exclusion zone and all nests that could be disturbed by PROJECT construction activities during the remainder of the breeding season or while the burrow is occupied by adults or young.
3. Not resume construction activities within the 250-foot zone until the ENGINEER provides written NTP.

D. If avoidance of occupied burrows is not feasible during February 1 to August 31 breeding season, construction may occur within 250 feet of the occupied burrows if the burrows are not disturbed, and the CONTRACTORs qualified biologist prepares and implements a Monitoring Plan which meets Habitat

Conservation Plan (HCP; Condition 15) requirements and is approved by the California Department of Fish and Wildlife and the Santa Clara Valley Habitat Agency.

E. If avoidance of occupied burrows is not feasible during September 1 to January 31 non-breeding season, construction may occur within 250 feet of the overwintering burrows as long as the ~~CONTRACTORs~~ qualified biologist monitors the owls for at least 3 days prior to Project construction and during construction and finds no change in owl foraging behavior in response to construction activities. If there is any change in owl foraging behavior as a result of construction activities, activities shall cease within the 250-foot exclusion zone.

3.06 MINIMIZE LIGHT POLLUTION

A. Lighting during nighttime activities shall be restricted to the necessary work area to satisfy safety requirements. The CONTRACTOR shall direct all lighting downward and provide shielding of lighting, as necessary, to avoid light spillage into adjacent open space.

3.07 ORDINANCE TREE PROTECTION MEASURES

A. If trees located on site will be retained after construction, the CONTRACTOR shall implement and maintain tree protection measures as directed by the ENGINEER. If such trees are injured or damaged by reason of the CONTRACTOR's operations, they shall be restored, replaced or fees paid at the CONTRACTOR's expense.

B. The CONTRACTOR will install and maintain fencing to protect trees as directed by the ENGINEER.

C. The CONTRACTOR shall adhere to the exclusion zones established by the ENGINEER. At a minimum, this zone will encompass the drip line of the tree and shall be noted on the project drawings. No equipment shall be stored or parked within the drip line of a tree unless approved by the CITY.

1. Where the ENGINEER allows work or equipment within the drip line of a tree, the CONTRACTOR shall protect roots as directed by the ENGINEER.

3.08 AVOIDANCE AND PROTECTION OF JURISDICTIONAL WATERS ~~[BIO-4]~~

Commented [AE4]: Deleted in the new version that City provided on 1/10/2020

A. The CONTRACTOR shall install fencing to establish the limits of the exclusion zone around the sensitive water feature at the direction of the ENGINEER.

1. A protective barrier shall be constructed around water features adjacent to the Project at the "top of bank" or at the feature boundary to isolate them from Project activities.

2. The CONTRACTOR shall install signage on the fencing identifying the sensitive water feature and restriction of construction activities.

3. Equipment and materials shall not be stored or stockpiled in an area where runoff may enter a stream, sensitive habitat, riparian, or wetland area.

PART 4 ADDITIONAL REQUIREMENTS

4.01 PRECONSTRUCTION SURVEYS FOR NESTING BIRDS [BIO-1]

Commented [AE5]: By CDM through ESA

A. A report of findings shall be prepared by the qualified biologist and submitted to the ENGINEER for review and approval prior to initiation of construction during the nesting season (February 1 to August 31). The report shall either confirm absence of any active nests or should confirm that any young are located within a designated no-disturbance zone and construction can proceed. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.

SECTION 01 35 43.05

HAZARDS AND HAZARDOUS MATERIALS MITIGATION

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For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-11-27- Incorporated changes from the latest version that City provided on 11/14/2019

2020-01-23- City provided a new version on 12/10/2020 with no changes compared to the previous version. Confirmed by City for 60% on 01/15/2020.

PART 1 GENERAL

1.01 SUMMARY

A. The CONTRACTOR shall adhere to all local, state, and federal regulations related to the use, transport, handling, and disposal of hazardous materials.

B. The CONTRACTOR shall be solely and fully responsible for compliance with all laws, rules, and regulations applicable to health and safety during the performance of the construction work.

C. Section Includes: Procedures required when encountering hazardous materials at the Work site including all associated excavation, removal, handling, disposal and backfill as specified.

~~D. Related Sections:~~

~~1. Section 01 29 00 - Payment Procedures~~

~~2. Section 01 35 23 - Plant Safety Requirements~~

1.02 REFERENCES

A. California Health and Safety Code, Section 25117

B. State of California Code of Regulations (CCR)

1. Title 8. Industrial Relations: Division 1. Department of Industrial Relations
2. Title 22. Social Security
   a. Division 4. Environmental Health

b. Division 4.5. Environmental Health Standards for the Management of Hazardous Waste

C. United States Code of Federal Regulation (CFR), Title 29 and Title 40

1. 29 CFR 1910 Occupational Safety and Health Standards

1.03 SUBMITTALS

A. Health and Safety Plan (HSP)

1. At a minimum, the HSP shall address the following to protect workers from potential exposure to contaminated materials:

a. All required measures to protect construction workers and the RWF workers by including engineering controls, monitoring, and security measures to prevent unauthorized entry to the construction area and to reduce hazards outside of the construction area. If prescribed contaminant exposure levels are exceeded, personal protective equipment shall be required for workers in accordance with state and federal regulations.

b. Required worker health and safety provisions for all workers potentially exposed to contaminated materials, in accordance with state and federal worker safety regulations (i.e., HAZWOPER training [24 or 40-hour course with annual 8-hour refreshers]), and designated qualified individual personnel responsible for implementation of the HSP.

c. Procedures to be implemented if unknown subsurface conditions or contamination are encountered, such as previously unreported tanks, wells, or contaminated soils.

B. The HSP shall be reviewed and approved by the ~~Engineer~~ENGINEER at least 10 working days prior to the start of construction activities. The CONTRACTOR shall not initiate work activities at the project site until the ENGINEER has provided written notice to proceed (NTP).

C. Soil Management Plan (SMP)

Commented [RJ1]: Need to coordinate with latest M&M

1. The CONTRACTOR must prepare and submit a SMP that specifies the method for handling and disposal of contaminated soil and groundwater prior to construction. The SMP shall include all necessary procedures to ensure that excavated materials and fluids generated during construction are stored, managed, and disposed of in a manner that is protective of human health and in accordance with applicable laws and regulations. At minimum, the SMP shall include the following information:

a. Results of soil and/or groundwater sampling, if applicable.

b. Step-by-step procedures for handling, stockpiling, storage, testing, and disposal of excavated material, including criteria for reuse and offsite disposal.

c. Procedures for containment, handling and disposal of groundwater generated from construction dewatering, the method to analyze

groundwater for hazardous materials likely to be encountered, and the appropriate treatment and/or disposal methods.

2. The SMP shall be reviewed and approved by the ENGINEER at least 10 working days prior to the start of construction activities. The CONTRACTOR shall not initiate work activities at the project site until the ENGINEER has provided written notice to proceed (NTP).

PART 2 PRODUCTS

A. The CONTRACTOR shall provide all materials necessary to implement the Health and Safety Plan.

B. The CONTRACTOR shall provide all materials necessary to implement the Soil Management Plan.

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION HAZARDOUS MATERIALS ASSESSMENT

A. The ENGINEER shall provide any available site-specific sampling reports or analytical data to the CONTRACTOR for review.

B. The CONTRACTOR shall review all site-specific sampling report(s) attached to this contract and/or attached information about potential soil and groundwater contaminants anticipated to be present in the Project area, to inform appropriate materials handling procedures and to inform the creation of the Health and Safety Plan and Soil Management Plan. The Health and Safety Plan and Measures.

3.02 HEALTH AND SAFETY PLAN AND MEASURES

A. The CONTRACTOR must instruct workers on recognition and reporting of materials that may be hazardous.

1. The CONTRACTOR shall be responsible to make sure that all personnel performing work in the identified, potentially contaminated area(s) must have read and clearly understand the HSP.

~~2. A copy of the HSP shall be reviewed by all personnel working in the contaminated areas, including personnel not employed by the CONTRACTOR or subcontractors. No worker shall be allowed in these areas until he/she has signed and acknowledged receiving and understanding a copy of the HSP.~~

~~3.~~2. The CONTRACTOR shall retain a site health and safety supervisor fully trained pursuant to hazardous materials regulations be present during excavation, trenching, or cut and fill operations to monitor for evidence of potential soil contamination, including soil staining, noxious odors, debris or buried storage containers. The site health and safety supervisor must be capable of evaluating whether hazardous materials encountered constitute an incidental release of a hazardous substance or an emergency spill. The

Commented [RJ2]: Too large a document, need some sort of summary?

Commented [RJ3]: Need to review assumptions with City for this requirement and how we plan to meet this. Need to match contract and cost model assumptions. Assume existing staff will meet this requirement. No additional env. staff planned for all excavation activities.

CONTRACTOR shall incorporate any comments by the site health and safety supervisor into the HSP.

B. The CONTRACTOR shall direct procedures to be followed in the event that an unanticipated hazardous materials release with the potential to impact health and safety is encountered. These procedures shall be in accordance with hazardous waste operations and regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of the unknown hazardous materials release; notifying the ENGINEER and retaining a qualified environmental firm to perform sampling, remediation, and/or disposal.

3.03 HAZARDOUS MATERIAL PROCEDURES

B. When Hazardous Materials are encountered:

1. The CONTRACTOR shall notify the ENGINEER immediately upon belief that the inadvertently discovered material is a hazardous waste.

2. The CONTRACTOR shall update the HSP and SMP appropriately. Plans for site remediation will be documented and submitted to the ENGINEER for review and approval.

3. The CONTRACTOR shall identify and contact subcontractors and licensed personnel qualified to undertake storage, removal, transportation, disposal, and other remedial work required by and in accordance with Local, State and Federal laws and regulations.

4. The CONTRACTOR shall employ additional health and safety measures, as necessary, for all workers in accordance with OSHA guidelines.

5. The CONTRACTOR shall decontaminate all construction equipment used for the handling of contaminated material prior to use for other work elements or removal from site.

6. The CONTRACTOR will minimize delays by continuing performance of the Work in areas not affected by hazardous material operations.

3.04 EXCAVATION AND SEGREGATION OF MATERIALS

A. All excavated materials shall be inspected prior to initial stockpiling, and materials that are visibly stained and/or have a noticeable odor shall be stockpiled separately to minimize the amount of material that may require special handling and disposal. In addition, excavated materials shall be inspected for buried building materials, debris, and evidence of underground storage tanks; if identified, these materials shall be stockpiled separately and characterized in accordance with landfill disposal requirements. If some of the material does not meet the reuse criteria and/or debris is identified, these materials shall be disposed of at a permitted landfill facility.

1. Where CONTRACTOR encounters contaminated materials during excavations, the CONTRACTOR will screen the excavated material by examining the sample for visual evidence of contamination and then screening for volatile organic vapors using a photoionization detector (PID) or other direct reading instrument. Soil testing must be performed to

determne the extent of contamination and to meet landfill testing criteria for disposal.

2. The CONTRACTOR shall take precautions to minimize the volume of soil classified as contaminated as a result of mixing between contaminated and non-contaminated soil during excavation. However, the excavation approach to remove the identified areas of contaminated soil shall be left to the discretion of the CONTRACTOR. The CITY shall not pay additional costs for additional contaminated soil generated by mixing or non-contaminated soils.

3. ~~Measurement and payment of contaminated materials shall be per Section 01 29 00~~ Payment Procedures

Commented [RJ4]: Should this be after 3.05 as well? This work will be done as an allowance so update this to match contract.

3.05 HANDLING OF CONTAMINATED LIQUID

A. ~~The~~ CONTRACTOR shall provide and maintain a temporary dewatering and pumping system during the duration of this work to handle any liquid identified as contaminated liquid as a result of contact with the contaminated material during the excavation and stockpiling operation.

B. CONTRACTOR shall provide all temporary holding tank(s), oil/water/solids separator(s), pumping, piping, and any other necessary equipment to collect, transport, and pre-treat the contaminated liquid from the excavation and stockpiling areas. At a minimum, the CONTRACTOR shall provide a desilting tank for treatment of groundwater from dewatering operations before discharge.

1. CONTRACTOR shall be responsible for discharging the treated water as instructed by the ENGINEER. CONTRACTOR will be responsible for disposal of the separated contaminated materials as instructed by ENGINEER.

Commented [RJ5]: To be done under an allowance approach per contract.

PART 4 ADDITIONAL REQUIREMENTS

A. The CITY has identified diesel contamination at the Project Site. The diesel contamination has impacted both the groundwater and the soil. High levels of diesel contamination as defined in the soil management plan will be removed from site. The remaining soil will be used on site as backfill or placed in the soil dispoal area. The groundwater will be pumped into the wastewater flow. The volume of diesel contaminated groundwater will not impact the biological treatment process.

Commented [AE6]: JR: This will be done as an allowance under the Contract/SOV.
To do management.

END OF SECTION

SECTION 01 35 43 14

ASBESTOS CONTAINING MATERIAL MANAGEMENT

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements.

For Part 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Part 4 is complete.

The following materials are draft, to be edited to reflect project specific needs. For each project specific application, draft and final draft material is to be submitted to the CIP Engineering Manager and CIP Construction Manager for review. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For a guidance on what information should be included in each article, refer to: ***Hazardous Material Investigation and Remediation Protocol, Technical Memorandum 1, March 2019*** *or latest version.*

2019-10-01: Suggested modifications. Need City to review and approve.

2020-01-23- City provided a new version on 1/9/2020 with minor changes that are applied here. Confirmed by City for 60% on 01/15/2020.

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes specifications for the abatement and disposal of Asbestos Containing Material (ACM) historically used in building and construction materials during construction of the FACILITY. The FACILITY was constructed originally in 1950s. The Project site is part of and within the FACILITY.

~~B. Related Sections:~~

~~1. Section 01 35 23 Plant Safety Requirements~~

~~2. Section 01 35 43.05 Hazards and Hazardous Materials Mitigation~~

~~3. Section 01 35 43.15 Lead Containing Material Management~~

~~4. Section 01 35 43.16 Polychlorinated Biphenyls Management~~

~~C.~~B. The FACILITY and CONTRACTOR and ENGINEER have not identified material suspected to be ACM for this project. If ACM abatement is identified, the work will be treated as a regulated site condition under the contract. ~~contracted an asbestos consultant to conduct a survey within the Project area. The findings of the survey are included in the report referenced in PART 4 of this Specification Section~~.

~~D.~~C. If ACM must be abated and disposed, the CONTRACTOR shall determine quantities of all the ACM identified at the Project site. All quantities shall be determined by the CONTRACTOR and no claim for additional costs will be accepted~~. Any quantities implied~~

Commented [RJ1]: True up with final Hawkins contract.

~~in these Specifications are illustrative only and are not intended to represent actual quantities for bidding purposes.~~

1. CONTRACTOR shall furnish all labor, materials, services, insurance, equipment, and decontamination facilities to carry out the work identified in this specification. ~~and associated project drawings.~~
2. All asbestos work will be performed by persons knowledgeable, qualified and trained in the removal, treatment, handling and disposal of asbestos containing materials (ACM) and asbestos containing construction materials (ACCM). In addition, such persons shall comply with applicable Environmental Protection Agency's Asbestos Hazard Emergency Response Act (EPA AHERA), California Occupational Safety and Health Administration (Cal/OSHA), Bay Area Air Quality Management District (BAAQMD) and local mandates. The CONTRACTOR shall be duly licensed in the State of California in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended, and shall be currently certified by Cal/OSHA in asbestos abatement.
3. Where methods or procedures are specified in this specification section, they shall constitute minimum measures and shall in no way relieve CONTRACTOR of sole responsibility for the means, methods, techniques, sequences or safety measures in connection with the work.

~~E.~~D. Description of Work

1. If the CONTRACTOR encounters any unidentified and/or untested material that is suspected to be asbestos-containing, the CONTRACTOR shall stop all work in the affected area and notify the ENGINEER. The ~~ENGINEER~~CONTRACTOR will arrange for sampling and testing of the suspect material.

~~1.~~2. The ACM abatement work includes removal and proper disposal of all ACM and related material waste from the Project site. ~~CONTRACTOR shall refer to ACM investigation report referred in Part 4 of this specification section for location and estimated quantities of ACM.~~

~~2.1. If the CONTRACTOR encounters any unidentified and/or untested material that is suspected to be asbestos-containing, the CONTRACTOR shall stop all work in the affected area and notify the ENGINEER. The ENGINEER will arrange for sampling and testing of the suspect material.~~

3. The removal and disposal of any previously unidentified asbestos-containing materials shall be performed by the CONTRACTOR at the prices ~~awarded for this Contract~~approved by the ENGINEER.
4. Work included:
   a. Furnishing of all labor, materials, facilities, equipment, services, and insurance necessary to perform the work;
   b. Maintenance of work area/site security;
   c. Preparation of work area, including installation of containment and decontamination areas as required;
   d. Removal, segregation, and/or containment of any ACM-containing materials encountered during the project work;
   e. Clean-up and final decontamination of all work areas;
   f. Implementation of a worker protection program in compliance with all applicable regulations;

Commented [RJ2]: Assume we do this.

Commented [AE3]: Deleted in the latest version that City provided on 1/9/20

g. Proper storage, wrapping/bagging, labeling, transportation and disposal of all waste generated as part of ACM abatement activities;
h. Preventing ACM and/or asbestos fibers from migrating out of the work area(s);
i. Cleaning all work areas at the end of each workday and collecting and storing all asbestos-containing waste as specified in Part 3 of this section;
j. Disposal of hazardous and non-hazardous waste streams as specified herein.

1.02 CODES COMPLIANCE AND REGULATIONS

A. The CONTRACTOR will assume full responsibility and liability for compliance with all applicable Federal, State, and Local regulations. Specifically, regulations pertaining to work practices, protection of workers, visitors to the site, persons occupying areas adjacent to the site, hauling, and disposal. As required by all applicable Federal, State and local regulations, the CONTRACTOR is responsible for providing medical examinations, and maintaining medical records of personnel.

B. CONTRACTOR shall comply with all pertinent laws, rules, and regulations existing at the time of the work including, but not limited to the following:
   1. Federal Regulations
      a. United States Environmental Protection Agency (EPA), Title 40, Code of Federal Regulations (CFR), Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP), National Emission Standard for Asbestos (40 CFR, Part 61, Subpart A & M).
      b. 40 CFR 763 including all Appendices, Asbestos Hazard Emergency Response Act (AHERA)
      c. 49 CFR Parts 171 through 180 – Department of Transportation (DOT), Hazardous Substances
      d. 29 CFR 1926.1101 and 29 CFR 1910.1001 - Occupational Exposure to Asbestos
      e. 29 CFR 1910.134 and 42 CFR Part 84, Respiratory Protection
      f. 29 CFR 1910.1200, Hazard Communication
      g. 29 CFR 1910.145, Accident Prevention Signs and Tags
      h. 29 CFR 1910, Subpart I, Personal Protective Equipment
      i. 29 CFR 1910.1020, Access of Employee Exposure/Medical Records
      j. National Electrical Code, NFPA70

   2. State and Local Regulations
      a. The State of California, Business and Professions Code, § 7058.5 (Asbestos Certification) and other corresponding regulations in the California CONTRACTORs State License Board, Title 16, California Code of Regulations, Division 8 (16 CCR Division 8).
      b. Title 8 CCR, Section 1529, Asbestos in Construction
      c. Title 8 CCR, Section 341.6, Registration, Asbestos-Related Work
      d. Title 8, Division 1, Chapter 4, Division of Industrial Safety
         1) Title 8 CCR 3203, Injury and Illness Prevention Program
      e. Title 8 CCR 5194, Hazard Communication

f. Title 22 CCR 66699, Persistent and Bio-accumulative Toxic Substance
g. Title 22 CCR, Hazardous Waste Handling
   1) Health and Safety Code, Section 25249.5 and 25249.6
h. California Labor Code, Sections 6501.5, 6501.7, 6501.8, and 6501.9.
i. Bay Area Air Quality Management District (BAAQMD): Regulation 11 Rule 2
j. City of San Jose or Santa Clara County, Fire Code, whichever is applicable.

Commented [RJ4]: How does this impact the work?

3. Miscellaneous Standards and References
   a. Underwriters Laboratories (UL) Standard 586, 2009 High Efficiency, Particulate, Air Filter Units.
   b. American National Standards Institute (ANSI), ANSI Z9.2, Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems.
   c. ANSI/ASSP Z88.2-2015, Practice for Respiratory Protection.
   d. National Fire Protection Association (NFPA), Standard 10, Standard for Portable Fire Extinguishers.
   e. Department of Housing and Urban Development, Guidelines for the Evaluation & Control of Lead-Based Paint Hazards in Housing (2012 edition)

1.03 SUBMITTALS

A. CONTRACTOR shall submit the following documentation prior to the start of work:
   1. A detailed job-specific plan of the work procedures to be used for the work to be completed. The plan shall be compliant with this specification and regulations. (Contractor's ACM Work Plan)
   2. A copy of the State Contractor's Licensing Board Asbestos Certification in accordance with the California Business and Professional Code, § 7058.5.
   3. Proof that the CONTRACTOR possesses a current California Class C Asbestos Removal License.
   4. A copy of the CONTRACTOR's current California DOSH registration to conduct asbestos-related work.
   5. Proof of asbestos supervisor and worker training. Include a copy of the most current refresher training certificate as issued by a DOSH-approved training provider.
   6. Physician's written medical opinion, current to within one year that contractor's employees can wear respiratory protection.
   7. Documentation of respirator fit-testing for all contractor's employees and agents who are required to wear a respirator. Fit-testing shall be current within one year.
   8. Documentation of medical surveillance required in CCR Title 8, Sections 1529 (m) and 1532.1 (j).
   9. If rental equipment is to be used during asbestos handling and disposal, a copy of the written notification concerning the intended use of the equipment that was furnished to the rental agency.
   10. Submit any current and valid licenses, permits, and notices required by federal/state/local regulations and proof of timely transmittal of notices to the respective agency requiring the notices including, but not limited to:
      a. California Division of Occupational Safety and Health in accordance with Title 8, Sections 1529 and 1532.1 (p).

b. Bay Area Air Quality Management District (BAAQMD) in accordance with Regulation 11 Rule 2.
c. Proof of BAAQMD permits for HEPA-filtered air filtration machines.

11. An emergency preparedness plan as specified in Paragraph 1.07 below.
12. Safety Data Sheets (SDS) for solvents, caustic stripping agents, paints, encapsulants, adhesives, detergents, and replacement materials, as necessary.

B. CONTRACTOR shall submit the following information on a daily basis during progression of the work or as requested:
1. Copies of daily personal air sample logs and analytical results.
2. Copies of daily project site entry logbooks with information on worker and visitor access.
3. Logs documenting filter changes on respirators, HEPA vacuums, differential pressure air filtration devices, and other engineering controls.

C. CONTRACTOR shall submit the following close-out information following completion of the Project:
1. Any documentation listed in Paragraphs 1.03.A or 1.03.B above not collected during the Project.

1.04 QUALITY ASSURANCE

A. Qualifications:
1. Qualifications of CONTRACTOR (or Subcontractor as applicable):
a. Work performed under this Section shall be by a single CONTRACTOR.
b. The CONTRACTOR shall have a minimum of five (5) years' experience as an approved asbestos abatement contractor unless approved by the ENGINEER to have less than five (5) years' experience. If requested, the CONTRACTOR shall provide the names and locations of 5 projects of similar size and scope that he has completed within the previous five years.
c. CONTRACTOR must hold a current and valid asbestos license issued by the California CONTRACTOR's State Licensing Board (CSLB).
d. CONTRACTOR must hold a current and valid Certificate of Registration for Asbestos-Related Work issued by the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA).
e. CONTRACTOR must hold all insurance and bonds as required by other sections of this specification and maintain as valid and current for the duration of the project.
2. Qualifications of Asbestos Abatement Personnel:
a. All work shall be completed utilizing fully qualified persons who are trained, experienced, and knowledgeable in the proper techniques and procedures for asbestos abatement activities covered by this Section.
b. Asbestos Workers: All workers performing asbestos related work shall be currently certified as AHERA asbestos workers.
c. Asbestos in Construction Contractor Supervisor: The Contractor's Supervisor shall be identified in writing and currently certified as an AHERA Asbestos Contractor Supervisor.

3. Qualifications of Analytical Laboratory:
   a. CONTRACTOR shall submit asbestos air samples to an analytical laboratory that is accredited by the American Industrial Hygiene Association's (AIHA) Industrial Hygiene Laboratory Accreditation Program (IHLAP). The CONTRACTOR shall choose another AIHA accredited lab if their current AIHA accredited lab does not maintain accreditation throughout the duration of this project.

B. Pre-Construction Meeting: At least one week before work commences, a pre-construction meeting shall be held at a location designated by the ENGINEER. Attendees shall include the ENGINEER and CONTRACTOR; and others as necessary. The agenda shall include a review of project safety requirements, the Contractor's ACM Work Plan, emergency contacts and notification plan, containment and work area design, facility requirements, submittals, and any other issues pertinent to the safe execution of the asbestos abatement work.
   1. Work shall not commence until all required submittals and plans have been approved by the ENGINEER.

1.05 NOTICES

A. Post a list containing the names, addresses, and telephone numbers of CONTRACTOR, and emergency medical services.

B. Additional postings shall include:
   1. Visitor Entry and Exit Log.
   2. Employee Daily Sign in Log.
   3. Entry and Exit Procedures.

1.06 SITE SECURITY

A. Access to the work areas shall be limited to authorized, trained and properly equipped personnel, including CONTRACTOR, Subcontractors, Contractor's employees, and regulatory agency inspectors.

B. Entry into the work area by unauthorized individuals shall be reported immediately.

C. CONTRACTOR shall be responsible for Project site security during abatement operations in order to protect work efforts and equipment.

1.07 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed by CONTRACTOR prior to abatement initiation.

B. Emergency procedures shall be in written form and prominently posted. CONTRACTOR shall ensure that all persons entering the work area read these procedures and understand the Project site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include considerations of fire, explosion, electrical hazards, slips, trips and falls, confined spaces, and heat related injury. Written procedures shall be developed and employee training in procedures shall be furnished by CONTRACTOR.

D. Employees shall be trained in evacuation procedures in the event of work place emergencies.
   1. For minor injuries and illness, employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work area to obtain proper medical treatment.
   2. For serious injury or illness, worker decontamination shall take least priority. After stabilizing the injured worker, remove him from the work area and seek proper medical treatment.
   3. Telephone numbers of all emergency response personnel shall be prominently posted in the clean and equipment rooms.

1.08 FIRE PROTECTION

A. All plastic sheet and structural materials used in the abatement process shall be UL approved and certified as fire retardant or noncombustible.

B. All combustible rubbish and debris shall be properly disposed of at the end of each working day.

C. A minimum of two (2) 4A/60BC dry-chemical fire extinguishers shall be kept in the work area. They shall be charged and maintained in good working order.

D. CONTRACTOR shall ensure that on site personnel are aware of the location and proper use of all fire extinguishers and other fire/life safety equipment.

E. Maintain a fire watch for a minimum of (30) minutes after the cessation of work.

F. Maintain fire/life safety information in the project log.

G. A statement shall be prepared at the end of each workday, signed by CONTRACTOR, confirming that a survey of the work site has been made and that any unsafe fire/life safety conditions have been rectified.

H. Any work requiring open flame shall require a fire watch standing by with a 2A/60BC extinguisher until completion of said open flame work.

1.09 ADMINISTRATIVE REQUIREMENTS

A. Existing Conditions:
   1. Building materials that contain asbestos are known to be present at the Project site. Building materials that have not been previously tested, that may be affected by the project scope, should be immediately brought to the attention of the ~~Client and/or it is a 3rd party asbestos consultant~~ENGINEER.
      a. If any other materials are found which are suspected of containing asbestos or other hazardous materials, immediately stop work in the affected area and notify the ENGINEER. Handle suspected asbestos containing material according to this specification section.
   2. The abatement CONTRACTOR is responsible for notifying other Contractors in writing regarding asbestos work per OSHA requirements (29 CFR 1926.1101).

B. ENGINEER has the authority to stop the work at any time it determines that conditions are not within the specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the ENGINEER. Standby time required to resolve violations shall be at the contractor's expense, and any fines, for hazardous conditions or non- compliance will be at the contractor's expense and will not be grounds for change orders or time extension.

C. Stop work orders may be issued for, but not limited to the following:
   1. Breaks in barriers or leakage to other areas.
   2. Loss of negative air (0.02 inches of water column - minimum negative pressure to be maintained).
   3. Fiber concentrations outside the work area, which exceed 0.010 f/cc for any one PCM sample.
   4. If the CONTRACTOR disregards laws or regulations of any regulatory or governing body having jurisdiction.
   5. If the contractor's work presents a risk to the building, to building occupants to the general public or to the environment as determined by the ENGINEER.

PART 2 PRODUCTS

2.01 MATERIALS

A. CONTRACTOR must supply abatement materials and equipment that are undamaged, and in serviceable condition. Only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards, will be utilized.

B. All plastic, spray-on strippable coatings and structural materials used shall be UL certified as fire retardant or non-combustible. SDS for fire retardant materials shall be made available upon request.

C. Polyethylene sheeting utilized for worker decontamination units and barriers shall be black in color and shall be a minimum of six mils thick.

D. For disposal of asbestos waste, CONTRACTOR shall furnish EPA and OSHA labeled 6- mil polyethylene disposal bags.

E. Stick-on hazardous waste labels as per EPA or Cal-OSHA regulations.

F. CONTRACTOR shall supply, and post warning signs as required by applicable Cal-OSHA regulations. Signs should be printed in English and Spanish.

G. All replacement materials shall be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and brand name.

H. Damaged, deteriorating or previously used materials shall not be used and shall be removed from the Project site.

2.02 EQUIPMENT

A. General:
1. CONTRACTOR shall supply all fire extinguishers. Applicable recommendations of NFPA Standard 10, "Standard for Portable Fire Extinguishers", must be complied with by the CONTRACTOR. Fire extinguishers need to be located where they are most convenient and effective for their intended purpose, but not less than one extinguisher in each work area, the equipment room, outside work areas, and in the clean room.
2. CONTRACTOR shall provide first aid supplies that comply with governing regulations, and recognized recommendations within the construction industry. In addition, the Contractor Supervisor shall have current first aid training, including Cardiopulmonary Resuscitation (CPR).
3. Respirators shall be furnished to the abatement workers by CONTRACTOR. The type of respirator to be furnished shall be determined by air sampling CCR Title 8, Sections 1529 and 1532.1. The respirators shall have been tested and approved by National Institute of Occupational Safety and Health (NIOSH) for use in contaminated atmospheres.
4. Full body disposable protective clothing, including head, body, and foot coverings shall be furnished to workers and visitors in sizes adequate to accommodate movement without tearing.
5. Additional safety equipment (e.g. hard hats meeting the requirements of ANSI Standard Z89.1-1997 or later, eye protection meeting the requirements of ANSI Standard Z87.1-1989, safety shoes meeting the requirements of ANSI Standard Z41.1-2005, disposable gloves), as necessary, shall be furnished to all workers and authorized visitors.
6. Non-skid footwear shall be furnished to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination
7. Provide NIOSH-approved disposable respirator cartridges capable of filtering dusts, mists, and radionuclides.

B. Removal:
1. Filters on vacuums and exhaust equipment shall be HEPA filters and UL 586 labeled.
2. A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g., scrapers, wire cutters, brushes, utility knives, chisels, etc.) shall be furnished as needed.
3. Sprayers are required with pumps capable of providing 500 pounds per square inch (PSI) at the nozzle tip at a flow rate of 2 gallons per minute for spraying amended water.
4. Furnish a sufficient supply of detergent and disposable mops, rags, and sponges for work area decontamination.
5. A sufficient supply of HEPA filtered vacuum cleaning systems shall be furnished during cleanup.

PART 3 EXECUTION

3.01 REPORTING UNUSUAL EVENTS

A. When an event of unusual and significant nature, as determined by ~~FACILITY's 3rd Party Asbestos Consultant~~ENGINEER, occurs at the site, CONTRACTOR shall prepare and

Commented [RJ5]: Above it says 2?

submit a special report listing chain of events, persons participating, responses and similar pertinent information. When such events are known or predictable in advance, advise ENGINEER within five (5) calendar days.

3.02 REPORTING ACCIDENTS

A. If a significant accident occurs at the Project site or anywhere else work is in progress, the CONTRACTOR shall prepare and submit appropriate reports to ~~CITY or its~~ ENGINEER. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained.

3.03 PREPARATION

A. General:
   1. Secure the Work Area:
      a. Provide and maintain temporary partitions to prevent spread of dust, fumes, odors, and noise to permit continued ~~University~~ occupancy.
      b. Demarcate the regulated work area, as required by OSHA regulation 29 CFR 1926.1101, by posting warning signs
      c. Provide labels affixed to all asbestos waste containers, as required by OSHA regulation 29 CFR 1926.1101
      d. Do not block, or reduce width, of egress to exits.
      e. Conduct operations with minimum interference to corridors, exits, and ~~public~~ FACTILITY thoroughfares.
      f. Path of travel for debris removal shall be maintained dust free and clean at all times.
      g. Cover and protect windows, doors, and walls that are adjacent to asbestos work areas.
      h. Water used during this project shall be collected and prevented from entering storm water drains and building drains.
      i. Eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics is prohibited in the work area.
   2. Temporary Electrical Service:
      a. Furnish, install and maintain all necessary temporary electrical equipment, connections, etc., as necessary for the work. Before final acceptance, all temporary equipment and connections installed by CONTRACTOR shall be removed.
      b. Ground fault interrupter outlets shall be furnished and installed in order to allow for temporary electric power hook up by CONTRACTOR. CONTRACTOR shall either itself have a current State of California Contractor's C-10 (Electrical - General) license or furnish the services of an electrical Contractor having a current C-10 license, in order to accomplish this work.
      c. Comply with all applicable electrical code requirements and Cal/OSHA requirements for temporary electrical systems.
      d. CONTRACTOR shall provide sanitary facilities for abatement personnel outside of the work area and maintain them in a clean and sanitary condition throughout the project.

Commented [RJ6]: Is this correct? What is intent here?

Commented [RJ7]: This seems more like items for a university office remediation.

3.04 REMOVAL PROCEDURES

A. Asbestos-Containing Materials ~~(ACM)~~
   1. Prior to removal, CONTRACTOR shall detail the removal method(s) to be used, and steps to maintain compliance with applicable regulations, in the Contractor's ACM Work Plan.
   2. The Contractor's ACM Work Plan shall be submitted in accordance with section 1.03 above and shall include at a minimum:
      a. Location and Description of Work
      b. Work Schedule
      c. List of equipment and materials to be utilized during the Work
      d. Name and qualifications of all supervisors and work crew members, worker training and licenses
      e. Control measures and Work procedures, including containment diagrams, air monitoring and clearance procedures, decontamination procedures and facilities, respiratory protection program, personal protection, and all related procedures necessary to complete the Work in compliance with all applicable regulations.
      f. Waste management procedures, including storage, packaging, labeling, transportation and disposal of waste and wastewater consistent with regulations
   3. CONTRACTOR shall implement the ACM Work Plan as approved. Amendments to the plan shall be made in writing and approved prior to implementation.

3.05 AIR SAMPLING

A. ~~At no cost to the CITY,~~ CONTRACTOR shall re-clean work areas that do not meet the clearance criteria established herein. Cleaning shall include, but not limited to, wet wiping all affected work area surfaces.

B. In-Progress Environmental Air Monitoring: air samples may be collected at any time and location in or adjacent to the Project area to determine the concentration of airborne asbestos.

C. Personal Air Monitoring:
   1. At minimum, CONTRACTOR shall conduct representative (10% of crew) personal breathing zone air monitoring of its employees twice each shift and repeated daily.
   2. CONTRACTOR shall collect the asbestos air samples on 25-millimeter cellulose ester membrane filters in open-faced cassettes. Asbestos samples shall be analyzed by an accredited laboratory using NIOSH Method 7400 or approved equal.

D. Clearance for Asbestos Abatement Work Areas
   1. Work areas and all other decontaminated areas and cleaned areas shall be considered clean when the work area passes a visual inspection performed by the ~~on-site Consultant~~ENGINEER.
   2. If the area fails to meet the above clearance criteria, the CONTRACTOR shall be responsible for any and all additional sample analysis and related costs until the work area meets the above criteria.
   3. CONTRACTOR shall transport the sealed asbestos materials to an approved waste disposal site.

3.06 STOP WORK ORDER

A. The CITY will provide an on-site Certified Site Surveillance Technician (CSST) or Certified Asbestos Consultant (CAC) that shall have the right to stop the abatement work whenever contractor's work, engineering controls, or air monitoring results are not in accordance with published regulations, contractual restrictions, or the abatement specifications. ~~All costs resulting from stopping the abatement work shall be at contractor's expense~~. The Stop Work Order shall first be given verbally to CONTRACTOR at which point all work shall cease. This shall be immediately followed by a written notification to stop work. If the situation is not corrected within (48) hours, the CONTRACTOR shall be considered in breach of the Contract and will be subject to termination.

Commented [RJ8]: Do you want us to provide this 3rd party agent?

Commented [RJ9]: This is based on the scope being clearly identified. This would fall under rework discussions. Agree with overall intent, reworks for poor work procedures should not be paid for twice.

3.07 TRANSPORTATION AND DISPOSAL PROCEDURES

A. Transport and dispose of asbestos-containing waste in accordance with applicable federal, state, and local requirements and regulations. It is the CONTRACTOR's responsibility to determine current waste handling, transportation, and disposal regulations for the work site and for each waste disposal facility. Accurately complete the Manifest as required by Title 22, Division 4.5 of the State of California Code of Regulations. Indicate on the Manifest that the FACILITY is the hazardous waste generator and obtain the FACILITY's Environmental Protection Identification Number for use in completing the Manifest.

B. CONTRACTOR is responsible for the disposal of all asbestos-containing waste and other solid waste debris generated at the Project. CONTRACTOR shall give seventy-two (72) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the CONTRACTOR and FACILITY representative are present, and the FACILITY representative authorizes their release of the waste as described herein.

C. CONTRACTOR shall only dispose of asbestos-containing waste at a FACILITY approved facility under a FACILITY approved profile. The CONTRACTOR, transporter and disposal facility shall document generation, transport and disposal of the waste by use of the Manifest. CONTRACTOR shall provide completed copies of the manifest to FACILITY prior to the date of disposal for review and signature authorization. All hazardous waste manifests will be signed by the designated FACILITY staff. Legible copies of the Manifest shall be provided to the ENGINEER.

3.08 RE-ESTABLISHMENT OF THE WORK AREAS AND SYSTEMS

A. Reestablishment of the work area shall only occur following the completion of clean-up procedures, after clearance has been performed and documented, and final clearance of the area issued by the on-site Certified Site Surveillance Technician (CSST) or Certified Asbestos Consultant (CAC).

PART 4 ADDITIONAL REQUIREMENTS

4.01 PROJECT SPECIFIC INFORMATION

A. The Project Site is part of and within the FACILITY and the FACTILITY could have ACM material that impacts the project site.

Commented [AE10]: JR: Mention soil management plan

A. This specification does not include Natural Occurring Asbestos (NOA) items. ~~the overall Project and the portion of the Project that requires ACM management.]~~

B. ~~ACM been detected in building materials at the Project Site where the building material samples were collected and analyzed for ACM by [ACM CONSULTANT NAME], as described in their [REPORT TITLE AND DATE] (Asbestos Survey Report Report) dated [DATE]. This Asbestos Survey Report provides information on the materials that were sampled, analytical results, and locations of the confirmed ACM materials within the Project area. A copy of this report is included herewith AND is part of this specification section. [INCLUDE REPORT]~~

END OF SECTION

Commented [AE11]: JR: NOA will be monitored and handled as an allowance per the plan to be developed

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SECTION 01 35 43.15

LEAD CONTAINING MATERIAL MANAGEMENT

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements.

For Part 4, the Project Team should use Edit >Find> bracket"[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Part 4 is complete.

The following materials are draft, to be edited to reflect project specific needs. For each project specific application, draft and final draft material is to be submitted to the CIP Engineering Manager and CIP Construction Manager for review. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For a guidance on what information should be included in each article, refer to: ***Hazardous Material Investigation and Remediation Protocol, Technical Memorandum 1, March 2019*** *or latest version.*

2019-10-01: Suggested modifications. Need City to review and approve.

2020-01-28: Confirmed by City for 60% on 01/15/2020.

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes specifications for the abatement and disposal of Lead Containing Material (LCM) including Lead Based Paint (LBP) historically used in building and construction materials during construction of the FACILITY. The FACILITY was constructed originally in the 1950s. The Project site is part of and within the FACILITY.

~~B. Related Sections~~

~~1. Section 01 35 23 - Plant Safety Requirements~~

~~2. Section 01 35 43.05 - Hazards and Hazardous Materials Mitigation~~

~~3. Section 01 35 43.14 - Asbestos Containing Material Management~~

~~4. Section 01 35 43.16 – Polychlorinated Biphenyls management~~

~~C.~~B. The FACILITY and CONTRACTOR and ENGINEER have not identified material suspected to be LCM for this project. If LCM is identified, the work will be treated as a regulated site condition under the contract.~~contracted a lead consultant to conduct a survey within the Project area. The findings of the survey are included in the report referenced in PART 4 of this Specification Section.~~

~~D.~~C. If ACM must be abated and disposed, the CONTRACTOR shall ~~be aware of all conditions of the Project and is responsible for verifying~~determine quantities and

Commented [RJ1]: True up with final Hawkins contract. This work to be done as an allowance or change order for differing site conditions. Not in cost model

locations of ~~all~~ the LCM identified at the Project site. All quantities shall be verified by the CONTRACTOR and no claim for additional costs will be accepted. ~~Any quantities implied in these Specifications are illustrative only and are not intended to represent actual quantities for bidding purposes~~.

1. CONTRACTOR shall furnish all labor, materials, services, insurance, equipment, and decontamination facilities to carry out the work identified in this specification ~~and associated project drawings~~.
2. All lead work shall be performed by persons knowledgeable, qualified and trained in the removal, treatment, handling and disposal of LCM. In addition, such persons shall comply with applicable California Occupational Safety and Health Administration (Cal-OSHA), California Air Resources Board Ambient Air Quality Standards, California Department of Public Health (CDPH) and local mandates. The workers performing the lead abatement, lead-related construction work, or disturbance of LCM shall possess current CDPH lead certification and at least one CDPH-Certified supervisor will be available as required by Title 17 CCR subsection 36100.
3. Where methods or procedures are specified in this specification section, they shall constitute minimum measures and shall in no way relieve CONTRACTOR of sole responsibility for the means, methods, techniques, sequences or safety measures in connection with the work.

~~E.~~D. Description of Work

1. If the CONTRACTOR encounters any unidentified and/or untested material that is suspected to be lead-containing, CONTRACTOR shall stop all work in the affected area and notify the ENGINEER. The CONTRACTOR will arrange for sampling and testing of the suspect material.

~~1.~~2. The lead abatement work includes removal and proper disposal of all LCM and related material waste from the Project site. ~~CONTRACTOR shall refer to the Lead Investigation Report, referred in PART 4 of this specification section, for the location and estimated quantities of LCM~~.

~~2. If the Contractor encounters any unidentified and/or untested material that is suspected to be lead containing, CONTRACTOR shall stop all work in the affected area and notify the ENGINEER. The ENGINEER will arrange for sampling and testing of the suspect material.~~

3. The removal and disposal of any previously unidentified LCM shall be performed by CONTRACTOR at the prices ~~awarded for this Contract~~approved by the ENGINEER.
4. Work included:
   a. Furnishing of all labor, materials, facilities, equipment, services, and insurance necessary to perform the work;
   b. Maintenance of work area/site security;
   c. Preparation of work area, including installation of containment and decontamination areas as required;
   d. Removal, segregation, and/or containment of any LCM encountered during the project work;
   e. Cleanup and final decontamination of all work areas;
   f. Implementation of a worker protection program in compliance with all applicable regulations;
   g. Proper storage, wrapping/bagging, labeling, transportation and, disposal of all waste generated as part of lead abatement activities;

h. Prevention of lead dust from migrating out of the work area(s);
i. Cleaning of all work areas at the end of each workday and collection and storage of all lead-containing waste as specified in Part 3 of this section; and
j. Disposal of LCM waste streams as specified herein.

1.02 CODES COMPLIANCE AND REGULATIONS

A. CONTRACTOR shall assume full responsibility and liability for compliance with all applicable federal, state, and local regulations. Specifically, regulations pertaining to work practices, protection of workers, visitors to the site, persons occupying areas adjacent to the site, hauling, and disposal. As required by applicable federal, state, and local regulations, CONTRACTOR is responsible for providing medical examinations for and maintaining medical records of personnel.

B. CONTRACTOR shall comply with all pertinent laws, rules, and regulations existing at the time of the work including, but not limited to the following:
   1. Federal Regulations
      a. United States Environmental Protection Agency (EPA), Title 40, Code of Federal Regulations (CFR), Part 745
      b. 49 CFR Parts 171 through 180, Department of Transportation (DOT), Hazardous Substances
      c. 29 CFR 1926.62 and 29 CFR 1910.1025, Occupational Exposure to Lead
      d. 29 CFR 1910.134 and 42 CFR Part 84, Respiratory Protection
      e. 29 CFR 1910.1200, Hazard Communication
      f. 29 CFR 1910.145, Accident Prevention Signs and Tags
      g. 29 CFR 1910, Subpart I, Personal Protective Equipment
      h. 29 CFR 1910.1020, Access of Employee Exposure/Medical Records
      i. National Electrical Code, NFPA70
   2. State and Local Regulations
      a. Title 8 CCR, Section 1532.1, Lead in Construction
      b. Title 8 CCR, Section 5198, Lead in General Industry
      c. Title 17 CCR, Division 1, Chapter 8 (35001-361000), Accreditation, Certification, and Work Practices for Lead-Based Paint and Lead Hazards
      d. Title 8, Division 1, Chapter 4, Division of Industrial Safety
         1) Title 8 CCR, Section 3203, Injury and Illness Prevention Program
      e. Title 8 CCR, Section 5194, Hazard Communication
      f. Title 22 CCR, Section 66699, Persistent and Bioaccumulative Toxic Substance
      g. Title 22 CCR, Hazardous Waste Handling
         1) Health and Safety Code, Section 25249.5 and 25249.6
      h. California Labor Code, Sections 6501.5, 6501.7, 6501.8, and 6501.9.
   3. Miscellaneous Standards and References
      a. Underwriters Laboratories (UL) Standard 586, 2009 High Efficiency, Particulate, Air Filter Units.

b. American National Standards Institute (ANSI), ANSI Z9.2, Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems.
c. ANSI, ANSI Z88.2, Practice for Respiratory Protection.
d. National Fire Protection Association (NFPA), Standard 10, Standard for Portable Fire Extinguishers.
e. Z88.2-2015, Practice for Respiratory Protection
f. Department of Housing and Urban Development, Guidelines for the Evaluation & Control of Lead-Based Paint Hazards in Housing (2012 edition)

1.03 SUBMITTALS

A. CONTRACTOR shall submit the following documentation prior to the start of work:
1. A detailed job-specific plan of the work procedures to be used for the work to be completed (CONTRACTOR's Lead Abatement Work Plan). The plan shall be compliant with this specification and regulations.
2. Proof of CDPH lead supervisor and worker training.
3. Where biological monitoring is required, submit test result documentation verifying employees have completed blood lead level and Zinc Protoporphyrin tests in accordance with Title 8 CCR, Section 1532.1.
4. Evidence of notification to Cal-OSHA as required by Title 8 CCR, Section 1532.1, where applicable.
5. Notify CDPH no less than five working days in advance of Abatement by submitting an Abatement of Lead Hazard Notification, CDPH Form 8551.
6. Physician's written medical opinion, current to within one year, that CONTRACTOR employees are physically able to wear respiratory protection.
7. Documentation of respirator fit-testing for all CONTRACTOR employees and agents who are required to wear a respirator. Fit-testing shall be current to within one year.
8. Documentation of medical surveillance required in Title 8 CCR, Section 1532.1 (j).
9. If rental equipment is to be used during lead handling and disposal, a copy of the written notification concerning the intended use of the equipment that was furnished to the rental agency.
10. Submit any current and valid licenses, permits, and notices required by federal, state, local regulations and proof of timely transmittal of notices to the respective agency requiring the notices including, but not limited to:
    a. Cal-OSHA in accordance with Title 8 CCR, Section 1532.1 (p).
    b. Proof of Bay Area Air Quality Management District (BAAQMD) permits for HEPA-filtered air filtration machines.
11. An emergency preparedness plan as specified in Paragraph 1.07 below.
12. Safety Data Sheets (SDS) for solvents, caustic stripping agents, paints, encapsulants, adhesives, detergents, and replacement materials, as necessary.

B. CONTRACTOR shall submit the following information on a daily basis during the progression of work or as requested:
1. Copies of daily personal air sample logs and analytical results.
2. Copies of daily project site entry logbooks with information on worker and visitor access.

3. Logs documenting filter changes on respirators, HEPA vacuums, differential pressure air filtration devices, and other engineering controls.

C. CONTRACTOR shall submit the following close-out information following completion of the Project:
   1. Any documentation listed in Paragraphs 1.03.A or 1.03.B above not collected during the Project.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Qualifications of CONTRACTOR (or Subcontractor as applicable):
      a. Work performed under this Section shall be by a single CONTRACTOR.
      b. CONTRACTOR shall have a minimum of five (5) years' experience as an approved lead abatement contractor unless approved by the ENGINEER to have less than five (5) years' experience. If requested, the CONTRACTOR shall provide the names and locations of five (5) projects of similar size and scope that it has completed within the previous five years.
      c. The CONTRACTOR must hold all insurance and bonds as required by other sections of this specification and maintain as valid and current for the duration of the Project.
   2. Qualifications of Lead Abatement Personnel:
      a. All work shall be completed utilizing fully-qualified persons who are trained, experienced, and knowledgeable in the proper techniques and procedures for lead abatement activities covered by this Section.
      b. Lead Workers: All workers performing lead-related work shall be currently certified as CDPH lead workers.
      c. Lead Supervisor: The CONTRACTOR's Supervisor shall be identified in writing and currently certified as an CDPH Lead Supervisor.
   3. Qualifications of Analytical Laboratory:
      a. The CONTRACTOR shall submit lead air samples to an analytical laboratory that is accredited by the American Industrial Hygiene Association's (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP). CONTRACTOR shall choose another ELLAP accredited lab if their current ELLAP accredited lab does not maintain accreditation throughout the duration of this project.

B. Pre-Construction Meeting: At least one week before work commences, a pre-construction meeting shall be held at a location designated by the ENGINEER. Attendees shall include the ENGINEER and CONTRACTOR; and others as necessary. The agenda shall include a review of project safety requirements, CONTRACTOR's Lead Work Plan, emergency contacts and notification plan, containment and work area design, facility requirements, submittals, and any other issues pertinent to the safe execution of the lead abatement work.
   1. Work shall not commence until all required submittals and plans have been approved by the ENGINEER.

1.05 NOTICES

A. Post a list containing the names, addresses, and telephone numbers of CONTRACTOR staff, and emergency medical services.

B. Additional postings shall include:
   1. Visitor Entry and Exit Log.
   2. Employee Daily Sign in Log.
   3. Entry and Exit Procedures.

1.06 SITE SECURITY

A. Access to the work areas shall be limited to authorized, trained, and properly equipped personnel, including the CONTRACTOR, Subcontractor(s), CONTRACTOR's employees, and regulatory agency inspectors.

B. Entry into the work area by unauthorized individuals shall be reported immediately.

C. The CONTRACTOR shall be responsible for Project site security during abatement operations in order to protect work efforts and equipment.

1.07 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed by the CONTRACTOR prior to abatement initiation.

B. Emergency procedures shall be in written form and prominently posted. The CONTRACTOR shall ensure that all persons entering the work area read these procedures and understand the Project site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include considerations of fire, explosion, electrical hazards, slips, trips and falls, confined spaces, and heat-related injury. Written procedures shall be developed, and employee training procedures shall be furnished by the CONTRACTOR.

D. Employees shall be trained in evacuation procedures in the event of work place emergencies.
   1. For minor injuries and illness, employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work area to obtain proper medical treatment.
   2. For serious injury or illness, worker decontamination shall take least priority. After stabilizing the injured worker, remove him from the work area and seek proper medical treatment.
   3. Telephone numbers of all emergency response personnel shall be prominently posted in the clean and equipment rooms.

1.08 FIRE PROTECTION

A. All plastic sheet and structural materials used in the abatement process shall be UL approved and certified as fire retardant or noncombustible.

B. All combustible rubbish and debris shall be properly disposed of at the end of each working day.

C. A minimum of ~~two~~ one (~~2~~1) 4A/60BC dry-chemical fire extinguishers shall be kept in the work area. They shall be charged and maintained in good working order.

Commented [RJ2]: Matches item below.

D. CONTRACTOR shall ensure that on site personnel are aware of the location and proper use of all fire extinguishers and other fire/life safety equipment.

E. Maintain a fire watch for a minimum of thirty (30) minutes after the cessation of work.

F. Maintain fire/life safety information in the project log.

G. A statement shall be prepared at the conclusion of each workday, signed by CONTRACTOR, confirming that a survey of the work site has been made and that any unsafe fire/life safety conditions have been rectified.

H. Any work requiring open flame shall require a fire watch standing by with a 2A/60BC extinguisher until completion of the open flame work.

1.09 EXPOSURE ASSESSMENT

A. For disturbance of LCM, as defined in this Specification, CONTRACTOR shall comply with the exposure assessment requirements of Title 8 CCR Section 1532.1, Subsection (d)(2). For all disturbance of LCM related tasks not listed in Title 8 CCR Section 1532.1, Subsection (d)(2), CONTRACTOR shall perform worker exposure monitoring upon initiation of the work. The workers performing these tasks shall be trained in accordance with the Hazard Communications Standard, Section 5194, including but not limited to, the requirements concerning warning signs and labels, Safety Data Sheets (SDS), and employee information and training.

B. Provide an exposure assessment where the workers are performing Lead Related Construction work. If historical data collected within the 12 months prior to the Work performed indicates worker exposure is below the Permissible Exposure Limit (PEL), and the Work being performed closely resembles the process, type of material, control methods, work practices, and environmental conditions, additional exposure assessment is not required.

C. Where Work being performed indicates an exposure above the Action Level, each employee is required to have current blood lead level and Zinc Protoporphyrin testing, medical clearance for negative pressure respirator use, and respirator fit testing.

D. The required exposure assessment shall not exceed 12 months from the date the samples were collected to the date the Lead Related Construction Work or disturbance of Lead Containing Paint is performed.

E. Submission and review by the ENGINEER of the objective data or exposure assessment is required prior to performing Lead Related Construction work.

1.10 ADMINISTRATIVE REQUIREMENTS

A. Existing Conditions:

1. Building and construction materials that contain lead are known to be present at the Project site. The materials that have not been previously tested, that may be affected by the project scope, shall be immediately brought to the attention of the ENGINEER.

a. If any other materials are found which are suspected of containing lead or other hazardous materials, immediately stop work in the affected area and notify the ENGINEER. Handle suspected LCM according to this specification section.

2. CONTRACTOR is responsible for notifying other Contractors in writing regarding lead work per Cal-OSHA requirements (8 CCR 1532.1).

B. ENGINEER has the authority to stop work at any time if it determines that conditions are not in conformance with these specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the ENGINEER. Standby time required to resolve violations shall be at the contractor's expense, and any fines, etc., for hazardous conditions or non-compliance shall be at the contractor's expense and shall not be grounds for change orders or time extension.

C. Stop work orders may be issued for, but not limited to, the following:

1. Breaks in barriers or leakage to other areas.
2. Loss of negative air (0.02 inches of water column - minimum negative pressure to be maintained).
3. Lead concentrations outside the work area which exceed 30 $\mu g/m^3$ for any one AA lead sample.
4. CONTRACTOR disregarding laws or regulations of any regulatory or governing body having jurisdiction.
5. CONTRACTOR's work presenting a risk to the building, building occupants, the general public, or to the environment as determined by the ENGINEER.

PART 2 PRODUCTS

2.01 MATERIALS

A. CONTRACTOR must supply abatement materials and equipment that are undamaged and in serviceable condition. Only materials and equipment that are recognized as being suitable for the intended use, in compliance with appropriate standards, shall be utilized.

B. All plastic, spray-on, strippable coatings and structural materials used shall be UL certified as fire retardant or non-combustible. SDS for fire retardant materials shall be made available upon request.

C. Polyethylene sheeting utilized for worker decontamination units and barriers shall be black in color and shall have a minimum thickness of six (6) mil.

D. For disposal of lead waste, CONTRACTOR shall furnish EPA and Cal-OSHA labeled 6 mil polyethylene disposal bags or disposal containers meeting the requirements of Title 22.

E. Stick-on hazardous waste labels as per EPA or Cal-OSHA regulations.

F. The CONTRACTOR shall supply and post warning signs as required by applicable Cal-OSHA regulations. Signs should be printed in English and Spanish.

G. All replacement materials shall be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and brand name.

H. Damaged, deteriorating, or previously used materials shall not be used and shall be removed from the Project site.

2.02 EQUIPMENT

A. General:

1. CONTRACTOR shall supply all fire extinguishers and must comply with applicable recommendations of NFPA Standard 10, "Standard for Portable Fire Extinguishers." Fire extinguishers must be located where they are most convenient and effective for their intended purpose, with no fewer than one extinguisher in each work area, equipment room, outside work area, and clean room.
2. CONTRACTOR shall provide first aid supplies that comply with governing regulations and recognized recommendations within the construction industry. In addition, the CONTRACTOR Supervisor shall have current first aid training, including Cardiopulmonary Resuscitation (CPR).
3. Respirators shall be furnished to the abatement workers by the CONTRACTOR. The type of respirator to be furnished shall be determined by air sampling per CCR Title 8, Section 1532.1. The respirators shall have been tested and approved by the National Institute of Occupational Safety and Health (NIOSH) for use in contaminated atmospheres.
4. Full body disposable protective clothing, including head, body, and foot coverings shall be furnished to workers and visitors in sizes adequate to accommodate movement without tearing.
5. Additional safety equipment (e.g. hard hats meeting the requirements of ANSI Standard Z89.1-1997 or later, eye protection meeting the requirements of ANSI Standard Z87.1-1989, safety shoes meeting the requirements of ANSI Standard Z41.1-2005, disposable gloves), as necessary, shall be furnished to all workers and authorized visitors.
6. Non-skid footwear shall be furnished to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination
7. Provide NIOSH-approved disposable respirator cartridges capable of filtering dust, mists, and radionuclides.

B. Removal:

1. Filters on vacuums and exhaust equipment shall be HEPA filters and UL 586 labeled.
2. A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g., scrapers, wire cutters, brushes, utility knives, chisels, etc.) shall be furnished as needed.
3. Sprayers are required with pumps capable of providing 500 pounds per square inch (PSI) at the nozzle tip at a flow rate of 2 gallons per minute for spraying amended water.
4. Furnish a sufficient supply of detergent and disposable mops, rags, and sponges for work area decontamination.
5. A sufficient supply of HEPA filtered vacuum cleaning systems shall be furnished during cleanup.

PART 3 EXECUTION

3.01 REPORTING UNUSUAL EVENTS

Commented [RJ3]: 1.08 C says but I changed to one per requirements here.

A. When an event of unusual and significant nature, as determined by ENGINEER~~FACILITIES' 3rd Party Lead Consultant~~, occurs at the site, CONTRACTOR shall prepare and submit a special report listing the chain of events, persons participating, responses and similar pertinent information. When such events are known or predictable in advance, advise ENGINEER within five (5) calendar days.

3.02 REPORTING ACCIDENTS

A. If a significant accident occurs at the site or anywhere else work is in progress, CONTRACTOR shall prepare and submit appropriate reports to ENGINEER. For this purpose, a significant accident is defined to include events where personal injury is sustained, or substantial property loss is sustained.

3.03 PREPARATION

A. Work Area Preparation and Work Practices:
   1. Where exposure monitoring indicates Worker exposure is below the PEL, comply with the requirements of this section and the "Monitoring" section of this Specification.
   2. Disturbance of LCM shall be performed using wet methods.
   3. Work requiring overhead disturbances shall require a means of capturing debris, thus preventing an uncontrolled release on the worker or the surfaces below.
   4. For disturbances utilizing local exhaust dust collection devices, the equipment shall be designed and furnished with a HEPA filtered vacuum attachment approved by the manufacturer.
   5. Where Components are to be removed, loose LCM shall be removed by manual means using wet methods.
   6. Where a Component is attached and painted onto another surface and the Component is to be removed from the adjoining surface, the paint shall be cut with a razor knife to reduce the potential of paint chip debris during Component removal.
   7. If a Component being removed shall be disposed of rather than reinstalled, manually cut the Component into manageable sections for disposal using wet methods or mechanically cut using a manufacturer-approved HEPA filtered local exhaust dust collector.
   8. If a Component is to be reused, loose paint or rough edges may require scraping or sanding. Scraping or sanding must be performed manually using wet methods or mechanically with a manufacturer approved HEPA filtered local exhaust attachment.
   9. For solid core surfaces where penetration or welding are required, the LCM shall be removed from the area impacted using wet methods. Layers of paint shall be removed before impact to the surface commences.

B. Cleanup Procedures:
   1. During the entire process of Lead Related Construction work, clean debris generated using wet methods and/or HEPA Vacuuming.
   2. At the completion of the Lead Related Construction Work, clean surfaces within the impacted Work Area.
   3. When HEPA filtered vacuums are utilized, vacuum from the area of impact to the outer perimeter of the polyethylene sheeting to remove visible debris. If vacuuming cannot remove visible debris, wet wiping shall also be required.

4. When wet wiping the Work Area, wipe from the area of impact to the outer perimeter of the polyethylene sheeting to remove visible debris.
5. Tools and equipment utilized in the work area shall be wet wiped to remove visible debris.

3.04 ABATEMENT

A. Construction Materials:
   1. Perform abatement and removal of lead-containing paint and materials in accordance with all Federal, State, and local regulations, codes, and ordinances as detailed in Section 1.02 Codes Compliance and Regulations.

B. Soil Abatement:
   1. Surface Contamination:
      a. Remove Lead Contaminated Soil from the locations and to a depth specified in the Scope of Work contained in PART 4.
      b. In the absence of a specified depth of soil removal identified in the Scope of Work, submit, prior to the bid, a Request for Clarification regarding the quantity of soil to be removed.
      c. Submit a written soil abatement plan prior to initiation of the Project.
      d. No soil abatement shall proceed until the Work plan has written approval by the ENGINEER.
      e. Refer to the waste handling and transportation section of this Specification for the handling, characterization, and disposal of waste.

C. Alternate Procedures:
   1. If specified procedures cannot be utilized, a request must be made in writing to the ENGINEER establishing details of the problem encountered and recommended alternatives.
   2. Alternate procedures shall provide equivalent or greater protection than procedures that they replace.
   3. Prior to implementation, alternative procedures shall be submitted and approved in writing by the ENGINEER.

D. Clean Up Procedures
   1. During the entire progression of work, perform continuous cleaning of debris generated using wet methods and/or HEPA filtered vacuuming.
   2. At the completion of work, clean surfaces within the impacted Work Area, including but not limited to, tools, equipment, and polyethylene sheeting, to remove visible debris from the Work Area.
   3. Tools and equipment utilized in the Work Area shall be thoroughly cleaned. Non-electrical tools and equipment shall be cleaned monthly and before removal from the Work Area by HEPA vacuuming and washing using a lead specific detergent or other suitable cleaning agent.
   4. Electrical tools and equipment shall be HEPA vacuumed and cleaned by wet wiping limiting the amount of water used to avoid electrical hazards.

5. Remove polyethylene sheeting, except for critical barriers, by folding it into itself starting at the top of the sheet.
6. Following removal of polyethylene sheeting, a final cleaning of surfaces in the Abatement workspace shall be performed by HEPA vacuuming, wet wiping, and a final HEPA vacuuming.
7. When HEPA vacuums are utilized, vacuuming shall be performed from the top down and from the area of impact to the outer edge of the polyethylene sheeting.
8. Apply no less than one continuous coat of approved paint or primer to abated surfaces, where applicable.
9. At the completion of the final clean up, the DHS certified supervisor shall inspect the Work Area for visible debris. If debris is identified, repeat the final cleaning process.
10. Wet wiping, washing, and cleaning required by this section shall include the Removal of visible debris by cleaning with a lead specific detergent or other suitable cleaning agent in clean water, followed by rinsing with clean water and clean rags, following the same sequence of cleaning as with vacuuming.
11. Refer to the waste handling and transportation section of this Specification for disposal of waste generated by this process.

3.05 LCM WASTE HANDLING AND TRANSPORTATION

A. Characterization of LCM Waste:
   1. Until analytical results are available, waste materials (including water containing paint chips) shall be treated as hazardous. Visible paint chips shall be separated from waste water before characterization. Following removal of solids, the waste water shall be characterized to determine disposal requirements. Paint chips removed from the waste water may be disposed of as assumed RCRA hazardous waste or characterized to determine disposal requirements.
   2. Characterize LCM waste streams as follows:
      a. Collect a representative sample of the waste material.
      b. For a pile of waste, take one sample of a proportionate combination of Component in the pile. If a large quantity of waste is generated, no fewer than four samples may be required.
      c. For large wood Components such as windows, doors, etc., a representative sample of each Component of similar characteristics, paint history, etc., shall be collected and tested. A full depth core sample, not less than one-inch diameter, of the Component is to be collected. The core sample shall include the substrate and paint coatings on both sides of the Component, as applicable.
   3. Analysis of the LCM waste characterization samples shall be performed as follows:
      a. Waste generated by chemical stripping shall, in addition to the requirements for determining the solid and soluble lead concentrations, shall be tested for corrosiveness and other contaminants, as applicable, resulting from the chemical stripping process.
      b. Analyze samples for Total Threshold Limit Concentration (TTLC):
         1) If results are less than 50 mg/kg (milligrams/kilogram), the waste is not hazardous and shall be disposed as general construction waste.
         2) If sample results are 50 mg/kg or greater, the waste shall be tested for Soluble Threshold Limit Concentration (STLC).

c. Where waste is required to be tested for STLC the following shall apply:
   1) If the STLC result is less than 5 mg/L (milligrams/liter) the material shall be disposed at a Class II landfill waste. Evidence of such results of the STLC testing shall be required by the landfill before waste is accepted. No further testing is required.
   2) If the STLC results are 5 mg/L or greater, the waste is a California regulated waste and the material shall be tested using the federally mandated Toxicity Characterization Leaching Procedure (TCLP).
d. Where waste is required to be tested by TCLP the following shall apply:
   1) If the TCLP is less than 5 mg/L, the waste is a California regulated hazardous solid waste (non-RCRA). The material shall be disposed in a Class I hazardous waste landfill.
   2) If the TCLP is equal to or greater than 5 mg/L, the waste is a federally regulated hazardous waste solid (RCRA). The waste shall then be disposed in a Class I hazardous waste landfill.
e. Personal and commercial wash water with lead contamination shall be handled as follows:
   1) Filter the waste water through cheesecloth, or other similar filtering media, to remove the gross debris. Separate the waste streams and characterize these in compliance with this Specification.
   2) If the waste water is identified as a RCRA or California regulated hazardous waste (Non-RCRA) by STLC and TCLP, filter the waste water by power pumping it through a 20-micron pore size filter. The filtered water shall be tested as described for waste in this Specification.
   3) If test results categorize the filtered water as non-hazardous, it may be disposed of in the sewer system.
   4) Wastewater, filtered or otherwise, shall not be discharged in storm drains, gutters or allowed to sheet flow over the surface of the ground.

B. LCM Waste Handling:
   1. Waste, hazardous and non-hazardous, shall be disposed of at an authorized site in accordance with provisions of this Specification and applicable Federal, State, and local laws.
   2. Any waste determined to be hazardous through analytical testing, shall be kept in a secured area or lockable container that is inaccessible to persons other than authorized personnel working on the Project. Hazardous waste containers shall be labeled “Hazardous-Waste – Contains Lead” and labeled with the date waste collection commenced.
   3. Hazardous waste shall not remain on the Project site beyond 90 calendar days of the date generated. It shall be removed from the Project site and transported to an approved landfill before 90 calendar days has elapsed.
   4. Waste shall not be transported from the work are to the storage container or waste hauler’s vehicle while staff are present in the path of travel. Where a path of travel cannot be cordoned off, the transportation of waste must be completed prior to or after staff are on site.
   5. Once hazardous waste is removed from the Project site, ensure it is disposed of in an approved landfill within 6 calendar days. The waste shall not be transported to another site for commingling of waste from a source other than the site of original

generation. This requirement shall be documented by the proper execution of a Uniform Hazardous Waste Manifest signed by the landfill operator.

6. Hazardous and non-hazardous waste shall be kept in different containers and stored in separate locations. Commingling of waste is not permitted.
7. As the work progresses, to prevent exceeding available storage capacity on the Project site, sealed and labeled containers of lead waste shall be removed and transported to the prearranged disposal location.
8. Containers used for hazardous waste shall meet the requirements of EPA and DOT for hazardous waste storage and transport. At a minimum, disposal packaging of LCM fragments, dust, and debris shall be in 6-mil polyethylene (plastic) bags that are airtight and puncture resistant.
9. Any debris or residue observed on containers or surfaces outside of the Work Area resulting from clean up or disposal activities shall immediately be cleaned using HEPA filtered vacuum equipment and/or wet methods as appropriate.
10. Materials not contained in bags or other appropriate disposal containers shall not be placed in lead waste storage containers, nor shall storage containers be used for non-lead waste. To avoid damage, packaged waste shall be placed, not thrown, into the storage containers.
11. Lead Contaminated Soil shall be transported in plastic lined containers.

C. Transportation of LCM Non-Hazardous Waste:
   1. Receipts from the disposal facility, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the ENGINEER within 48 hours of disposal. The waste manifest shall be signed by the generator, the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, and signature of the transporter shall also appear on the manifest.

D. Transportation of LCM Hazardous Waste:
   1. Hazardous waste shall be transported by a RCRA/DOT/EPA certified hazardous waste transporter. Provide evidence that the hazardous waste transporter meets the requirements of this Specification.
   2. The work of this section includes responsibility for actions of the hazardous waste transporter as it pertains to waste removal and disposal related to the work of this Specification.
   3. Identify the facility to which the waste generated by this Specification shall be taken. Evidence shall be provided verifying the facility is licensed and permitted to receive and handle non-hazardous lead-containing waste and/or hazardous lead-containing waste as applicable.
   4. Waste disposed as hazardous shall be transported under a Uniform Hazardous Waste Manifest. The generator copy of this manifest shall be submitted to the ENGINEER within five (5) calendar days of transport.
   5. Dump receipts, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the ENGINEER within 48 hours of disposal. The Uniform Hazardous Waste Manifest shall be signed by the generator (or designee), the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, USEPA ID number and signature of the transporter shall also appear on the manifest.

6. The enclosed cargo area of trucks or containers shall be free of debris and lined with 6-mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and must extend up the walls. Wall sheeting shall be overlapped and taped into place.
7. During transport, drums and other containers shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural Components shall be secured to prevent shifting and bags shall be placed on top.

E. General:
1. Secure the Work Area:
   a. Provide and maintain temporary partitions to prevent the spread of dust, fumes, odors, and noise to permit continued occupancy.
   b. Demarcate the regulated work area, as required by Cal-OSHA regulation Title 8 CCR, Section 1532.1, by posting warning signs
   c. Provide labels affixed to all lead waste containers, as required by Cal-OSHA regulation Title 8 CCR, Section 1532.1
   d. Do not block, or reduce the width, of egress to exits.
   e. Conduct operations with minimum interference to corridors, exits, and public thoroughfares.
   f. Path of travel for debris removal shall be maintained dust free and clean at all times.
   g. Cover and protect windows, doors, and walls that are adjacent to lead work areas.
   h. Water used during this project shall be collected and prevented from entering storm water drains or building drains.
   i. Eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics is prohibited in the work area.
2. Temporary Electrical Service:
   a. Furnish, install, and maintain all necessary temporary electrical equipment, connections, etc., as necessary for the work. Before final acceptance, all temporary equipment and connections installed by CONTRACTOR shall be removed.
   b. Ground fault interrupter outlets shall be furnished and installed in order to allow for temporary electric power hook up by CONTRACTOR. CONTRACTOR shall either itself have a current State of California contractor's C-10 (Electrical - General) license or furnish the services of an electrical Contractor having a current C-10 license, in order to accomplish this work.
   c. Comply with all applicable electrical code requirements and Cal-OSHA requirements for temporary electrical systems.
   d. CONTRACTOR shall provide sanitary facilities for abatement personnel outside of the work area and maintain them in a clean and sanitary condition throughout the Project.

3.06 MONITORING

A. Project Management and Inspection:
   1. The ~~CITY~~ ENGINEER has the right to perform air, wipe, and visual monitoring at any time.
   2. The ~~CITY~~ ENGINEER shall proceed in accordance with the terms and conditions of the Contract Documents whenever the Work or protective measures are not in compliance with applicable governmental regulations, Contract requirements, and/or threatens the adjoining environment with lead contamination.
   3. Where exposure monitoring indicates exposure is at or above the PEL or AL, the CONTRACTOR must comply with Title 8, CCR Section 1532.1 (e) through (n).

B. Employee – Personal Air Monitoring:
   1. Provide air monitoring as required by Title 8 CCR, Section 1532.1. Results shall be provided within ten working days of sampling. If the intent is to utilize such exposure assessment documentation, and Work is to commence earlier than ten working days, submit results 24 hours in advance of the start of Work.

C. Clearance Inspection:
   1. Clearance Inspection for Lead Related Construction Work shall include a visual inspection of the Work Area by the ENGINEER prior to occupancy for normal activity. Other provisions of the Clearance Inspection include:
      a. Do not remove barriers designating a regulated Work Area until a written release from the ENGINEER is provided.
      b. The ENGINEER has the right to collect wipe samples as part of the Clearance Inspection.
   2. Clearance Inspection for Abatement shall include a visual inspection of the Work Area by the prior to collection of environmental samples (dust, wipe, and/or soil samples, as applicable). Other provisions of the Clearance Inspection include:
      a. ENGNEER shall collect environmental samples.
      b. Results of samples shall comply with Title 17 CCR before the Work Area is released for normal occupancy.
      c. Where samples fail to meet regulated clearance levels of Title 17 CCR, clean the Work Area as required for final cleaning in the Clean Up Procedures section of this Specification.
      d. Following cleaning, the visual inspection and environmental sampling shall be repeated as described above. This process shall continue until the clearance level of Title 17 CCR is provided.

D. At no additional cost to the CITY, the CONTRACTOR shall re-clean work areas that do not meet the clearance criteria established herein. Cleaning shall include, but not be limited to, wet wiping all affected work area surfaces.

E. In-Progress Environmental Air Monitoring: air samples may be collected at any time and at any location in or adjacent to the Project area to determine the concentration of airborne lead.

Commented [RJ4]: This does not make sense to me, please explain.

Commented [RJ5]: Do you want CONTRACTOR to do this as directed by ENGINEER?

3.07 STOP WORK ORDER

A. The ~~on site CDPH inspector or Project Monitor~~ENGINEER shall have the right to stop the abatement work whenever CONTRACTOR's work, engineering controls, or air monitoring results are not in accordance with published regulations, contractual restrictions, or the abatement specifications. ~~All costs resulting from stopping the abatement work shall be at CONTRACTOR's expense~~. The Stop Work Order shall first be given verbally to CONTRACTOR at which point all work shall cease. The verbal notification shall be immediately followed by a written notification to stop work. If the situation is not corrected within (48) hours, the CONTRACTOR shall be considered in breach of the Contract and shall be subject to termination.

Commented [RJ6]: Do you want us to provide this person?

Commented [RJ7]: Okay for known areas, intent okay, not sure words for poor work procedures are correct?

3.08 RE-ESTABLISHMENT OF THE WORK AREAS AND SYSTEMS

A. Re-establishment of the Work Area shall only occur following the completion of clean-up procedures and after a Clearance Inspection has been performed and documented to the satisfaction of the ENGINEER.

B. Re-secure moveable objects removed from their former positions during area preparation activities.

C. Relocate moveable objects that were removed to temporary locations back to their original positions.

D. Reestablish HVAC, mechanical and electrical systems to the condition prior to commencement of the Project.

E. Repair areas of damage that occurred as a result of Abatement or Lead Related Construction Work.

3.09 PROJECT COMPLETION DOCUMENTATION

A. Provide to the ENGINEER the following close-out documentation:
   1. Filter change logs for air filtration units, water filtration units, and respirators
   2. Foreman's daily job reports
   3. Employee entry and exit logs for Work Area
   4. Visitor entry and exit logs for Work Area
   5. Air sample results for personnel
   6. Copies of hazardous and non-hazardous waste manifests
   7. Hazardous waste weight tickets
   8. Analytical data and chain of custody for waste characterization
   9. Signed Daily Personnel Report Forms

B. Provide ENGINEER with as-built drawings identifying surfaces where LCM has been encapsulated or enclosed.

Commented [RJ8]: Do we need this to be record drawings?

PART 4 ADDITIONAL REQUIREMENTS

4.01 PROJECT SPECIFIC INFORMATION

A. The Project Site is part of and within the FACILITY, and the FACTILITY could have LCM material that impacts the project site, but no locations have been identified at this time.. ~~includes the following. [Describe the overall Project and the portion of the Project that requires LCM management.]~~

~~B. LCM have been detected in building materials [and other media] [remove brackets and add text if soil, sediment or media other than building materials are part of the cleanup plan] at the Project site where the building material samples were collected and analyzed for LCM by [LCM CONSULTANT NAME], as described in their [REPORT TITLE AND DATE] (Hazardous Materials Report). This Hazardous Materials Report provides information on the materials that were sampled, analytical results, and locations of the confirmed LCM. A copy of the Hazardous Materials Report is included herewith AND is part of this specification section. [INCLUDE REPORT]~~

~~C. [insert the following text only if soil, sediment or other non-building material impacts need to be remediated.] [Within the limits of the Project, lead has been found in media other than building related materials. The potential release mechanism whereby lead came to be located in such other media and the required Scope of Work to address other lead contaminated media are presented in the [REPORT TITLE AND DATE], by [CONSULTANT NAME] (Lead Scope of Work). Such other media must be in accordance with the Lead Scope of Work, which is included herewith and is part of this specification section. [INCLUDE REPORT] All Work related to other media must be coordinated with the overall Project so that project delays, if any, are minimized.]~~

END OF SECTION

SECTION 01 35 43.16

POLYCHLORINATED BIPHENYLS MANAGEMENT

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements.

For Part 4, the Project Team should use Edit >Find> bracket"[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Part 4 is complete.

The following materials are draft, to be edited to reflect project specific needs. For each project specific application, draft and final draft material is to be submitted to the CIP Engineering Manager and CIP Construction Manager for review. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

*For a guidance on what information should be included in each article, refer to **"Hazardous Material Investigation and Remediation Protocol, Technical Memorandum 1, March 2019"** or latest version.*

2019-10-01- Suggested modifications. Need City to review and approve.

2020-01-28: Confirmed by City for 60% on 01/15/2020.

PART 1 GENERAL

Commented [RJ1]: Why is the document not formatted like others?

1.01 SUMMARY

A. This Section includes the specifications for the management, removal and disposal, and cleanup of polychlorinated biphenyls (PCBs) historically used in building and construction materials during construction of the FACILITY. The FACILITY was constructed originally in the 1950s. The Project site is part of and within the FACILITY. PCBs have not been detected in building materials at the Project.

~~B. Related Sections:~~

~~1. Section 01 35 23 - Plant Safety Requirements~~
~~2. Section 01 35 43.05 - Hazards and Hazardous Materials Mitigation~~
~~3. Section 01 35 43.14 - Asbestos Management~~
~~4. Section 01 35 43.15 - Lead Abatement And Lead Related Construction~~

~~C.~~B. If PCBs must be abated and disposed, the CONTRACTOR shall ~~be aware of all conditions of the Project and is responsible for verifying~~determine quantities and locations of all PCB Cleanup work to be performed in accordance with applicable rules and regulations. Failure to do so shall not relieve CONTRACTOR of its obligations to furnish all labor and materials necessary to perform the work.

~~D.~~C. CONTRACTOR ~~is~~ shall be responsible for conducting all work as part of the PCB portion of the Project in accordance with this specification section, with all referenced documents included as part of this specification, and with the current version of all applicable regulations, standards, and guidelines of federal, state, and local environmental and occupational safety and health agencies regarding PCB wastes. The publications are referenced in text by basic designation only. The list provided below is not intended to be all inclusive of each regulation prevailing over the work, and failure to list a specific regulation here does not relieve CONTRACTOR from responsibility for regulatory compliance. The latest version of the document listed shall govern the work performed. Where more stringent requirements are specified, adhere to the more stringent requirements.

1. Department of Transportation (DOT):
   a. 49 Code of Federal Regulations (CFR) 171 - General Information, Regulations, and Definitions
   b. 49 CFR 172 – Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
   c. 49 CFR 173 – Shippers: General Requirements for Shipments and Packaging
   d. 49 CFR 178 – Specifications for Packaging
2. US Environmental Protection Agency (USEPA):
   a. 40 CFR 761 – Toxics Substances Control Act (TSCA) - Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
   b. EPA SW-846 Method 8082 – Polychlorinated Biphenyls (PCBs) by Gas Chromatography; including extraction methods 3540C and 3550B
   c. 40 CFR 116 – Designation of Hazardous Substances
   d. 40 CFR 117 – Determination of Reportable Quantities for Hazardous Substances
   e. 40 CFR 260 – Hazardous Waste Management Systems: General
   f. 40 CFR 261 – Identification and Listing of Hazardous Waste
   g. 40 CFR 262 – Standards Applicable to Generators of Hazardous Waste
   h. 40 CFR 263 – Standards Applicable to Transporters of Hazardous Waste
   i. 40 CFR 264 – Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
   j. 40 CFR 265 – Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
   k. 40 CFR 268 – Land Disposal Restrictions
   l. 40 CFR 302 – Designation, Reportable Quantities, and Notification
3. Occupational Safety and Health Administration (OSHA):
   a. 29 CFR 1910 – Occupational Safety and Health Standards
   b. 29 CFR 1910.28 – Safety Requirements for Scaffolding
   c. 29 CFR 1910.120 – Hazardous Waste Operations and Emergency Response
   d. 29 CFR 1910.134 – Respiratory Protection Standard
   e. 29 CFR 1910.1200 - Hazard Communication Standard
   f. 29 CFR 1926 – Safety and Health Regulations for Construction

4. State and Local Requirements:
   a. California Department of Toxic Substances Control (DTSC)
   b. San Francisco Regional Water Quality Control Board (SFRWQCB)

E.D. Description of Work

1. If CONTRACTOR encounters any unidentified and/or untested material that is suspected to contain PCBs, the CONTRACTOR shall stop all work in the affected area and notify the ~~CITY~~ENGINEER. The ~~ENGINEER~~CONTRACTOR will arrange for sampling and testing of the suspect material. If the material in question is confirmed as impacted by PCBs, then CONTRACTOR shall manage, remove and dispose of the material in accordance with this specification, with all referenced documents included as part of this specification, and with all federal, state and local regulations.

~~1.~~2. The PCB Cleanup Work ~~described in Part 4 of this specification section~~ may include some or all of the following: segregation, removal and proper disposal of PCB impacted materials, or management in place of PCB impacted materials with capping, isolation or encapsulation. Based on the Project specific findings, some or all PCBs and related material waste from the Project fall within one of the scenarios defined in the CITY's document entitled *Hazardous Material Investigation and Remediation Protocol, Technical Memorandum 1, March 2019* or latest version. Some or all PCBs and related waste materials from the Project either:
   a. can be removed and disposed, along with associated substrate at the same time, as PCB Bulk Product Waste [Scenario B]
   b. can be removed and disposed as PCB Bulk Product Waste, with substrate to remain in place as shown or indicated on the project drawings. PCB impacted substrate to remain in place is considered PCB Remediation Waste and shall be managed by encapsulation or capping in accordance with the requirements in ~~Part 4 below~~developed if PCB material is found. [Scenario C], or
   c. are present in building materials, adjacent substrate and other media and must be managed as PCB Remediation Waste. PCB Remediation Waste shall be removed and disposed and/or managed in place by encapsulation or capping in accordance with the requirements developed if PCB material is found~~in Part 4 below~~. [Scenario D]

~~2. CONTRACTOR shall refer to PCB investigation report referred in Part 4 of this specification section below for location and estimated quantities of PCBs.~~

~~3.1. If CONTRACTOR encounters any unidentified and/or untested material that is suspected to contain PCBs, the CONTRACTOR shall stop all work in the affected area and notify the CITY. The ENGINEER will arrange for sampling and testing of the suspect material. If the material in question is confirmed as impacted by PCBs, then CONTRACTOR shall manage, remove and dispose of the material in accordance with this specification, with all referenced documents included as part of this specification, and with all federal, state and local regulations.~~

~~4.~~3. The removal and disposal of any previously unidentified PCB Wastes shall be performed by CONTRACTOR at the unit prices ~~bid for in this Contract~~approved by the ENGINEER.

~~5.~~4. Work included:
   a. Furnishing of all labor, materials, facilities, equipment, services, and insurance necessary to perform the work;
   b. Maintenance of work area/site security;

Commented [AE2]: JR: Assume we do this? This is not in cost model so this is all part of the allowance for contaminated materials – NOA, diesel etc. Treat as UC for differing site conditions. Soil management plan will address that this could happen so need to be ready for this material.

Commented [RJ3]: We need to get this reference document. Please send through EADOC.

c. Preparation of work area, including installation of containment and decontamination areas as required;
d. Removal, segregation, and/or containment of PCB Bulk Product Waste and PCB Remediation Waste (collectively PCB Wastes) encountered during the project work;
e. Clean-up and final decontamination of all work areas;
f. Implementation of a worker protection program in compliance with all applicable regulations;
g. Proper storage, wrapping/bagging, labeling, transportation and disposal of all waste generated as part of PCB clean-up activities.
h. Preventing PCBs from migrating out of the work area(s).
i. Cleaning all work areas at the end of each workday and collecting and storing all PCB Wastes as specified in Part 3 of this section.

~~F.~~E. Permits and Applicable Standards

1. CONTRACTOR shall obtain and maintain current registrations, permits and licenses pursuant to federal, state and local regulations for all work related to this Project, including the handling, removal, transportation and disposal of TSCA, hazardous and industrial waste.
2. CONTRACTOR shall confirm in writing that the proposed disposal facility(ies) have all federal, state and local required certifications and permits to receive and dispose of the materials managed under this Project.
3. CONTRACTOR shall perform all work in accordance with these specifications, the USEPA and OSHA regulations, all conditions of any USEPA Approval of the PCB Cleanup Plan issued for the Project, NIOSH recommendations, California State, local statutes, local ordinances, local codes and any other applicable federal, state and local government regulations and guidelines.
4. CONTRACTOR shall obtain all permits required to complete the work, including but not limited to utility work permits, discharge permits, or any other permits required by local government regulations as applicable.

1.02 REFERENCES

A. The regulations, guidance and policies listed in this specification section are not all-inclusive and are noted and cited for information purposes for CONTRACTOR. The CONTRACTOR shall be responsible for a thorough knowledge and full implementation of all requirements for removal, encapsulation, capping, transportation and disposal of PCB wastes.

B. Perform work in accordance with all applicable regulations, including but not limited to the publications listed in Part 1.01 D above, which form a part of this specification to the extent referenced.

C. In addition to the regulations noted above, CONTRACTOR shall to the extent practicable utilize the current version of the following referenced policies and guidance relating to PCBs.

1. PCB Facility Approval Streamlining Toolbox (FAST): Streamlining the Cleanup Approval Process (USEPA 2017) https://www.epa.gov/pcbs/pcb-facility-approval-streamlining-toolbox-fast-streamlining-cleanup-approval-process
2. USEPA Memorandum regarding PCB Bulk Product Waste Reinterpretation dated October 24, 2012
3. Handling PCBs in Caulk During Renovation (EPA-747-F-09-004): https://www.epa.gov/sites/production/files/2016-01/documents/contrctrs.pdf
4. Wipe Sampling and Double Wash/Rinse Cleanup https://www.epa.gov/sites/production/files/2015-08/documents/wipe-samp_0.pdf
5. USEPA Standard Operating Procedure for sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), May 2011: Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs) | Polychlorinated Biphenyls (PCBs) | USEPA
6. ELAP laboratory list via the California Water Board website GIS mapping system: Environmental Laboratory Accreditation Program (ELAP) | California State Water Quality Control Board

1.03 DEFINITIONS

All terms not defined herein shall have the meaning given in the applicable publications and regulations.

A. Air Monitoring: Stationary air sampling at the perimeter of the PCB Control Area to determine contaminant content of a specific volume of air in a stated period of time for comparison with OSHA Limits for Air Contaminants and for comparison to any ambient air monitoring compliance requirements set out in the conditions of any USEPA Approval of the PCB Cleanup Plan issued for the Project.

B. ANSI: American National Safety Institute

C. Authorized Visitors: Any visitor authorized by the CITY, the ENGINEER or any representative of a regulatory agency or other agency having jurisdiction over the Project.

D. Barrier: Any surface, structure or solid layer that seals off the work area to inhibit the movement of contaminated media.

E. Certified Industrial Hygienist (CIH): An individual employed by the CONTRACTOR who is currently certified by the American Board of Industrial Hygiene (ABIH).

F. CONTRACTOR: General Contractor and/or Subcontractor responsible for conducting the work associated with the PCB Cleanup.

G. Encapsulation: Procedures necessary to cap or coat and seal surfaces containing residual PCB Waste to provide a barrier to direct contact and control the possible release of contaminated media into the ambient air.

H. Exposure Monitoring: Personal air sampling performed outside the respirator within the breathing zone of individuals, for the purpose of determining compliance with OSHA's airborne limits for PCBs, lead, silica, asbestos or other air contaminants.

I. Hazardous Waste Operations (HAZWOPER) Training: Training that meets the criteria outlined in the OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120).

J. HEPA Filter: Equipment with a High Efficiency Particulate Air (HEPA) filter, greater than 99.97 percent efficiency by 0.3-micron DOP test, and complying with ANSI Z9.2 (1979).

K. MSHA: Mine Safety and Health Administration

L. NIOSH: National Institute of Occupational Safety and Health

M. OSHA: Occupational, Safety and Health Administration.

N. PCB: Polychlorinated Biphenyls

O. PCB Bulk Product Waste: Waste derived from products manufactured to contain PCBs in a non-liquid state at or assumed to be at 50 ppm or greater. Typical examples are caulk, paint, and sealants. Materials as defined by the USEPA Memorandum regarding PCB Bulk Product Waste Reinterpretation dated October 24,2012 may include adjacent substrate, however USEPA allows impacted substrate to be managed as PCB Bulk Product Waste only if is removed and disposed of with the PCB Bulk Product building material simultaneously.

P. PCB Cleanup Plan: The plan governing the removal and/or encapsulation or capping of PCB wastes at the Site, including all amendments and including, where provided, all the conditions of USEPA's Approval of the Cleanup Plan. The PCB Cleanup Plan is developed to meet the requirements of Subpart D of TSCA and may be a standalone plan for Scenario B, or a self-implementing plan or risk-based application plan for scenarios C and D as defined in the CITY's document entitled *Hazardous Materials Investigation and Remediation Protocol*, *Technical Memorandum 1, March 2019* or latest version.

Q. PCB Control Area: The area within the physical boundary where Work activities take place that involve the disturbance of materials impacted by PCBs or PCB Wastes.

R. PCB Remediation Waste: Liquid or solid waste containing PCBs as the result of a spill or release (date and concentration limits apply), such as PCB-contaminated soil, sediments, and concrete. In addition to typical spills or similar types of releases, the leaching of PCBs into adjacent substrates (such as the spreading of PCBs from caulk into adjacent brick) is considered a release. Building materials and debris, soil, disposable clothing and protective equipment, plastic sheeting and tape, exhaust systems or vacuum filters, or any remediation equipment that is or has been in contact with PCBs and cannot be decontaminated are subject to the disposal requirements set forth in TSCA, including building materials with PCB concentrations equal to or greater than 1 ppm.

S. Removal: All herein specified procedures necessary to strip all PCBs from designated areas and to dispose of these materials at a permitted facility.

T. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

U. Uniform Hazardous Waste Manifest: The shipping document to be originated by the CONTRACTOR and signed by the CITY as the waste generator, used to track the disposition of PCB wastes.

V. USEPA: United Stated Environmental Protection Agency. Note that USEPA Region 9 and the USEPA Region 9 TSCA Coordinator are the primary regulatory entities related to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

A. CONTRACTOR is responsible for ensuring that all remediation worker personnel shall receive appropriate training and information regarding the potential hazards of PCBs, safety and health precautions, and the use and requirements of protective clothing and equipment prior to the start of any remediation work, and shall provide the proof of trainings and certifications, including HAZWOPER training, to the CITY.

B. If respirators are required, the CONTRACTOR is responsible for establishing a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134. The CONTRACTOR shall provide respirator training and fit testing, and medical surveillance for those workers conducting removal or remediation activities that require the use of respirator.

C. The CITY will retain the services of an independent consultant to perform construction oversight and testing services. These activities may include air monitoring with a particulate dust meter during removal work to verify the effectiveness of the engineering controls and containment/controls and the collection of verification samples to document remediation completeness. CONTRACTOR shall anticipate the turnaround time required for the verification sampling program, and no additional charges for sampling and laboratory analytical delays shall be accepted.

Commented [RJ4]: Does City want DB to higher the independent consultant?

D. The ENGINEER has the authority to stop the work at any time it determines ~~either personally or through the services of the ENGINEER~~ that conditions are not within the specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the ENGINEER. Standby time required to resolve violations shall be at the CONTRACTOR's expense, and any fines for hazardous conditions or non-compliance shall be at the CONTRACTOR's expense, and shall not be grounds for change orders or time extension.

Commented [RJ5]:

Commented [RJ6]: Contractor's expense could mean cost of work so what is the correct balance here. Not sure this is City intent.

1.05 SUBMITTALS

The CONTRACTOR shall submit the following items to the ENGINEER.

A. CONTRACTOR's PCB Work Plan to the Engineer clearly indicating the following:
   1. All work areas/containments;
   2. Locations and types of all decontamination enclosures and decontamination procedures;
   3. A description of the procedures to be used to contain, treat and dispose of water run-off and power-wash water;
   4. Description of Air Monitoring locations, equipment, and procedures (unless provided by Consultant);
   5. A description of the proposed packaging procedures;

6. Entrances and exits to the work areas/containments;
7. Type of remediation activity/technique for each work area/containment;
8. Sequence of work activities;
9. Proposed schedule
10. Proposed location and construction of storage facilities and field office;
11. Location of utility connections to building services;
12. Waste storage locations (must be coordinated with ENGINEER);
13. Waste transport routes to the waste storage containers and to off-site disposal facility (ies);
14. Products, equipment, and materials to be used on the Project, including specifications and Safety Data Sheets for all products used on the Project.

CONTRACTOR's PCB Work Plan may require submittal to USEPA as part of the Agency's Approval of this Work. ~~CITY~~ ENGINEER must review all documents prior to submittal to USEPA.

B. Site specific Health & Safety Plan, indicating the means and methods by which the CONTRACTOR shall follow applicable federal and state regulations regarding the work activities, including but not limited to OSHA regulations, fall protection standards, respiratory protection, ladder/scaffolding safety, personal protective equipment, handling and management of disposable protective clothing to be used on this Project, Exposure Monitoring, health and safety contingency planning. The CONTRACTOR's HASP shall clearly identify the names and qualifications of the PCB Supervisor and safety officer(s) responsible for the PCB Cleanup.

C. Signed certification that CONTRACTOR has read and understands and shall agree to abide by the PCB Cleanup Plan, these specifications, and if applicable the conditions specified by USEPA in its approval of the PCB Cleanup Plan.

D. Proposed Treatment, Storage or Disposal Facility(ies) locations and corresponding permits from applicable regulatory agency.

E. Waste transporter licenses, permits and other transportation documentation. CITY must review all Waste Profiles and Shipping Manifests prior to shipment. Only an authorized representative of the CITY may sign shipping documents.

F. Certification of compliance with OSHA requirements including but not limited to medical surveillance, record keeping and personal monitoring. Documentation of worker training, respiratory protection and medical examination.

G. Project Close-out Submittals:
   1. CONTRACTOR shall provide the originals of all waste disposal manifests, disposal logs, and Certifications of Disposal within 30 calendar days of waste shipment.
   2. CONTRACTOR shall provide within 30 calendar days of Project completion all daily progress logs, including the entry/exit log.

1.06 NOTICES

A. Post a list containing the names, addresses, and telephone numbers of CONTRACTOR, and emergency medical services.

B. Additional postings shall include:
   1. Visitor Entry and Exit Log.
   2. Employee Daily Sign in Log.
   3. Entry and Exit Procedures.

1.07 SITE SECURITY

A. Access to the work areas shall be limited to authorized, trained and properly equipped personnel, including CONTRACTOR, Subcontractors, Contractor's employees, and regulatory agency inspectors.

B. Entry into the work area by unauthorized individuals shall be reported immediately.

C. CONTRACTOR shall be responsible for Project site security during abatement operations in order to protect work efforts and equipment.

1.08 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed by CONTRACTOR prior to abatement initiation.

B. Emergency procedures shall be in written form and prominently posted. CONTRACTOR shall ensure that all persons entering the work area read these procedures and understand the Project site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include considerations of fire, explosion, electrical hazards, slips, trips and falls, confined spaces, and heat related injury. Written procedures shall be developed and employee training in procedures shall be furnished by CONTRACTOR.

D. Employees shall be trained in evacuation procedures in the event of work place emergencies.
   1. For minor injuries and illness, employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work area to obtain proper medical treatment.
   2. For serious injury or illness, worker decontamination shall take least priority. After stabilizing the injured worker, remove him from the work area and seek proper medical treatment.
   3. Telephone numbers of all emergency response personnel shall be prominently posted in the clean and equipment rooms.

1.09 QUALITY ASSURANCE

A. In general, the quality assurance requirements are intended to enhance the removal of PCBs consistent with the PCB Cleanup Plan without spilling or spreading PCBs to unimpacted areas.

B. The removal, transportation and disposal firms engaged in the PCB Cleanup must be licensed by authorities having appropriate jurisdiction to provide the work specified. The

CONTRACTOR shall be the single party responsible for accomplishing all work related to the PCB Cleanup.

Commented [RJ7]: This will be a subcontractor, what is City trying to get at here?

C. The ENGINEER shall from time to time observe the work in progress to verify that the work complies with the requirements herein and good practice.

1.10 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in original unopened containers.

B. Store and handle materials in compliance with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 EQUIPMENT AND SUPPLIES

A. CONTRACTOR shall supply all the materials and equipment to perform the PCB Cleanup.

B. Damaged or deteriorated materials shall not be used and shall be promptly removed from the premises. Materials that become contaminated with PCB- containing material shall be thoroughly decontaminated, or sealed in plastic bags or sheeting, labeled, and legally disposed of in an approved, secure landfill in accordance with TSCA requirements.

C. All plastic sheeting ("poly") and bags used shall be polyethylene or equivalent with a thickness of at least 6 mil for all applications.

D. Tools used for the removal of caulking or other PCB materials shall be used in a manner that minimizes dust generation, as appropriate. Tools used to apply coatings shall be as recommended by the manufacturer.

E. All dry vacuuming performed under this contract shall be performed with High Efficiency Particulate Absolute (HEPA) filter equipped industrial vacuums conforming to ANSIZ9.2.

F. Any power tools used to drill, cut into, or otherwise disturb PCBs shall be manufacturer equipped with HEPA filtered local exhaust ventilation.

G. CONTRACTOR's HASP shall provide for the following equipment:

1. All personnel must utilize proper personal protective equipment (PPE) during all work activities. Proper PPE may vary depending on the job task, but may include disposable gloves, disposable rubber boots, steel-toe boots, Tyvek suits, protective vests, respirators, including replacement cartridges, hard hats, hearing protection, and eye protection. The CITY may have location specific additional requirements for PPE. CONTRACTOR is responsible for providing sufficient quantities of PPE throughout the duration of the PCB Cleanup.
2. Where required, provide all workers with a full or half face piece respirator which is approved by NIOSH/MSHA for protection against PCBs and dust and which meets the requirements of the OSHA Standard under 29 CFR1910.134.
3. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area. Authorized visitors shall not enter a Work Area where respiratory protection is required unless the visitor has been approved and individually fit-tested for respirator use.

H. Containers, Signs and Labels

1. Provide warning signs and barrier tapes at all approaches to the PCB-designated Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area. If necessary, signs should be legible in the language(s) of the workers.
2. Provide the appropriate “Large PCB Marking” or “Small PCB Marking” (ML or MS per 40 CFR 761), of sufficient size to be clearly legible, for display on waste containers (bags, boxes, roll offs or drums) which shall be used to contain or transport PCB Wastes, in accordance with 40 CFR 761. In addition, U.S. Department of Transportation (DOT) 49 CFR Parts 171 and 172 requires the name and UN number of the material to be on the bags or drums, and, if shipped in bulk (roll offs, Gaylord boxes, etc.) the bulk container must also be labeled: Polychlorinated biphenyl, solid mixture UN 3432, if designated as hazardous waste.
3. Some PCB materials may also be Hazardous Waste or California Non-RCRA Hazardous Waste and must be appropriately labelled accordingly.
4. Provide 6 mil polyethylene disposal bags with PCB caution labels.
5. Labeled PCB waste containers or bags shall not be used for non-PCB waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as PCB waste.
6. A secure, lined, and covered waste container (roll-off or equivalent), 55-gallon DOT-approved steel containers, or equivalent shall be staged for the collection of PCB wastes generated during the work activities in accordance with 40 CFR761.65 and related applicable USEPA and DOT regulations.

PART 3 EXECUTION

3.01 EXAMINATION

A. CONTRACTOR shall examine the entire Project area where PCBs have been identified as part of the Project.

B. CONTRACTOR shall examine all support areas, proposed storage areas and travel routes that may be needed to support the PCB Cleanup.

3.02 PREPARATION

A. Access to the work areas for PCB Cleanup Work shall be controlled through the use of controlled access points, fire retardant polyethylene containments, and/or signage.

B. Control Area Required: Establish a PCB control area at each PCB equipment location, encompassing the area of work. The area shall be designed to restrict PCB material and handling activities, and to prevent the entrance of unauthorized persons into the area of PCB contamination, and of removal work.

C. Barricades and Screening: Define and barricade the Control Area by portable panels, curtains, barricades, and other barriers that shall prevent people and animals from coming into contact with PCB contaminated materials and shall prevent PCB contaminated liquids, vapors, mists, or solids from leaving the Control Area.

D. Signing: Provide warning and control signs at all entrances to the Control Area. Locate the signs at such a distance from the Control Area that they may be read and appropriately reacted to prior to entering the area.

E. Signs shall warn persons approaching the Control Area and shall clearly instruct them how to avoid contamination and avoid entering the area.

F. Removal of Signs: Remove the signs only after all work is completed, PCB contaminated materials have been removed, and final cleanup completed.

G. Protective Coverings: Provide protective covering of walls, floors, ceilings, and equipment in and adjacent to the Control Area. At completion of the work, coverings shall be contained and disposed of as PCB Waste.

H. Cleanliness: Maintain the Control Area clean at all times, free of debris, cloths, trash, and contaminated material.

I. Cleanup: Do not hose down the area. Clean and maintain cleanliness with protective coverings, mechanical procedures and the use of appropriate solvents. Any concrete, or other porous surface that has been contaminated shall decontaminated in accordance with TSCA requirements (40 CFR 761.79) following the procedures in the approved CONTRACTOR's PCB Work Plan.

3.03 REMOVAL OF PCB WASTE

A. This work includes the removal and off-site disposal of the PCB Waste in accordance with the Project PCB Cleanup Plan.

B. PCB Waste materials subject to removal and off-site disposal shall be removed through a combination of mechanical and physical means. Proper removal techniques and engineering controls shall be utilized to minimize the generation and spread of dust and debris throughout the work area:

1. Caulking removal shall be conducted using hand tools or mechanized caulking removal guns; no grinding or saw cutting is permitted to remove or pulverize caulking from interior or exterior locations. All tools shall be used in a manner that minimizes dust generation.
2. Paint removal shall be conducted using mechanical means or if necessary by grinding or scarifying porous surfaces. Use of solvent stripping methods for paint removal from non-porous surfaces allowed only upon demonstration of effectiveness and written approval by the ENGINEER. All removal methods shall be conducted in a manner that minimizes dust generation.
3. Concrete removal in areas requiring Cleanup or repairs shall generally consist of:
   a. Saw cutting around sections of damaged concrete to achieve a repair surface bounded by smooth and straightedges;
   b. Chipping out the block of cut concrete;
   c. Grinding out and replacing corroded rebar as needed; and,
   d. Patching the surface with new concrete.
4. The extent of removal of PCB Waste shall be as described in the PCB Cleanup Plan.
5. All powered tools shall be manufacturer equipped with appropriate tool guards and dust/debris collection systems (i.e., HEPA filters). Wet wiping and vacuuming of all

tools and equipment in the work area shall be performed at the completion of the work activity.

6. All dry vacuuming performed under this contract shall be performed with High Efficiency Particulate Absolute (HEPA) filter equipped industrial vacuums conforming to ANSIZ9.2.
7. Hot cutting of PCB impacted metal surfaces is prohibited.

C. Exposure Monitoring within the support work zone and perimeter Air Monitoring shall be conducted by the CONTRACTOR during the active removal of caulking and concrete. To reduce dust levels and exposures to dust, a combination of engineered controls (e.g., wetting, work zone enclosures), equipment equipped with HEPA filters and dust controls, and personal protective equipment (PPE – respirators) shall be implemented as part of the work activities. Air Monitoring shall be conducted in accordance with the USEPA approved PCB Cleanup Plan.

D. PCB containing materials shall be transported in appropriate containers (polyethylene bags, drums, etc.) from the Work Area along a designated route to the proper waste disposal containers.

3.04 APPLICATION OF ENCAPSULANT COATING

A. Surfaces subject to encapsulation shall be prepared as described in the PCB Cleanup Plan and as recommended by the product specifications.

B. The encapsulation of building materials shall be conducted using the coatings specified in the PCB Cleanup Plan, including the coatings specified therein, typically Sikagard 62, Sikagard 670W, Sikadur35,BASFSonoguard, or approved equivalents;

C. The application of each encapsulating product is to be conducted in accordance with the manufacturer's specifications.

3.05 SOIL EXCAVATION AND REMOVAL OR CAPPING

A. If the Project PCB Cleanup Plan incorporates the cleanup of non-building materials such as soil or sediment, or capping of exterior impacted media, the CONTRACTOR is responsible for implementing such measure developed. ~~in accordance with Part 4 below~~. The CONTRACTOR's PCB Work Plan shall include management of PCB impacted non-building materials as applicable.

3.06 INSPECTION AND VERIFICATION

A. At the end of each work day, CONTRACTOR is responsible for inspecting and verifying the work areas are clean and free from dust and debris and secured to prevent unauthorized access.

B. Following removal of PCB Waste and encapsulant application, inspection and verification testing shall be performed by CITY's consultant to verify completion of the USEPA-approved PCB Cleanup activities.

C. The CONTRACTOR is responsible for inspection of all waste storage containers and waste transport routes to verify proper waste handling, storage, and labeling in accordance with all applicable federal and state regulations.

D. Prior to removal of the containment structures, the CONTRACTOR is responsible for verifying all remedial actions have been completed in accordance with the PCB Cleanup Plan.

E. To verify task completion, sample collection and analytical testing by the CITY may require up to a 10 calendar days turnaround time prior to receiving verification results. Appropriate project planning and scheduling should be incorporated into the overall project plans. If the results of the CITY testing show that all remedial actions have not been completed in accordance with the PCB Cleanup Plan, CONTRACTOR is responsible for completing additional actions to complete the work. The CITY shall complete additional sampling and testing activities to confirm remedial actions are complete.

Commented [RJ8]: City must have vendor ready?

3.07 EQUIPMENT AND WORK AREA DECONTAMINATION

A. CONTRACTOR, or remediation Subcontractor, shall clean all work areas at the end of each workday and shall collect and store all waste generated from the PCB Cleanup process (e.g., removed PCB Waste, dust from HEPA filters, etc.) in secure, closed containers that are properly labeled.

Commented [RJ9]: Term never used before, why use now?

B. When Cleanup of PCBs is completed via verification inspections and/or sampling, the decontamination process shall consist of vacuuming (with a HEPA filter), wet-wiping/ mopping and a repeated vacuuming (with a HEPA filter) of the entire interior work area. All surfaces in and around the work area must be free of dust generated during the work. Final cleaning shall be performed only after all PCB Waste is packaged and removed, but before reinstalling or demolishing any equipment, or dismantling any barrier, decontamination facilities, or protective coverings. Cleaning shall be subject to the approval of the ENGINEER based on a visual inspection and air testing.

Commented [RJ10]: Is this correct?

C. Decontaminate all tools and equipment before removal from the work area in accordance with USEPA guidelines (See 40 CFR 761.79).

D. If dust or debris has migrated to areas of the building other than the immediate work area, those areas shall be incorporated into the work area and thoroughly decontaminated to ensure all visible dust generated by the activity is eliminated.

E. Remove containment barriers and any other protective sheeting. Place in disposable construction bags (6-milpoly) and dispose of as non-liquid cleanup materials in accordance with 40 CFR § 761.61(a)(5)(v).

F. Visually inspect the area for any remaining dust or debris. Vacuum (with HEPA filter) and wet wipe until space is clean.

G. After completing decontamination and removing containment barriers, a final inspection shall be performed by the CONTRACTOR and ENGINEER. If the visual inspection reveals that additional cleaning is needed, the CONTRACTOR shall clean or re-clean the affected areas at no additional expense to the CITY.

H. The CONTRACTOR, or remediation Subcontractor, shall not stockpile any PCB waste on-site that is not properly containerized and labeled in accordance with this specification section.

I. The ENGINEER shall designate a temporary 'hazardous waste storage' area for the storage of PCB waste. The location shall be determined prior to the start of Work.

3.08 PCB WASTE DISPOSAL

A. General Requirements - All PCB Wastes must be handled, packaged, stored, transported, and disposed of as specified in this subsection, and in compliance with all federal, state and local regulations and codes. The CONTRACTOR, or the remediation subcontractor, is responsible for the disposal of all PCB Waste and other solid waste debris generated at the Project. The CONTRACTOR shall give seventy-two (72) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the CONTRACTOR and CITY representative are present and the CITY representative authorizes their release of the waste as described herein.

Commented [RJ11]: City vs. City representative?

B. Waste Labeling- All waste shall be labeled using the labels described in Section 2.04. If waste containers are not already so preprinted, warning labels having waterproof print and permanent adhesive shall be affixed to the lid and/or sides of the containers, whether or not these containers are further packaged. Warning labels shall be conspicuous and legible, and conform to the latest OSHA, USEPA and DOT labeling requirements. The CONTRACTOR shall properly wrap/bag all waste from the PCB Cleanup process (e.g., removed PCB Waste, dust from HEPA filters, etc.) within the work area. Wrapped/bagged waste shall be stored in secure, closed containers (e.g., drums, roll-off containers) and labeled.

C. Waste Packaging - CONTRACTOR shall inspect each bag, drum or container to ensure that the package is secure. The secure drum/container shall then be placed in the designated temporary storage area.

D. Waste Container Removal and Disposal Documentation:

1. All waste generated as part of the PCB Cleanup shall be removed from the Site within the applicable regulatory timeframe, and no later than 90 calendar days after successful completion of all PCB Cleanup Work.
2. It is the responsibility of CONTRACTOR to determine current waste handling, transportation, and disposal regulations for the work site and for each waste disposal landfill. CONTRACTOR and its subcontractors must comply fully with these documents and all DOT and USEPA requirements.
3. CONTRACTOR shall only make arrangements with and dispose PCB Waste at a CITY approved facility under an CITY approved profile.
4. CONTRACTOR, transporter and landfill shall document generation, transport and disposal of the waste by use of the Hazardous Waste Manifest. This record is a legally required document, which identifies the generator, transporter(s), temporary storage location(s) and disposal site for any PCB-waste material. The waste management facility shall also provide the CITY with a copy of the Certificate of Disposal.

Commented [RJ12]: Other sections clearly state City must sign manifests and use generator ID isn't that true here?

3.09 FIELD QUALITY CONTROL

A. Where removal, encapsulation or capping requires specific dimensions be met, CONTRACTOR shall supply measurement, photo documentation and drawing markups to adequately demonstrate that the specified dimensions have been met.

B. The ENGINEER shall periodically inspect and verify CONTRACTOR's compliance with required dimensions for removal, encapsulation or capping. Any identified deficiencies are to be corrected promptly by CONTRACTOR at no additional cost to the CITY.

C. All material sampling and laboratory analytical data provided by the CONTRACTOR shall be reviewed prior to submittal for compliance with standard methodologies, representativeness and laboratory QA/QC as provided in the PCB Cleanup Plan.

PART 4 ADDITIONAL REQUIREMENTS

4.01 PROJECT SPECIFIC INFORMATION

A. The Project Site is part of and within the FACILITY, and the FACTILITY could have PCBs material that impacts the project site, but no locations have been identified at this time. ~~includes the following. [Describe the overall Project and the portion of the Project that requires PCB management.]~~

Commented [RJ13]: Cost allowance or UC item; cost not estimate.

~~B. PCBs have been detected in building materials [and other media] [remove brackets and add text if soil, sediment or media other than building materials are part of the cleanup plan] at the Project Site where the building material samples were collected and analyzed for PCBs by [PCB CONSULTANT NAME], as described in their [REPORT TITLE AND DATE] (PCB Investigation Report). This PCB Investigation Report provides information on the materials that were sampled, analytical results, and locations of the confirmed PCB materials. A copy of this report is included herewith AND is part of this specification section. [INCLUDE REPORT]~~

~~C. To address the presence of PCBs within the Project Site, a PCB Cleanup Plan has been prepared by [PCB CONSULTANT NAME], titled [insert title] and dated [DATE]. The PCB Cleanup Plan is attached herewith and is part of this specification section. The PCB Cleanup Plan describes the project specific PCB management Work to be completed by the CONTRACTOR and has been developed as a:[select which of the following is applicable and delete the remainder.]~~

~~1. Stand alone plan that does not require submittal to or approval by US EPA (Scenario B)~~
~~2. A self implementing plan developed under TSCA 40 CFR 761.61(a) and submitted as a notification to US EPA. The 30 day presumptive approval of the plan has expired and no further approvals from US EPA are required~~
~~3. A self implementing plan developed under TSCA 40 CFR 761.61(a) and submitted as a notification to USEPA. EPA has reviewed and issued approval conditions to the PCB Cleanup Plan in its letter dated [DATE]. Such USEPA approval conditions are attached herewith and as part of this specification~~
~~4. A risk based application submitted under 40 CFR 761.61(c) for review and approval by USEPA. USEPA has reviewed and issued approval conditions to the PCB Cleanup Plan in its letter dated [DATE]. Such USEPA approval conditions are attached herewith and as part of this specification.~~

D. Order of Precedence: In the event a conflict arises between the USEPA approval conditions, the PCB Cleanup Plan or the specifications provided in Parts 1 through 3 above, unless directed otherwise by the ENGINEER, the USEPA approval conditions shall govern, followed by the PCB Cleanup Plan and then by Parts 1 through 3.

E. [insert the following text only if soil, sediment or other non building material impacts need to be remediated.] [Within the limits of the Project, PCBs have been found in media other than building related materials. The potential release mechanism whereby PCBs came to be located in such other media is presented in the PCB Cleanup Plan. Such other media must be managed as PCB Remediation Waste in accordance with the PCB Cleanup Plan. All Work related to other media must be coordinated with the overall Project so that project delays, if any, are minimized.

END OF SECTION

SECTION 01 35 43.17

OTHER HAZARDOUS MATERIAL MANAGEMENT

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering Manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements.

For Part 4, the Project Team should use Edit >Find> bracket"[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Part 4 is complete.

The following materials are draft, to be edited to reflect project specific needs. For each project specific application, draft and final draft material is to be submitted to the CIP Engineering Manager and CIP Construction Manager for review. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For a guidance on what information should be included in each article, refer to: ***Hazardous Material Investigation and Remediation Protocol, Technical Memorandum 1, March 2019*** *or latest version.*

2019-10-01- Suggested modifications. Need City to review and approve.

2020-01-28: Confirmed by City for 60% on 01/15/2020.

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes specifications for the management and disposal of Hazardous or Regulated Materials (Other Hazardous Materials – [OHM]) other than Polychlorinated Biphenyls (PCBs), Asbestos Containing Materials (ACMs), and Lead Containing Materials (LCMs), that are used, stored or managed at the FACILITY and within the Project area. Refer specification sections listed ~~below~~ for the management of PCBs, ACMs, and LCMs in building or construction materials.

~~B. Related Sections~~

~~1. Section 01 35 23 - Plant Safety Requirements~~
~~2. Section 01 35 43.05 - Hazards and Hazardous Materials Mitigation~~
~~3. Section 01 35 43.14 - Asbestos Containing Material Management~~
~~4. Section 01 35 43.15 – Lead Containing Material Management~~
~~5. Section 01 35 43.16 – Polychlorinated Biphenyls Management~~

~~C.~~B. The FACILITY and CONTRACTOR and ENGINEER have not identified material suspected to be OHMs for this project. If OHMs is identified, the work will be treated as a regulated site condition under the contract. ~~contracted a hazardous materials consultant to conduct an assessment to characterize the nature, type, and extent of impacts by~~

Commented [RJ1]: True up with final Hawkins contract. The diesel will be done as an allowance item. Is this covered here or elsewhere?

~~hazardous materials within the Project area. The findings of the this assessment are included in the report referenced in PART 4 of this Specification Section.~~

~~D.~~C. If OHM must be abated and disposed, the CONTRACTOR shall ~~be aware of all conditions of the Project and is responsible for verifying~~determine quantities and locations of all the OHMs identified at the Project site. All quantities shall be verified by the CONTRACTOR and no claim for additional costs will be accepted. ~~Any OHM quantities implied in these Specifications are illustrative only and are not intended to represent actual quantities for bidding purposes.~~

1. CONTRACTOR shall furnish all labor, materials, services, insurance, equipment, and decontamination facilities to carry out the work identified in this specification, hazardous materials investigation reports~~, and associated project drawings~~.
2. All work shall be performed by persons knowledgeable, qualified and trained in the removal, treatment, handling and disposal of hazardous materials.
3. Where methods or procedures are specified in this section, they shall constitute minimum level of performance requirements and shall in no way relieve CONTRACTOR of sole responsibility for the means, methods, techniques, sequences or safety measures to successfully complete that work as agreed upon in the Contract Documents or approved change order.

~~E.~~D. Description of Work

1. If ~~Contractor~~CONTRACTOR encounters any unidentified and/or untested material that is suspected to be hazardous or any suspect material that is not within the projected parameters or work area, CONTRACTOR shall stop all work in the affected area and notify the ENGINEER.

~~1.~~2. The work includes proper planning, safety, permitting, notifications, and all labor, equipment, and materials necessary to successfully remove, abate, mitigate, remediate the OHMs from the Project site, inclusive of waste characterization, handling, transport, and proper waste disposal. ~~CONTRACTOR shall refer to the report referenced in PART 4 of this specification section, for the location(s), estimated quantities, and specific performance requirements related to the OHMs~~.

~~2.~~1. ~~If Contractor encounters any unidentified and/or untested material that is suspected to be hazardous or any suspect material that is not within the projected parameters or work area, CONTRACTOR shall stop all work in the affected area and notify the ENGINEER.~~

3. Work included:
   a. Furnishing of all labor, materials, facilities, equipment, services, and insurance necessary to perform the work;
   b. Preparation and maintenance of work area/site security;
   c. Removal, segregation, and/or containment of OHMs encountered during the project work;
   d. Cleanup and final decontamination of all work areas;
   e. Implementation of a worker protection program in compliance with all applicable regulations;
   f. Development of a Site Specific Health and Safety Plan that addresses all potential hazards associated with the work and specifies (and contains records) training requirements for workers in compliance with Local, State, and Federal regulations.

Commented [RJ2]: Coordinate with contract language.

Commented [RJ3]: Don't we already have this? Is this really an amendment or update?

g. Proper handling, containerization, labeling, profiling, transportation and, disposal of all waste generated as part of management of OHMs.

1.02 CODES COMPLIANCE AND REGULATIONS

A. CONTRACTOR shall assume full responsibility and liability for compliance with all applicable federal, state, and local regulations, including but not limited to regulations pertaining to work practices, protection of workers, visitors to the site, persons occupying areas adjacent to the site, packaging and labelling, hauling, and disposal.

B. CONTRACTOR shall comply with all pertinent laws, rules, and regulations existing at the time of the work for the type of hazardous materials identified at the Project site. CONTRACTOR is responsible to be in compliance with all regulations governing the work to be performed.

1.03 SUBMITTALS

A. CONTRACTOR shall submit the following documentation prior to the start of work:
   1. A detailed job-specific plan of the work procedures to be used for the work to be completed (CONTRACTOR's Hazardous Materials Management Work Plan). The plan shall be compliant with this specification section and regulations.
   2. A Site Specific Health and Safety Plan that addresses all potential hazards associated with the work and specifies (and contains records) training requirements for workers in compliance with Local, State, and Federal regulations
   3. Submit any current and valid licenses, permits, and notices required by federal, state, local regulations and proof of timely transmittal of notices to the respective agency requiring the notices.
   4. An emergency preparedness plan as specified in Paragraph 1.07 below.
   5. Safety Data Sheets (SDS) for any solvents, caustic stripping agents, paints, encapsulants, adhesives, detergents, and replacement materials, as necessary that CONTRACTOR intends to bring to the FACILITY.
   6. Other submittals as required by the work and OHM identified at the Project.

B. CONTRACTOR shall submit the following close-out information following completion of the Project:
   1. After completion of the work, the Contractor shall provide a final report documenting removal, transportation and recycling, treatment, disposal, or incineration activities. The document shall include copies of tailgate safety meeting forms, manifests, supervisor logs, shipping slips, permits, and licenses for this Project and any documentation listed in Paragraphs 1.03.A or 1.03.B above not collected during the Project.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Qualifications of CONTRACTOR (or Subcontractor as applicable):
      a. Work performed under this Section shall be by a single CONTRACTOR.
      b. CONTRACTOR shall have a minimum of five (5) years' experience as an approved hazardous materials abatement contractor unless approved by the

Commented [RJ4]: Do we really mean specialty subcontractor?

ENGINEER to have less than five (5) years' experience. If requested, the CONTRACTOR shall provide the names and locations of five (5) projects of similar size and scope that it has completed within the previous five years.

c. The CONTRACTOR must hold all insurance and bonds as required by other sections of this specification and maintain as valid and current for the duration of the Project.

2. Qualifications of Personnel:
   a. All work shall be completed utilizing fully-qualified persons who are trained, experienced, and knowledgeable in the proper techniques and procedures for hazardous materials management activities covered by this Section.
   b. Workers who handle hazardous materials shall be licensed and trained in safe and proper hazardous materials handling procedures. At a minimum, this shall include OSHA 40-Hour Hazardous Waste Site Health and Safety Training in accordance with 29 CFR 1910.120.
   c. Refrigerant recovery shall be completed by technicians qualified and certified by an EPA approved certification program.
3. Qualifications of Analytical Laboratory:
   a. Any laboratory proposed by the CONTRACTOR shall be certified and accredited for such analytical procedures by the governing state and federal accrediting board, and shall maintain accredidation throughout the duration of the project. Qualifications and accredidation documents shall be provided in CONTRACTOR's Hazardous Materials Management Work Plan.
   b. If requested, t~~T~~he laboratory shall forward copies of all reports and technical correspondence directly to the ENGINEER

B. Pre-Construction Meeting: At least one week before work commences, a pre-construction meeting shall be held at a location designated by the ENGINEER. Attendees shall include the ENGINEER and CONTRACTOR; and others as necessary. The agenda shall include a review of project safety requirements, CONTRACTOR's Hazardous Materials Management Work Plan, emergency contacts and notification plan, and any other issues pertinent to the safe execution of the work.
   1. Work shall not commence until all required submittals and plans have been approved by the ENGINEER.

C. ENGINEER has the authority to stop work at any time if it determines that conditions are not in conformance with these specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the ENGINEER. Standby time required to resolve violations shall be at the contractor's expense, and any fines, etc., for hazardous conditions or non-compliance shall be at the contractor's expense and shall not be grounds for change orders or time extension.

Commented [RJ5]: No additional cost? This could be a cost of work under contract terms. Coordinate with contract terms.

1.05 NOTICES

A. Post a list containing the names, addresses, and telephone numbers of CONTRACTOR staff, and emergency medical services.

B. Additional postings shall include:
   1. Visitor Entry and Exit Log.

2. Employee Daily Sign in Log.
3. Entry and Exit Procedures.

1.06 SITE SECURITY

A. Access to the work areas shall be limited to authorized, trained, and properly equipped personnel, including the CONTRACTOR, Subcontractor(s), CONTRACTOR's employees, and regulatory agency inspectors.

B. Entry into the work area by unauthorized individuals shall be reported immediately.

C. The CONTRACTOR shall be responsible for Project site security during work operations in order to protect work efforts and equipment.

1.07 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed by the CONTRACTOR prior to the start of Hazardous Materials Management activities and described in the CONTRACTOR's Hazardous Materials Management Work Plan.

B. Emergency procedures shall be in written form and prominently posted. The CONTRACTOR shall ensure that all persons entering the work area read these procedures and understand the Project site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include considerations of fire, explosion, electrical hazards, slips, trips and falls, confined spaces, and heat-related injury. Written procedures shall be developed, and employee training procedures shall be furnished by the CONTRACTOR.

D. Employees shall be trained in evacuation procedures in the event of work place emergencies.
   1. For minor injuries and illness, employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work area to obtain proper medical treatment.
   2. For serious injury or illness, worker decontamination shall take least priority. After stabilizing the injured worker, remove him from the work area and seek proper medical treatment.
   3. Telephone numbers of all emergency response personnel shall be prominently posted in the clean and equipment rooms.

1.08 FIRE PROTECTION

A. CONTRACTOR is responsible for compliance with all federal, state and local fire protection regulations and codes and the fireprotection procedures established at the Facility.

B. CONTRACTOR's means and methods will at a minimum provide for the following:
   1. When applicable, a~~A~~ll plastic sheet and structural materials used in the hazardous materials management process shall be UL approved and certified as fire retardant or noncombustible.

2. All combustible rubbish and debris shall be properly disposed of at the end of each working day.
3. A minimum of ~~two (2)~~one (1) 4A/60BC dry-chemical fire extinguishers shall be kept in the work area. They shall be charged and maintained in good working order.
4. CONTRACTOR shall ensure that on site personnel are aware of the location and proper use of all fire extinguishers and other fire/life safety equipment.
5. Maintain a fire watch for a minimum of thirty (30) minutes after the cessation of work.
6. Maintain fire/life safety information in the project log.
7. A statement shall be prepared at the conclusion of each workday, signed by CONTRACTOR, confirming that a survey of the work site has been made and that any unsafe fire/life safety conditions have been rectified.
8. Any work requiring open flame shall require a fire watch standing by with a 2A/60BC extinguisher until completion of the open flame work.

Commented [RJ6]: Matches item below.

PART 2 PRODUCTS

2.01 MATERIALS

A. CONTRACTOR must supply health and safety equipment required to protect workers and to comply with the Health and Safety Plan and CalOSHA requirements.

PART 3 EXECUTION

3.01 REPORTING UNUSUAL EVENTS

A. When an event of unusual and significant nature, as determined by ENGINEER, occurs at the site, CONTRACTOR shall prepare and submit a special report listing the chain of events, persons participating, responses and similar pertinent information. When such events are known or predictable in advance, advise ENGINEER within five (5) calendar days.

3.02 REPORTING ACCIDENTS

A. If a significant accident occurs at the site or anywhere else work is in progress, CONTRACTOR shall prepare and submit appropriate reports to ENGINEER. For this purpose, a significant accident is defined to include events where personal injury is sustained, or substantial property loss is sustained.

3.03 GENERAL WORK

A. Where possible or as directed by ~~Engineer~~ENGINEER, ~~Contractor~~ CONTRACTOR shall segregate waste streams to minimize hazardous and non-hazardous waste and maximize recycling/reuse of materials.

B. Maintain all containers in a continuously sealed condition after they have been filled. Storage of containers must be in a secure location approved by the ENGINEER.

3.04 HANDLING AND DISPOSAL OF HAZARDOUS AND REGULATED MATERIALS

A. Perform all sampling and testing required to properly profile the material for waste reuse, recycling or disposal. CONTRACTOR shall provide for waste characterization and any related testing that may be required by the off-site materials management facility. All costs for testing shall be borne by the CONTRACTOR.

B. CONTRACTOR shall file all necessary notices, obtain all necessary permit and licenses and pay all governmental fees, taxes and other costs in connection with Hazardous Materials Management. It is the CONTRACTOR's responsibility to obtain approvals from all regulators having jurisdiction over the Work.

C. CONTRACTOR shall segregate, contain, package, label, transport and dispose of Hazardous Materials in accordance with all DOT, EPA, California and local regulations. Potential Hazardous Materials that may be encountered during completion of the Project may include, but are not limited to:
   1. California reglated Universal Wastes, including:
      a. Electronic devices: Includes any electronic device that is a hazardous waste (with or without a Cathode Ray Tube (CRT)), including televisions, computer monitors, cell phones, VCRs, computer CPUs and portable DVD players.
      b. Batteries: Most household-type batteries, including rechargeable nickel-cadmium batteries, silver button batteries, mercury batteries, alkaline batteries and other batteries that exhibit a characteristic of a hazardous waste .
      c. Electric lamps: Fluorescent tubes and bulbs, high intensity discharge lamps, sodium vapor lamps and electric lamps that contain added mercury, as well as any other lamp that exhibits a characteristic of a hazardous waste (e.g., lead).
      d. Mercury-containing equipment: Thermostats, mercury switches, mercury thermometers, pressure or vacuum gauges, dilators and weighted tubing, mercury rubber flooring, mercury gas flow regulators, counterweights, dampers
      e. CRTs: The glass picture tubes removed from devices such as televisions and computer monitors.
      f. CRT glass: A cathode ray tube that has been accidently broken or processed for recycling.
      g. Non-empty aerosol cans.
   2. Light ballasts
   3. Biological wastes including raw sewage, bird or animal quano, mold.
   4. Used oil or oil containing equipment
   5. Radioactive wastes, for example tritium exit signs and smoke detectors
   6. Pressurized vessels such as fire extinguishers and compressed gas cylinders
   7. Refrigerator and HVAC refrigerants

D. If OHMs are identified, the d~~D~~etails regarding the specific OHM that ~~are anticipated~~must be removed for the Project and the specific safety, training, performance, handling, and disposal requirements ~~are provided in Part 4 of this specification~~will need to be developed.

Commented [RJ7]: What is expectation here?

E. The removal, packageing, storage, transportation, recycling and/or disposal of Hazardous Materials shall be completed in accordance with the CONTRACTOR's Hazardous Materials Management Work Plan as reviewed and approved by the ENGINEER.

Commented [RJ8]: Matt Smith – do we just need to do this plan no matter what since we have batteries?

3.05 WASTE HANDLING, TRANSPORTATION AND DISPOSAL

A. The Contractor shall provide legal transportation of the waste to the recycling, disposal, treatment, or disposal facility, and complete or obtain all required licenses, manifests, receiving facility waste profiles, or other forms. Copies of all forms or licenses, and the signed original of the waste manifest or other shipping document for each load shall be given to the ENGINEER.

B. Waste, hazardous and non-hazardous, shall be recycled or disposed of at an authorized site in accordance with provisions of this Specification and applicable Federal, State, and local laws.
   1. Any waste determined to be hazardous through analytical testing, shall be kept in a secured area or lockable container that is inaccessible to persons other than authorized personnel working on the Project. Hazardous waste containers shall be labeled in accordance with regulatory requirements, including the date waste collection commenced.
   2. Hazardous waste shall not remain on the Project site beyond 90 calendar days of the date generated. It shall be removed from the Project site and transported to an approved disposal facility before 90 calendar days has elapsed.
   3. Waste shall not be transported from the work area to the storage container or waste hauler's vehicle while staff are present in the path of travel. Where a path of travel cannot be cordoned off, the transportation of waste must be completed prior to or after staff are on site.
   4. Hazardous and non-hazardous waste shall be kept in different containers and stored in separate locations. Commingling of waste is not permitted.
   5. Containers used for hazardous waste shall meet the requirements of EPA and DOT for hazardous waste storage and transport.
   6. Any debris or residue observed on containers or surfaces outside of the Work Area resulting from clean up or disposal activities shall immediately be cleaned.

C. Transportation of Hazardous Materials
   1. Receipts from the disposal facility, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the ENGINEER within 48 hours of disposal.
   2. Hazardous waste shall be transported by a RCRA/DOT/EPA certified hazardous waste transporter. Provide evidence that the hazardous waste transporter meets the requirements of this Specification.
   3. Identify the facility to which the waste generated by this Specification shall be taken. Evidence shall be provided verifying the facility is licensed and permitted to receive and handle recyclable, non-hazardous and/or hazardous waste as applicable.
   4. Waste disposed as hazardous shall be transported under a Uniform Hazardous Waste Manifest. The generator copy of this manifest shall be submitted to the ENGINEER within five (5) calendar days of transport.
   5. Dump receipts, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the ENGINEER within 48 hours of

disposal. The Uniform Hazardous Waste Manifest shall be signed by the generator (or designee), the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, USEPA ID number and signature of the transporter shall also appear on the manifest.

3.06 MONITORING

A. Project Management and Inspection:
   1. The ~~CITY~~ ENGINEER has the right to perform visual monitoring/oversight, air monitoring and/or confirmation sampling at any time.

B. The ~~CITY~~ ENGINEER shall proceed in accordance with the terms and conditions of the Contract Documents whenever the Work or protective measures are not in compliance with applicable governmental regulations, Contract requirements, and/or threatens the adjoining environment with lead contamination.

Commented [AE9]: JR: This does not make sense to me, please explain

PART 4 PROJECT SPECIFIC REQUIREMENTS

4.01 PROJECT SPECIFIC INFORMATION

A. The Project Site is part of and within the FACILITY, and the FACTILITY could have OHM material that impacts the project site, but no ~~locations~~materials have been identified at this time.~~includes the following. [Describe the overall Project and the portion of the Project that requires Hazardous Materials management.]~~

~~B. [Insert project specific requirements based on existing OHM survey and attach, or] [If an OHM survey of the Project Site has not been completed, CONTRACTOR shall include arranging for and conducting such a survey at its own expense. The OHM survey shall identify, locate and quantify OHM other than Polychlorinated Biphenyls (PCBs), Asbestos Containing Materials (ACMs), and Lead Containing Materials (LCMs), that are used, stored or managed at the FACILITY and within the Project area, including but not limited to materials that cannot be disposed as Solid Waste or materials that require sampling and analysis before such disposal. CONTRACTOR shall provide the ENGINEER with a Hazardous Materials Survey Report that includes a summary of the findings and provides the quantity of each type of material identified, the locations of such materials, and the results of any sampling and analysis.]~~

~~C. [Insert project specific health and safety, and training requirments for CONTRACTOR]~~

END OF SECTION

SECTION 01 35 53

SITE SECURITY REQUIREMENTS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- Changes confirmed by City- DONE

PART 1 GENERAL

1.01 SUMMARY

A. Requirements of this section apply to work at the San José - Santa Clara Regional Wastewater Facility (FACILITY), 700 Los Esteros Road, San José, CA.

B. CONTRACTOR shall comply with the CITY's protocol for personnel identification, vehicle hang tags, site access control, and CONTRACTOR deliveries.

C. CONTRACTOR shall be responsible for their own security of equipment and materials from commencement of work through contract completion.

D. CONTRACTOR shall assign an on-site security representative who shall be available at all times while work is being performed ensuring that requirements of this section are met. This individual may be the CONTRACTOR's Superintendent.

1.02 SUBMITTALS

A. Submit name of the individual(s) designated as the on-site security representative (s) including his/her mobile phone numbers.

B. CONTRACTOR's on-site security representative will be responsible for providing the FACILITY's Project Manager and FACILITY's Security Supervisor a current list of deliveries including company name and personnel for inclusion in the FACILITY's appointment calendar. CONTRACTOR's on-site security representative shall be readily available to identify personnel and supervise deliveries as scheduled in the FACILITY's appointment calendar. The Project Manager and Security Supervisor must be notified of any delivery schedule changes as soon as possible to be included in the appointment calendar.

C. CONTRACTOR onsite meetings and quality inspections are required to be entered in the FACILITY's appointment calendar by the Project Manager. The CONTRACTOR will provide

all pertinent information including business name, names of all attending, location in FACILITY and date and time to the Security Supervisor.

D. The CONTRACTOR is responsible for identifying all of his/her staff, the project description and location within the FACILITY as related to projects specified in the Special Provisions. If projects are to be in phases then the CONTRACTOR is responsible for providing a phase description, location and time frame per phase as needed. CONTRACTOR shall complete the Security Review Form CIP, with all the information as stated above, and return the form to the FACILITY's Project Manager for processing.

1.03 CONTRACTOR IDENTIFICATION BADGING PROCEDURE

A. For CONTRACTORS, subcontractors or workers whose presence is required at the FACILITY and related to projects as specified in the Special Provisions, an ID badge must be obtained from the FACILITY Security Supervisor.
   1. The CONTRACTOR's on-site security representative must provide a list of their subcontractors or workers to the Project Manager to include in the FACILITY'S Security Review Form CIP.
   2. If a worker is not on the list, at the discretion of the FACILITY Security Supervisor, he/she will take the name, business and number of the worker and contact the CONTRACTOR's on-site security representative and the Project Manager to verify and escort the worker to the FACILITY. If approved by the Project Manager, the worker/CONTRACTOR shall be added to the Security Review Form CIP and turned into the Security Supervisor.
   3. CONTRACTOR and his/her staff shall complete the Contractor ID Badge Access Request Form and return the form to the Project Manager for processing.
   4. Once the Contractor ID Badge Request Form has been processed and the FACILITY Safety Video/Briefing has been conducted, the FACILITY Security Supervisor will determine the type of ID Badge that will be distributed to the CONTRACTOR and his/her staff.
   5. All personnel need to wear ID badge when on site at the FACILITY. The ID badge provides visibility and security while working at the FACILITY during the approved contract time frame.
   6. The CONTRACTOR's on-site representative shall coordinate with the FACILITY Security Supervisor in scheduling workers needing to take a photo for their ID badge.
   7. For workers who have been distributed a day use ID Badge, at the end of the workday, the CONTRACTOR's site security representative is responsible for having the workers sign out, return the day use ID badge and escort the workers off property.
   8. All identification badges shall be collected by the CONTRACTOR's on-site security representative at the end of the job or assignment and returned to the Project Manager before the final payment will be made. Lost or non-returned identification badges will be charged $25.00 each at the CONTRACTOR's expense.

B. All costs associated with this security procedure shall be borne by the CONTRACTOR.

1.04 VEHICLE IDENTIFICATION - HANG TAG PROCEDURE

A. For CONTRACTORS, subcontractors or workers whose presence is required at the FACILITY related to projects as specified in the Special Provisions, a vehicle hang tag must be obtained from the FACILITY Security Supervisor.

1. The CONTRACTOR's on-site security representative must provide a list of their workers to the Project Manager to include in the FACILITY's Security Review Form CIP.
2. Workers who are not approved to park within the FACILITY will need to park in the visitor parking lot in front of the FACILITY's Administration building or other designated area which does not require a hang tag.
3. CONTRACTOR and his/her staff shall complete the Contractor Vehicle Hang Tag Form and return the form to the Project Manager for processing.
4. Once the Contractor Vehicle Hang Form has been processed, the FACILITY Security Supervisor will determine the type of vehicle hang tag that will be distributed to the Contractor and his/her staff.
5. The Contractor's on-site representative shall coordinate with the FACILITY Security Supervisor in scheduling workers to issue contractor vehicle hang tags.
6. For workers who have been distributed a day use vehicle hang tag, at the end of the workday, the Contractor's on-site security representative is responsible for having the workers sign out; return the vehicle hang tag and escort the workers off property.
7. All hang tags shall be collected by the Contractor's on-site security representative at the end of the expiration date of hang tag(s) to the Project Manager before final payment will be made. Lost or non-returned hang tags will be charged $25.00 each at the CONTRACTOR's expense.

1.05 FACILITY'S SECURITY POLICY REPRESENTATIVE

A. The FACILITY's security policy representative contact information is listed below. At any time when questions arise related to the FACILITY site security procedures, the FACILITY's Security Supervisor shall be contacted, informed of the situation and further direction shall be obtained from the FACILITY'S Security Supervisor.

Ron Nickels
San José/ Santa Clara Regional Wastewater Facility
700 Los Esteros
San Jose, CA 95134
ron.nickels@sanjoseca.gov
408.635.4000

1.06 PRODUCTIVITY LOST AND COST INCURRED DUE TO SECURITY REQUIREMENTS

A. Time lost and/ or costs incurred due to compliance with FACILITY Security measures (e.g., deliveries or personnel held at the gate without badges or identification, refusal of package deliveries, etc.) shall be deemed an inexcusable and non-compensable delay at CONTRACTOR'S sole risk.

1.07 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this specification:
   1. Contractor ID Badge.
   2. Contractor Vehicle Hang Tag Form
   ~~1.~~3. Security Review Form CIP

PART 2 NOT USED

PART 3 NOT USED

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

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SECTION 01 43 33
MANUFACTURERS' FIELD SERVICES

2019-09-10- City to confirm

2020-01-28: In 60% set. Not City spec so TBD if included. Coordinate with vendor/subcontractor POs if not included. Some items covered in City Div-01.

PART 1 GENERAL

1.01 DEFINITIONS

A. Person-Day: One person for 8 hours within regular working hours.

1.02 SUBMITTALS

A. Informational Submittals:

1. Lesson Plan: Submit, in accordance with requirements of this Specification, proposed lesson plan not less than 45 days prior to scheduled training and revise as necessary for acceptance.

1.03 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

A. Authorized representative of manufacturer, factory trained, and experienced in technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system, with full authority by equipment manufacturer to issue certifications required of manufacturer. Additional qualifications may be specified in individual specification section.

B. Representative subject to acceptance by Design-Builder. No substitute representatives will be allowed unless prior written approval by such has been given.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

A. Furnish manufacturers' services, when required by individual specification section, to meet requirements of this section.

B. Schedule manufacturers' services to avoid conflict with other onsite testing or other manufacturers' onsite services.

C. Only those days of service approved by Design-Builder will be credited to fulfill specified minimum services.

D. When specified in individual specification sections, manufacturer's onsite services shall include:

1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of Subcontractor's assembly, erection, installation or application procedures.
2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.
3. Providing, on a daily basis, copies of manufacturers' representatives field notes and data to Design-Builder.
4. Revisiting Site as required to correct problems and until installation and operation are acceptable to Design-Builder.
5. Resolution of assembly or installation problems attributable to or associated with respective manufacturer's products and systems.
6. Assistance during pre-operational testing, functional testing, and Acceptance Testing.
7. Training of City's personnel in operation and maintenance of respective product as required.

3.02 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

A. When so specified, Manufacturer's Certificate of Proper Installation form, a copy of which is attached to this section, shall be completed and signed by equipment manufacturer's representative.

B. Form shall certify signing party is a duly authorized representative of manufacturer, is empowered by manufacturer to inspect, approve, and operate their equipment and is authorized to make recommendations required to ensure equipment is complete and operational.

3.03 TRAINING

A. General:

1. Provide training such that operations and maintenance staff have the information needed to safely operate, maintain, repair, and troubleshoot the equipment and systems provided.
2. Furnish manufacturers' representatives for detailed classroom and hands-on training to City's personnel on operation and maintenance of specified product (system, subsystem, and component) and as may be required in applicable Specifications.
3. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with Design-Builder, and familiar with operation and maintenance manual information specified in Section 01 78 23, Operation and Maintenance Data.
4. Manufacturer's representative shall be familiar with facility operation and maintenance requirements as well as with specified equipment.

5. Furnish complete training materials at the start of the training session, to include operation and maintenance data, to be retained by each trainee. Provide 15 copies of complete training materials.
6. At the conclusion of training, submit two electronic copies and three hard copies of the final lesson plan, overhead transparencies, and handouts within 7 calendar days of training. Material shall be transmitted within 7 calendar days from the completion of the training session.
7. Design-Builder will digitally record training sessions and provide copies of the recordings to the City for future use by operations and maintenance personnel in training of equipment and systems.
8. Following each training session, class evaluation documents as provided herein will be distributed to determine overall effectiveness of the training. Sessions judged "Unsatisfactory" by a majority of the attendees shall be revised and conducted again until a satisfactory rating is achieved.

B. Training Schedule:
1. Coordinate training sessions with Design-Builder and manufacturers' representatives, and with submission of operation and maintenance manuals in accordance with Section 01 78 23, Operation and Maintenance Data.
2. Adjust schedule to ensure training of appropriate personnel as deemed necessary by Design-Builder, and to allow full participation by manufacturers' representatives.
3. Adjust schedule for interruptions in operability of equipment.
4. Unless otherwise specified, provide a minimum of two training sessions for each type and size of equipment.
5. Provide approved preliminary (not Final Submittal) Operation and Maintenance Manual for specific pieces of equipment or systems 60 calendar days prior to training session for that piece of equipment or system.
6. Do not perform training until Lesson Plan and preliminary Operations and Maintenance Manual has been approved by the Design-Builder.

C. Lesson Plan:
1. When manufacturer or vendor training of City personnel is specified, prepare a lesson plan for each required course.
2. An agenda shall be included at the beginning of the lesson plan containing the following minimum information:
   a. Title and objectives.
   b. Recommended attendees for each session or portion of session (such as, managers, engineers, operators, maintenance personnel).
   c. Course description and goals.
   d. Outline of course content to include at a minimum:
      1) Overview of equipment and/or system.
      2) Operating function and system theory.
      3) Startup and shutdown procedures.
      4) Alternative and emergency operation.

5) Preventative maintenance.
6) Troubleshooting.
7) Specific safety procedures and precautions.

e. Estimated class duration for each session or portion of session.
f. Format such as, lecture, self-study, demonstration, hands-on.
g. Instruction materials and equipment requirements.
h. Resumes of instructor(s) providing training.

3. The proposed lesson plans shall include the elements presented in the outlines of the instruction lesson plans herein for each craft. Specific components and procedures shall be identified in the proposed lesson plans.
4. The proposed lesson plans should detail specific instruction topics. "Hands-on" demonstrations planned for the instructions shall be described in the lesson plans. Training aids to be utilized in the instruction shall be cross-referenced in the proposed lesson plans.
5. Training strategies such as planned whiteboard work, instructor questions, and discussion points or other planned classroom or field strategies shall be detailed in the proposed lesson plans.
6. Handouts for training shall be attached to the lesson plans, cross-referenced by section or topic in the lesson plans.
7. The outlines of the Maintenance Instruction Lesson Plan shall include the following, as applicable to each craft:
   a. Equipment operation for all crafts:
      1) Describe equipment's operating (process) function and system theory as well as emergency operating shut down procedures.
      2) Describe equipment's fundamental operating principles and dynamics.
      3) Identify equipment's mechanical, electrical, and electronic components and features.
      4) Identify all support equipment associated with the operation of subject equipment.
      5) Detail the relationship of each piece of equipment or component to the subsystems, systems, and process related to this project.
      6) Cite all hazards associated with the operations, exposure to chemicals associated with the component, or the waste stream handled by the component.
      7) Specify the appropriate and safety precautions, equipment, and procedures to eliminate, reduce, or overcome these hazards.
   b. Detailed component descriptions specific for Mechanical, HVAC, Instrumentation, and Electrical:
      1) Describe Preventative Maintenance inspection procedures required to be performed by operations and maintenance staff while the equipment is in operation, how to spot potential trouble symptoms (anticipate breakdowns), and forecast maintenance requirements (predictive maintenance).

2) Identify and describe in detail each component function.
3) Where applicable, group relative components into subsystems.
4) Identify and describe in detail equipment safety features, permissive and controls interlocks.
5) Review preventative maintenance frequency and task analysis table.
6) Detail procedure for each preventative maintenance activity to be performed weekly or less frequently.
7) Equipment troubleshooting specific for Mechanical, HVAC, Instrumentation, and Electrical:
   a) Define recommended systematic troubleshooting procedures.
   b) Provide component specific troubleshooting checklists.
8) Equipment Corrective Maintenance specific for Mechanical, HVAC, Instrumentation, and Electrical:
   a) Describe recommended equipment preparation requirements.
   b) Identify and describe the use of any special tools required for maintenance of the equipment.
   c) Describe component removal/installation and disassembly/ assembly procedures for repairs.
   d) Perform at least two "hands-on" demonstrations of common maintenance repairs. Additional demonstrations may be required by the Design-Builder.
   e) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
   f) Describe recommended procedures to check/test equipment following a corrective maintenance repair.
9) "Hands-on" instruction shall be conducted according to the following descriptions:
   a) Course instructor shall present "hands-on" demonstrations of common corrective maintenance repairs for each group or craft. The manufacturer shall provide the tools and equipment to conduct the demonstrations. Requests for supplemental assistance and materials should be submitted with the proposed lesson plans.
   b) For those "hands-on" training situations where the operations or maintenance personnel will participate in disassembly or assembly of equipment, trainer shall be responsible for such disassembly or assembly and, on completion of all "hands-on" training, shall provide written certification of proper equipment operation to Design-Builder.
   c) "Hands-on" training of operations personnel will cover proper start-up, shutdown, and normal and alternative operating strategies.

3.04 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this Specification.

1. Manufacturer's Certificate of Proper Installation.
2. Training Evaluation Form.

END OF SECTION

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

Owner: City of San José

Project: Headworks Project

Contract Number: _____

Specification Section: _____

Equipment System: _____

Tag Number(s): _____

Serial Number(s): _____

I hereby certify that the above-referenced equipment/system has been:

Yes	No	N/A	
☐	☐	☐	Installed in accordance with Manufacturer's recommendations.
☐	☐	☐	Serviced with proper initial lubricants.
☐	☐	☐	Electrical and mechanical connections meet quality and safety standards.
☐	☐	☐	All applicable safety equipment has been property installed.
☐	☐	☐	Operated and rotates in the proper direction.
☐	☐	☐	Properly aligned and adjusted as necessary.
☐	☐	☐	Tested for vibration and meets requirements.
☐	☐	☐	Meets specifications and is ready for startup.
☐	☐	☐	Initial Volts (V) and Amps (A) recorded:

Ph1 (A-B): V_____ A_____
Ph2 (B-C): V_____ A_____
Ph3 (A-C): V_____ A_____

Comments:

_____

_____

_____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Signature of Authorized Representative: _____

Manufacturer: _____

SECTION 01 45 00

QUALITY CONTROL

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- Jacobs (Joe) to review.

2019-City to review and provide comments

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Quality control requirements and procedures for products and workmanship and includes the following:
   1. Testing of equipment
   2. Procedures and limitations of inspection

B. Related Sections:
   1. Section 4-1.01 of the July 1992 City of San Jose Standard Specifications
   2. Section 6-3 of the July 1992 City of San Jose Standard Specifications

Commented [BJ1]: Find, review, and coordinate applicability with other documents and contract.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. E 329 – Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
   2. D 3740 – Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

B. California Building Code
   1. Chapter 17- Structural Tests and Special Inspections

1.03 PRODUCTS AND WORKMANSHIP

A. Provide new products of specified quality, and equal to accepted samples when samples were submitted.

B. Perform and complete work in a thorough manner.

1. Call ENGINEER's attention to apparent errors, conflicts, discrepancies, or omissions in Contract Documents and request instructions before proceeding with the Work.
2. ENGINEER will issue written clarification or interpretation of requirements of the Contract Documents.

C. When specified, products will be tested and inspected either at point of origin or at Work site.
1. Notify ENGINEER in writing well in advance of when products will be ready for testing and inspection at point of origin.
2. Do not construe that satisfactory tests and inspections at point of origin is final acceptance of products. Satisfactory tests or inspections at point of origin do not preclude retesting or re-inspection at Work site.

D. Do not ship products that require testing and inspection at point of origin prior to testing and inspection.

1.04 INSPECTION

A. Material and equipment, and workmanship shall be subject to inspection and rejection when not in conformance with Contract Documents.

B. Remove defective work and products from Work site, whether in place or not, and replace or renew with work, material or equipment in conformance with Contract Documents.

C. Questions concerning acceptability of materials, classification or materials, and execution of the Work will be decided by ENGINEER.

D. Facilitate inspection by maintaining proper facilities and providing safe access to the Work, to shops where products are in preparation, and to warehouses and storage yards where products are stored.

E. ENGINEER's observation of Work that will be covered up:
1. When directed to allow observation of work before it is covered up, provide timely notification of work readiness and allow ENGINEER reasonable time to observe such work before covering it up.
2. Uncover, at CONTRACTOR's cost, work covered up for which ENGINEER was not given timely notification or reasonable time to conduct observations.
3. ENGINEER may specify time requirements for timely notification and for performing observations.

F. Inspections may extend to entire or part of the Work and to preparation, fabrication, and manufacture of products for the Work.

G. The presence or absence of a quality assurance inspector does not relieve CONTRACTOR from any Contract requirement.

H. CITY's Representative or Inspector will not:
1. Alter or waive provisions of Contract Documents.

Commented [BJ2]: Change both of these to CONTRACTOR.

Commented [BJ3]: In other parts of the contract we give City 20-45 days notice. Suggest same here.

Commented [BJ4]: CONTRACTOR

Commented [RJ5]: This will be at daily 6:30 meetings.

Commented [BJ6]: Suggest we define the time as no less than 24 hours. We hold a 6:30 a.m. meeting daily. We discuss all tests today and for tomorrow. Once we close that meeting, we immediately go into EADOC and establish tests for tomorrow.

2. Inspect CONTRACTOR's means, methods, techniques, sequences, or procedures for construction.
3. Accept portions of the Work, issue instructions contrary to intent of Contract Documents, or act as foreman for CONTRACTOR.
4. Supervise, control, or direct CONTRACTOR's safety precautions or programs; whether CONTRACTOR's employees or others.

I. CITY's Representative or Inspector will:
1. Conduct on-site observations of the Work in progress to assist ENGINEER in determining when the Work is, in general, proceeding in accordance with Contract Documents.
2. Report to ENGINEER whenever Inspector believes that Work is faulty, defective, does not conform to Contract Documents, or has been damaged; or whenever there is defective material or equipment; or whenever Inspector believes the Work should be uncovered for observation or requires special testing.

Commented [BJ7]: ENGINEER and CONTRACTOR

Commented [BJ8]: ENGINEER and CONTRACTOR

1.05 SPECIAL INSPECTION

Commented [AE9]: City will contact Eric to determine who pays for third party inspection

A. All building and structural projects must follow and comply to the 2016 California Building Codes, Chapter 17, Special Inspection requirements.

B. Special inspections and testing shall be performed in accordance with the approved plans and specifications, and CBC sections 1704, 1705, 1706, 1707, and 1708.

C. Special inspections and testing shall be performed by one or more of the Recognized Special Inspection and Testing Agencies listed in the City of San Jose Special Inspection List. The current list can be found at http://www.sanjoseca.gov/documentcenter/view/19243.

D. The CITY's Statement of Special Inspection Form shall be completed by the Registered Design Professional in Responsible Charge and submitted to the City of San Jose for review and approval. All structural elements require special inspections and tests shall be specified and submitted with the Statement of Special Inspection Form.

E. All Interim Reports shall be submitted to the City of San Jose and the Registered Design Professional in Responsible Charge in accordance with CBC Section 1704.1.2.

F. A Final Report of Special Inspections signed by the responsible ENGINEER of the special inspection agency documenting required special inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy (CBC Section 1704.1.2). The Final Report shall document the following:
1. Required special inspections performed
2. Correction of discrepancies noted in inspections

A copy of the Final Report shall be maintained at the job site for CITY's Inspector's review prior to final inspections.

Commented [BJ10]: Is this correct that this step is performed by the City capital ENGINEER?

Commented [RJ11]: CONTRACOR will submit documents through EADOC

Commented [BJ12]: CONTRACTOR
May want to add a second sentence that the City will retain and directly pay for an independent testing and inspection firm. City will determine when they utilize that firm to perform checks. DB cost model as budget for 3rd party inspection.

G. The CITY will retain and directly pay for the Special Inspections as required in CBC Section 1704.1

1.06 SAMPLING AND TESTING

A. General
   1. Prior to delivery and incorporation in the Work, submit listing of sources of materials, when specified in Sections where materials are specified.
   2. When specified in Sections where products are specified:
      a. Submit sufficient quantities of representative samples of character and quality required of materials to be used in the Work for testing or examination.
      b. Test materials in accordance with standards of national technical organizations.

B. Sampling
   1. Furnish specimens of materials when requested.
   2. Do not use materials which are required to be tested until testing indicates satisfactory compliance with specified requirements.
   3. Specimens of materials will be taken for testing whenever necessary to determine quality of material.
   4. Assist ENGINEER in preparation of test specimens at site of Work, such as soil samples and concrete test cylinders.

Commented [BJ13]: CONTRACTOR unless this is to support the duplicative 3rd party testing that City might do.

C. Test Standards
   1. Perform sampling, specimen preparation, and testing of materials in accordance with specified standards, and when no standard is specified, in accordance with standard of nationally recognized technical organization.
   2. Physical characteristics of materials not particularly specified shall conform to standards published by ASTM, where applicable.

1.07 TESTING LABORATORY SERVICES

A. Qualification of Laboratory
   1. Meets “Recommended Requirements for Independent Laboratory Qualification”, published by American Council for Independent Laboratories.
   2. Meets requirements of ASTM E 329.
   3. Has authorization to operate in the State of California.
   4. Will submit copy of report of inspection of facilities made by Materials Reference Laboratory during most recent tour of inspection, with memorandum of remedies of deficiencies reported by inspection.
   5. Has testing equipment calibrated at reasonable intervals by devices of accuracy traceable or accepted values of natural physical constants.

B. Laboratory Duties
   1. Cooperate with ENGINEER and CONTRACTOR.
   2. Provide qualified personnel.
   3. Notify ENGINEER and CONTRACTOR, in writing, of response time needed to schedule testing or inspections after receipt of notice.
   4. Perform specified inspections, sampling, and testing of materials and methods of construction in accordance with specified standards to ascertain compliance of materials with requirements of Contract Documents.

Commented [BJ14]: I think this is okay but could be CONTRACTOR. We provide all responses to the City once we receive them.

5. Promptly notify ENGINEER and CONTRACTOR of observed irregularities or deficiencies of construction by telephone or email followed by a written letter.
6. Promptly submit written report of each test and inspection; one copy each to ENGINEER, CITY, CONTRACTOR, and one copy to file of Project Record Documents. Each report shall include:
   a. Sequential number
   b. Date issued
   c. Project title and number
   d. Testing laboratory name, address and telephone number
   e. Name and signature of laboratory inspector
   f. Date and time of sampling or inspection
   g. Record of temperature and weather conditions
   h. Date and time of test
   i. Identification of product and specification section
   j. Location of sample or test in project
   k. Type of inspection or test
   l. Results of tests and compliance with Contract Documents
   m. Interpretation of test results, when requested by ENGINEER
7. Store samples for a period of one (1) year after testing

C. Limitations of Authority of Testing Laboratory: Laboratory is not authorized to:
   1. Release, revoke, alter or enlarge on requirements of Contract Documents.
   2. Approve or accept portion of Work.
   3. Perform duties of CONTRACTOR.

1.08 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel and provide access to construction and manufacturing operations.

B. Secure and deliver to laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

C. Provide to laboratory preliminary mix design proposed to be used for concrete, and other materials mixes which require control by testing laboratory.

D. Furnish copies of product test reports.

E. Furnish incidental labor and facilities:
   1. To provide access to construction to be tested
   2. To obtain and handle samples at Work site or at source of product to be tested.
   3. To facilitate inspections and tests
   4. For storage and curing of test samples

F. Notify laboratory in advance of when observations, inspections, and testing is needed for laboratory to schedule and perform in accordance with their notice of response time.

Commented [BJ15]: Email only. We will load the electronic copy to EADOC.

Commented [BJ16]: Alter this to be one copy to CONTRACTOR. Next sentence is CONTRACTOR shall provide to Project Record Documents system-EADOC.

Commented [RJ17]: Delete this sentence.

Commented [BJ18]: 24 hours in advance. This is how we schedule our projects with Signet. Strike end of sentence.

G. CONTRACTOR shall pay for all quality control testing other than the Special Inspections as required in CBC Section 1704.1.

Commented [BJ19]: CONTRACTOR pays for Special Inspection.

H. Correct defective work at CONTRACTOR'S expense

1.09 ELECTRICIAN CERTIFICATION REQUIREMENTS

A. In accordance with California Labor Code Section 3099.2., the CONTRACTOR shall use, and/or cause its electrical subcontractor to use, properly certified electricians to perform electrical work.

B. There are a number of exemptions to the "certification" requirement. For example, certification is not required for the following:
   1. Persons performing work within the scope of the C-7 contractor's license (low voltage systems) or the C-45 contractor's license (electric signs).
   2. A registered apprentice performing electrical work as part of an approved apprenticeship program.
   3. A nonresidential lighting trainee meeting certain enumerated requirements.
   4. The person qualifying for the C-10 electrical contractor license.
   5. Persons performing electrical connections under 100 volt-amperes.
   6. Electrical work ordinarily and customarily performed by stationary ENGINEERS.
   7. Electrical work in connection with the installation, operation, or maintenance of temporary or portable electrical equipment performed by technicians in the theatrical, motion picture production, television, hotel, exhibition, or trade show industries.

C. Whenever the CITY becomes aware that uncertified electricians are performing electrical work, the ENGINEER will prohibit the Work from proceeding until properly certified electricians are used.

D. The CITY will inspect any electrical work performed by uncertified electricians and – if the Work is incorrect – require the CONTRACTOR to make the necessary corrections using certified electricians at the CONTRACTOR's sole cost.

PART 2 PRODUCTS (**NOT USED**)

PART 3 EXECUTION (**NOT USED**)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 45 36
EQUIPMENT SEISMIC CERTIFICATION

~~2019-09-10- DB added- Discuss with City-~~. Doing for equipment with limited cost impacts

2019-10-18- Section 01 88 15 is changed to 01 73 23

PART 1 GENERAL

1.01 SUMMARY

A. This section covers the code required seismic certification of mechanical and electrical equipment in accordance with 2016 CBC, Chapter 17.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:
1. American Society of Civil Engineers (ASCE): 7, Minimum Design Loads for Buildings and Other Structures.
2. California Building Standards Commission, California Building Code (CBC).
3. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   a. 344, Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations.
   b. 693, Recommended Practice for Seismic Design of Substations.
4. International Code Council (ICC):
   a. International Building Code (IBC).
   b. Evaluation Service (ICC-ES) Reports and Legacy Reports.
5. National Fire Protection Association (NFPA): 13, Standard for Installation of Sprinkler Systems.

1.03 DEFINITIONS

A. Agencies and Personnel:
1. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.

B. Component Supports:
1. Electrical: Structural members or assemblies which transmit loads and forces from electrical equipment to the structure, including braces, frames, legs, pedestals, and tethers, as well as elements forged or cast as part of component for anchorage.
2. Mechanical: Structural members or assemblies which transmit loads and forces from mechanical equipment to the structure, including braces, frames, skirts, legs, saddles, pedestals, snubbers, and tethers, as well as elements forged or cast as part of component for anchorage.

1.04 SUBMITTALS

A. Informational Submittals:

1. Seismic Qualification of Mechanical and Electrical Equipment Certification of Compliance: Submit for mechanical and electrical components having a component importance factor of 1.5 as designated herein. Submit for other components having component importance factor of 1.0 where test results are submitted as an alternate to required calculations under 13.2.5 of ASCE 7-10. Refer to Article Supplement located at end of section.
2. If required by Engineer, submit documentation of testing results or analytical data.

1.05 STATEMENT OF SPECIAL INSPECTIONS (PLAN) REQUIREMENTS

A. Complete special inspection and testing in accordance with Section 01 45 33, Special Inspection, Observation, and Testing.

B. Architectural, mechanical, and electrical components subject to special inspection and testing under CBC Section 1705.13 for seismic resistance, as listed in table in Article Mechanical and Electrical Component Certification are in addition to requirements of Section 01 45 33, Special Inspection, Observation, and Testing.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MECHANICAL AND ELECTRICAL COMPONENT CERTIFICATION

A. Provide certificate of compliance for mechanical and electrical component testing and certification on form located at end of section. Provide certificates for equipment and components listed in the following table:

Mechanical and Electrical Components Requiring Certification of Compliance for Seismic Testing or Analysis under CBC Section 1705.13.2			
Specification Section	**Component**	**Component Importance Factor, I_p**	**Component to Remain Operable?**
23 18 00	Unitary Air-Conditioning Equipment	1.5	Not Required
26 12 02	Oil-Filled Pad Mounted Transformers	1.5	Yes
26 13 13	Medium-Voltage Circuit Breaker Switchgear	1.5	Yes

Mechanical and Electrical Components Requiring Certification of Compliance for Seismic Testing or Analysis under CBC Section 1705.13.2			
Specification Section	**Component**	**Component Importance Factor, I_p**	**Component to Remain Operable?**
26 19 23	Medium-Voltage Variable Frequency Drive System	1.5	Yes
26 22 00	Low-Voltage Transformers	1.5	Yes
26 24 16	Panelboards	1.5	Yes
26 24 19	Low-Voltage Motor Control	1.5	Yes
26 29 23	Low-Voltage Variable Frequency Drive System	1.5	Yes
26 36 23	Automatic Transfer Switches	1.5	Yes
44 31 00	Biotrickling Filter System	1.5	Not Required
44 42 30	Influent Screening System	1.5	Not Required
44 42 40	Grit Basin Equipment	1.5	Not Required
44 42 41	Grit Washer/Classifier System	1.5	Not Required
44 42 48.01	Automatic Composite Sampler (Vacuum/ Pressure Type)	1.5	Not Required
44 42 56.03	Vertical Turbine Pumps	1.5	Not Required
44 42 56.04	Submersible Pumps	1.5	Not Required
44 42 56.12	Induced Flow (Recessed Impeller) Centrifugal Pumps	1.5	Not Required

Commented [RJ1]: Take out; this will be in MCC

B. Certify mechanical and electrical components listed in table above on basis of tests on a shaking table, by three-dimensional shock tests, or by an analytical method using dynamic characteristics, and forces as provided in Section ~~01 88 15~~01 73 23, Bracing and Anchoring~~age and Bracing~~. Submitted testing shall meet requirements of ASCE 7-10, Section 13.2.5.

C. Component and attachment testing and certification shall be in accordance with applicable provisions of CBC Section 1705.13.3. Seismic testing and certification is in addition to functional and performance testing required for new equipment for field quality control or start-up testing as indicated in technical specification.

D. Where equipment is required to remain operable following the design earthquake ground motion, active parts or energized components shall be certified on basis of approved shake table testing or experience only unless demonstrably similar to other equipment so qualified.

E. Where component is included in list and not required to remain operable, certification of component by analysis with forces as provided in Section 01 73 23, Bracing and Anchoring~~01 88 15, Anchorage and Bracing~~, is allowed. Component may be analyzed assuming equipment is not in operation at time of seismic event. Equipment structural members required for component stability such as frames, enclosures, casings, shafts, and connections shall be analyzed and shown to transmit seismic forces to supporting building structure without yielding or failure of component members and connections.

F. Components with hazardous contents shall be certified to contain materials under the design earthquake.

3.02 SUPPLEMENT

A. The supplement listed below, following "End of Section," is a part of this specification:
   1. Seismic Qualification of Mechanical and Electrical Equipment Certificate of Compliance.

END OF SECTION

SEISMIC QUALIFICATION OF MECHANICAL AND ELECTRICAL EQUIPMENT
CERTIFICATE OF COMPLIANCE

(Component under Certification)	(Name of Manufacturer)
(Tag Number or Equipment ID)	(Business Address)
(Drawing/Detail Number)	(_____)_____ (Telephone)

This is to certify that above-referenced component meets or exceeds requirements of Section 1705.13.2, or 1705.13.3 for equipment to remain operable, of 2016 CBC for seismic qualification of equipment. Basis of qualification is by:

(Check Applicable)

☐ Shake-table Test

☐ Three-dimensional Shock Test

☐ Analytical Method ~~(not allowed for equipment required to remain operable)~~

☐ Experience Data

☐ Other _____

under acceptance criteria of:

☐ ICC-ES AC156, Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems

☐ IEEE 693, IEEE Recommended Practice for Seismic Design of Substations

☐ IEEE 344, IEEE Recommended Standard Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations for experience data

☐ ASCE 7-10 Chapter 13 for analytical methods

☐ Other _____

for the following earthquake hazard rating:

IEEE Seismic Qualification Level:_____

Mapped MCE, 5 Percent Damped, Short Period Spectral Response Acceleration, S_S:_____

Design, 5 Percent Damped, Short Period Spectral Response Acceleration, S_{DS}:_____

Component Importance Factor, I_p:_____

Component Response Modification Factor, R_p:_____

Height of Point of Attachment as Factor of Average Roof Height, z/h:_____

This certification covers both the integrity of the equipment and anchorage of equipment. Required mounting and anchorage details are shown on attached Seismic Outline Drawing for the most seismically vulnerable component covered by this certification.

Manufacturer's Representative Signature: _____

Address: _____

Date: _____

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- This section requires further discussion between City and Jacobs

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Furnishing, maintaining, and removing construction facilities and temporary controls, including temporary utilities, construction aids, security, access roads, temporary controls, field offices and sheds, and removal after construction.

B. Minimum temporary facilities and controls requirements are specified in this section. Nothing in this section is intended to limit types and amounts of temporary Work, and no omission from this Section will be recognized as an indication that such temporary Work is not required for successful completion of the Project and compliance with the Construction Documents.

Commented [RJ1]: Update to meet the latest Contract assummtions – utilities, trailers, etc. Might remove this so it does not conflict with Contract?

~~C. Related Sections:~~

~~1. Section 01 14 00 – Work Sequence and Restrictions~~
~~2. Section 01 33 00 – Submittal Procedures~~
~~3. Section 01 35 53 – Site Security Requirements~~

1.02 SUBMITTALS

A. Informational Submittals:
   1. For products specified to be furnished under this Section, submit product data in accordance with Section 01 33 00 – Submittal Procedures.
   2. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
   3. Temporary Utility Submittals
      a. Electric power supply and distribution plans
      b. Water supply and distribution plans

c. Drainage plans
d. Dewatering well locations
e. Sanitary

4. Temporary Construction Submittals
   a. Parking areas
   b. CONTRACTOR's field office, storage yard, and storage building plans, including gravel surfaced area
   c. Fencing and protective barrier locations and details
   d. Staging area location plan
   e. Traffic and Pedestrian Control and Routing plans: as specified herein, and proposed revisions thereto
   ~~f. Plan for maintenance of existing Plant operations~~
   ~~g.~~f. CONTRACTOR's Field Office Plans
5. Temporary Control Submittals
   a. Dust control plan
   ~~b. Noise control plan~~
   ~~c.~~b. Plan for disposal of waste materials and intended haul

1.03 MOBILIZATION

A. Mobilization shall include, but not be limited to, these items:
   1. Obtaining all required permits. Note permits for project will be obtained after mobilization.
   2. Moving the CONTRACTOR's field office and equipment required for the first month of operations onto site.
   3. Install temporary construction power, wiring, and lighting facilities.
   4. Provide onsite communications facilities, ~~including telephones~~.
   5. Providing onsite sanitary facilities and potable water facilities as specified and as required by all applicable laws and regulations.
   6. Providing sedimentation and erosion control measures.
   7. Arranging for and construction of the CONTRACTOR's work and storage yard .
   8. Posting OSHA required notices and establishing safety programs and procedures.
   9. Having the CONTRACTOR's superintendent at site full time.

1.04 TEMPORARY UTILITIES

A. Temporary Electrical Power:
   1. CONTRACTOR shall provide power for construction at the plant site. He shall make arrangements ~~with the electrical utility and~~ with the CITY for power takeoff points, voltage and phasing requirements, transformers and metering and shall pay the costs and fees arising therefrom. The CONTRACTOR shall provide the special connections required for his work.
   2. Subject to the ENGINEER's approval, temporary electric power for use during construction may be obtained from CITY's electric system where adequate capacity and switching are available, and where the normal operation of any of the CITY's

facilities will not be adversely affected. In such cases, no charge will be made by the CITY for electric power.

3. Where use of the CITY's power system is not possible or is not allowed, CONTRACTOR shall be responsible for obtaining a source of electric power for construction. CONTRACTOR shall arrange with local utility to provide adequate temporary electrical service, including metering equipment. Cost of electric power in this case shall be borne by the CONTRACTOR.
4. Provide and maintain adequate jobsite power distribution facilities conforming to applicable Laws and Regulations. ~~When using permanent facilities, provide separate meter and reimburse CITY for power used in connection with performance of the Work.~~

B. Temporary Electrical Lighting:
   1. In work areas, provide temporary lighting sufficient to maintain lighting levels during working hours, not less than lighting levels required by OSHA and state agency which administers OSHA regulations where Project is located.
   2. When available, permanent lighting facilities may be used in lieu of temporary facilities.

C. Temporary Heating, Cooling and Ventilating:
   1. Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather and to provide safe environment for workers.
   2. Permanent heating system may be utilized when sufficiently completed to allow safe operation.

D. Temporary Water:
   1. CONTRACTOR shall pay for and construct facilities necessary to furnish potable water for human consumption and non-potable water for use during construction.
   2. CONTRACTOR shall remove temporary piping and connections and restore affected portions of the FACILITY to original condition before Project Completion.
   3. Development of Potable Water Supply:
      ~~a. CONTRACTOR shall install a CITY approved metering device and record the volume of potable water used at the construction site. Submit records to the ENGINEER on a monthly basis.~~
      ~~b.~~a. Approved quantities of potable water are available from approved connections within the Facility without cost.
   4. Non-Potable Water Supply:
      a. Recycled water from the South Bay Water Recycling (SBWR) Facility is available to the Contractor free of charge from the Recycled Water Truck Fill Station located adjacent to the EBOS structure.
      b. Use of the Recycled Water Truck Fill Station and subsequent use of the recycled water is conditional upon contractor's personnel receiving SBWR training and compliance with SBWR requirements for use of recycled water. The SBWR training and requirements will be provided by the ENGINEER.
      c. Non-potable water, ~~other than~~and Recycled Water, is available from approved hose valves within the Plant without cost.
      d. When combined demand of the Work and Plant exceeds Plant supply capacity, provide additional temporary supply capacity.

Commented [RJ2]: Agreed to plan is that City will provide power at no additional cost to the project.

Commented [RJ3]: City pays all power costs.

Commented [RJ4]: No costs for recycled water included in cost model.

e. Post ample signs throughout the Work area warning that Plant water is not potable.

E. Temporary Sanitary Facilities:
1. CONTRACTOR shall provide suitable and adequate sanitary facilities for his/her employees and his subcontractors that are in compliance with applicable Laws and Regulations. Use of CITY's sanitary facilities will not be permitted.
2. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. CONTRACTOR shall enforce the use of such sanitary facilities by all personnel at the site.
3. At completion of the Work, remove sanitary facilities and leave site in neat and sanitary condition.

F. Communication Services:
1. CONTRACTOR shall arrange and provide onsite ~~local and long distance telephone and~~ internet service for use during the period of construction of the Contract.
2. The CONTRACTOR's supervisory field staff must carry a cellular phone for external and team communications. In addition, the CONTRACTOR is to provide a radio communication system for internal communications.
3. The costs of installation and monthly bills for CONTRACTOR's communication services shall be borne by the CONTRACTOR.

G. Utilities in Existing Facilities:
1. Refer to Section 01 14 00 – Work Sequence and Restrictions

1.05 CONSTRUCTION AIDS

A. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.

B. Use construction hoists, elevators, scaffolds, stages, shoring and similar temporary facilities of ample size and capacity to adequately support and move loads.

C. Design temporary supports with adequate safety factor to assure adequate load bearing capacity:
1. When requested, submit design calculations by a Professional Engineer registered to practice in the State of California prior to application of loads
2. Submitted design calculations are for information and record purposes only and not for review and approval
3. CONTRACTOR shall design sheeting, shoring, and bracing for trench excavation of five feet or more in depth in accordance with Article 6 of the Construction Safety Orders of CAL/OSHA and the California State Labor Code. The standards of design referred to in the Labor Code shall be those of CAL/OSHA

D. Accident Prevention:
1. Exercise precautions throughout construction for protection of persons and property
2. Observe safety provisions of applicable Laws and Regulations

3. Guard machinery and equipment, and eliminate other hazards
4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work
5. Before commencing construction Work, take necessary action to comply with provisions for safety and accident prevention

E. Signs and Equipment:
1. Provide temporary traffic control measures as required by CONTRACTOR's Traffic Control Plan.
2. Provide signs at obstructions and hazards, such as material piles and equipment.
3. Provide barricades and light in order to protect existing facilities and adjacent properties from potential damage.
4. CONTRACTOR shall locate all barricades temporary and light in a manner which enable access by FACILITY operators.
5. Provide chain link fences in accordance with Section 80 of the July 1992 City of San Jose Standard Specifications.

F. Above-Grade Protection:
1. On multi-level structures, provide safety protection that meets requirements of OSHA and State agency which administers OSHA regulations where Project is located.

1.06 SITE SECURITY

A. CONTRACTOR shall make adequate provision for protection of the Work area against fire, theft, and vandalism, and for protection of public against exposure to injury.

B. CONTRACTOR shall make good all damage to the CITY's property resulting from CONTRACTOR's failure to provide security measures as specified.

C. Maintain access controls pursuant to Section 01 35 53 – Site Security Requirements.

1.07 STORAGE YARDS AND BUILDING

A. Temporary Storage Yards: The CONTRACTOR shall construct temporary storage yards for storage Products that are not subject to damage by weather conditions.

B. Temporary Storage Buildings:
1. CONTRACTOR shall provide environmental control systems that meet the recommendations of Vendors and manufacturers of equipment and materials stored.
2. CONTRACTOR shall arrange for a chain link partition fence to provide security of contents and ready access for inspection and inventory.
3. CONTRACTOR shall store combustible materials (paints, solvents, fuels) in a well ventilated and remote building meeting all applicable safety standards.

1.08 ACCESS ROADS

A. On-Site Access Roads
1. CONTRACTOR shall utilize existing roads where shown on Drawings. Alignments for new routes must receive prior approval by the ENGINEER.

2. Maintain access roads to storage areas and other areas to which frequent access is required.
3. Maintain similar roads to existing facilities on site of the Work to provide access for maintenance and operation.
4. Protect buried vulnerable utilities under temporary roads with steel plates, wood planking, or bridges.
5. Maintain on-site access roads free of mud. Under no circumstances shall vehicles leaving the site track mud off the site onto the public right-of-way.
6. Upon completion of the Work, restore any ground surface disturbed by access road Construction to original grade.

1.09 PARKING AREAS

A. CONTRACTOR shall control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, CITY's operations or construction operations.

B. CONTRACTOR shall provide parking facilities for personnel working on site. No employee or equipment parking will be permitted elsewhere other than areas specifically designated for CONTRACTOR's use.

C. CONTRACTOR shall not use public roads or undesignated areas for parking.

D. CONTRACTOR shall provide staff vehicles and site transportation, such as but not limited to, trucks, cars, and ATVs, as may be required. Pay all transportation and maintenance costs.

1.10 TEMPORARY CONTROLS

A. Site Maintenance:
1. Keep the work site clean and free from rubbish and debris. Materials and equipment shall be removed from the site when they are no longer necessary. Upon completion of the work and before final acceptance, the work site shall be cleared of equipment, unused materials, and rubbish to present a clean and neat appearance

B. Air Pollution Control:
1. Do not discharge smoke, dust, and other contaminants into the atmosphere that violate the regulations of any legally constituted authority.

C. Dust Control:
1. Prevent dust nuisance caused by operations, unpaved roads, excavation, backfilling, demolition, or other activities
2. Control dust by sprinkling water, use of dust palliatives, modification of operations, or other means acceptable to agencies having jurisdiction.
3. Provide dust control in accordance with Section 10 of the July 1992 City of San José Standard Specifications and Section 01 35 43 (Environmental Procedures)

Commented [RJ5]: Review and confirm.

D. Noise Control:

~~1. Between 7:00 pm and 7:00 am, noise from CONTRACTOR's operations shall not exceed limits established by applicable laws or regulations and in event shall exceed 85dBA at a distance of 50 feet from the noise source.~~

~~2.~~1. Near office areas, perform Work in a manner to minimize noise

E. Mud Control:
1. Prevent mud nuisance caused by construction operations, unpaved roads, excavation, backfilling, demolition or other activities.

F. Pollution Control:
1. Prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris etc.

1.11 FIELD OFFICES AND SHEDS

Commented [RJ6]: Update to matach Hawkins contracts and cost model assumptions. Also must provide trailer -200sf for City

A. CONTRACTOR'S FIELD OFFICE(S): CONTRACTOR is responsible for providing, equipping, maintaining, and removing upon Final Completion of the Work field office(s), appropriate for and sufficient to meet the needs of CONTRACTOR's staff. Type and location of field offices shall be subject to review by the ENGINEER to assess adequacy to accommodate services required by Contract. This location may not be adjacent to the Work site.

Regular weekly ~~daily~~ janitorial services shall be furnished during working hours each Day. Offices shall be swept, dusted, and waste receptacles emptied.

~~B. FIELD MEETING OFFICE:~~

~~1. In addition to the CONTRACTOR's field offices(s), the CONTRACTOR must provide a dedicated field meeting office at the site. The CONTRACTOR shall be responsible for cleaning, maintaining, controlling access and scheduling the use of the field meeting office. The field meeting office shall be located close to the CONTRACTOR's field office.~~

~~a. Area of the field meeting office shall not be less than 600 square feet. Office shall be of the portable trailer type unless otherwise specifically authorized by the ENGINEER in writing and shall be a separate unit, not attached or connected to any other structures.~~

~~b. Furnish the following items in good condition in the field conference room: table, with chairs, capable of seating a minimum of 20 individuals, two white boards, and projection screen~~

~~C.~~B. OFFICE EQUIPMENT: Maintain a copy machine, and scanner~~, and facsimile machine~~ on-site in the size and quantity to meet the requirement of the Contract during the progress of the Work, pay all charges, maintenance, and supplies.

1. COPY MACHINE AND SCANNER:
   a. The CONTRACTOR shall provide one new office copy machine and scanner for joint use by the CONTRACTOR and CITY. The copy machine shall be designed to produce a minimum of ~~50~~10,000 copies per month~~ and shall be dust resistant~~.
   b. Copy machine shall employ a dry, electrostatic process and be capable of automatically feeding 8-1/2 by 11 and 11 by 17 originals and copying onto plain bond paper sheets at variable magnification from 50 percent to 200 percent. The

machine shall have an automatic copy sorter and scanner. The paper tray for each size paper shall hold at least 144 sheets.

c. The CONTRACTOR shall obtain and pay for a service and repair contract with a local representative of the copy machine dealer or manufacturer for on-call daily on-Site service. The CONTRACTOR shall furnish powders, cartridges, chemicals, paper and other materials required for proper operation of the copy machine.

~~D.~~C. COMPUTER SERVICES: Provide computers and commercial -grade broadband internet access, ~~either DSL or cable,~~ to perform Contract required services. The internet connection speed shall be a minimum of one ~~gigabyte~~megabyte/second of bandwidth.

1. Provide for 24 hour technical support and a local or 1-800 phone number to troubleshoot and maintain the broadband connectivity.
2. ~~Provide inside wiring to support a Local Area Network inside the field offices and meeting room.~~ Wiireless access to be provided.
3. ~~3.~~2. Provide necessary equipment to allow internet connectivity that shall be configured to allow VPN access from individual machines to the CITY's network to support web-based document management system requirements per Section 01 35 25 (Web Based Design and Construction Management System).

1.12 REMOVAL

A. Remove temporary buildings and furnishings before inspection for Substantial Completion or when directed.

B. Remove all temporary facilities, such as water lines, gas lines, electric conduit and transformers, shoring, crane base and hoist foundation construction, etc. unless indicated otherwise in the Construction Documents. Restore site to original, or new, conditions patching and filling as required to match adjacent surfaces.

C. Clean and repair damage caused by installation or use of temporary facilities.

D. Restore existing facilities used during construction to specified or original condition.

PART 2 PRODUCTS (**NOT USED**)

PART 3 EXECUTION (**NOT USED**)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

2019-09-10- City to confirm

2020-01-28-Note that this is section to be used instead of 01 57 23. This specification is geared more to the subcontractor as well. Update with City to work with contract and new Div-01 changes, and cost model assumptions. SWPPP will be necessary for HW3 area and soil disposal area.

PART 1 GENERAL

1.01 SUMMARY

A. This section covers Work to implement structural and nonstructural Best Management Practices (BMP) to control soil erosion by wind or water and keep eroded sediments and other construction-generated pollutants from moving off project sites. Requirements described in this specification and shown on Drawings are part of the project Temporary Erosion and Sediment Control Plan (TESC Plan) and are the minimum for all project construction sites and conditions. This specification covers all project activities, including material sources, disposal sites, and offsite mitigation areas unless specific project activities are excluded elsewhere in this specification or in other Contract Documents controlling the Work.

B. Runoff from the Headworks 3 project site work area will be covered under a TESC Plan and shall comply with the requirements set forth in the most recent version of the Erosion Control and Sediment Control Field Manual for California and the California Stormwater Quality Association (CASQA) Best Management Practice (BMP) Handbook, Construction. In the event of a conflict, the more stringent requirement shall apply.

C. Areas disturbed north of the bridge drain to an existing pump station and then to the plant for treatment and will not be part of the TESC Plan.

D. A region in the southeast portion of the plant will be used for temporary and permanent storage of excavated earthfill from the Project - soil disposal area. The earthfill placed here will be graded at Project Closeout. Runoff is not captured and sent back to the plant. No impervious area will be added therefore no increase in runoff volume is expected. The work area here will be covered under a TESC Plan.

E. The TESC Plan shall ensure the project site is protected during all storm events for the entire duration of the project by implementing and maintaining temporary erosion and sediment control including, but not limited to, the following:

1. Construction of any and all necessary systems required to eliminate contaminants from entering the storm system.
2. Clean up and control of work site materials, spoils and debris.
3. Removal of contaminants produced by equipment used for the construction of the project.
4. Prohibition of illicit discharge (non-rain water) into the storm system.

5. Provisions for all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, which are incidental and necessary to complete the work.

1.02 REFERENCES

A. California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for Construction, Latest Edition, and Drawings.

B. Use this specification in conjunction with the provisions of Section 7-1.01G, "Water Pollution" of the City of San José Standard Specifications, July 1992.

C. The following is a list of standards that may be referenced in this section:
   1. American Association of State Highway and Transportation Officials (AASHTO): M252, Standard Specification for Corrugated Polyethylene Drainage Pipe.
   2. ASTM International (ASTM):
      a. D638, Standard Test Method for Tensile Properties of Plastics.
      b. D2974, Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
      c. D3776/D3776M, Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
      d. D4355, Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
      e. D4397, Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
      f. D4491, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
      g. D4533, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
      h. D4632/D4632M, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
      i. D4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile
      j. D6241, Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.
      k. D6459, Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Hillslopes from Rainfall-Induced Erosion.
      l. D6460, Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion.
      m. D6475, Standard Test Method for Measuring Mass Per Unit Area of Erosion Control Blankets.

n. D7322, Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions.

o. D7367, Standard Test Method for Determining Water Holding Capacity of Fiber Mulches for Hydraulic Planting.

3. National Weather Service:
   a. Precipitation-Frequency of the United States by State/Territory, 2012.
   b. Precipitation Frequency Data Server, 2012.
4. North American Weed Management Association (NAWMA).
5. U.S. Department of Agriculture, Natural Resources Conservation Service: Urban Hydrology for Small Watersheds; 1986. Technical Release 55.
6. U.S. Environmental Protection Agency:
   a. Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites, 2007. EPA-833-R-06-004.
   b. National Menu of BMPs, 2012.

1.03 SYSTEM DESCRIPTION

A. Erosion and Sediment Control:
   1. Provide, maintain, and operate temporary facilities to control erosion and sediment releases during construction period.
   2. Size temporary stormwater conveyances based on procedures presented in U.S. Department of Agriculture, Natural Resources Conservation Service: Urban Hydrology for Small Watersheds, 1986. Technical Release 55.

B. Erosion and Sediment Control (ESC) Lead:
   1. Identify the ESC Lead at the preconstruction discussions and in the TESC Plan. The ESC Lead shall have certification in construction site erosion and sediment control from a course approved by the City.
   2. The ESC Lead shall implement the TESC Plan, including, but not limited to:
      a. Installing and maintaining all temporary erosion and sediment control Best Management Practices (BMPs) included in the TESC Plan to assure continued performance of their intended function. Damaged or inadequate TESC BMPs shall be corrected immediately.
      b. Updating TESC Plan to reflect current field conditions.
      c. Terminating TESC Plan.
   3. ESC Lead shall also inspect all areas disturbed by construction activities, all onsite erosion and sediment control BMPs, all stormwater discharge points, and all temporarily stabilized inactive sites per schedule in the approved TESC plan and as directed by CONTRACTOR. Complete erosion and sediment control inspection form provided by water resource agency or City for each inspection and submit a copy to Web based Design and Construction System no later than end of the next working day following inspection.

C. Personnel Training: Prior to commencement of construction, applicable personnel must have an understanding of the TESC plan's requirements and their specific responsibilities. At a minimum, personnel must be trained to understand the following as it relates to the scope of their job duties:

1. The location of all stormwater controls and how to maintain them.
2. Procedures for complying with the pollution prevention requirements.
3. Procedures for conducting inspections, recording findings, and taking corrective action.

D. Temporary Erosion and Sediment Control Plan:

1. Subcontractors shall select and implement BMPs as needed to control erosion and sediment control as part of the TESC Plan that will be shown on Drawings. Subcontractor is not required to use all BMPs listed in this section.
2. A schematic TESC Plan is furnished as part of the Drawings. This initial TESC Plan, when adopted by the Subcontractor, may be used as the basis of the construction TESC Plan. Additional or revised erosion and sediment control features, not shown on the initial TESC Plan, may be required depending on Subcontractor's methods of operation and schedule.
3. For each phase of the scheduled work, the TESC Plan will indicate the BMPs proposed and installed for erosion and sediment control to minimize clearing, stabilize exposed soil, divert or temporarily store flows, limit runoff from exposed areas, and filter transported sediment. Include all temporary slopes, constructed for staging or other reasons, which may not have been identified in the original Contract plans. Refer to the current local jurisdiction's erosion and sediment control manual.
4. TESC Plan Required Elements:
    a. Narrative Site Description:
        1) Nature of construction activity planned for the Site.
        2) Estimates of total site area and the areas of the Site expected to be disturbed.
        3) Soil types found onsite and their erosion potential.
        4) The types of fill materials to be used.
        5) Timetable for sequence of major construction events.
    b. Site Map:
        1) All areas of development.
        2) Drainage patterns.
        3) Areas of soil disturbance, including pre-development and post-development elevation contours.
        4) Areas used for storage of soils or wastes.
        5) Areas where vegetative practices are to be implemented.
        6) Location of all erosion and sediment control BMP or structures.

7) Location of all impervious structures and surfaces after project is completed.
8) Springs, wetlands, and other surface waters located onsite.
9) Boundaries of the 100-year floodplain, if determined.
10) Ordinary High Water line, if determined.
11) Location of storm drainage outfalls to receiving waters, if applicable.
12) Details of sediment and erosion controls.

c. Required BMPs and Procedures for Erosion Prevention, Runoff Control, and Sediment Control:
1) Construction entrances and parking areas.
2) Hauling saturated soils from the Site.
3) Water washed from concrete trucks.
4) Correct installation of erosion and sediment control BMPs.
5) Prompt maintenance and repair of BMPs.
6) Clearing and grading practices to minimize area of exposed soil throughout life of the Project.
7) Schedule of phased clearing operations to limit soils to what can be stabilized.
8) Vegetative practices, including preservation of existing vegetation, seeding, mulching, and buffer strips.
9) Preventing erosion of exposed areas.
10) Diverting flows from exposed slopes.
11) Limiting sediment transport within work sites and keeping it from moving off of project areas.
12) Perimeter controls for all clearing and grubbing, both planned and installed.
13) Additional controls for wet season work and temporary work suspensions.
14) Offsite material source and waste areas.
15) Dust.
16) Emergency materials stockpiled onsite.
17) Permanent and Temporary Soil stockpiles.

5. Subcontractor's construction TESC Plan and implementation schedules must be prepared by a competent individual. Furnish a signed copy of the TESC Plan with individual's name, title, state certifications, and employing firm if different than Subcontractor's firm.
6. Do not begin any Site activities that have potential to cause erosion or sediment movement until the TESC Plan and implementation schedules are approved by Design-Builder.
7. Keep a copy of the approved TESC Plan with updated changes onsite during all construction activities. During inactive periods longer than

7 calendar days, keep the TESC Plan onsite or provide a copy to Design-Builder to retain.

8. Continually update the TESC Plan and schedules as needed for unexpected storm or other events to ensure that sediment-laden water does not leave the construction site. Add approved changes to the TESC Plan no later than 24 hours after implementation.

E. Install high visibility fence along the Site work areas shown on the Drawings or as instructed by the CONTRACTOR. Space posts and attach fence fabric to posts as shown on Drawings. Do not fasten fence to trees. Throughout the life of the Project, preserve and protect delineated area, acting immediately to repair or restore any fencing damaged or removed.

F. Preventing erosion, and controlling runoff, sedimentation, and non-stormwater pollution, requires Subcontractor to perform temporary Work items including, but not limited to:

1. Select, install, and maintain BMPs including ditches, berms, culverts, and other measures to control surface water.
2. Select, install, and maintain BMPs including check dams, energy dissipaters, and other measures, to control downstream flows.
3. Select, install, and maintain BMPs used to prevent erosion from discharge of underground water found during construction.
4. Covering or otherwise protecting slopes until permanent erosion control measures are working.

G. To the degree possible, coordinate this temporary Work with permanent drainage and erosion control work the Contract requires.

H. Design-Builder may require additional temporary control measures if it appears pollution or erosion may result from weather, nature of materials, or progress on the Work.

I. When natural elements rut or erode the slope, restore and repair damage with eroded material where possible, and remove and dispose of any remaining material found in ditches and culverts. When Design-Builder orders replacement with additional or other materials, unit Contract prices will cover quantities needed.

J. Select, install, and maintain all sediment control devices necessary to trap sediment on site prior to any ground disturbing activity. Do not expose more erodible earth than necessary during clearing, grubbing, excavation, borrow, or fill activities without written approval by the Design-Builder. Design-Builder may increase or decrease the limits based on project conditions. Erodible earth is defined as any surface where soils, grindings, or other materials may be capable of being displaced and transported by rain, wind, or surface water runoff. Cover inactive areas of erodible earth, whether at final grade or not, within 1 day using an approved soil covering practice. Phase clearing and grading to maximum

extent practical to prevent exposed inactive areas from becoming a sources of erosion.

K. Water Management:

1. Manage site water in accordance with the conditions of the waste discharge permit from a local permitting authority. If site water management is not subject to permit, manage as follows:
   a. Groundwater. When uncontaminated groundwater is encountered in an excavation, provide erosion control BMPs to control erosion at the discharge point or coordinate discharge into Plant system.
   b. Process Water: Do not discharge high pH process water or wastewater (nonstormwater) that is generated onsite, including water generated during concrete grinding, rubblizing, washout, hydrodemolition and other construction and washing activities offsite.
   c. Offsite Water: Prior to disruption of normal watercourse, intercept offsite stormwater and pipe it either through or around the Project Site. This water shall not be combined with onsite stormwater. Discharge offsite water at its preconstruction outfall point preventing an increase in erosion below the site. Submit proposed method for performing this Work for Design-Builder's approval.

L. Dispersion: Convey water only to dispersion areas designated in the TESC Plan or to sites approved by Design-Builder and City. Water shall be conveyed to designated dispersion areas at a rate such that, when runoff leaves the area, turbidity standards have been achieved.

M. Temporary Detention Pond Construction: Construct as needed before beginning other grading and excavation work in the area that drains into that pond. Install temporary conveyances concurrently with grading in accordance with the TESC Plan so that newly graded areas drain to the pond as they are exposed.

N. Pollution Control: Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations. Implement the following BMPs when applicable:

1. Written spill prevention and response procedures.
2. Employee training on spill prevention and proper disposal procedures.
3. Spill kits in all vehicles.
4. Regular maintenance schedule for vehicles and machinery.
5. Material delivery and storage controls.
6. Training and signage.
7. Covered storage areas for waste and supplies.

O. If Design-Builder orders the Work suspended, continue to control erosion, pollution, and runoff during the shutdown.

P. Nothing in this section shall relieve Subcontractor from complying with other Contract requirements.

1.04 SUBMITTALS

A. Informational Submittals:

1. Adopt or modify the schematic TESC Plan included on Drawings and submit Subcontractor's TESC Plan for review if changes are approved. Provide a schedule for TESC Plan implementation and incorporate it into Contractor's progress schedule. Obtain Engineer's approval of the TESC Plan and schedule before any Work begins.
2. Modified TESC Plans shall meet all requirements of the applicable jurisdictions.
3. The TESC Plan shall cover all areas that may be affected inside and outside the limits of the Project (including all Owner-provided sources, disposal sites, and haul roads, and all nearby land, streams, and other bodies of water).
4. TESC Plan: Allow at least 10 working days for Design-Builder to review any original TESC Plan and 5 working days for revised TESC Plans. Failure to approve all or part of any such Plan shall not make Design-Builder or City liable to Subcontractor for any Work delays.

PART 2 PRODUCTS

2.01 BMP PRODUCTS

A. BMP Products shall be as specified in the CASQA BMP Handbook for Construction.

2.02 CHECK DAMS

A. Specified by Subcontractor with approval of Design-Builder.

2.03 COMPOST SOCK OR FIBER ROLE

A. Provide socks fabricated from extra heavy weight biodegradable fabric, with a minimum strand thickness of 5 mils or a SE-5 Fiber Roll.

B. Fill fabric with Coarse Compost as specified in Section 21-2.02K of the 2015 Caltrans Standard Specifications.

C. Diameter: 12 inches minimum.

D. Fabric: Clean, evenly woven, and free of encrusted concrete or other contaminating materials. Shall be free from cuts, tears, broken or missing yarns.

Shall be free of thin, open, or weak areas. Shall be free of any type of preservative.

E. Wood Stakes: Untreated softwood species, be 2-inch by 2-inch nominal dimension and 36 inches in length.

2.04 EROSION CONTROL BLANKET (MATTING)

A. Excelsior mat, coconut blanket, or straw blanket; staples as recommended by matting manufacturer.

B. Manufacturers and Products:
1. Akzo Industries, Asheville, NC; Curlex Mat.
2. Tensar | North American Green, Evansville, IN; S150 blanket.

2.05 GEOTEXTILE

A. Geotextiles shall consist only of long chain polymeric fibers or yarns formed into a stable network such that the fibers or yarns retain their position relative to each other during handling, placement, and design service life. At least 95 percent by weight of the material shall be polyolefins or polyesters. The material shall be free from defects or tears. Geotextile shall also be free of any treatment or coating which might adversely alter its hydraulic or physical properties after installation. Geotextile properties shall be as specified in Section 31 32 19.16, Geotextile (as included in Balance of Plant Project), or as described in Table 1.

Table 1
Geotextile for Temporary Silt Fence

Geotextile Property	ASTM Test Method	Geotextile Property Requirements	
		Unsupported Between Posts	Supported Between Posts with Wire or Polymeric Mesh
AOS	D4751	U.S. No. 30 max. for silt wovens, U.S. No. 50 for all other geotextile types, U.S. No. 100 min.	
Water Permittivity	D4491	0.2 sec^{-1} min.	
Grab Tensile Strength, in machine and x-machine direction	D4632/ D4632M	180 lb min. in machine direction, 100 lb min. in x-machine direction	100 lb min.
Grab Failure Strain, in machine and x-machine direction	D4632/ D4632M	30% max. at 180 lb or more	
Ultraviolet (UV) Radiation Stability	D4355	70% strength retained min., after 500 hours in xenon arc device	

2.06 HIGH VISIBILITY FENCING

A. High Visibility Fence: UV stabilized, orange, high-density polyethylene or polypropylene mesh.

B. Height: 4 feet minimum.

C. Support Posts: Wood or steel with sufficient strength and durability to support the fence through the life of the Project.

2.07 CULVERT ENTRANCE PROTECTION, SE-10

A. Install Gravel Bags or Sand Bags, as shown on Drawings.

2.08 MULCH

A. Wood Cellulose Fiber Mulch:
   1. Specially processed wood fiber containing no growth or germination inhibiting factors.
   2. Dyed suitable color to facilitate inspection of material placement.
   3. Manufactured such that after addition and agitation in slurry tanks with water, material fibers become uniformly suspended to form homogenous slurry.
   4. When hydraulically sprayed on ground, material will allow absorption and percolation of moisture.

B. Straw:
   1. Clean salt hay or threshed straw of oats, wheat, barley, or rye, free from seed of noxious weeds. Suitable for spreading with mulch blower equipment.
   2. Average Stalk Length: 6 inches.
   3. Seasoned before baling or loading.

2.09 OUTLET PROTECTION

A. Size riprap or quarry spall to resist movement under design flows. Install at least 12 inches deep. Provide riprap or quarry spall material free of extraneous material.

2.10 PLASTIC COVERING

A. Clear plastic meeting requirements of ASTM D4397 for polyethylene sheeting having a minimum thickness of 6 mils.

2.11 SEEDING

A. See Section 32 92 00, Turf and Grasses.

2.12 SILT (SEDIMENT) FENCE, SE-1

A. Geotextile: As specified in Article Geotextile.

B. Reinforcing: Welded wire fabric, 14-gauge minimum with 2-inch by 4-inch mesh.

C. Support Posts: As recommended by manufacturer of geotextile.

D. Fasteners: Heavy-duty wire staples at least 1-inch long, tie wires, or hog rings, as recommended by manufacturer of geotextile.

2.13 STABILIZED CONSTRUCTION ENTRANCE, TC-1

A. Construct a pad from stone as shown on Drawings.

B. Provide aggregate free of extraneous materials that may cause or contribute to track out.

C. Place separation geotextile under the rock to prevent fine sediment from pumping up into the rock pad. See Article Geotextile for required geotextile properties.

D. Use of constructed or constructed/manufactured steel plates with ribs (such as, shaker/rumble plates or corrugated steel plates) for entrance/exit access is allowable.

2.14 STREET CLEANING

A. Use self-propelled pickup street sweeper(s). Mechanical broom sweepers are not allowed where environmental concerns exist about storm water pollution or air quality.

2.15 TEMPORARY SEDIMENT TRAP

A. Temporary ponding area with a rock weir or perforated riser pipe at the outlet, formed by excavation or constructing a weir. Specified by Subcontractor with approval of Design-Builder.

2.16 TIRE WASH FACILITY

A. Specified by Subcontractor with approval of Design-Builder. Wheel wash facilities should have a nonerosive base, and a small grade change, 6 inches to 12 inches for a 10-foot-wide pond, to allow sediment to flow to low side of pond to help prevent re-suspension of sediment. A drainpipe with a 2-foot to 3-foot riser should be installed at low side of pond to allow for cleaning and refilling. Pond should be deep enough to hold 14 inches of water after displacement. Alternatively, pressure washing combined with an adequately-sized and adequately-surfaced pad with direct drainage to a 10-foot by 10-foot sump can be very effective.

2.17 BIOFILTER BAGS

A. Bags of biodegradable plant material such as weed-free straw, coir, compost, wood chips, excelsior, or wood fiber or shavings encased within biodegradable netting.

B. Netting Material: Clean, evenly woven, and free of encrusted concrete or other contaminating material such as preservatives. Also free from cuts, tears, or weak places with a minimum lifespan of 6 months.

C. Posts for Bags: 2-inch by 2-inch untreated wood or commercially manufactured metal posts.

PART 3 EXECUTION

3.01 PREPARATION

A. Design-Builder's acceptance of the TESC Plan is required prior to starting earth disturbing activities.

B. Include proposed stockpile areas and installation of temporary erosion control devices, ditches, or other facilities in Work phasing plans.

C. Areas designated for Subcontractor's use during Project may be temporarily developed as specified to provide working, staging, and administrative areas. Include control of sediment from these areas in the TESC Plan.

D. Check Dams: Install check dams as soon as construction will allow, or when designated by Design-Builder. Subcontractor may substitute a different check dam, in lieu of what is specified in the Contract, with approval of Design-Builder. Check dam is a temporary or permanent structure, built across a minor channel. Water shall not flow through check dam structure. Construct check dams to create a ponding area upstream of dam to allow pollutants to settle, with water from increased flows channeled over a spillway in check dam. Construct check dam to prevent erosion in area below spillway. Place check dams perpendicular to flow of water and install in accordance with Drawings. Extend outer edges up sides of conveyance to prevent water from going around check dam. Provide check dams of sufficient height to maximize detention, without causing water to leave ditch. Place sandbags so that initial row makes tight contact with ditch line for length of dam. Stagger subsequent rows so center of bag is placed over space between bags on previous lift.

E. Compost Sock: Exercise care when installing compost socks to ensure method of installation minimizes disturbance of waterways and prevents sediment or pollutant discharge into waterbodies. Lace compost socks together, end-to-end, with coir rope to create a continuous length. Bury loose ends of continuous length 3 feet to 5 feet laterally into the bankslope. Install the upper surface of compost sock parallel to slope. Provide finished grades of a natural appearance with smooth transitions. Secure compost sock with wood stakes or live stakes of

species as indicated on Drawings. Drive stakes into place centered on top of compost sock and spaced 3 feet on center throughout length of sock.

F. Erosion Control Blanket (Matting)): Place on seeded slopes 3H:1V and steeper, staple/stake in place and with the appropriate overlap in accordance with manufacturer's instruction.

G. High Visibility Fencing: Install high visibility fencing in accordance with Drawings.

H. Mulch: Furnish, haul, and evenly apply at rates indicated and spread on seeded areas within 48 hours after seeding unless otherwise specified.

1. Distribute straw mulch material with an approved mulch spreader that uses forced air to blow mulch material on seeded areas.
2. Apply wood strand mulch by hand or by straw blower on seeded areas.
3. Hydraulically apply Mulch at the minimum rate of 2,500 pounds per acre. Mulch may be applied with seed and fertilizer. Provide mulch suitable for application with a hydroseeder.
4. Cover temporary seed applied outside application windows established in Section 32 92 00, Turf and Grasses, with mulch.
5. Mulch areas not accessible by mulching equipment by approved hand methods.

I. Outlet Protection: Provide outlet protection to prevent scour at outlets of ponds, pipes, ditches, or other conveyances.

J. Plastic Covering: Use clear plastic covering to promote seed germination when seeding is performed outside of specified dates. Use black plastic covering for stockpiles or other areas where vegetative growth is unwanted. Place plastic with at least a 12-inch overlap of all seams. Install and maintain plastic cover to prevent water from cutting under the plastic and to prevent cover from blowing open in the wind.

K. Seeding: See Section 32 92 00, Turf and Grasses.

L. Silt (Sediment) Fence:

1. Silt fence shall be installed in accordance with Drawings.
2. Attach geotextile to posts and support system using staples, wire, or in accordance with manufacturer's recommendations. Geotextile shall be sewn together at the point of manufacture, or at a location approved by Design-Builder, to form geotextile lengths as required.
3. Provide wood or steel support posts at sewn seams and overlaps and as shown on Drawings and necessary to support fence.
4. Wood Posts: Minimum dimensions of 1-1/4-inch by 1-1/4-inch by the minimum length shown on Drawings.
5. Steel Posts: Minimum weight of 0.90 lb/ft.
6. When sediment deposits reach approximately one-third the height of the silt fence, remove and stabilize deposits.

M. Stabilized Construction Entrance: Construct temporary stabilized construction entrance in accordance with Drawings, prior to beginning any clearing, grubbing, earthwork, or excavation. When stabilized entrance no longer prevents track out of sediment or debris, either rehabilitate existing entrance to original condition or construct a new entrance.

N. Street Cleaning: Use self-propelled pickup street sweepers whenever required by Design-Builder to prevent transport of sediment and other debris off Project Site. Provide street sweepers designed and operated to meet air quality standards. Street washing with water will require approval by Design-Builder. Intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments.

O. Temporary Sediment Trap: Form trap by constructing a berm or by partial or complete excavation. Direct the discharge flow to a stabilized conveyance outlet or level spreader.

P. Tire Wash Facility: When the Contract requires a tire wash (in conjunction with a stabilized entrance), include details for tire wash and method for containing and treating sediment-laden runoff as part of the TESC Plan. All vehicles leaving the Site shall stop and wash sediment from their tires. Keep the water level 12 inches to 14 inches deep. Change wash water a minimum of once per day. Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the wheel wash water at a rate of 0.25 pound to 0.5 pound per 1,000 gallons of water increases effectiveness and reduces cleanup time.

Q. Biofilter Bags: Place and install as shown on Drawings and as needed for erosion control.

3.02 MAINTENANCE

A. The TESC Plan measures described in this specification are minimum requirements for anticipated Site conditions. During the construction period, upgrade these measures as needed to comply with all applicable local, state, and federal erosion and sediment control regulations.

B. Maintain erosion and sediment control BMPs so they properly perform their function until Design-Builder determines they are no longer needed.

C. Construction activities must avoid or minimize excavation and creation of bare ground during wet weather.

D. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments.

E. Inspect BMPs in accordance with the schedule in approved TESC Plan or as directed by Design-Builder.

F. Complete an inspection report within 24 hours of an inspection. Each inspection report shall be signed and identify corrective actions. Document that corrective actions are performed within 7 days of identification. Keep a copy of all inspection reports at the Site or at an easily accessible location.

G. Unless otherwise specified, remove deposits before the depth of accumulated sediment and debris reaches approximately height of BMP. Dispose of debris or contaminated sediment at approved locations. Clean sediments may be stabilized onsite using BMPs as approved by Design-Builder.

H. Sediment Fence: Remove trapped sediment before it reaches one-third of the above ground fence height and before fence removal.

I. Other Sediment Barriers (such as biobags): Remove sediment before it reaches 2 inches depth above ground height and before BMP removal.

J. Catch Basins: Clean before retention capacity has been reduced by 50 percent.

K. Sediment Basins and Sediment Traps: Remove trapped sediments before design capacity has been reduced by 50 percent and at completion of Project.

L. Initiate repair or replacement of damaged erosion and sediment control BMPs immediately, and work completed by end of next work day. Significant replacement or repair must be completed within 7 days, unless infeasible.

M. Within 24 hours, remediate any significant sediment that has left the construction site. Investigate cause of the sediment release and implement steps to prevent a recurrence of discharge within same 24 hours. Perform in-stream cleanup of sediment according to applicable regulations.

N. At end of each work day, stabilize or cover soil stockpiles or implement other BMPs to prevent discharges to surface waters or conveyance systems leading to surface waters.

O. Temporarily stabilize soils at end of shift before holidays and weekends, if needed. Ensure soils are stable during rain events at all times of year.

P. Initiate stabilization by no later than end of next work day after construction work in an area has stopped permanently or temporarily.

Q. Within 14 days of initiating stabilization or as specified in permit, either seed or plant stabilized area (see Section 32 92 00, Turf and Grasses); or apply nonvegetative measures and cover all areas of exposed soil. Seed dry areas as soon as Site conditions allow. Ensure that vegetation covers at least 70 percent of stabilized area. In areas where Subcontractor's activities have compromised erosion control functions of existing grasses, overseed existing grass. Nonvegetative measures may include blown straw and a tackifier, loose straw, or an adequate covering of compost mulch.

R. During rainy season, erodible soils must be covered within 24 hours.

S. Provide permanent erosion control measures on all exposed areas. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. However, do remove all temporary erosion control measures as exposed areas become stabilized, unless doing so conflicts with local requirements. Properly dispose of construction materials and waste, including sediment retained by temporary BMPs.

3.03 EMERGENCY MATERIALS

A. Emergency erosion and sediment control shall consist of any measure not addressed in the approved TESC that the Design-Builder deems necessary to prevent degradation of water quality after the start of construction

B. Work under Emergency Erosion and Sediment Control shall be considered as extra work paid for on a force account basis as indicated in Sections 9-1.03 and 4-1.03.1(D) of the City of San José Standard Specifications, July 1992.

C. Provide, stockpile, and protect the following emergency erosion and sediment control materials on the Project Site for unknown weather or erosion conditions. Emergency materials are in addition to other erosion control materials required to implement and maintain the TESC Plan. Replenish emergency materials as they are used. Remove all unused emergency materials from the Project Site at completion of the Project.

Item	Quantity
Silt (sediment) fence	100 ft
Plastic sheeting	260 sq. ft.
Sand bags (empty, to be filled as needed)	50
Straw bales	10
Biofilter bags (with stakes)	10

3.04 REMOVAL

A. When Design-Builder determines that an erosion control BMP is no longer required, remove BMP and all associated hardware from the Project limits. When materials are biodegradable, Design-Builder may approve leaving temporary BMP in place.

B. Permanently stabilize all bare and disturbed soil after removal of erosion and sediment control BMPs. Dress sediment deposits remaining after BMPs have been removed to conform to existing grade. Prepare and seed graded area. If installation and use of erosion control BMPs have compacted or otherwise rendered soil inhospitable to plant growth, such as construction entrances, take measures to rehabilitate soil to facilitate plant growth. This may include, but is

not limited to, ripping the soil, incorporating soil amendments, or seeding with specified seed.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- DONE- No changes have been made;

2020-01-28: replace 01 61 00 and 01 64 00 as they are too subcontractor focused; should not be cost impact.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Product requirements, product selection, products schedule, execution, manufacturer's instructions, and delivery, handling, and storage.

B. Related Sections:
   1. Section 01 33 00 – Submittal Procedures
   2. Section 01 60 00.01 – Material/Product Substitution Request Form

1.02 PRODUCT REQUIREMENTS

A. Comply with Specifications and referenced standards as minimum requirements.

B. Provide products by same manufacturer when products are of similar nature, unless otherwise specified.

C. Provide identical products when products are required in quantity.

D. Provide products with interchangeable parts whenever possible.

E. Require each equipment manufacturer to have maintenance facilities meeting the following requirements:
   1. Minimum 3 years operational experience
   2. Location in continental United States
   3. Equipment and tools capable of making repairs
   4. Staff qualified to make repairs

5. Inventory of maintenance spare parts

F. Provide evidence of product compliance pursuant to appropriate specification section, this Section, and Section 01 33 00 – Submittal Procedures.

1.03 PRODUCT SELECTION

A. When products are specified by standard or specification designations of technical societies, organizations, or associations only, provide products which meet or exceed reference standard and Specifications.

B. When products are specified with names of manufacturers but no model numbers or catalog designations, provide:
   1. Products by one of named manufacturers which meets or exceeds Specifications
   2. Accepted or-equals

C. When products are specified with names of manufacturers and model numbers or catalog designations, provide:
   1. Products with model numbers or catalog designations by one of named manufacturers.
   2. Accepted or-equals.

D. When products are specified with names of manufacturers, but with brand or trade names, model numbers, or catalog designations by one manufacturer only, provide:
   1. Products specified by brand or trade name, model number, or catalog designation.
   2. Products by one of named manufacturers proven in accordance with requirements for or-equals to meet or exceed quality, appearance and performance of specified brand or trade name, model number, or catalog designation.
   3. Accepted or-equals.

E. When products are specified with only one manufacturer followed by "or Equal," provide:
   1. Products meeting or exceeding Specifications by specified manufacturer.
   2. Accepted or equals.

1.04 APPROVED EQUAL AND SUBSTITUTION

A. Specified Item: Material, equipment, product, thing, or service referenced in this Project Plans and Specifications that has been identified by specific brand, manufacturer, model number, catalog number, or trade name.

B. Equal Items: Items, as referenced in this Project Plans and Specifications are those, which, to the ENGINEER’s knowledge, meet the requirements of the Project Plans and Specifications and are considered equal to the Specified Items.

C. Substitutions: Substitutions are considered changes to the Contract

D. Submissions for Evaluation:
   1. The CONTRACTOR shall submit to the ENGINEER in accordance with Public Contract Code Section 3400, after contract award but no later than thirty-five (35) days after the date of Notice to Proceed, proposal(s) for acceptance of a proposed Equal Item for a Specified Item or a Substitution. At the sole discretion of the ENGINEER, CITY may give written consent to the submission of the proposed Equal Item or Substitution after the expiration of the thirty-five (35) day time limit.
   2. The CONTRACTOR shall completely fill out the Material/Product Substitution Request Form per Section 01 60 00.01 and submit sufficient data, drawings, samples, literature, calculations, and all other information requested by CITY to demonstrate to the ENGINEER that the proposed Equal Item or Substitution is a suitable replacement for the Specified Item(s).
   3. Failure of the CONTRACTOR to submit the proposed Equal Item or Substitution for review in the manner and time described above shall be sufficient cause for rejection by the ENGINEER of the proposed Equal Item or Substitution.
   4. Burden of proof as to the submitted items being equal to the Specified Items, or a suitable Substitution, is the responsibility of the CONTRACTOR.

E. Evaluation as Equal:
   1. Submission of items which are proposed as equal to the Specified Items will be evaluated in accordance with the following provisions:
   2. In addition to the complete Substitution Request Form, and information specified above, CONTRACTOR shall provide a table showing equivalency between the Specified Item and the proposed equal item.
   3. The ENGINEER's evaluation of the submitted items proposed as being equal to the Specified Items is based on, but not limited to, the following:
      a. Performance
      b. Functionality
      c. Efficiency
      d. Durability
      e. Life cycle costs
      f. Ease and economy of maintenance and operation
      g. Construction and physical characteristics as compared to the Specified Items, or as delineated in the Project Plans and Specifications.
      h. Dimensional compatibility with the materials it combined to produce a unified design system.
      i. Compatibility with products in use.
      j. Impact to Project design, construction schedule, or construction sequencing.
      k. All aspects of finished appearance including form, texture, and color,that may affect other design elements.
   4. The ENGINEER will be the sole judge in this matter. In the event the ENGINEER rejects the proposal items based on one of the above criteria, the CONTRACTOR shall submit the Specified Items.

F. Submission of items which are proposed as substitution of the Specified Items shall be subject to requirements for proposed equal evaluation and the following additional provisions:

1. Substitution(s) of Specified Item(s) proposed by the CONTRACTOR may require modifications in the Project design, Project schedule, and/or construction sequencing. The CONTRACTOR shall identify all necessary project modification required for the substitution(s). Necessary project modifications may include, but not be limited to, construction cost (credit), electrical, instrumentation, structural, mechanical, architectural, testing, engineering costs, and other related modifications.
2. The CONTRACTOR is responsible for all costs associated with the substitutions(s) including submittal reviews and any project redesigns and modifications. CONTRACTOR refusal to accept any of these costs shall be just cause for disapproval of the substitution(s).
3. ENGINEER will review and respond in writing to the CONTRACTOR's proposed substitution within twenty-one (21) days after receipt of all information CITY requires to make a final determination.
4. If the proposed items are accepted, all cost saving shall be credited to the CITY.

1.05 QUALITY ASSURANCE

A. Employ entities that meet or exceed specified qualifications, to execute the Work.

B. Inspect conditions before executing subsequent portions of the Work. Accept responsibility for correcting unsatisfactory conditions upon executing subsequent portions of the Work.

C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.06 TOOLS AND SPARE PARTS

A. All special tools and the manufacturer's standard set of spare parts required for the normal operation and maintenance of respective items of equipment shall be furnished with those items of equipment by the manufacturer. This includes special tools, instruments, accessories required for proper "in-plant" adjustment, maintenance, overhaul, and operation. Tools shall be high-grade, smooth, forged, alloy tool steel or other appropriate material required for service conditions.

B. Special tools are considered to be those tools which because of their limited use are not normally available, but which are necessary for the particular equipment, whether identified in the manufacturer's standard manual or not.

C. All spare parts shall be carefully packed in sealed, weather-resistant cartons and all tools packed in metal tool boxes with locking clasps, each labeled with indelible markings, and shall be adequately treated for a long period of storage. Complete ordering information including manufacturer's name and address, part ordering information including manufacturer, part number, part name, and equipment name and number(s) for which the part is to be used shall be supplied with the required spare parts. The tools and spare parts shall be delivered and stored in a location directed by the ENGINEER no later than 30 days prior to scheduled field-testing. A list

of spare parts, respectively, shall be placed in each storage container and a duplicate list included in the operations and maintenance manuals.

D. Additional and specific spare parts and tools for certain equipment provided have been specified in the pertinent Sections of the Specifications. The CONTRACTOR shall collect and store all spare parts so required in an area to be designated by the ENGINEER. In addition, the CONTRACTOR shall furnish to the ENGINEER an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each item. Copies of the actual invoice for each item shall be furnished with inventory to substantiate the delivery.

E. Special tools and spare parts shall be new and shall not be utilized by the CONTRACTOR.

1.07 DELIVERY, HANDLING, AND STORAGE

A. Prepare Products for Shipment by:
   1. Applying grease and lubricating oil to bearings and similar items.
   2. Separately packing or otherwise suitably protecting bearings. Bearing housings, vents and other types of openings shall be wrapped or otherwise sealed to prevent contamination by grit and dirt.
   3. Applying permanently-affixed tagging or marking of products to agree with delivery schedule or Shop Drawings.
   4. Including complete packing lists and bills of material with each shipment.
   5. Packaging products to facilitate handling and protection against damage during transit, handling, and storage.

B. Transport products by method that avoids product damage. Deliver products in undamaged condition in manufacturer's unopened containers or packaging.

C. Provide accelerometers with shipments of equipment, where specified. Accelerometers shall be active from the manufacturer to the FACILITY and be inspected in the presence of the ENGINEER upon delivery.

D. Stiffeners shall be used where necessary to maintain shapes and to give rigidity. Parts of equipment shall be delivered in assembled or subassembled units where possible.

E. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

F. Upon delivery, promptly inspect shipments. Verify compliance with Contract Documents, correct quantities, and undamaged condition of products. Immediately store and protect products and materials until installed in Work.

G. Equipment or component damage shall be corrected to conform to the requirements of the contract before the assembly is incorporated into the work. The CONTRACTOR shall bear the costs arising out of dismantling, inspection, repair and reassembly.

H. Store products with seals and legible labels intact.

I. Store moisture sensitive products in weather tight enclosures.

J. Maintain products within temperature and humidity ranges required or recommended by manufacturer.

K. Connect and operate space heaters during storage when ambient temperatures fall below temperatures recommended by manufacturer.

L. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Repaint damaged painted surfaces.

M. Exterior Storage of Fabricated Products:
   1. Place on above ground supports which allow for drainage.
   2. Cover products subject to deterioration with impervious sheet covering.
   3. Provide ventilation to prevent condensation under covering.

N. Store loose granular materials on solid surfaces in well-drained area Prevent materials mixing with foreign matter.

O. Provide access for inspection.

1.08 PROTECTION OF EQUIPMENT AFTER INSTALLATION:

A. After installation, all equipment shall be protected from damage from, including but not limited to, dust, abrasive particles, debris and dirt generated by the placement, chipping, sandblasting, cutting, finishing and grinding of new or existing concrete, terrazzo and metal; and from the fumes, particulate matter, and splatter from welding, brazing and painting of new or existing piping and equipment.

B. As a minimum, vacuum cleaning, blowers with filters, protective shields, and other dust suppression methods will be required at all times to adequately protect all equipment.

C. During concreting, including finishing, all equipment that may be affected by cement dust must be completely covered.

D. During painting operations, all grease fittings and similar openings shall be covered to prevent the entry of paint.

E. Electrical switchgear, unit substation, and motor load centers shall not be installed until after all concrete work and sandblasting in those areas have been completed and accepted and the ventilation systems installed.

1.09 MANUFACTURER'S INSTRUCTIONS

A. Deliver, handle, store, install, erect, or apply products in accordance with manufacturer's instructions, Contract Documents, and industry standards.

B. Periodically inspect to assure products are undamaged and maintained under required conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- DONE- No changes have been made

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Field Engineering to establish lines and grades for the Work.

B. Related Sections:
   1. Section 01 77 00 – Closeout Procedures

1.02 SUBMITTALS

A. Informational Submittal:
   1. Qualifications of Surveyor or ENGINEER: Registered Professional Civil Engineer or Land Surveyor in the State of California.

1.03 UTILITY NOTIFICATION AND COORDINATION

A. Coordinate all utility Work with the ENGINEER. The ENGINEER will contact the FACILITY's Subsurface Utility Locating and Designating Team.

B. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during Work.

1.04 SURVEY MONUMENT PRESERVATION

A. It is the sole responsibility of the CONTRACTOR to save and protect any existing survey monuments which are not identified for removal and replacement on the project plans.

B. In the event that disturbance or destruction of any survey monument is necessary, regardless of whether removal and replacement is indicated on the project plans, the

CONTRACTOR shall contact the ENGINEER and City Survey Section at (408) 975-7310 seventy-two (72) hours in advance.

C. If the specified notice is not given to the City Survey Section and/or the survey monument is disturbed or destroyed without reference points having been set, the City Survey Section will re-establish the original position of the survey monument and the associated land surveying costs will be at the CONTRACTOR's expense and will be deducted from the CONTRACTOR's pay letter.

1.05 SURVEY MONUMENT REMOVAL AND REPLACEMENT

A. Survey monuments shall conform to the provisions of Section 81, "Monuments," and Section 1301-1.4, "Survey Monuments and Points," of the City of San Jose Standard Specifications, Details R-16, R-17, and R-18 of the City of San Jose Standard Details, and these Special Provisions.

B. The City Survey Section will set reference points for survey monuments which are identified for removal and replacement on the project plans, or which are otherwise threatened by construction activities associated with this project. If such referenced survey monuments are disturbed or destroyed, they shall be replaced according to the following procedure:

1. When construction in the vicinity of the original monument is substantially complete (finished grade is achieved), the City Survey Section will set reference points (typically four (4) 2' cross-ties) from which the approximate centerpoint of the new survey monument box can be located.
2. Based on the reference points, the CONTRACTOR shall position and construct a new Standard City Monument in accordance with Detail R-16 of the Standard Details.
3. The CONTRACTOR shall obtain a monument box frame and cover (and riser ring, if necessary) which conforms to Detail R-18 (Type I Monument Box) of the Standard Details. The City Survey Section will provide the CONTRACTOR with a stamped brass marker disc to be set in concrete at the intersection of the cross-ties within the survey monument box in accordance with Detail R-16 of the Standard Details.
4. Upon completion of the construction of the survey monument box by the CONTRACTOR, the City Survey Section will punch the brass marker disc with the exact location of the original point.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CONSTRUCTION STAKES, LINES AND GRADES

A. Execute Work in accordance with the lines and grades indicated on project plans.

B. Make distances and measurements on horizontal plans, except elevations and structural dimensions.

3.02 SURVEY REFERENCE POINTS

A. Basic reference line, a beginning point on basic reference line, and a benchmark will be provided, by ENGINEER.

B. From these reference points, establish other control and reference points as required to properly layout the Work.

C. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction.
   1. Make no changes or relocations without prior written notice.
   2. Replace Project control point, when lost or destroyed, in accordance with original survey control.
   3. It is the CONTRACTOR's sole responsibility to save and protect these surveying points. Any and all re-staking will be done at the CONTRACTOR's expense.

D. In the event of discrepancy in data or staking provided by CITY, request clarification before proceeding with Work.

3.03 PROJECT SURVEY REQUIREMENTS

A. Establish a minimum of 2 permanent benchmarks on site referenced to data established by survey control points.

B. Record permanent benchmark locations, including horizontal and vertical data, on Project Record Documents.

C. Assume responsibility for accuracy of stakes, alignments, and grades by performing verifications and checking in accordance with standard surveying practice.

3.04 QUALITY ASSURANCE

A. Accuracy of stakes, alignments, and grades may be checked randomly by ENGINEER.
   1. Notice of when checking will be conducted will be given.
   2. When notice of checking is given, postpone parts of the Work affected by stakes, alignments, or grades to be checked until checked.
   3. Do not assume that ENGINEER's check substitutes or complements required field quality control procedures.
   4. Provide competent employee(s), tools, stakes and other equipment and materials as ENGINEER may require to:
      a. Establish control points, lines and easement boundaries.
      b. Check layout, survey, and measurement Work performed by others.

3.05 RECORD DOCUMENTS

A. Prepare and submit Record Documents as specified in Section 01 77 00 – Closeout Procedures.

B. Maintain complete, accurate log of control points and survey.

C. Affix Professional Civil Engineer's or Land Surveyor's signature and registration number to Record Drawing to certify accuracy of information shown.

Commented [RJ1]: For bench marks only is current assumption.

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

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SECTION 01 73 03
SPECIAL PROVISIONS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2020-01-23- Jacobs made this as a standalone spec section and modified it based on City's comments in the meeting on Jan 15th, 2020

PART 1 GENERAL

1.01 SPECIFICATIONS AND PLANS

A. The work embraced herein shall be done in accordance with the City of San José Standard Specifications (July 1992) and the City of San José Standard Details (July 1992) insofar as the same may apply and in accordance with the following special provisions.

1.02 AMENDMENTS TO THE JULY 1992 STANDARD SPECIFICATIONS

A. **Section 1** of the Standard Specifications (page 1-6) shall have the following paragraphs added:

Issue Date: September 1, 2016

1-1.37 Special Provisions. –~~All~~ Applicable Procurement and Contracting Requirement Sections and all Technical Specifications Sections are part of the Special Provisions

Commented [AE1]: Proposed to delete. Confirm with City

B. **Section 5** of the Standard Specifications (page 5-12) shall be amended as follows:

Issue Date: September 1, 2016

5-1.04 Coordination and Interpretation of Plans, Standard Specifications, and Special Provisions, of the Standard Specifications shall have the order of precedence listed as items 1 through 4 revised to read as follows:

1. Special Provisions

   Within Special Provisions the precedence of specific documents is as follows;
   a. Change Orders
   b. Amendments to the Standard Specifications
   c. Agreement
   d. Technical Specifications

Commented [AE2]: JR: A new version is in Hawkins. Confirm this works with Hawkins

2. **Project Plans**
   Project plans are the design drawings issued for the preparation of bids. Within the project plans, the order of precedence is as follows;
   a. Written numbers govern over figures
   b. Figures govern over scaled dimensions
   c. Detail drawings govern over general drawings
   d. Specific notes on drawings take precedence over tables and lists
   e. Addenda/Change Order drawings govern over any other drawings
   f. Notes, descriptions or tables take precedence over graphic representations on
   g. drawings
   h. Greater number, amount, or size takes precedence over lesser number, amount or size.
3. **Standard Plan Details**
4. **Standard Specifications**

If a discrepancy is found or any confusion arises, submit a request for clarification to the ENGINEER

C. Section 7-1.01A through 7-1.01A(11) shall be revised to read as follows:

1. **Section 7-1.01A Labor Standards**
   The Contractor shall comply with the labor standard requirements set forth below in this Section 7-1.01A.

   a. **7-1.01A(1) City Compliance Officer**
      1) **City Compliance Officer**: For purposes of this Section 7-1.01A, the "City Compliance Officer" is the Director of the Office of Equality Assurance or such other City employee as the City Manager may designate as having primary responsibility for administering and enforcing the labor standard requirements set forth in this Section 7-1.01A. The term includes the City Compliance Officer's staff and any other City employees and agents authorized to assist in the administration and enforcement of these labor standards.
      2) **Contact Information:** The address of the City's Office of Equality Assurance for purposes of correspondence and inquiries is 200 East Santa Clara Street, 5th Floor, San José CA 95113-1905. The Office's phone number is 408-535-8430.
      3) **Scope of Authority:** The City Compliance Office has primary responsibility for administering and enforcing the prevailing wage requirements, the payroll requirements and all other labor standards required by this Contract.

   b. **7-1.01A(2) Working Hours**
      The Contractor shall comply with the working-hour requirements set forth in Sections 1810 through 1815 of the California Labor Code, which are incorporated into this Contract. Working-hour requirements include, but are not limited to, the following.
      1) **General Requirement:** Eight hours constitutes a legal day's work. Employees of the Contractor cannot work more than 8 hours during any one calendar day and more than 40 hours during any one calendar week.
      2) **Exception:** Notwithstanding the general requirement set forth above, the Contractor may permit its employees to work more than 8 hours per

calendar day and 40 hours per calendar week if the Contractor pays at least 1 ½ times the basic rate of pay for all hours worked in excess of 8 hours per day.

3) **Record Keeping:** The Contractor must keep accurate records showing the name and actual hours worked each day and each calendar week by each of its employees. The Contractor shall make the records available at all reasonable hours for inspection by the City Compliance Officer or by the Division of Labor Standards Enforcement. The Contractor's failure to make and maintain the required records is a misdemeanor.
4) **Restitution for Underpayment:** If the Contractor requires or permits an employee to work in violation of the working-hour requirements set forth in this Section 7-1.01A(2), then the Contractor shall pay the employee the difference between the amount that should have been paid and the actual amount paid.
5) **Penalties:** In addition to paying restitution for an underpayment, the Contractor shall forfeit to the City $25 for each employee for each calendar day during which the Contractor requires or permits such employee to work in violation of the working-hour requirements set forth in this Section 7-1.01A(2).
6) **Withholding of Restitution and Penalties:** The Engineer may withhold and retain from any payments or moneys due the Contractor the following: (1) the amount of any outstanding restitution resulting from an underpayment, and (2) the amount of any penalties resulting from such underpayment. The Engineer's right to withhold and retain moneys under this provision is separate and independent from any other right to withhold and retain moneys included in this Contract.

c. **7-1.01A(3) Prevailing Wage**

The Work in this Contract is a Public Work, as that term is defined for prevailing wage purposes in Sections 1720 through 1720.6 of the California Labor Code. The Contractor shall comply with the prevailing wage requirements set forth in Sections 1720 through 1782 of the California Labor Code, which are incorporated into this Contract. The prevailing wage requirements with which the Contractor must comply include, but are not limited to, the following:

1) **Prevailing Wage Requirement:** The Contractor shall pay, and shall cause its subcontractors to pay, employees performing Work not less than the general prevailing rates of per diem wages, for each craft, classification and type of worker, as determined by the Director of the Department of Industrial Relations of the State of California.
2) **Project-Specific Rates:** Copies of the General Prevailing Wage Determinations made by the Director of the Department of Industrial Relations of the State of California for each craft, classification and type of worker required to perform the Work are available from the City Compliance Officer. Please direct all questions regarding prevailing wage requirements to the City Compliance Officer.
3) **Unlisted Job Classifications:** The prevailing wage rate applicable to a craft, classification or type of worker not shown on the General Prevailing Wage Determinations shall be the rate applicable to the most closely related craft, classification or type of worker. Contact the Office of Equality Assurance at (408) 535-8430 for crafts, classifications or types of workers not listed in the General Prevailing Wage Determinations.

4) **Paying Higher Wages:** The prevailing wage rates are minimum rates. The Contractor may pay workers more than the applicable prevailing wage rate. The City will not pay extra compensation based on the inability of the Contractor to hire workers at the prevailing wage rates.
5) **No Adjustments:** The City will not pay extra compensation based on increases in the prevailing wage rates during the term of the Contract.
6) **Posting Notice:** The Contractor must post at each job site at which Work is performed a sign informing employees that the State's prevailing wage requirements apply to the Work. The sign shall include the City Compliance Officer's telephone number and address. The Contractor also must post at each job site where Work is performed the General Prevailing Wage Determinations in effect for each craft, classification and type of worker employed required to perform the Work. If the Contractor fails to post the sign or General Prevailing Wage Determinations as required, the Engineer or City Compliance Officer shall have the right to do so.
7) **Restitution for Underpayment:** The Contractor, or any subcontractor of the Contractor, must pay the following amount to each employee who was paid less than the applicable prevailing wage rate during any period of time that such employee was performing Work: the difference between the applicable prevailing wage rate and the actual amount paid.
8) **Penalties:** The Contractor, and any subcontractor of the Contractor, shall forfeit up to $200 for each calendar day, or portion thereof, for each worker paid less than the applicable prevailing wage rate. The City shall determine the amount of the penalty based on the guidelines and factors set forth in Section 1775(2) of the California Labor Code.
9) **Liability for Subcontractor's Penalties:** The Contractor is liable for any penalties resulting from the payment of less than the prevailing wage rate by one of its subcontractors unless the Contractor can clearly demonstrate all of the following:
    a) The contract between the Contractor and its subcontractor for the performance of the Work included a copy of Sections 1171, 1175, 1176, 1777.5, 1813 and 1815 of the California Labor Code; and
    b) The Contractor periodically reviewed the certified payroll records of its subcontractor for payment of the specified general prevailing rate of per diem wages; and
    c) Upon becoming aware of the subcontractor's payment of less than the applicable prevailing wage rate, the Contractor diligently took corrective action to halt or rectify the violation, including, but not limited to, retaining sufficient funds from payments due the subcontractor for Work performed; and
    d) Before making final payment to its subcontractor, the Contractor obtained an affidavit, signed under penalty of perjury, from the subcontractor stating that the subcontractor paid each of its workers not less than the applicable general prevailing rate of per diem wages and any amounts due pursuant to Section 1813 of the California Labor Code.
10) **Withholding:** The Engineer may withhold and retain from payments or moneys due the Contractor the following: (1) the amount of any outstanding restitution resulting from an underpayment, (2) penalties resulting from such underpayment, and (3) any amounts required to satisfy any civil wage and penalty assessment issued by the California Labor Commission in accordance with the California Labor Code. The Engineer's right to withhold

under this provision is separate and independent from any other right to withhold moneys included in this Contract.

11) **Notice of Withholding:** The City Compliance Officer will provide written notice to the Contractor and subcontractor, if applicable, of any withholding resulting from a prevailing wage violation. The notice will describe the nature of the violation, the amount of wages, penalties and forfeitures withheld, and the procedure for obtaining review of the withholding.
    a) **Service of Notice:** The City Compliance Officer will serve the notice by first-class and certified mail, in a sealed envelope, with postage prepaid, addressed to the person on whom it is to be served, at the office address last given for that person.
    b) **Service on Surety:** The City Compliance Officer will also serve a copy of the notice by certified mail to the surety that issued the payment and performance bonds for the Contract.
    c) **Appeal of Withholding:** In accordance with Section 1771.6 of the California Labor Code, the Contractor or the affected subcontractor may seek review of the City's withholding by transmitting a written request for review to the Office of the Labor Commissioner for the State of California. The Contractor or the affected subcontractor shall transmit a copy of the written request for review to the City Compliance Officer.
    d) **Time to Appeal Withholding:** In accordance with Section 1742 of the California Labor Code, a written request to review a notice of withholding must be transmitted to the Office of the Labor Commissioner for the State of California within 60 calendar days after service of the notice. If review is not requested within 60 calendar days, then the City Compliance Officer's determination is final.
12) **Attachment 5:** The Contractor is directed to review Attachment 5 of the Bid Documents for further information regarding prevailing wage requirements applicable to this Contract.

d. **7-1.01A(4) Payroll Records**

The Contractor and each of its subcontractors shall make and keep payroll records in accordance with Section 1776 of the California Labor Code and with this Section 7-1.01A(3), both of which are incorporated into this Contract. The requirements to make and keep payroll records are as follows:

1) **General Requirement:** The Contractor and its subcontractors must keep accurate payroll records. For each journey-man, apprentice, worker, or other employee performing Work, the payroll records must show the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages.
2) **Form of Payroll Records:** The Contractor and its subcontractors must prepare the payroll records on forms provided by the Division of Labor Standards Enforcement for the State of California on forms containing the same information as the forms provided by the Division of Labor Standards Enforcement. The Contractor and subcontractor shall obtain the approval of the City Compliance Officer before using any form other than one provided by the Division of Labor Standards Enforcement.
3) **Location of Payroll Records:** Within 10 working days of starting Work, the Contractor shall inform the City Compliance Officer of the location of all payroll records, including the street address, city, and county. Within 5 working days of changing the location of the payroll records, the Contractor shall notify the City Compliance Officer of the new location.

4) **Submission of Payroll Records with Progress Payment:** In accordance with Section 9-1.06A of the Special Provisions, entitled "Application for Progress Payment," the Contractor must submit the payroll records of its employees and those of its subcontractor(s) to the City with each application for progress payment. The payroll records submitted to the City shall meet all of the requirements set forth in this Section 7-1.01A(3).
   a) **Verification/Certification:** The payroll records submitted to the City must be both verified, and the copies certified, by the Contractor or subcontractor that prepared the record. The verification must be a written declaration, made under penalty of perjury, stating the following: (1) the information contained in the payroll record is true and correct, and (2) the Contractor or subcontractor has complied with the requirements of Sections 1771, 1811 and 1815 for Work performed by its employees.
   b) **Condition Precedent to Payment:** As set forth in Section 9-1.06A of the Special Provisions, the submission of verified and certified payroll records with each application for progress payment is an ***express condition precedent*** to the City's obligation to make a progress payment. An application for progress payment is incomplete in the absence of verified and certified payroll records, and the Engineer is not obligated to approve or make, in whole or in part, any progress payment due the Contractor until the Contractor has submitted the required payroll records.
5) **Written Request for Payroll Records:** The Contractor or subcontractor must provide verified and certified payroll records to the City Compliance Officer on or before 10 working days following receipt of the written request for such records by the City Compliance Officer.
   a) **Penalties:** If the Contractor or subcontractor fails to timely comply with the request, then the Contractor or subcontractor, whichever one failed to provide the records, shall pay a penalty to the City of $100 for each calendar day, or portion thereof, for each worker, until the records are provided. The Contractor is not liable for a penalty imposed as a result of a subcontractor's failure to comply with the City's written request for payroll records.
   b) **Withholding:** The Engineer may withhold and retain from payments or moneys due the Contractor the amount of any penalties imposed based on a failure to timely respond to the City's written request for payroll records. The Engineer's right to withhold under this provision is separate and independent from any other right to withhold moneys included in this Contract.
6) **Inspection of Records by Employee:** A verified and certified copy of an employee's pay record shall be made available, on request, for inspection or given to the employee or the employee's authorized representative. The records shall be available at all reasonable hours at the principal office of the contractor.
7) **Inspection of Records by Department:** A verified and certified copy of all payroll records shall be made available, upon request, for inspection or furnished to the City Compliance Officer and the Division of Labor Standards Enforcement of the Department of Industrial Relations. The records shall be available at all reasonable hours at the principal office of the contractor.

e. **7-1.01A(6) Discrimination Prohibited**

1) **Labor Code Prohibition:** The Contractor must comply with, and is subject to, the employment non-discrimination requirements set forth in Section 1735 of the California Labor Code, which is incorporated into this Contract.
2) **City Prohibition:** The Contractor also must comply with, and is subject to, the nondiscrimination/nonpreference requirements set forth in Chapter 4.08 of Chapter 4 of the San José Municipal Code, entitled "Nondiscrimination Requirements for Contracts," which is incorporated into this Contract.
   a) **Attachment 1 of Contract:** The nondiscrimination/nonpreference requirements set forth in Attachment 1 of this Contract implement, in part, the requirements of Chapter 4.08. The Contractor shall comply with the requirements set forth in Attachment 1.
   b) **Subcontractors:** The Contractor shall include the same provisions in Attachment 1 in every subcontract entered into in furtherance of the Contract so that such provisions are binding on each subcontractor.

f. **7-1.01A(7) Apprentices**
1) **Compliance:** The Contractor and its subcontractors shall comply with the requirements of the State Apprenticeship Program, as set forth in Section 1777.5 and Chapter 4 of division 3 of the California Labor Code (starting at Section 3070), which collectively are incorporated into this Contract. The Contractor is solely responsible for securing compliance with Section 1777.5 for all apprenticeable occupations.
2) **Subcontracts:** The Contractor shall include in all of its subcontracts the obligation for subcontractors to comply with the requirements of the State Apprenticeship Program.
3) **Evidence of Compliance:** The Contractor shall comply promptly with all requests of the City Compliance Officer for documentation that the Contractor and its subcontractors are in compliance with the State Apprenticeship Program.
4) **Penalties:** The Contractor is subject to the penalties set forth in Section 1777.7 of the California Labor Code for a failure to comply with the requirements of Section 1777.5. Section 1777.7 is incorporated into this Contract.
5) **Withholding:** The Engineer may withhold and retain from payments or moneys due the Contractor the amount of any penalties imposed based on a violation of Section 1777.5 of the California Labor Code. The Engineer's right to withhold under this provision is separate and independent from any other right to withhold moneys included in this Contract.

g. **7-1.01A(8) Workers' Compensation**
1) **Requirement:** The Contractor shall secure worker's compensation for all of its employees in accordance with Section 3700 of the California Labor Code. By signing the Contract, the Contractor is certifying and filing with the City the following:

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

2) **Prohibition:** The Contractor is prohibited from performing Work if at the time of such Work the Contractor is not in compliance with Section 3700 of the California Labor Code. The Contractor must not allow a subcontractor to perform Work if at the time of such Work the subcontractor is not in compliance with Section 3700 of the California Labor Code.
3) **Proof of Compliance:** Before starting any Work, the Contractor shall provide the Engineer with one of the following: (1) satisfactory proof that it is properly insured by one or more insurers authorized to write worker's compensation insurance in California, or (2) a valid certificate of consent to self-insure issued by the Director of Industrial Relations for the State of California.
    a) **Maintaining Compliance:** The Contractor shall maintain such insurance or certificate of consent to self-insure for the term of the Contract.
    b) **Requests for Proof of Compliance:** Upon the request of the Engineer at any time during the term of the Contract, the Contractor must provide satisfactory proof that it is in compliance with Section 3700 of the California Labor Code.
4) **Failure to Comply:** The Contractor's failure to comply promptly with a request by the Engineer for proof of compliance with Section 3700 of the California Labor Code, or the Contractor's failure to be in compliance with Section 3700, is a material breach of this Contract. Such breach is a basis for the Engineer to suspend Work in accordance with Section 8-1.05 of these Specifications. The Contractor is responsible for all costs and damages resulting from any such suspension of Work.
5) **Withhold:** If any injury occurs to any employee of the Contractor for which the employee, or the employee's dependents, is entitled to compensation from the City under the California Labor Code provisions applicable to worker's compensation, the Engineer may withhold and retain from any moneys due the Contractor an amount sufficient to cover such compensation.
6) **Subcontractors:** The Contractor shall include in all of its subcontracts the obligation for subcontractors to comply with the requirements of this Section 7-1.01A(8).

h. **7-1.01A(9) Certified Electricians**

The Contractor must use, and must cause its subcontractor(s) to use, properly certified persons to perform any Work as electricians in accordance with Chapter 4.5 of Division 1 of the California Labor Code, entitled "Electrician Certification" (Sections 108 – 108.5).

i. **7-1.01A(10) Labor Standards Enforcement**

1) **Cooperation:** The Contractor and its subcontractors shall cooperate fully with the City Compliance Officer as part of any action by the City Compliance Officer to administer and/or enforce the labor standards set forth in this Section 7-1.01A.
2) **Inspections:** The Contractor and its subcontractors agree that the City Compliance Officer has the following rights in the performance of the Officer's duties: (1) to engage in random inspections of job sites, (2) to have access to the employees performing Work, and (3) to have access to employee time sheets, inspection logs, payroll records, paychecks and any other documents reasonably related to an appropriate investigation of the Contractor's and subcontractor's compliance with the labor standards set forth in this Section 7-1.01A.

3) **Audit**: The City Compliance Officer may audit such records of the Contractor and it subcontractors as the Officer deems necessary to determine compliance with the labor standards set forth in this Section 7-1.01A.

j. **7-1.01A(11) Subcontractors**
Notwithstanding anything to the contrary, the prevailing wage requirements, payroll record requirements and all other labor standard requirements set forth in this Section 7-1.01A are applicable to every subcontractor engaged by the Contractor to perform Work. The Contractor shall include in every such subcontract the following provision(s): (1) an agreement from the subcontractor that it is subject to each of the labor standard requirements set forth in this Section 7-1.01A, (2) an agreement from the subcontractor that it will comply with each of the labor standard requirements, and (3) an agreement from the subcontractor that the City Compliance Officer can enforce each of the labor standard requirements against the subcontractor to the same extent it can enforce the provisions against the Contractor.

2. **Section 7-1.22** Provisions of Law and Venue of the Standard Specifications (page 7-30) shall have the following paragraph added: "All depositions, document production, mediations, arbitrations, and any other meetings will take place in the City of San José."

D. **Section 9-1.07C** of the Standard Specifications (page 9-18) shall be added as follows:

a. **9-1.07C Claims Certification.** -All claims submitted by the contractor shall include the following personal certification:

"I, , BEING THE (MUST BE AN OFFICER) OF (GENERAL CONTRACTOR), DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA, AND DO PERSONALLY CERTIFY AND ATTEST THAT: I HAVE THOROUGHLY REVIEWED THE ATTACHED CLAIM FOR ADDITIONAL COMPENSATION AND/OR EXTENSION OF TIME, AND KNOW ITS CONTENTS, AND SAID CLAIM IS MADE IN GOOD FAITH; THE SUPPORTING DATA IS TRUTHFUL AND ACCURATE; THAT THE AMOUNT REQUESTED ACCURATELY REFLECTS THE CONTRACT ADJUSTMENT FOR WHICH THE CONTRACTOR BELIEVES THE OWNER IS LIABLE; AND, FURTHER, THAT I AM FAMILIAR WITH CALIFORNIA PENAL CODE SECTION 72 AND CALIFORNIA GOVERNMENT CODE 12650, ET SEQ, PERTAINING TO FALSE CLAIMS, AND FURTHER KNOW AND UNDERSTAND THAT SUBMISSION OR CERTIFICATION OF A FALSE CLAIM MAY LEAD TO FINES, IMPRISONMENT, AND/OR OTHER SEVERE LEGAL CONSEQUENCES."

By Title: _____

END OF SECTION

SECTION 01 73 23

BRACING AND ANCHORING

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019: We (Luke -Lead Structural) started editing the wind and seismic specifications and deleted so much out of the conetnt that it seemed more relevant to just include the information from those specifications into the Bracing and Anchoring specification, which is what Luke did, and then he proposes to delete those two specifications. Luke also added in our DB project specific information from our spec to the B&A specification for one final product. Very messy. Luke thinks it would be simpler and cleaner to go the other way and propose deleting their specifications and move the pertinent information to our specification.

2019-09-24- Modified the text- City to confirm

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Minimum structural requirements for the design, anchorage and bracing of architectural/mechanical/HVAC/electrical components, equipment, and systems, and nonbuilding structures.

B. Design of supports, attachments and bracing for all parts or elements of the architectural, mechanical, HVAC and electrical systems shall be provided in accordance with this Section and the individual equipment specifications.

C. The requirements of this section apply to the design of the structural elements and features of equipment and to platforms/walkways that are provided with equipment or nonbuilding structures.

D. This section applies to nonbuilding structures and nonstructural components that are permanently attached to structures as defined below and in ASCE 7-10. Note that equipment is defined as a non-structural component and tanks are defined as nonbuilding structures.

E. Design in accordance with the criteria listed within this section and conform to the provisions of the design codes listed within this section.

F. Additional pipe, cable tray, ductwork and conduit loading requirements are specified in the Technical Specifications. Unless noted otherwise in the individual equipment specifications, engineering design is not required for attachments, anchorage, or bracing

detailed on the Drawings or where the size of attachments, anchorage, or bracing is defined in the technical specification sections.

G. This section also covers design and performance requirements for anchorage and bracing of general equipment and nonstructural components not necessarily required by the California Building Code but required by these Specifications.

H. Equipment supplier shall provide code required attachments, braces, and anchors to the structure for elements of the architectural, mechanical, and electrical systems included in the Work in accordance with this section unless a design is specifically provided within the Contract Documents

~~G.~~I. The following nonstructural components are exempt from the seismic design loading requirements of this section.

1. Furniture (except permanent floor supported storage cabinets over 6 ft tall).
2. Temporary or movable equipment.
3. ~~Mechanical and electrical components in Seismic Design Categories D, E, or F where all of the following apply:~~
   a. ~~The component importance factor, I_p, is equal to 1.0;~~
   b. ~~The component is positively attached to the structure;~~
   c. ~~Flexible connections are provided between the component and associated ductwork, piping, and conduit; and either~~
      1) ~~The component weighs 400 lb or less and has a center of mass located 4 ft or less above the adjacent floor level; or~~
      2) ~~The component weighs 20 lb or less or, in the case of a distributed system, 5 lb/ft or less.~~

~~H. Related Sections~~

~~1. Section 01 88 14 – Seismic Design Criteria~~

~~2. Section 01 88 15 – Wind Design Criteria~~

Commented [SL1]: Component importance factor for entire project is 1.5 in accordance with CIP

Commented [SL2]: Included criteria within this section

1.02 REFERENCES

A. The references listed below are a part of this section. 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 this section shall prevail.

Reference	Title
Aluminum Design Manual	The Aluminum Association, Aluminum Design Manual with Specifications and Guidelines for Aluminum Structures
AAMA	American Architectural Manufacturer's Association
ACI 318	Building Code Requirements for Structural Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures
ACI 350.3	Seismic Design of Liquid-Containing Concrete Structures
AISC 341	Seismic Provisions for Structural Steel Buildings
ACI 360	Specification for Structural Steel Buildings
ASCE 7	Minimum Design Loads for Buildings and Other Structures

Reference	Title
ASTM C635	Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
ASTM C636	Installation for Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
AWS D1.1	Structural Welding Code – Steel
AWS D1.2	Structural Welding Code - Aluminum
AWS D1.6	Structural Welding Code – Stainless Steel
CBC	California Building Code
DOSH	California Division of Occupational Safety and Health (DOSH; Cal/OSHA)
IBC	International Building Code with local amendments
NFPA-13	Installation of Sprinkler Systems
OSHA	U.S. Dept. of Labor, Occupational Safety and Health Administration
SMACNA	Seismic Restraint Manual Guidelines for Mechanical Systems

1.03 DEFINITIONS

A. Structures: The structural elements of a building that resist gravity, seismic, wind, and other types of loads. Structural components include columns, posts, beams, girders, joists, bracing, floor or roof sheathing, slabs or decking, load-bearing walls, and foundations.

B. Nonstructural Components: The nonstructural portions of a building include every part of the building and all its contents, except the structural portions, that carry gravity loads and that may also be required to resist the effects of wind, snow, impact, temperature and seismic loads. Nonstructural components include, but are not limited to, ceilings, partitions, windows, equipment, piping, ductwork, furnishings, lights, etc.

C. Nonbuilding Structures: Self-supporting structures that carry gravity loads and that may also be required to resist the effects of wind, snow, impact, temperature and seismic loads. Nonbuilding structures include, but are not limited to, pipe racks, storage racks, stacks, tanks, vessels, and structural towers that support tanks and vessels.

1.04 SUBMITTALS

~~A. Submittals per Section 01 33 00.~~

A. General: Anchorage drawings and calculations are identified as CBC deferred submittals and will be submitted to and accepted by permitting agency prior to installation of component, equipment or distribution system. Submittals shall comply with Section 01 33 00, Submittal Procedures, and as described below.

B. Submittal Preperation Requirements:

1. Method 1:

a. Calculations and Reference Drawings: Complete calculations and reference drawings.

1) Calculations shall be comprehensible and complete. When evaluating the structural strengths, indicate stress for comparing with strengths or show Demand/Capacity ratio in the structural elements. Evaluating the results by

stating "Okay by Inspection" may not be acceptable. When spreadsheets are used, reference equations and formulas found in calculations.

2) Reference drawings shall include plans, sections, details and equipment information as necessary for anchorage calculations. Indicate the location of the equipment on plan which is necessary for load calculations.

3) Submittals shall be returned without review if:

a) Submittals include only calculations without reference drawings

b) Calculations have no sheet numbers or sheets are missing

c) Calculations or reference drawings are illegible

d) Calculations are made based on wrong information, assumptions or design parameters

e) Information in reference drawings is insufficient for calculations or review

b. Calculations shall be prepared, stamped, signed and furnished by a Professional Civil or Structural Engineer licensed to practice in the State of California.

1) The Civil or Structural Engineer shall be responsible for obtaining all necessary reference drawings and data from the SUBCONTRACTOR or Manufacturer.

2. Method 2: As indicated in Article 1.07, Design and Performance Requirements.

a. Submit component information specific to project.

C. Action Submittals:

~~1. A copy of this specification section with each paragraph check marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.~~

~~Check marks (✓) shall denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance on the part of the CONTRACTOR with the specifications. Include a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.~~

1. List of nonstructural components and nonbuilding structures requiring wind and seismic design and anchorage.

2. Shop Drawings:

a. Submit Shop Drawings with supporting calculations (Method 1) or design criteria (Method 2) for review and acceptance in advance of installation of component, equipment, or distribution system to be anchored to structure.

b. List of architectural, mechanical, and electrical equipment requiring anchorage and bracing.

c. For Method 1:

1) Reference drawings shall include plans, sections, details and component, equipment, or distribution system information as necessary for seismic calculations. Indicate the location of the component, equipment, or distribution system on plan including anchorage locations, edge distance, embedment, diameter and material which is used for load calculations

2) Each drawing sheet shall be sealed by the same engineer that sealed the calculations document for that element.

3) Submittals will be rejected if proposed anchorage method would create an overstressed condition of supporting member. Revise anchorages and strengthening of structural support so there is no overstressed condition.

~~2.~~

~~3. Drawings depicting structural elements of nonstructural components and nonbuilding structures required to be designed per this specification section. Drawings shall be stamped by a California licensed professional engineer qualified to perform structural engineering.~~

~~4. List of nonstructural components and nonbuilding structures requiring wind and seismic design and anchorage.~~

~~5. Shop drawings showing details of complete wind and seismic bracing and anchorage attachment assemblies including connection hardware, and embedment into concrete.~~

~~6. Shop drawings showing plans, elevations, sections and details of equipment support structures and nonbuilding structures, including anchor bolts, structural members, platforms, stairs, ladders, and related attachments.~~

~~7. Identify interface points with supporting structures or foundations, as well as the size, location, and grip of required attachments and anchor bolts. Clearly indicate who will be providing each type of attachment/anchor bolt. Equipment vendor shall design anchor bolts, including embedment into concrete, and submit stamped calculations.~~

~~8. Manufacturer's certificates of compliance with the seismic force requirements of this section.~~

~~9. Special Seismic Certification for the following equipment and components required to be fully operable in an essential facility after the maximum design earthquake per IBC~~

Commented [SL3]: Included in certification specification

~~B.~~D. ~~Product Data~~Informational Submittals ~~per Section 01 33 00.~~

1. Anchorage and Bracing Calculations (Method 1): For attachments, braces, and anchorages, include CBC and project specific criteria as noted herein, sealed by a civil or structural engineer registered in the State of California.
2. Supplier Provided Information (Method 2): Supplier provided design information noted herein.

~~1. Calculations for structural elements of nonstructural components and nonbuilding structures required to be designed per this specification section. Calculations shall be stamped by a California licensed professional engineer qualified to perform structural engineering.~~

~~a. Calculations for all supports, bracing, and attachments shall clearly indicate the design criteria applied. Concrete embedment calculations shall be coordinated with thickness and strength of concrete members. Submit a tabulation of the magnitude of unfactored (service level) equipment loads at each support point, broken down by type of loading (dead, live, wind, seismic, etc.). Indicate impact factors applied to these loads in the design calculations.~~

1.05 QUALITY ASSURANCE

~~A. Submittals preparation, review and engineer qualifications shall be as specified in Section 01 88 14.~~

~~B.~~A. Quality Control By Owner:

1. Special Inspection of nonstructural components and nonbuilding structures, and their anchorages ~~shall~~ will be performed by the Special Inspector under contract with the ~~Owner~~ CONTRACTOR and in conformance with CBC Chapter 17. Special Inspector(s) and laboratory shall be acceptable to the ~~Owner~~ CITY in their sole discretion. Special Inspection is in addition to, but not replacing, other inspections and quality control requirements. Where sampling and testing required conforms to Special Inspection standards, such sampling and testing need not be duplicated.

~~1.06 DESIGN PREPARATION~~

~~A. For structural elements of nonstructural components and nonbuilding structures required to be designed per this specification section, prepare Drawings and design calculations, stamped by a California licensed professional engineer qualified to perform structural engineering.~~

~~B. Prepare calculations for all supports, bracing, and attachments that clearly indicate the design criteria applied. Concrete embedment calculations shall be coordinated with thickness and strength of concrete members. Submit a tabulation of the magnitude of unfactored (service level) equipment loads at each support point, broken down by type of loading (dead, live, wind, seismic, etc.). Indicate impact factors applied to these loads in the design calculations.~~

~~1.07~~1.06 ~~DETAILS OF AND CALCULATIONS FOR anchorages shall be submitted prior to placement of concrete or erection of other structural supporting members.~~DESIGN AND PERFORMANCE REQUIREMENTS

A. Design Codes

1. The following standard codes have application at this site for:

Design	Code
Buildings/Structures:	California Building Code 2016, and ASCE 7-10
Reinforced concrete:	ACI 350 -06 and ACI 350.3-06 for Concrete Liquid Containing Structures, ACI 318-14 for all other reinforced concrete
Structural steel:	AISC 360-10 and AISC 341-10
Aluminum:	Aluminum Design Manual, Latest Edition
Welding:	AWS Welding Codes, Latest Edition
Occupational health and safety requirements:	OSHA and DOSH

Note: When conflicting requirements occur, the most stringent requirements will govern the design.

B. When requirements conflict, the most stringent requirement governs the design.

C. The equipment or component supplier may choose either of the following methods for design of anchorage.

1. Equipment or component supplier may self-perform the anchorage and bracing calculations, as noted in Paragraph Method 1.
2. Equipment or component supplier may supply sufficient information regarding the equipment or component anchorage and bracing, such that Design-Builder can adequately perform the required anchorage and bracing calculations, as noted in Paragraph Method 2. If Method 2 is selected, the equipment or component supplier shall provide Design-Builder a credit for associated engineering costs associated with providing anchorage calculations.

Commented [RJ4]: How do we coordinate between Contractor and Engineer and Design-Builder – need to confirm approach

D. Method 1: Provide support and anchorage calculations stamped by an engineer registered in the State of California. Support and anchorage design criteria shall meet supplier's requirements, design loads provided herein, and all applicable codes and standards. Provide International Code Council ICC-ES or IAPMO-UES report and special inspection requirements for any post installed anchors in concrete and masonry. Anchor calculations shall account for edge distance, concrete thickness and other existing conditions which shall be field verified by the Subcontractor and identified in the calculations and any related Drawings.

E. Method 2: Provide equipment geometry, weight, center of mass, and anchorage locations along with operating loading including but not limited to torque, overturning, thermal loading, etc., to allow Design-Builder to design the anchorage and bracing of the equipment or component for all applicable codes and standards. Design-Builder will be responsible only for the physical anchorage of the equipment or component to the supporting structure. Design of the equipment or component itself to withstand the imposed loading is the responsibility of the equipment supplier.

~~B.~~F. Provide supplementary framing where required to transfer anchorage and bracing loads to structure.

~~1.08~~1.07 DESIGN LOADS

A. Design nonstructural components and nonbuilding structures for the following loads. Do not apply wind ~~and snow~~ loads to nonstructural components and nonbuilding structures that are located inside buildings.

~~A.~~B. Components shall be designed for all dead, live, operational, seismic, wind, and thrust loads per the CBC load combinations

~~B.~~C. Dead Loads:

1. Add an additional allowance for piping and conduit when supported and hung from the underside of equipment and platforms.
2. Typical allowance for piping and conduit unless noted otherwise: 20 psf

~~C.~~D. Uniform Live Loads:

Elevated grating floors:	100 psf
Columns:	No column live load reduction allowed
Exitways, stairs and landings:	100 psf
Equipment platforms, walkways/catwalks (other than exitways):	60 psf
Utility bridges:	75 psf per level minimum

~~D.~~E. Wind Loads:

1. Design Requirements:
   a. Wind Design: In accordance with 2016 California Building Code (CBC), with design parameters listed below:
      1) Ultimate Design Wind Speed: 115 miles per hour
      2) Wind Exposure: C.
      3) Wind Importance Factor, I: 1.0

~~1. Wind design criteria shall be as specified in Section 01 88 15.~~

2. Design exterior nonstructural components and nonbuilding structures, unless located in a pit or basin, to withstand the design wind loads without consideration of shielding effects by other structures.

~~E.~~F. Seismic Loads:

1. Design Requirements
   a. Seismic Design: In accordance with the requirements of 2016 California Building Code (CBC)., with design parameters listed below
      1) Design, 5 percent damped, spectral response acceleration parameter at short periods: S_{DS} = 1.000 g.
      2) Design, 5 percent damped, spectral response acceleration parameter at a period of 1 second: S_{D1} = 0.600 g.
      3) Seismic Design Category: D.
      4) Seismic Component Importance Factor for Anchorage of Mechanical and Electrical Equipment, I_P: 1.5.

~~1. Seismic design criteria shall be as specified in Section 01 88 14.~~

~~2. Design exterior nonstrutural components and nonbuilding structures, unless located in a pit or basin, to withstand the design wind loads without consideration of shielding effects by other structures.~~

~~3.~~2. Calculate seismic loads on the basis of the governing building code. Include equipment operating loads in the structure dead load.

~~4.~~3. Check individual members for seismic and full member live load acting simultaneously, except that flooded equipment loads (infrequent occurrence) need not be combined with seismic loads. Combine equipment operating loads with seismic loads.

~~F.~~G. Impact Loads:

1. Consider impact loads in the design of support systems.
2. Use the following impact load factors unless recommendations of the equipment manufacturer will cause a more severe load case.

Rotating machinery:	20% of moving load
Reciprocating machinery:	50% of moving load
Monorail Hoists:	
• Vertical	25% of lifted load
• Longitudinal	10% of lifted load

Hangers supporting floors and platforms:	33% of live and dead load

~~G.~~H. Temperature:

1. Include the effects of temperature in design where nonstructural components and nonbuilding structures are exposed to differential climatic conditions. See climatic conditions below for temperature extremes.

a. Climatic Conditions:

Maximum design temperature:	90	degrees Fahrenheit
Minimum design temperature:	30	degrees Fahrenheit

I. Hydraulic: Design of anchorage for submerged gates and other mechanical equipment shall include hydrostatic and hydrodynamic loads determined in accordance with Section 15.7 of ASCE 7-10.

~~H.~~J. Operational Loads: In accordance with 2016 CBC and equipment manufacturer's product data.

~~I. Load Combinations~~

~~1. Design all nonstructural components and nonbuilding structures to withstand the load combinations as specified in the governing building code. Where the exclusion of live load or impact load would cause a more severe load condition for the member under investigation, then ignore the load when evaluating that member.~~

~~J. Design Considerations~~

~~1. Design nonstructural components and nonbuilding structures for the following conditions.~~

~~2. Climatic Conditions:~~

~~Maximum design temperature:~~	~~90~~	~~degrees Fahrenheit~~
~~Minimum design temperature:~~	~~15~~	~~degrees Fahrenheit~~

~~3. Foundations:~~

~~a. Extend foundations supporting nonstructural components and nonbuilding structures below the frost line, or supported on non-frost susceptible structural fill down to the frost line.~~

~~Frost line for foundations:~~	~~18 inches~~

~~*Note: Consult project geotechnical report for allowable soil bearing recommendations at location of structure.*~~

~~K. Column Base Fixity~~

~~1. Design column bases as pinned connections. No moments shall be assumed to be transferred to the foundations.~~

~~2. Where significant shear loads (greater than 5,000 lb. per anchor bolt) are transferred at column base plates, the equipment vendor shall provide a shear key designed to transfer the shear load.~~

~~L.~~K. Deflections

1. Maximum beam deflections as a fraction of span for walkways and platforms: L/240 for total load and L/360 for live load.
2. Maximum total load deflection for equipment supports: L/450.

PART 2 PRODUCTS

2.01 GENERAL

A. Anchors shall comply with Section 05 05 19, Anchor Bolts.

B. Attachments and supports transferring loads to structure shall be constructed of materials and products suitable for the application and be designed and constructed in accordance with the design criteria and nationally recognized standards.

C. Size of anchor bolts and anchors, and required minimum embedment and spacing shall be based on calculations submitted for Method 1.

D. Powder actuated fasteners and sleeve anchors shall not be used for attachments and anchorage where resistance to tension loads is required. Expansion anchors, other than undercut anchors or specifically approved anchor, shall not be used for non-vibration-isolated mechanical equipment rated over 10 hp.

E. Cast-in-place anchor bolts shall be used for equipment rated over 50 hp unless otherwise approved by Design-Builder.

F. Seismic loads must be resisted by welded connection plates, and anchor bolts or bolts fastened to structural steel frames. All steel assemblies, anchor bolts and fasteners shall be of Type 316 stainless steel, unless otherwise indicated.

~~A. Materials shall be in conformance with information shown on the Drawings and in other technical specification sections. See individual component and equipment specifications for additional requirements.~~

PART 3 EXECUTION

3.01 GENERAL

A. Make attachments and braces in such a manner that the component force is transferred to the lateral force-resisting system of the structure. Base attachment requirements and size and number of braces on the ~~calculations submitted by the CONTRACTOR~~submitted calculations.

~~B. All anchorage of equipment is specified to be made by cast in anchor bolts in concrete elements unless specifically noted otherwise on the Drawings or other specification sections. CONTRACTOR shall be responsible for any remedial work or strengthening of concrete elements because of superimposed seismic loading if anchor bolts are improperly installed or omitted due to lack of submittal review or improper placement for any reason, at no additional cost to the Owner.~~

~~C. Provide anchor bolts in accordance with the Technical Specifications. Base size of anchor bolts and embedment on the submitted calculations.~~

Commented [RJ5]: Luke – need to note the City has unique requirements that equipment pads do not coutn for imbedment length. Might want to note that above.

Commented [RJ6]: Confirm terminology

B. Overall anchorage system shall provide restraint in all directions, including vertical, for each component or system so anchored.

C. Components mounted on vibration isolation systems shall have snubbers in each horizontal direction and vertical restraints where required to resist overturning.

D. Anchor piping in such a manner as to ensure piping system has adequate flexibility and expansion capabilities at flexible connections and expansion joints. Piping and ductwork suspended more than 12 inches below the supporting structure shall be braced for seismic effects to avoid significant bending of the hangers and their attachments, unless high-deformability piping is used per ASCE 7-10, or HVAC ducts have a cross-sectional area of less than 6 square feet.

E. Tall and narrow equipment such as motor control centers and telemetry equipment shall be anchored at the base and within 12 inches from the top of the equipment, unless approved otherwise by Design-Builder.

F. Architectural, mechanical, or electrical components shall not be attached to more than one element of a building structure at a single restraint location where such elements may respond differently. Such attachments shall also not be made across building expansion and contraction joints.

~~D.~~G. Details of and calculations for anchorages shall be submitted and approved prior to placement of concrete or erection of other structural supporting members. Submittals received after structural supports are in place will be rejected if proposed anchorage method would create an overstressed condition of the supporting member. The ~~CONTRACTOR~~ Subcontractor shall be responsible for revisions to the anchorages and/or strengthening of the structural support so that there is no overstress condition at no additional cost to the ~~Owner~~Design-Builder.

~~**PART 4 ADDITIONAL REQUIREMENTS**~~

END OF SECTION

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SECTION 01 77 00

CLOSEOUT PROCEDURES

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-10-18: City to review and approve.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Contract closeout requirements including:
   1. Final cleaning
   2. Preparation and submittal of closeout documents
   3. Final completion certification

~~B. Related Sections:~~
   ~~1. Section 01 33 23 – Record Drawings~~
   ~~2. Section 01 71 23 – Field Engineering~~
   ~~3. Section 01 78 23 – Operation and Maintenance Manuals~~
   ~~4. Section 01 91 14 – Testing, Training, and Facility Start Up~~

1.02 CLOSEOUT DOCUMENTS

A. Informational Submittal:
   1. CONTRACTOR shall submit closeout documents to ENGINEER ~~with~~ before the application for final payment.

1.03 FINAL CLEANING

A. Perform final cleaning prior to inspections ~~for Substantial Completion~~before Acceptance Test and City begins operation for Acceptance Test.

B. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.

C. Prevent scratching, discoloring, and otherwise damaging surfaces being cleaned.

Commented [RJ1]: This is Hawkins-contract definition and need to coordinate – do once.

D. Clean roofs, gutters, downspouts, and drainage systems.

E. Remove dust, cobwebs, and traces of insects and dirt.

F. Broom clean exterior paved surfaces (e.g. walks, steps and platforms) and remove dust, dirt and other disfigurations from exterior surfaces of site work.

G. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.

H. Clean each surface or unit of Work and remove non-permanent protection and labels.

I. Wipe surfaces of mechanical and electrical equipment clean. CONTRACTOR shall remove excess lubrication and other substances.

J. Clean light fixtures and replace burned out or dim lights.

K. Repair any damage to existing roadway, fencing, etcetera, due to construction activities.

L. Remove all temporary work form the site including but not limited to fencing, sign boards, samples, and any other items not considered part of the permanent Work.

1.04 WASTE DISPOSAL

A. Arrange for and dispose of surplus materials, waste products, and debris off-site. Prior to making disposal on private property, obtain written permission from ENGINEER of such property.

B. Do not fill ditches, washes, or drainage ways which may create drainage problems.

C. Do not create unsightly or unsanitary nuisances during disposal operations.

D. Maintain disposal site in safe condition and good appearance.

E. Complete leveling and cleanup prior to final acceptance of the Work.

1.05 TOUCH-UP AND REPAIR

A. Touch-up or repair finished surfaces on structures, equipment, fixtures, and installations that have been damaged prior to inspection for Substantial Completion.

Commented [RJ2]: Need to harmonize terms.

B. Refinish or replace entire surfaces which cannot be touched-up or repaired satisfactorily.

1.06 CLOSEOUT DOCUMENTS

A. Submit the following Closeout Submittals upon Substantial Completion and at least seven (7) days prior to submitting Application for Final Payment:
   1. Evidence of Compliance with Requirements of Governing Authorities
   2. Project Record Documents
   3. Operation and Maintenance Manuals

4. Warranties and Bonds
5. Evidence of Payment and Release of Stop Payment Notices as outlined in Conditions of the Contract
6. Release of claims as outlined in Conditions of the Contract
7. Survey Record documents as specified in Section 01 71 23 – Field Engineering
8. Certificate of Final Completion

Commented [RJ3]: Confirm with Geoff that this is just benchmarks.

1.07 PROJECT RECORD DOCUMENTS

A. Provide record drawings in accordance with Section 01 33 23 – Record Drawings and herein this section.

B. CONTRACTOR shall record actual revisions to the Work and maintain one set of the following Project Record Documents on site:
1. Contract Drawings, Specifications, and Addenda
2. Change Orders, Field Orders and other written notices
3. Shop drawings, product data and samples
4. Records of surveying and layout work
5. Project Record Drawings
~~5.~~6. Documents in the Web Based Design and Construction Management System is considered on site.

C. CONTRACTOR shall record information on Project Record Documents concurrent with construction progress and store separately from the documents used for construction:
1. ENGINEER shall supply a set of Contract drawings. CONTRACTOR shall mark thereon all revisions as the Work progresses in order to produce a set of as-built drawings.
2. CONTRACTOR shall note any changes made during construction by any of CONTRACTOR'S forces or any Subcontractors.
3. CONTRACTOR shall dimension the locations of buried or concealed work, especially piping and conduit, with reference to exposed structures or GIS coordinates.
4. CONTRACTOR shall dimension the installed locations of concealed service lines on the site or within the structure by reference from the center line of the service to structure column lines or other main finished faces or other structural points easily identified and located in the finished Work.
5. A completion certificate shall not be issued until as-built drawings are complete and submitted, and the CONTRACTOR has satisfied all requirements for Substantial Completion and Final Completion of the Work.

Commented [RJ4]: Confirm term.

1.08 WARRANTIES AND BONDS

A. Provide executed Warranty or Guaranty Form if required by Contract Documents.

B. Provide specified additional warranties, guarantees, and bonds from manufacturers and suppliers.

C. Warranties, Guaranties, and Bonds shall be included in the section for the specific equipment in the Section 01 78 23 O&M manuals.

1.09 CERTIFICATE OF FINAL COMPLETION

A. Once the Acceptance testing that is required by Section 01 91 14 Testing, Training and Facility Start Up has been successfully completed, ENGINEER will certify that new facilities are operationally complete. ENGINEER will then schedule and conduct a walk-through inspection with CITY and CONTRACTOR and publish a punch list to the CONTRACTOR for correction.

B. List of items to be completed or corrected will be amended as items are resolved by CONTRACTOR.

C. When all items have been completed or corrected, submit written certification that the entire work is complete in accordance with the Contract Documents and request final inspection.

D. Upon completion of final inspection, ENGINEER will either prepare a written acceptance of the entire work or advise CONTRACTOR of work not complete. If necessary, inspection procedures will be repeated.

PART 2 PRODUCTS (**NOT USED**)

PART 3 EXECUTION (**NOT USED**)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

Commented [RJ5]: Confirm no conflicts with Hawkins.

Commented [RJ6]: Need to coordinate with Hawkins language.

SECTION 01 78 23

OPERATION AND MAINTENANCE ~~DATA~~MANUAL

Commented [AE1]: This has changed in the new version that City provided on 1/10/20

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- Jacobs to review

2020-01-23: City provided a new version on 1/10/20 with minor changes compared to the previous version that are applied here as track changes.

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Preparation and submittal of paper and electronic operation and maintenance manuals. Operation and maintenance information shall be provided for each piece of equipment, equipment assembly, or subassembly and material provided or modified under this contract.

B. Section includes: Providing information for all new assets provided under this contract to populate the RWF computerized maintenance management system (CMMS) in accordance with Standard Operating Procedure (SOP) AM.100, Asset Tagging Convention and Section 01 78 23.01. ~~SOP AM.100 may be obtained from ENGINEER upon request.~~ "CMMS SUBMITTALS".

1.02 RELATED SECTIONS:

A. The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the CONTRACTOR to see that the completed Work complies accurately with the Contract Documents.

1. Section 01 33 00 – Submittal Procedures
2. Section 01 ~~78 23.01 – Closeout Submittals~~35 25 – Web-Based Design & Construction Management System
~~2.~~3. Section 01 78 23.01 – CMMS Submittals
4. Section 01 78 43 – Spare Parts
~~3.~~5. Section 00 90 09 – Attachment 9

1.03 SUBMITTALS

A. Hard and electronic copies required in this Section are in addition to electronic copies required by Section 01 35 25 – Web-Based Design and Construction Management System.

~~A.~~B. Submit four (4) printed bound copies, and one (1) electronic copy of the draft operation and maintenance manuals and asset information files to CITY for review. Draft operation and maintenance manuals shall be submitted to the CITY prior to shipment of equipment to the site. The manuals shall receive a submittal rating of NO EXCEPTIONS TAKEN or MAKE CORRECTIONS NOTED by the ENGINEER in accordance with Section 01 33 00 before field quality control testing and before training of each piece of equipment or system may start

~~B.~~C. Revise and resubmit draft manuals and asset information files, as required, for each piece of equipment or system. The final manual and asset information files shall receive a submittal rating of NO EXCEPTIONS TAKEN by the ENGINEER in accordance with Section 01 33 00 at least 60 calendar days before starting to train the FACILITY's personnel on each piece of equipment or system. Submit five (5) printed bound copies and ~~five (5)~~one (1) electronic cop~~y~~ies on CD or DVD of the final accepted manuals and asset information files within 30 calendar days of acceptance of equipment or systems. Final manuals shall include all previous submittal information pertinent to the operation and maintenance manuals and asset information files, all source quality control testing data, field quality control test results, startup reports, training materials, and detailed course outlines that could not be included prior to start-up, testing, and training. Shipment of equipment will not be considered complete until all required manuals and equipment data has been received.

~~C.~~D. Submittals shall be provided in accordance with Section 01 33 00.

~~D.~~E. Make additions and revisions to the manuals and asset information files in accordance with ENGINEER'S review comments.

~~E.~~F. Make the final accepted manuals available at project site for use by project construction personnel and CITY.

~~F.~~G. Number sequentially using the prefix "O&M" followed by the submittal numbering process in Section 01 33 00. For example, O&M_012-01 is the first resubmittal of O&M Submittal number 12.

~~G.~~H. Supply operation and maintenance information for all equipment requiring maintenance or other attention; provide an operation and maintenance manual prepared by the supplier for each type of equipment indicated in the individual specifications sections; furnish parts lists and operating and maintenance instructions for other equipment not listed in the specifications.

~~H.~~I. Provide operation and maintenance manuals, lists of all parts and information required under this Section, in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required from CONTRACTOR.

~~I.~~J. Complete ~~Attachment 1~~Appendix 7 – SOP AM100 – Maintenance Summary for each piece of equipment. (refer to the end of this specification section).

1.04 PREPARATION

A. Assemble manuals and other data in the format as follows:
   1. Provide operations and maintenance manuals in sturdy 3-ring binders with rigid covers and tab sheets. Assemble material, where possible, in the same order specified, with each volume having a table of contents and suitable index tabs.
   2. Print on the heavy, first quality paper: 8-1/2 by 11-inch size.
   3. Reduce drawings and diagrams to 11 by 17-inch size.
      a. When reduction is not practicable, fold drawings separately and place in envelopes to be bound into the manuals.
      b. Label each drawing on the outside with appropriate identification.
      c. Each drawing file shall be legible when viewed on a 22" monitor at 1920 x 1080 resolution and when printed out on letter, legal or 11-inch x 17-inch size paper unless other sizes are approved.
   4. Place the following information on the outside of the cover of each manual:

OPERATION AND MAINTENANCE DATA

[INSERT DESCRIPTIONS OF EQUIPMENT]

SPECIFICATION SECTION [_____]

SAN JOSE SANTA CLARA REGIONAL WASTEWATER FACILITY

PROJECT – NAME OF PROJECT

B. Prepare asset information files using SOP AM.100 as a guidance document and in accordance with Section 01 78 23.01.

C. Contents of the CD(s)/DVD(s) shall match the final printed copies of the manuals and asset information files page for page.

D. A separate CD/DVD or set of CDs/DVDs shall be submitted for each manual and asset information file.

E. PDF File Format Requirements: see paragraph 1.05

F. Asset Management Data: Follow the format of the attached documents when entering the asset information. The information shall be furnished electronically in editable document format (e.g., ~~Microsoft Word 2010 document~~ or Excel ~~2010~~format only).

G. Contents of Operation and Maintenance Manuals:
   1. Cover Page: Equipment name, equipment tag number, project name, FACILITY's name, process area, audience group, SME approver, date. Process area, audience group and SME approver lists will be provided by the ENGINEER. ~~date~~
   2. Provide names, addresses, and telephone numbers of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts.

3. Table of Contents: General description of information provided within each tabbed section
4. Provide names, addresses, and telephone numbers of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts.
5. Vendor's and Manufacturer's product data with catalog number.
6. Lubrication Information: Required lubricants and lubrication schedules, including commercial number of each
7. Control Diagrams: Internal and connection wiring including logic diagrams, wiring diagrams for control panels, ladder logic for PLC-based systems, HPC800 Function Blocks for DCS-based systems, and connections between equipment wiring of existing systems and new additions; and adjustments such as calibrations and set points for relays, and control or alarm contact settings.
8. Start-up Procedures: Recommendations for installation, adjustment, calibration, and troubleshooting
9. Operating Procedures:
    a. Step-by-step procedures for starting, operating, and stopping equipment under specified modes of operation, including any post-shutdown procedures
    b. Safety precautions that should be taken when operating equipment
    c. Instructions to shutdown and/or turn off equipment in an emergency. Include re-start procedures
    d. Provide table with set points and additional parameters for all processes and controllable equipment
    e. Identify User/Operator access roles and if special permissions are required for certain procedures
10. Preventive Maintenance Procedures: Recommended steps and schedules for maintaining equipment in good working condition, including routine procedures for troubleshooting
11. Overhaul Instructions: Directions for disassembly, inspection, repair and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required
12. Material Safety Data Sheets, as appropriate.
13. Parts List: Generic title and identification number of each component part of equipment; including bearing manufacturer, model and ball or roller pass frequencies for every bearing
14. Spare Parts List (Section 01 78 43): Recommended number of parts to be stored at the site and special storage precautions
15. Drawings: Exploded view or plan and section views with detailed callouts
16. Provide electrical and instrumentation schematic record drawings
17. Source (Factory) Quality Control Test Results: Provide copies of factory test reports as specified in the individual equipment sections.
18. Field Quality Control Test Results: After field testing is completed, insert field test reports as specified in Section 01 91 14, and the individual equipment sections.
19. Equipment Summary Form: Completed form found in this Section. Insert completed Equipment Summary Form (~~Attachment 1~~Appendix 7- SOP AM100) into separate tab

and reference tab in Table of Contents. The manufacturer's standard form will not be acceptable.

20. Warranty Information: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or Contract Documents to keep warranties in force.

1.05 FORMAT OF ELECTRONIC SUBMITTALS

A. General:

1. All Operation and Maintenance Manuals and asset information files shall be provided on a CD-ROM or DVD-ROM in the appropriate file format as specified in this Section.

~~1.~~2. Electronic submittals required by Section 01 35 25 Web-Based Design & Construction Management shall include all information and file format as specified in this Section.

~~2.~~3. Electronic submittals must include all information in the printed copy submittal, and be arranged in the same order.

~~3.~~4. After the documents are in correct electronic format as specified herein, copies shall be given to the ENGINEER as a 120-mm, 700-MB, 80-minute CD-ROM or DVD-ROM compatible with Microsoft Windows.

~~4.~~5. CD-ROM or DVD-ROM disks shall be labeled with the project name, project number, and a brief description of the contents.

~~5.~~6. If multiple electronic manual or asset information file submittals are made on one CD-ROM or DVD-ROM, all files shall be organized in a manner that directly corresponds to the order and nomenclature of the submittal log. Each submittal must be located in its own subdirectory, where the subdirectory name corresponds to the submittal number.

~~6.~~7. Electronic files shall be saved in the latest version of Adobe Acrobat PDF format with the following characteristics.

a. The PDF files on each CD or DVD shall have "clickable" link for each of the items in the table of contents to the corresponding pages and sections in the entire document. They shall also be bookmarked with links to the main table of contents and allow for the search functions of Adobe Acrobat to be used
b. Each section (tab) and heading shall be bookmarked.
c. Each bookmark must reflect the structure of the Manual.
d. All levels of bookmarks must appear in a collapsed and visible state when the file is opened.
e. Bookmarks shall have logical descriptions by function, process area, or equipment description. Headings such as "Section A" or "Chapter 1" are not acceptable.
f. PDF files shall have embedded thumbnails for each page and be optimized for fast web view.
g. Optimized for byte-serving
h. Screen optimized
i. Save files so that printing and selection of text and graphics is allowed
j. Save files so that editing of files through Adobe Reader is not allowed
k. Force navigation pane "on" when file is opened
l. Links within files to other files shall use relative addressing

~~m. File names shall contain no spaces, shall not exceed twenty five (25) characters, shall have only alphanumeric characters, and shall not contain symbols such as listed below:~~

~~1) `!@#$%^&*() =+<>?/\|.,~'";{[}]~~

~~n. File names shall be descriptive of file contents and shall not be arbitrary~~

m. File names convention is:

Process Area_Title of the Document_Document Type

A list of process areas and document types will be provided by the ENGINEER.

~~o.~~n. Password protection of files is not acceptable

~~p.~~o. Fonts used within a document shall be embedded within each PDF file, unless font type is Arial, Helvetica, or Times New Roman True Type fonts

~~7.~~8. One single PDF document, with separate drawing files as necessary, is preferred for each manual. If a manual is broken into multiple volumes due to the large size of the printed version, a single PDF file for the electronic version shall be submitted.

B. Documents:

1. All technical information shall be provided electronically in Adobe Acrobat PDF format. These files shall be provided by the original equipment manufacturer (OEM).
2. PDF files shall be created from the native format of the document (e.g., Microsoft Word, Excel, AutoCAD, etc.). Scanned images are not acceptable.
   a. Materials not available in original electronic format (available only in paper format) shall be scanned into a electronic format and cleaned to remove smudges, fingerprints, artifacts, and other extraneous marks as specified in this Section. CONTRACTOR shall scan (minimum 600 x 600 dpi resolution) and convert the OEM hard copies to Adobe .pdf format.
3. Text shall appear and paginate as it would in a printed copy.
4. Text shall be searchable.
5. Any items or options not provided in the supplied equipment or system shall be deleted.
6. Where a packaged control system is provided with equipment, provide completely annotated ladder logic for a Programmable Logic Controller (PLC) in both printed and electronic format.

C. Drawings:

1. All drawing data shall be provided in electronic format compatible with RWF CAD standard, AutoCAD 2017. All drawings included in the manuals shall be provided in DWG or DXF format.
2. Drawings shall have a white background.
3. Drawing shapes shall not degrade when closely zoomed.
4. Screening effects intended to de-emphasize detail in the drawing must be preserved.
5. Any items or options not provided in the supplied equipment or system shall be deleted.
6. Converting printed record drawings:
   a. Record drawings that exist in printed copy only shall be provided as one Image PDF or Searchable Image PDF file. The following section details the requirements for scanning and converting printed drawings to PDF format.

b. Converting the sections of a printed record drawing:
   1) Each set of drawings shall be provided as one multi-page PDF file.
   2) The cover of the drawing set shall be page 1 of the PDF file.
   3) When the PDF file opens, the entire cover shall be visible.
   4) Drawings shall be scanned at 200 to 300 DPI B&W Group IV Compression.
   5) When a photo is present in the background of the drawing, scan at 400 DPI B7W Group IV to provide enough resolution to appear as a grayscale image.
   6) Bookmarks: At a minimum, bookmark each discipline, area designation, or appropriate division of the drawing set.

D. Converting documentation to electronic formats:
   1. Documentation falls into one of the following two classifications: (1) Archival or (2) Living.
      a. Archival documentation: Typically does not require updating to remain valid and should be stored in a format that preserves the document and limits ability to make changes. The following is a list of archival type documentation:
         1) Record drawings
         2) Reports
         3) Specifications/shop drawings
         4) Equipment manuals
         5) Photos
         6) Demonstration and training videos
         7) Other documents.
      b. Living documentation: Requires periodic updates to remain valid and should be stored in formats that allow for easy updating. The following is a list of living type documentation:
         1) Facility O&M Manuals
         2) Standard Operating Procedures
         3) CMMS Information

E. Special Provisions for PLC manuals:
   1. Manuals shall contain a copy of the most current PLC program with descriptors for each newly installed PLC at the FACILITY. The electronic copy of the manual shall contain the actual PLC files and not a PDF version of the actual file.
   2. Manuals shall contain a copy of the training manual. The electronic copy of the manual shall contain the actual Microsoft Word document and not a PDF version of the actual file.
   3. For PLC-based systems, manuals shall contain a copy of the memory maps from PLC to PLC or to other devices such as motor control centers (MCCs) and variable frequency drives (VFDs). If both DCS and PLC are used, both the I/O map for HPC800 and the memory map for PLC shall be included. The electronic copy of the manual shall contain the actual Microsoft Excel workbook for the input/output (I/O) map and not a PDF version of the actual file.
   4. Electronic copies of the manuals shall contain a copy of the most current 3D model files used for the HMI screens in the native, editable format of the software.

5. Electronic copies of the manuals shall contain a copy of the most current HPC800 and/or PLC system project back up. For HPC800-based projects include all Objects and Aspects necessary for the project.
6. The paper and electronic copies of the manuals shall contain any and all other material not explicitly stated here, but of value and importance to the operation and maintenance of the control system.

1.06 VALVE AND GATE IDENTIFICATION

A. The CONTRACTOR shall prepare a valve and gate schedule for all tagged/numbered valves and gates required for the work showing a number, the location, type, function, and normal operating position, for each valve and gate. The schedule shall be submitted to the ENGINEER electronically and three (3) hard copies for acceptance not more than 30 calendar days prior to start-up.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

A. PAYMENT
   1. Final O&M information for the project must be delivered to the FACILITY prior to project completion. Final Progress Payments will not be processed until the specified final O&M information has been delivered to the FACILITY.

B. FIELD CHANGES
   1. Following the acceptable installation and operation of an equipment item, the item's instructions, and procedures shall be modified and supplemented by the CONTRACTOR to reflect any field changes or information requiring field data.

PART 4 ADDITIONAL REQUIREMENTS (NOT USED)

END OF SECTION

ATTACHMENT 1

SECTION 01 78 23 - OPERATIONS AND MAINTENANCE MANUALS

MAINTENANCE SUMMARY

1. EQUIPMENT ITEM
2. MANUFACTURER
3. EQUIPMENT PURCHASE DATE/PRICE
4. EQUIPMENT IDENTIFICATION TAG NUMBER(S)
5. LOCATION OF EQUIPMENT
6. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS)
7. NAME PLATE DATA
   - Horsepower
   - Amperage
   - Voltage
   - Service Factor (S.F.)
   - Speed
   - ENC Type
   - Capacity
   - Other
8. MANUFACTURER'S LOCAL REPRESENTATIVE
   - Name
   - Address
   - Telephone Number
   - E-mail Address

9. MAINTENANCE REQUIREMENTS
10. LUBRICANT LIST
11. SPARE PARTS (RECOMMENDATIONS)
12. COMMENTS

END OF SECTION

SECTION 01 78 23.01

CMMS SUBMITTALS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-11-14: Updated version from City.

2020-01-28: Looks similar to previous CMMS – Vendors will develop required submittal information.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Requirements and procedures for submitting Data, Product Information and other submittals as it relates to the Computerized Maintenance Management System (CMMS), Asset Management and as specified in this section.

B. Related Sections:
   1. Section 01 78 23 – Operation and Maintenance Data
   2. Section 01 78 23.02 – Equipment Summary Form
   3. Section 01 78 23.03 – Equipment Warranty Summary Form

1.02 BACKGROUND

A. The CITY utilizes CMMS to assist them with the management of their physical assets and associated maintenance processes. Accordingly, business elements and systems (Which are considered "ASSET" as per CITY's Standard Operating Procedure titled "SOP-AM100-Tagging Convention") and their "Physical attributes" need to be captured through the project delivery process for entry into the CITY's CMMS application. Typical "physical attributes" are required for building plant and equipment, utilities, building systems and other maintainable assets.

B. In addition to those efforts linked directly with the CITY's CMMS application, the data collection and numbering convention will be as specified in Section 1.04 and will be shared with other entities requiring such information.

1.03 SUBMITTAL PROCEDURES

A. Deliver submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. CONTRACTOR shall submit a complete list of all the equipment to be installed as the first draft of the CMMS submittal. This list shall contain all equipment for which CMMS data is to be provided by the CONTRACTOR and shall be submitted within 60 days of the Notice to Proceed.

C. All CMMS submittals shall be completed a minimum of 60 days prior to substantial completion.

D. Any performance related data should be submitted no later than 30 days after its measurement and recording in the field. All required submittals concerning elements of the work that are accomplished in the final 60 days prior to substantial completion shall be submitted within 30 days of that activity or testing being accomplished.

1.04 ASSET DATA COLLECTION / SUBMITTAL

A. The general nature and content of data (Assets & their physical attributes) to be submitted in tabular form shall comply with CITY's Standard Operating Procedure titled "SOP-AM100- Tagging Convention", as following :

1. Maintained Assets: The project participants and the ENGINEER shall identify those items on the drawings and/or in the specifications that require the submittal of CMMS - data. Such asset data shall include, but not limited to the following:
   a. Actuator Electric
   b. Actuator Pneumatic
   c. Air Conditioning Unit
   d. Analyzer
   e. Bar Screen
   f. Bearing
   g. Blower
   h. Boiler
   i. Breaker
   j. Chiller
   k. Compressor
   l. Control Panel
   m. Conveyor
   n. Cooling Tower
   o. Engine
   p. Fan
   q. Filter
   r. Gearbox
   s. Generator
   t. Grit Cyclone
   u. Heat Exchanger

v. Motor
w. Motor Control Center
x. Panel
y. Positioner
z. Pump
aa. Switchboard
bb. Tank
cc. Transformer
dd. Transmitter
ee. Turbocharger Turbine
ff. Uninterrupted Power Supply
gg. Valve
hh. Variable Frequency Drive

2. Maintained Assets Criteria: The following criteria shall be used to identify maintainable assets (one or more criteria need apply):
   a. The asset requires some form of periodic maintenance and/or inspections.
   b. The unit, assembly or building feature is the subject of a separate and distinct warranty provision.
   c. The item needs to be tracked per regulatory requirements or good maintenance practice.

   Any questions can be referred to the ENGINEER for clarification.
3. Physical Attributes: The physical attributes are those characteristics normally identified in the equipment schedules or specific requirements included in the technical requirements documents. For example, the physical attributes for an exhaust fan might include the fan type, volumetric air flow (cfm), design speed and drive type. The list of attributes is based on component family so that all fans will have the same data elements and likewise for air handling units, boilers, chillers, etc.
4. The vendor submittal shall include the list of physical attributes in tabular format per "SOP-AM100- Tagging Convention – Appendix 07". The ENGINEER will provide the CMMS spreadsheet templates for CONTRACTOR's convenience.
5. The Asset Hierarchy Parent / Child relationship is used to link two assets in a hierarchical fashion. An asset may have only one parent. If two or more assets are associated with an equipment, a Hierarchy showing the Parent/Children relationship will be created. The CONTRACTOR shall meet with the ENGINEER for a briefing of CITY's equipment hierarchical requirements and setup.
6. The vendor submittal shall include in tabular format per "SOP-AM100- Tagging Convention" the hierarchy of the equipment identified in the submittal. The ENGINEER will provide the CMMS hierarchical templates for CONTRACTOR's convenience.
7. As part of the submittal process and prior to installation, the CONTRACTOR shall provide a detailed list of key components, recommended spares and/or consumable replacement parts, that serve as an abbreviated bill of materials (BOM) for each particular asset. The data elements shall be provided in the same format as those specified in Section 01 78 23.00– Operations and Maintenance Manual except as noted below:

a. Motor data shall include horsepower, frame size, voltage and current requirements within the description field.
b. Unit cost data is not required if the component is integral to the larger asset (not purchased separately) or is not normally provided as attic stock.

8. Vendors: For each identifiable asset or data record created wherein a CONTRACTOR, manufacturer, distributor or supplier is identified, the submittal shall include the complete name, address, telephone number, fax number company web-site URL, and primary point of contact (including e-mail address and phone numbers if different than that used by the company).
9. The general nature and content of data to be submitted via electronic document (report format) includes, but is not limited to pre-functional checklists, functional checklists, testing and air balancing reports, commissioning reports, warranty certificates and training documents. These requirements do not alter the requirement for any hard copy reports, especially those requiring signatures and/or notarization.
10. All reports to be submitted in support of this project shall be provided in electronic format in addition to any hard copies specified separately. Each report shall reference the specific asset, system or building element involved.
11. The electronic data file format shall be limited to those normally associated with Microsoft Office 2010 products (as may be most appropriate), AutoCAD 2017 (.dwg files) or Adobe (.pdf files) unless specifically approved by the ENGINEER.
12. Any stand-alone graphic files shall be provided in JPEG format (.jpg files).
13. Check, verify, and revise submittals as necessary to bring them into conformance with Contract Documents and actual field conditions.
    a. Determine and verify quantities, dimensions, specified design and performance criteria, materials, catalog numbers, and similar data.
    b. Coordinate submittal with other submittals and with the requirements of the Contract Documents.

1.05 ENGINEER'S REVIEW

A. ENGINEER's review of CMMS submittals shall be in accordance with Section 01 33 00 – Submittal Procedures.

1.06 EQUIPMENT IDENTIFICATION AND PHYSICAL TAGGING

A. For equipment identification The CONTRACTOR shall provide equipment / asset tags as specified in SOP-AM100- Tagging Convention – Appendix 07. The CONTRACTOR shall coordinate equipment/asset tag identification nomenclature with the ENGINEER to align with SOP-AM100- Tagging Convention.

B. Physical Tagging of Assets shall comply with CITY's Standard Operating Procedure AM.100 Supplement, titled "Asset Tagging Convention Supplement".

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 78 23.02

EQUIPMENT SUMMARY FORM

2019-09-10- DONE- No changes have been made

1. EQUIPMENT ITEM _____
2. MANUFACTURER _____
3. EQUIPMENT PURCHASE DATE/PRICE _____
4. EQUIPMENT IDENTIFICATION TAG NUMBER(S) _____
5. LOCATION OF EQUIPMENT _____
6. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____

7. NAME PLATE DATA
   - Horsepower _____
   - Amperage _____
   - Voltage _____
   - Service Factor (S.F.) _____
   - Speed _____
   - ENC Type _____
   - Capacity _____
   - Other _____

8. MANUFACTURER'S LOCAL REPRESENTATIVE
   - Name _____
   - Address _____
   - Telephone Number _____
   - E-mail Address _____

9. MAINTENANCE REQUIREMENTS _____
10. LUBRICANT LIST _____
11. SPARE PARTS (RECOMMENDATIONS) _____
12. COMMENTS _____

END OF SECTION

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SECTION 01 78 23.03

PROJECT NAME – EQUIPMENT WARRANTY SUMMARY (SAMPLE)

2019-09-10- DONE- No changes have been made

O&M Manual	Spec Section / Paragraph No.	Company	Equipment Tag #	Warranty Period
Rotary Liquid Ring Compressor	43 12 56	Nash	71COMP9550-05	12 months from substantial completion of project

END OF SECTION

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SECTION 01 78 43

SPARE PARTS

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-09-10- DONE- No changes have been made

2020-01-28: New. Not in 60% set. If added, need to coordinate with contract and use of spare parts during functional and acceptance testing. Some of this is duplicative of other sections – CMMS forms.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Spare parts and special tools required for testing, starting, and adjusting of equipment.

B. Related Sections:

1. 01 60 00 – Product Requirements
2. 01 91 14 – Testing, Training and Facility Start-up

1.02 CONTRACT REQUIREMENTS

A. CONTRACTOR shall provide for each item of mechanical, electrical, and instrumentation equipment a supply of spare parts and special tools required for the testing, starting, and adjusting of equipment, including but not limited to, functional testing, operational testing, and performance testing of completed portions of the work and as a completed facility as specified in Section 01 91 14 – Testing, Training, and Facility Start-up.

B. Spare parts and special tools shall be as recommended by the equipment manufacturer.

C. The CONTRACTOR shall be responsible to have on hand sufficient spare parts and special tools to meet his/her start-up and testing schedule and contract completion schedule.

D. Spare parts and special tools will not be provided by the CITY.

E. No spare parts shall be furnished to the CITY by the CONTRACTOR, unless specified in the detailed specification sections.

F. Spare parts furnished to the CITY as required in the detailed specification sections shall be in addition to those spare parts required by the CONTRACTOR for the testing, starting and adjustment of equipment as specified in Section 01 91 14 – Testing, Training, and Facility Start-up.

G. Spare parts, wherever required by detailed specification sections, shall be stored in accordance with Section 01 60 00.00 – Product Requirements.

1.03 SUBMITTALS

A. Informational Submittals:

1. Not less than 90 days before the date shown in the CONTRACTOR's construction schedule for starting, testing, and adjusting equipment, the CONTRACTOR shall provide the ENGINEER with three copies of a list showing the required spare parts and special tools for each item of mechanical, electrical, and instrumentation equipment.
2. The list shall show the CONTRACTOR's/subcontractor's equipment purchase order number, the manufacturer's/supplier's name, address, and telephone number, and the quantity of spare parts and special tools required for each item of equipment. The list shall also contain a purchase price for each spare part provided.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 DELIVERY OF SPARE PARTS

A. CONTRACTOR shall deliver all required spare parts to the CITY at the RWF Warehouse as required by these specifications and as additionally directed by the ENGINEER.

B. Spare parts shall be delivered when required as specified in Section 01 91 14.

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

SECTION 01 91 14

TESTING, TRAINING, AND FACILITY START-UP

The following specification is divided into four parts. The first three parts are to be considered standard, and revisions to these sections must be reviewed and approved by the CIP Engineering manager. PART 4 of each Section of the Division 1 specifications is titled Additional Requirements and represents project specific requirements for that Section of the specifications. The responsibility for developing and drafting any PART 4 material rests with the project team as they are in the best position to understand and develop project specific requirements. The Project Manager will decide the content, scope and timing of preparation of such requirements. The project team will ensure that the material is compatible with the technical specifications and that the appropriate SMEs have reviewed and approved the material.

For Parts 1 - 4, the Project Team should use Edit >Find> bracket "[" for blanks to be filled in, alternative choices, and provisions that may or may not be included depending on the project specific application. Instructions for the specifier are included in highlighted text. Delete unused alternative choices and provisions as appropriate, fill in blanks, and take out brackets and highlighted text once customization of Parts 1 -4 is complete.

2019-11-07 version to City for review. Modified to try and match the way City wanted the contract for substantial competition and acceptance test. Sent by e-mail to City only.

2020-01-28: Made numerous changes in contract and Appendix 9 and 10 to try and match terms from Hawkins to City standard terms. Need to modify this specification to match up with DCA Contract. Need to coordinate with purchase orders.

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Requirements for equipment and system testing and start- up, including, but not limited to, the following:
   1. General ,Testing, Training, and Start-up Requirements
   2. Start-up and Operational Schedule and Plans
   3. Factory Acceptance Testing
   4. Pre-operational Testing and Inspection
   5. Functional Testing (Start-up)
   6. ~~Operational Testing (~~Acceptance Testing~~ or Commissioning)~~
   7. Certificate of Proper Installation
   8. Services of manufacturer's representatives
   9. Training of O&M personnel

B. Submittals required in this Section shall be in accordance with Section 01 33 00.

1.02 RELATED SECTIONS

1. Section 01 14 00 – Work Sequence and Restrictions
2. Section 01 31 19 - Project Meetings
3. Section 01 32 16 – Progress Schedules and Reports

4. Section 01 33 00 – Submittal Procedures
5. Section 01 35 23 – Plant Safety Requirements
6. Section 01 78 23 – Operations and Maintenance Data
7. Section 01 99 90 – Reference Forms
8. Technical Spec Sections – Factory/Witness acceptance testing as applicable

1.03 DEFINITIONS

A. Factory Performance Testing (Source Quality Control and/or Factory Acceptance Testing): Tests as described in individual Specification sections, which refers to testing performed on specified equipment at manufacturer's facility prior to shipment.

B. Pre-operational Testing and Inspection: Tasks that CONTRACTOR shall complete as prerequisites prior to starting systems

C. Functional Testing (Startup): Test or tests in presence of the ~~ENGINEER~~ CONTRACTOR to demonstrate that installed equipment or system meets manufacturer's installation, calibration, and adjustment requirements and other requirements as specified including, but not limited to, noise, vibration, alignment, speed, proper electrical, instrumentation and control, mechanical connections, thrust restraint, proper rotation, initial servicing, and instrumentation calibration. ENGINEER may witness functional testing at their discretion.

Commented [CA1]: This phase of testing should only be approved by DB and not City; City may witness at their discretion.

D. ~~Operational Testing (~~AcceptanceTesting ~~or Commissioning)~~: A test performed in presence of the ENGINEER and after any required functional test, to demonstrate and confirm that the equipment and/or system meets the specified operational performance requirements, while simulating actual operating conditions to the greatest extent possible.

E. System: the overall process, or a portion thereof, that performs a specific function. A system may consist of two or more subsystems as well as two or more types of equipment.

1.04 GENERAL TESTING, TRAINING, AND START-UP REQUIREMENTS

A. Testing, training, start-up and ~~commissioning~~ Acceptance Testing are requisite to the satisfactory completion of the Design-Build Contract and shall be completed within the Contract times. ~~.~~

B. CONTRACTOR shall coordinate all start-up and testing with restrictions and requirements stipulated in Section 01 14 00.

C. CONTRACTOR shall allow realistic durations in the Progress Schedule in Section 01 32 16 for testing, training, and start-up activities.

D. CONTRACTOR shall comply with safety requirements as specified in Section Section 01 35 23 – Plant Safety Requirements

E. CONTRACTOR shall provide labor, tools, equipment, instruments, and services required for and incidental to completing functional testing, and ~~operational testing~~Acceptance Testing.

F. CONTRACTOR shall provide competent, experienced technical representatives of equipment manufacturers for assembly, installation and testing guidance, and operator training.

G. CONTRACTOR shall assist the equipment supplier to repair each system, equipment, and device for start-up and testing.

H. CONTRACTOR shall complete installation, preoperational testing and inspection of each system or process before functional or ~~operational testing~~Acceptance Testing, including all related manufacturer's services.

I. All equipment, piping, electrical and instrumentation tagging shall be complete before ~~functional or operational testing~~Acceptance Testing.

J. CONTRACTOR shall use No. 3 Water (final effluent) water for all testing purposes to the extent possible, except those employing potable water, oil, air, gas or chemicals, which shall be filled with the specified fluid.

K. The CONTRACTOR shall provide temporary valves, gauges, piping, test equipment and other materials and equipment required to conduct testing.

L. CONTRACTOR shall designate and furnish one or more CONTRACTOR's personnel to coordinate and expedite testing and FACILITY startup. Such person or persons shall be present during equipment testing and FACILITY startup meetings specified in Section 01 31 19 - Project Meetings, and shall be available at all times during functional testing and ~~operational testing~~Acceptance Testing.

M. ENGINEER will provide operations personnel to interact with the CONTRACTOR during all testing periods. ~~Prior to the start of any system, t~~The CONTRACTOR shall instruct the ENGINEER's staff on standardized operating procedures as part of training requirements during the functional testing phase.

N. Any routine sampling and analytical laboratory work required during the ~~operational testing~~Acceptance Testing phase will be completed by the ENGINEER.

O. CONTRACTOR shall provide related operating and maintenance data~~, and spare parts and special tools~~ as specified before functional testing of any unit or system.

P. CONTRACTOR shall provide related spare parts and special tools as specified before Acceptance Testing.

~~P.~~Q. During the functional and ~~operational testing~~Acceptance Testing periods, CONTRACTOR shall provide local on-call supervisory staff during all shifts to supervise CONTRACTOR on-site staff and be completely responsible for the preventative maintenance of installed equipment.

Commented [CA2]: Functional testing is complete by DB offline from the existing plant operations (by utilizing the recirculation loop). Final tagging will likely not be in place at this time but will prior to operations by City.

Commented [CA3]: Not prior to…training occurs during/after startup of systems so we can utilize the equipment during training. City flow chart also shows this as concurrent to functional testing. This markup is also consistent with item 1.11.G below.

Commented [CA4]: Spare parts and special tools are not turned over this early as the DB utilizes them during functional testing, added next paragraph to address these items. Note in this project the functional testing phase is complete with the facility completely separated from the operating plant with the recirculation loop in place.

1.05 START-UP AND OPERATIONAL SCHEDULE AND PLANS

A. CONTRACTOR shall submit start-up plans and schedules for each phase of planned testing, namely; factory acceptance testing, pre-operational testing, functional testing, and ~~operational testing~~Acceptance Testing. Each plan shall be submitted not less than thirty (30) working days prior to planned start-up of each testing phase for review and approval by ENGINEER. CONTRACTOR shall revise schedule and proposed plan based on ENGINEER's comments and resubmit final versions. CONTRACTOR may elect to submit a single overall plan with each phase described in separate sections.

B. CONTRACTOR shall coordinate all start-up and testing with restrictions and requirements stipulated in Section 01 14 00, Work Sequence and Restrictions. However, testing activities may occur around the clock, 7-days per week as long as testing activities do not impact existing plant operations and/or during Acceptance Testing that requires 24/7 operation.

C. CONTRACTOR shall provide detailed sub-network with the following activities identified in the Progress Schedule:

~~1. Manufacturer's services;~~
~~2.~~1. ~~Installation certifications;~~
~~3.~~2. Operator training;
~~4.~~3. Submission of Operation and Maintenance Manual;
~~5.~~4. Factory Acceptance Testing
~~6.~~5. Pre-Operational Testing and Inspection
~~7.~~6. Functional Testing
~~8.~~7. ~~Operational~~ Acceptance Testing.

Commented [CA5]: We do this is the 6-week look ahead as manufacturer's trips are constantly moving and highly variable with supplier availability. Sicne we are offline in a recirc loop, this has less impact to City overall schedule.

D. CONTRACTOR shall provide the following information for each item of equipment or system to be started up.
   1. Manufacturer's services requirements;
   2. Installation certifications requirement;
   3. Operator training requirements;
   4. Submission of Operation and Maintenance Data;
   5. Factory Acceptance Testing requirements;
   6. Pre-Operational Testing and Inspection requirements;
   7. Functional Testing requirements, including testing of alarms, control circuits, capacities, speeds, flows, pressures, vibrations, sound levels, and other parameters.
   8. Summary of shutdown requirements for existing systems which are necessary to complete start-up of new equipment and systems.
   9. Names of CONTRACTOR's personnel, subcontractor(s), manufacturer(s), or organization(s) proposed to perform services, and documentation to confirm their qualifications.

E. At the conclusion of each phase of the planned testing, CONTRACTOR shall prepare a report on the test results and shall indicate the systems and items of equipment tested.

1.06 FACTORY ACCEPTANCE TESTING

A. When factory acceptance testing (FAT) or source quality control is specified:
   1. CONTRACTOR shall submit a Factory Acceptance Test Plan to the ENGINEER for approval prior to performing testing as identified as a critical submittal by the ENGINEER in the Design-Build Contract. The test may be scheduled prior to final approval of the test plan at the discretion of the CONTRACTOR. At a minimum, the test plan shall meet the requirements of the Design-Build Contract.
   ~~1.~~2. CONTRACTOR shall demonstrate equipment meets specified performance requirements.
   ~~2.~~3. CONTRACTOR shall provide certified copies of test results.
   ~~3.~~4. CONTRACTOR shall not ship equipment until certified copies of test results have been received and reviewed ~~in accordance with Section 01 33 00~~ by the CONTRACTOR. Written acceptance of factory testing does not constitute final acceptance by the ENGINEER.
   ~~4.~~5. CONTRACTOR shall perform testing as specified in the equipment specification sections unless otherwise approved in the Factory Acceptance Test Plan.

B. CONTRACTOR shall notify the ENGINEER in advance of the location and schedule of any factory acceptance testing. The ENGINEER will, at its own discretion, decide if any representatives are required and will pay for all travel, lodging and transportation costs.

1.07 PRE-OPERATIONAL TESTING AND INSPECTION

A. CONTRACTOR shall complete the tasks in this section as prerequisites prior to start functional or ~~operational testing~~Acceptance Testing of equipment. .

B. Mechanical Systems: CONTRACTOR shall:
   1. Calibrate testing equipment in accordance with manufacturer's instructions.
   2. Inspect and clean equipment, devices, connected piping, and structures to ensure they are free of foreign material
   3. Remove rust preventatives and oils applied to protect equipment during construction;
   4. Equipment base is to be true and leveled.
   5. Check equipment for soundness (without cracked or otherwise damaged parts) and correctness of setting and relative arrangement of various parts of system.
   6. Inspect bearings, clean and remove foreign matter, and verify alignment.
   7. Adjust clearances and torque.
   8. Flush lubrication systems, dispose flushing oils and recharge lubrication system with lubricant recommended by manufacturer;
   9. Flush fuel system and provide fuel for testing and start-up;
   10. Install and adjust packing, mechanical seals, O-rings, and other seals;
   11. Replace defective seals;

Commented [CA6]: Hawkins will be adding language to the DB contract to cover specific City concerns of what the plan shall include.

Commented [CA7]: This is DB risk to ship equipment. Test results will be provided to the City.

12. Remove temporary supports, bracing, or other foreign objects installed to prevent damage during shipment, storage and erection;
13. Check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting driver;
14. Perform cold alignment and hot alignment to manufacturer's tolerances;
15. Adjust V-belt tension and variable pitch sheaves;
16. Inspect hand and motorized valves for proper adjustment. Tighten packing glands to insure no leakage, but permit valve stems to rotate without galling. Verify valve seats are positioned for proper flow direction;
17. Test piping for leaks. Tighten leaking flanges or replace flange gasket. Inspect screwed joints for leakage; and
18. Install gratings, safety chains, handrails, shaft guards, and sidewalks prior to operational testing.

C. Electrical Systems: As specified in Division 26 and in the individual equipment specification sections, CONTRACTOR shall:
   1. Perform insulation resistance tests on wiring except 120 volt lighting, wiring, and control wiring inside electrical panels;
   2. Perform continuity tests on grounding systems;
   3. Test and set switchgear and circuit breaker relays for proper operation;
   4. Perform direct current (DC) high potential tests on all cables that will operate at more than 2,000 volts. Obtain the services of independent testing lab to perform tests; and
   ~~5. Test electrical equipment to assure that meter readings and specific electrical characteristics,~~
   ~~6. Check motors for actual full load amperage draw. Compare to nameplate value.~~
   ~~7.~~5. ~~Verify drive rotation, equipment speed, control sequence, and other conditions are correct and will not cause damage~~.

Commented [CA8]: These last 3 items can only be completed when operating the equipment. This is part of functional testing rather than pre-operational testing.

D. Instrumentation Systems: As specified in Division 40 and in the individual equipment specification sections, CONTRACTOR shall:
   1. Bench or field calibrate instruments and make required adjustments and control point settings;
   2. Leak test pneumatic controls and instrument air piping; and
   3. Energize transmitting and control signal systems, verify proper operation, ranges and settings.
   4. Confirm monitoring, interlocks and manual control are operational
   ~~5. Test to assure that controls are operational in automatic and manual modes and that all local and remote control points are functional.~~
   ~~6.~~5. Confirm that all programming and setup and installation of Process Control Systems are complete.
   ~~7.~~6. Confirm that the wiring and support systems for equipment have been inspected and are completely operational.

Commented [CA9]: This item can only be completed when operating the equipment. This is part of functional testing rather than pre-operational testing.

E. ~~HVAC~~ systems: As specified in Divsions 23 and in the individual equipment sections, CONTRACTOR shall:

Commented [CA10]: These activities are functional testing of the HVAC systems. Paragraph has been moved to the functional testing phase.

1. Perform testing of heating, ventilating, and air conditioning (HVAC) equipment, balancing of distribution systems, and adjusting of ductwork accessories; and
2. Test hydronic systems.

F. CONTRACTOR shall complete the Installation/Start-Up Check out form~~s~~ on each equipment or process that is being inspected prior to functional testing. A copy of the Pre-Operational Checklist is attached to this specification. ~~Typical examples are included in Section 01 99 90 Reference Forms. Project specific forms will be issued to the CONTRACTOR prior to Start up. All parties are to complete and sign the respective forms. The forms presented are a minimum and additional forms will be provided as required by ENGINEER.~~

G. The CONTRACTOR and Vendor shall provide written documentation of all tests not covered by above Forms.

H. In addition to the test reports specified above, submit the Vendor's representative's signed report describing in detail the findings of the pre-startup inspection, tests and adjustments made, quantitative results and suggestions for precautions to be taken for correct maintenance, if any, and a Vendor's certificate stating that the installation of the equipment has been inspected, is installed in accordance with the instructions, has been started and adjusted as necessary and that the equipment is ready for operation ~~and is in warranty condition~~.

Commented [CA11]: Warranty does not start until Acceptance Testing is completed

1.08 FUNCTIONAL TESTING (START UP)

A. ~~ENGINEER will authorize~~ CONTRACTOR ~~to~~ will initiate functional testing once that Preoperational Testing and Inspection has been completed for the specific equipment or process that is being tested ~~and all the General Testing, Training and Start-up Requirements have been completed~~.

B. Functional testing performed by the CONTRACTOR shall be in addition to the requirements of shop, field, and other tests specified in the Design-Build Contract Documents. Such tests shall demonstrate that the component equipment functions as an entire system in accordance with the design requirements.

C. CONTRACTOR shall provide testing that simulates the actual operating conditions. To the extent possible, reclaimed water shall be used for the testing of all liquid systems, except gaseous, oil, or chemical systems. Test media for these systems shall either be the intended fluid or a compatible substitute.

D. ~~CONTRACTOR shall be required to operate system for three (3) continuous days starting on a Tuesday. Provide temporary pumps if required to complete the tasks. If the demonstartion is not successful, reschedule a new three (3) day test.~~ The CONTRACTOR shall be required to operate the Headworks Facility with clean-water for three (3) continuous days in a recirculation mode. The CONTRACTOR will provide a 48-inch recirculation pipe from the Grit Basin effluent channel to the Influent Screening Facility influent channel to perform the recirculation test. The CONTRACTOR shall rotate through various pieces of equipment during the test. Recirculation flows will be limited to a maximum of 105 mgd based on recirculation system sizing

Commented [A12]: Team still to evaluate if existing ponds can be utilized for the loop. If existing pond is utilized, need to verify this flowrate can be achieved with hydraulics of system.

E. CONTRACTOR shall functionally test mechanical and electrical equipment, and instrumentation and controls systems for proper connection and operation after preoperational testing and inspection tasks have been completed.

F. CONTRACTOR shall demonstrate to ENGINEER proper rotation, alignment, speed, flow, pressure, vibration, sound (noise) level, adjustments, thrust restraint, and calibration. CONTRACTOR shall also perform initial checks and servicing in the presence of and with the assistance of the manufacturer's representative.

G. CONTRACTOR shall demonstrate to the ENGINEER proper operation of each instrument loop function including alarms, local and remote controls, instrumentation and other equipment functions. CONTRACTOR shall also generate signals with test equipment to simulate operating conditions in each control mode

H. CONTRACTOR shall immediately correct defects in material, workmanship, or equipment which became evident during functional test. CONTRACTOR shall perform additional testing required due to failure of materials or construction to meet specifications.

I. At the conclusion of the planned testing, CONTRACTOR shall prepare a written report on the system and equipment tested, certifying products have been properly installed and lubricated, are in accurate alignment, are free from undue stress imposed by connecting lines or anchor bolts, have been tested and proven consistent with the requirements of each specification section, have been satisfactorily operated under full load conditions, and have undergone satisfactory start-up.

J. Once each system meets the start up requirements specified, such system shall be accepted by the ENGINEER as conforming for purposes of advancing to the ~~operational testing~~Acceptance Testing phase ~~(Commissioing)~~.

K. HVAC systems: As specified in Divsions 23 and in the individual equipment sections, CONTRACTOR shall:

1. Perform testing of heating, ventilating, and air conditioning (HVAC) equipment, balancing of distribution systems, and adjusting of ductwork accessories; and

~~1.~~2. Test hydronic systems.

1.09 ~~OPERATIONAL TESTING (~~ACCEPTANCE TESTING ~~OR COMMISSIONING)~~

A. CONTRACTOR shall not commence Acceptance Testing~~operational testing~~ until the proposed system/equipment has been approved by the ~~ENGINEER~~ CONTRACTOR as having satisfied Functional testing requirements as specified.

B. CONTRACTOR shall complete operator training on all new equipment that are required to start up at the FACILITY prior to beginning of the Acceptance Testing~~operational testing~~. CONTRACTOR shall follow approved Acceptance Testing~~operational plan~~ and detailed procedures specified.

C. Once all equipment and systems have been tested individually, the CONTRACTOR shall fill all systems except wastewater, scum, sludge, and other wastewater-derived systems with the intended process fluids.

D. During Acceptance Testing~~operational testing~~, the system must be operated continuously for the specified duration as a complete facility. Should the operation be halted for any reason related to the facilities constructed or the equipment furnished, the system ~~commissioning~~ Acceptance Testing program must be restarted and repeated until the specified continuous period has been accomplished without interruption.

E. ENGINEER will provide operations staff, power, fuel, and other consumables for the duration of Acceptance Testing~~operational test~~.

F. CONTRACTOR shall be available at all times during Acceptance Testing~~operational testing~~ periods to provide immediate assistance in case of failure of any portion of the system being constructed.

G. CONTRACTOR shall immediately correct defects in material, workmanship, or equipment which became evident during Acceptance Testing~~operational test~~.

H. Acceptance Testing ~~Operational testing~~ of the system, the entire facility or any portion thereof shall be considered complete when, in opinion of the ENGINEER, the system, FACILITY or designated portion has operated in manner intended for 28 continuous days without significant interruption, unless otherwise agreed upon or as defined in Appendix 9 of the Design-Build Contract or the approved Acceptance Testing Plan. Significant Interruption: May include any of the following events:
   1. Failure of CONTRACTOR to provide and maintain qualified onsite startup personnel as scheduled.
   2. Failure of any critical (as defined in the Design-Build Contract and approved Acceptance Test Plan) equipment or unit process that is not satisfactorily corrected within ~~6~~48 hours after failure.
   3. Failure of any noncritical (as defined in the Design-Build Contract and approved Acceptance Test Plan) equipment or unit process that is not satisfactorily corrected within ~~24~~ 72 hours after failure.

I. CONTRACTOR shall be available to repeat Acceptance Testing~~operational test~~ when malfunctions or deficiencies cause shutdown or significant interruption of the test.

J. At the conclusion of the planned testing, CONTRACTOR shall prepare a report on the test results and shall indicate the systems and items of equipment tested.

Commented [CA13]: Appendix 9 defines other tests to be completed as part of Acceptance Testing to demonstrate performance guarantees and also defines a 14-day odor test to be completed when that system is acclimation.

Commented [CA14]: Alternate timeframes have been provided based on risk level assumed in bid. If there is a failure of a component that must be replaced, it will take at least 48-72 hours to locate, ship, receive, and install a new component that is on the shelf. These timeframes are consistent with time needed to replace components.

1.10 CERTIFICATE OF PROPER INSTALLATION (COPI)

A. Upon completion of the Functional Testing, CONTRACTOR shall furnish a written report (COPI) prepared and signed by the manufacturer's authorized representative, certifying that equipment:
   1. Has been properly installed, adjusted, aligned and lubricated (include form 43 05 11-A from previously submitted equipment product data);

2. Is free of any stresses imposed by connecting piping or anchor bolts;
3. Is suitable for satisfactory full-time operation under full load conditions;
4. Operates within its design rating ~~and is in warranty condition~~;
5. Controls, protective devices, instrumentation, and control panels furnished as part of the equipment package are properly installed, calibrated and functioning; and
6. Control logic for start-up, shutdown, sequencing, interlocks, and emergency shutdown furnished as part of the equipment package have been tested and are properly functioning.

Commented [CA15]: Warranty starts much later when Acceptance Testing is completed per CIP flow chart and DB Contract.

1.11 TRAINING OF PERSONNEL

A. All training shall meet established training outcomes and objectives.
   1. Outcomes:
      a. O&M staff shall have the information needed to safely operate, maintain, and repair the equipment and systems provided under ~~this~~ the Design-Build Contract.
   2. Objectives:
      a. To instruct O&M personnel on how to properly operate, maintain and troubleshoot the equipment and systems provided under the Design-Build ~~this~~ Contract.
      b. To instruct O&M personnel in the removal, inspection, and cleaning of equipment and systems as needed.
      c. Provide training that is tailored to the skills and job classifications of the staff attending the classes (e.g., superintendent, treatment operator, maintenance technician, electrician, etc.).
      d. Provide supporting documentation, such as vendor operation and maintenance manuals.

B. Training plan:
   1. CONTRACTOR shall coordinate and arrange for manufacturer's representatives to provide both classroom-based learning and field (hands-on) training, based on training module content and stated learning objectives. An overall training plan describing the training program to be conducted for individual classes will be submitted to the Training Coordinator for review at least 180 days prior to the start of Functional Testing
   2. Classroom-based learning sessions shall be conducted at the location designated by the ENGINEER.
   3. Field training shall be conducted at the FACILITY and shall include demonstrations for products, systems, and equipment herein and as specified in the CONTRACT Documents.
   4. Scope and sequence:
      a. CONTRACTOR shall plan and schedule training in the correct sequence to provide prerequisite knowledge and skills to trainees.
      b. CONTRACTOR shall describe recommended procedures to check/test equipment and systems following a corrective maintenance repair.

Commented [CA16]: Added language to clarify what this document is. Indiviual training plans (or lesson plans) have a 30 day requirement described below.

C. Scheduling:

1. Unless otherwise specified, CONTRACTOR shall provide a minimum of two (2) training sessions for each type and size of equipment. Each session shall be ~~for a minimum of two (2) hours or~~ as long as necessary to complete proper instruction.
2. CONTRACTOR shall coordinate training sessions to prevent overlapping sessions and arrange sessions so that individual operators and maintenance technicians do not attend more than two (2) sessions per week unless otherwise approved by ENGINEER.
3. CONTRACTOR shall schedule training sessions within the constraints of O&M staff's schedule availability. Those who will participate in the training have existing full-time work assignments and training is an additional task; therefore, advanced scheduling is imperative. The FACILITY is operated 24 hours a day, seven (7) days a week, 365 days a year. CONTRACTOR shall submit preliminary lesson plans to the Training Coordinator prior to issuing a 30 day notice for training on each equipment package or system
4. Training sessions shall not overlap.

D. All training sessions shall be completed prior to ~~Operational testing~~Acceptance Testing.

E. CONTRACTOR shall provide on-site demonstration of start-up, operations, control, adjustment, troubleshooting, service, shutdown, and maintenance training for items of mechanical, electrical, HVAC, and instrumentation equipment. Utilize manufacturer's field representatives who are knowledgeable of the products, equipment, and systems applicable to the requirements in the Contract Documents to conduct training sessions. The ENGINEER~~engineer~~ may require alternate instructors should the ones provided lack adequate knowledge or instruction and demonstration skills.

F. CONTRACTOR shall provide Accepted (not Final Submittal) Operation (accepted by CONTRACTOR'S Engineer-of -Record) and Maintenance Manual for specific pieces of equipment or systems ~~6~~30 calendar days prior to training session for that piece of equipment or system.

Commented [CA17]: The O&M's will be approved by EOR prior to training; modified requireemnet to 30 days as this matches training plan requirements.

G. CONTRACTOR shall satisfactorily complete installation of equipment and appurtenances, and initial start-up before beginning operator training. Operator training shall be conducted prior to ~~Operational testing~~Acceptance Testing.

~~H. ~~ENGINEER may record training session at their discretion. ~~The CONTRACTOR shall digitally record all training sessions (including classroom and field) and answering periods. Video materials must be produced by a qualified, professional video production company, unless CONTRACTOR demonstrates satisfactorily skill of other personnel as acceptable to the ENGINEER. CONTRACTOR shall provide two (2) complete sets of video materials fully indexed and cataloged with printed labels stating session content and dates recorded. Recording shall be in digital format and shall become the property of the ENGINEER.~~

Commented [CA18]: Not in bid.

~~1. Audio quality shall not be degraded during the recording of the field sessions due to background noise, space, distance or other factors.~~

~~2. The CONTRACTOR shall provide a written release from all claims to the recorded training material produced.~~

~~3. Video files shall be on DVD-ROM, file format as specified in Section 01 78 23 – Operations and Maintenance Data.~~

Commented [CA19]: Does City still want this format or MP4 or other format?

~~I.~~H. The CONTRACTOR shall designate and provide one (1) or more persons to be responsible for coordinating and expediting his/her training duties (training coordinator). The person or persons so designated shall be present at all training coordination meetings with the O&M staff.

~~J.~~I. The CONTRACTOR's training coordinator shall facilitate the training periods with O&M personnel and manufacturer's representatives.

1. At least 60 calendar days prior to Functional Testing, CONTRACTOR's training coordinator shall meet with the ENGINEER to develop a list of personnel to be trained and to establish expected training outcomes and objectives.
2. CONTRACTOR's training coordinator shall submit a detailed course outline 30 calendar days prior to first training session for ENGINEER's review and acceptance. The course outline shall include subject matter, length of classes, scheduling of dates and times of classes to accommodate the staff, and credentials of the equipment manufacturer representative who is to be the course instructor. This submittal shall include documentation detailing the instructor's general knowledge of the material he or she will teach, education, and specific knowledge of the application of this equipment, and qualifications and history as an adult vocational instructor. Base classroom instruction on audience needs.
3. CONTRACTOR's training coordinator shall provide handouts and presentation materials (lesson plans) for review and acceptance by the ENGINEER 30 calendar days prior to each training session.
4. Detailed lesson plans shall include the information outlined below:
5. CONTRACTOR's proposed lesson plans shall include the elements presented in the outlines of the instruction lesson plans herein for each craft. Specific components and procedures shall be identified in the proposed lesson plans.
6. CONTRACTOR's proposed lesson plans should detail specific instruction topics. "Hands-on" demonstrations planned for the instructions shall be described in the lesson plans. Training aids to be utilized in the instruction shall be cross-referenced in the proposed lesson plans.
7. Training strategies such as planned whiteboard work, instructor questions, and discussion points or other planned classroom or field strategies shall be detailed in the proposed lesson plans.
8. Handouts for training shall be attached to the lesson plans, cross-referenced by section or topic in the lesson plans.
9. The CONTRACTOR shall indicate the duration of each training segment in the lesson plans.

~~K.~~J. The outlines of the Maintenance Instruction Lesson Plan shall include the following, as applicable to each craft:

1. Equipment operation for all crafts:
   a. Describe equipment's operating (process) function and system theory as well as emergency operating shut down procedures.
   b. Describe equipment's fundamental operating principles and dynamics.

c. Identify equipment's mechanical, electrical, and electronic components and features.
d. Identify all support equipment associated with the operation of subject equipment.
e. Detail the relationship of each piece of equipment or component to the subsystems, systems, and process related to this project.
f. Cite all hazards associated with the operations, exposure to chemicals associated with the component, or the waste stream handled by the component.
g. Specify the appropriate and safety precautions, equipment, and procedures to eliminate, reduce, or overcome these hazards.

2. Detailed component descriptions specific for Mechanical, HVAC, Instrumentation, and Electrical:
   a. Describe Preventative Maintenance (PM) inspection procedures required to be performed by FACILITY staff while the equipment is in operation, how to spot potential trouble symptoms (anticipate breakdowns), and forecast maintenance requirements (predictive maintenance).
   b. Identify and describe in detail each component function.
   c. Where applicable, group relative components into subsystems.
   d. Identify and describe in detail equipment safety features, permissive and controls interlocks.
   e. Review preventative maintenance frequency and task analysis table.
   f. Detail procedure for each PM activity to be performed weekly or less frequently.
   g. Equipment troubleshooting specific for Mechanical, HVAC, Instrumentation, and Electrical:
      1) Define recommended systematic troubleshooting procedures.
      2) Provide component specific troubleshooting checklists.
   h. Equipment Corrective Maintenance specific for Mechanical, HVAC, Instrumentation, and Electrical:
      1) Describe recommended equipment preparation requirements.
      2) Identify and describe the use of any special tools required for maintenance of the equipment.
      3) Describe component removal/installation and disassembly/assembly procedures for repairs.
      4) Perform ~~at least two~~ "hands-on" demonstrations of common maintenance repairs. ~~Additional demonstrations may be required by the Egineer.~~
      5) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
      6) Describe recommended procedures to check/test equipment following a corrective maintenance repair.
   i. "Hands-on" instruction shall be conducted according to the following descriptions.

Commented [CA20]: Not included in bid.

1) Course instructor shall present "hands-on" demonstrations of common corrective maintenance repairs for each group or craft. The manufacturer shall provide the tools and equipment to conduct the demonstrations. Requests for supplemental assistance and materials should be submitted with the CONTRACTOR's proposed lesson plans.
2) For those "hands-on" training situations where the FACILITY's operations or maintenance personnel will participate in disassembly or assembly of equipment, CONTRACTOR shall be responsible for such disassembly or assembly and, on completion of all "hands-on" training, shall provide written certification of proper equipment operation to ENGINEER.
3) "Hands-on" training of operations personnel will cover proper start-up, shutdown, and normal and alternative operating strategies.

j. Following each training session, distribute class evaluation documents supplied ~~by the ENGINEER~~as a supplement to this Section to determine overall effectiveness of the training. CONTRACTOR's training coordinator shall return evaluation sheets to the ENGINEER when session is completed. An example of an evaluation form is attached to the end of this Section.
   1) Sessions judged "Unsatisfactory" by a majority of attendees shall be revised and conducted again until a satisfactory rating is achieved.

~~k. At the conclusion of training, CONTRACTOR's training coordinator shall submit an electronic and three (3) printed copies of the final lesson plans, , and handouts, plus two (2) copies of all other audio-visual aids utilized during each training course. Material shall be transmitted as one (1) final record submittal within 14 calendar days from the completion of training sessions.~~

Commented [CA21]: This is already addressed in para 3.01 below, and some of the requirements between the two paragraphs are inconsistent. Recommend to use 3.01 below.

PART 2 -PRODUCTS

2.01 TRAINING MATERIALS

A. Specific, customized, and itemized lesson plans shall be prepared by CONTRACTOR prior to any training sessions. A draft of the training lesson plans and any books, modules, handouts, etc. to be used during the training sessions shall be submitted not less than 30 days before such training.

~~B. CONTRACTOR shall cause each manufacturer to produce an electronic narrated training module at each training session.~~
   ~~1. The module shall include, at a minimum:~~
      ~~a. All applicable technical information as described in the Instruction Lesson Plan outline.~~
      ~~b. Audio narration accompanied by a slide presentation and/or video recording. Narration should be clearly audible and provide a description of items viewed.~~
      ~~c. Demonstration video of installed equipment on site.~~
      ~~d. High quality color resolution in a digital format (AVI, MOV, or as approved by the ENGINEER).~~

Commented [CA22]: No audio narration or documents is included in the bid. If desired, need to revisit with vendors and understand what City expects here.

~~2. The module may be used by the CONTRACTOR to provide classroom instruction during the session training.~~

~~C.~~B. The outline of the Operations Instruction Lesson Plan for each training session shall include the following, as applicable:

1. Equipment operation:
   a. Describe equipment's operating (process) function and system theory.
   b. Describe equipment's fundamental operating principles and dynamics.
   c. Identify equipment's operating standards, characteristics, limiting conditions, and performance curves.
   d. Identify equipment's mechanical, electrical, and electronic components and features.
   e. Identify all support equipment associated with the operation of subject equipment.
   ~~f. Detail the relationship of each piece of equipment or component to the subsystems, systems, and process related to this project.~~
   ~~g.~~f. Cite all hazards associated with the component, or the waste stream handled by the component.
   ~~h.~~g. Specify the appropriate and safety precautions, equipment, and procedures to eliminate, reduce, or overcome these hazards.
   ~~i.~~h. Describe the emergency operating shutdown procedures.
2. Detailed component description:
   a. Describe preventative maintenance procedures to perform an inspection of the equipment in operation, spot potential trouble symptoms (anticipate breakdowns), and forecast maintenance requirements (predictive maintenance).
      1) Identify and describe in detail each component function.
      2) Where applicable, group related components into subsystems.
      3) Identify and describe in detail equipment safety features, permissive and controls interlocks.
      4) Review preventative maintenance frequency and task analysis table.
      5) Detail procedures for each PM activity to be performed weekly or less frequently.
3. Equipment controls:
   a. Step-by-step procedures for starting, operating, and stopping equipment under the specified modes of operation.
   b. Functional description and graphical representation of the control panel layout as specific to the PROJECT.
   c. Functional description and graphical representation of each Human Machine Interface (HMI) graphical display screen specific to the PROJECT.
4. Equipment troubleshooting:
   a. Define recommended systematic troubleshooting procedures.
   b. Provide component specific troubleshooting checklists.
5. Equipment corrective maintenance:
   a. Describe recommended equipment preparation requirements.

Commented [CA23]: DB will provide this information in the design theory training. Individual vendors do not know more than their own black box.

b. Identify and describe the use of any special tools required for maintenance of the equipment.
c. Describe component removal/installation and disassembly/assembly procedures for specific repairs.
d. Perform "hands-on" demonstrations of common maintenance repairs. ~~Additional demonstrations may be required by the ENGINEER.~~
e. Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
f. Describe recommended procedures to check/test equipment following a corrective maintenance repair.

~~D.~~C. A complete set of the training materials (including any books, handouts, PowerPoint® presentations, etc.) shall be provided by CONTRACTOR for each person to be trained. Each training session may have up to 15 O&M personnel.

~~E.~~D. Training sessions judged "Unsatisfactory" by a majority of attendees shall be revised and conducted again until a satisfactory rating is achieved

PART 3 EXECUTION

3.01 RECORD KEEPING

A. CONTRACTOR shall provide an electronic copy of the complete training materials ~~saved on a CD/DVD~~ to the ENGINEER, including, but not limited to:
1. Training modules;
2. Instruction Lesson Plan outlines; and
3. Additional handouts, slides, pictures, or other visual aids (i.e., Microsoft PowerPoint®, etc.) used during the training sessions.

~~B. Electronic training data shall comply with the labeling, formats, file saving, and file naming conventions and requirements in Section 01 78 23.~~

~~C.~~B. CONTRACTOR shall provide the final record submittal within 30 calendar days of training per each manufacturer as a single transmittal.

PART 4 ADDITIONAL REQUIREMENTS

END OF SECTION

Commented [CA24]: Not included in bid.

Commented [CA25]: Documents will be submitted electronically through document management system (EADOCs) utilized on project for construction submittal review process.

PRE-OPERATIONAL CHECKLIST

ATTACHMENT 1

Item	Yes	No	N/A	Initials	Date
General Verifications					
Construction complete according to the P&IDs as required to commence testing: concrete complete, piping installed, pipe supports installed, equipment installed and powered, and instruments installed and powered. Note architectural components or other features that do not impact startup do not have to be completed.	☐	☐	☐		
Leak testing completed satisfactorily for all water holding basins.	☐	☐	☐		
Applicable preliminary O&M manuals reviewed, complete, and available onsite.	☐	☐	☐		
Area clean and safe for work.	☐	☐	☐		
Grating, safety rails, and walkways installed.	☐	☐	☐		
Lock-Out-Tag-Out is in place per FSI if required for mechanical or electrical isolation.	☐	☐	☐		
Mechanical Verifications					
Utilities are properly connected to commence testing:					
Utility water	☐	☐	☐		
Potable water	☐	☐	☐		
Service air	☐	☐	☐		
HVAC	☐	☐	☐		
Safety showers	☐	☐	☐		
Natural gas	☐	☐	☐		
Equipment is set on its foundation, leveled, grouted, aligned, and earthed	☐	☐	☐		
Leak and pressure testing completed satisfactorily for all piping systems.	☐	☐	☐		

Leak testing completed for pneumatic controls and instrument air piping.	☐	☐	☐		
Flanges and gaskets tight and checked for leakage. Inspect screwed joints for leakage.	☐	☐	☐		
Screwed joints and mating devices checked for leakage.	☐	☐	☐		
Pipe supports and seismic bracing installed.	☐	☐	☐		
Downstream piping reviewed for potential water hammer during initial startup.	☐	☐	☐		
Low point drains connected to drain piping and routed to appropriate drainage collection system.	☐	☐	☐		
Hand valves in place, positioned for proper flow direction, and freely open/close by hand.	☐	☐	☐		
Motor valves in place, positioned for proper flow direction, and freely open/close by hand.	☐	☐	☐		
Air release valves and blowoff vents installed.	☐	☐	☐		
Temporary supports, bracing, or other foreign objects installed to prevent damage during shipment, storage and erection have been removed	☐	☐	☐		
Rust preservatives, oils, and temporary protective coverings removed from equipment.	☐	☐	☐		
Lubrication/coolant flushed and recharged. Recharge only with lubricant recommended by manufacturer.	☐	☐	☐		
Fuel flushed, filled, and available.	☐	☐	☐		
Packing installed loose, seals, o-rings, and miscellaneous seals checked and adjusted.	☐	☐	☐		
Rotation direction arrows installed and pointing in correct direction.	☐	☐	☐		
Alignment to manufacturer's tolerances of equipment complete (only if alignment not completed by vendors).	☐	☐	☐		
Adjust V-belt tension and variable pitch sheaves.	☐	☐	☐		

Mounting apparatus, bolts, etc. properly installed and tightened. Temporary supports and other foreign objects removed.	☐	☐	☐		
Shaft guards installed (or available for installation during startup with manufacturer).	☐	☐	☐		
Safety devices and equipment are installed, fully functional, adjusted, and tested (or available for installation during startup with manufacturer).	☐	☐	☐		
Electrical/I&C Verifications					
Third party electrical tests and adjustments have been completed:					
Insulation resistance tests	☐	☐	☐		
Continuity tests on grounding systems	☐	☐	☐		
Direct current (DC) high potential tests on all cables that will operate at more than 2,000 volts	☐	☐	☐		
Power is available to equipment and instruments.	☐	☐	☐		
PLCs installed, wired, pulled, and terminated.	☐	☐	☐		
Fiber-optic Network installed and tested.	☐	☐	☐		
Point to point checks have been satisfactorily completed from the equipment/device to the PLC.	☐	☐	☐		
Startup Verifications					
Walkthrough with Startup Team has been completed.	☐	☐	☐		
Startup punch list items have been documented.	☐	☐	☐		

TESTING, TRAINING, AND FACILITY START-UP

ATTACHMENT ~~21~~

TRAINING EVALUATION FORM

EQUIPMENT ITEM: _____

VENDOR/MANUFACTURER: _____

DATE: _____ NAME OF REPRESENTATIVE: _____

			(Circle One)		
1.	Was representative prepared?	Acceptable	Unacceptable	or	N/A
2.	Was an overview description presented?	Acceptable	Unacceptable	or	N/A
3.	Were specific details presented for system components?	Acceptable	Unacceptable	or	N/A
4.	Were alarm and shutdown conditions clearly presented?	Acceptable	Unacceptable	or	N/A
5.	Were step-by-step procedures for starting, stopping, and trouble-shooting presented?	Acceptable	Unacceptable	or	N/A
6.	Were routine/preventative maintenance items clearly identified?	Acceptable	Unacceptable	or	N/A
7.	Was the lubrication schedule (if any) discussed?	Acceptable	Unacceptable	or	N/A
8.	Was the representative able to answer all questions?	Acceptable	Unacceptable	or	N/A
9.	Did the representative agree to research and answer unanswered questions?	Acceptable	Unacceptable	or	N/A
10.	Comments:				

_____

_____

_____

11.	Overall Rating:	Satisfactory	Unsatisfactory

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Pre-Startup Checklist

2019-09-10- City to confirm

Item	Yes	No	N/A	Initials	Date
General Verifications					
Construction complete according to the P&IDs as required to commence testing: concrete complete, piping installed, pipe supports installed, equipment installed and powered, and instruments installed and powered. Note architectural components or other features that do not impact startup do not have to be completed.	☐	☐	☐		
Leak testing completed satisfactorily for all water holding basins.	☐	☐	☐		
Applicable preliminary O&M manuals reviewed, complete, and available onsite.	☐	☐	☐		
Area clean and safe for work.	☐	☐	☐		
Grating, safety rails, and walkways installed.	☐	☐	☐		
Lock-Out-Tag-Out is in place per FSI if required for mechanical or electrical isolation.	☐	☐	☐		
Mechanical Verifications					
Utilities are properly connected to commence testing: - Utility water - Potable water - Service air - HVAC - Safety showers - Natural gas	 ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐		
Equipment is set on its foundation, grouted, aligned, and earthed	☐	☐	☐		
Leak and pressure testing completed satisfactorily for all piping systems.	☐	☐	☐		
Leak testing completed for pneumatic controls and instrument air piping.	☐	☐	☐		
Flanges and gaskets tight and checked for leakage. Inspect screwed joints for leakage.	☐	☐	☐		
Screwed joints and mating devices checked for leakage.	☐	☐	☐		
Pipe supports and seismic bracing installed.	☐	☐	☐		

Downstream piping reviewed for potential water hammer during initial startup.	☐	☐	☐		
Low point drains connected to drain piping and routed to appropriate drainage collection system.	☐	☐	☐		
Hand valves in place, positioned for proper flow direction, and freely open/close by hand.	☐	☐	☐		
Motor valves in place, positioned for proper flow direction, and freely open/close by hand.	☐	☐	☐		
Air release valves and blowoff vents installed.	☐	☐	☐		
Rust preservatives, oils, and temporary protective coverings removed from equipment.	☐	☐	☐		
Lubrication/coolant flushed and recharged. Recharge only with lubricant recommended by manufacturer.	☐	☐	☐		
Fuel flushed, filled, and available.	☐	☐	☐		
Packing installed loose, seals, O-rings, and miscellaneous seals checked and adjusted.	☐	☐	☐		
Rotation direction arrows installed and pointing in correct direction.	☐	☐	☐		
Alignment to manufacturer's tolerances of equipment complete (only if alignment not completed by vendors).	☐	☐	☐		
Adjust V-belt tension and variable pitch sheaves.	☐	☐	☐		
Mounting apparatus, bolts, etc. properly installed and tightened. Temporary supports and other foreign objects removed.	☐	☐	☐		
Shaft guards installed (or available for installation during startup with manufacturer).	☐	☐	☐		
Safety devices and equipment are installed, fully functional, adjusted, and tested (or available for installation during startup with manufacturer).	☐	☐	☐		
Electrical/I&C Verifications					
Power is available to equipment and instruments.	☐	☐	☐		
PLCs installed, wired, pulled, and terminated.	☐	☐	☐		
Fiber-optic Network installed and tested.	☐	☐	☐		
Insulation resistance tests on wiring except 120-volt lighting, wiring, and control wiring inside electrical panels.	☐	☐	☐		
Continuity tests on grounding systems.	☐	☐	☐		
Direct current (DC) high potential tests on all cables that will operate at more than 2,000 volts.	☐	☐	☐		

Test and set switchgear and circuit breaker relays for proper operation.	☐	☐	☐		
Third party electrical tests and adjustments have been completed.	☐	☐	☐		
Pneumatic controls and instrument air piping leak tested.					
Point to point checks have been satisfactorily completed from the equipment/device to the PLC.	☐	☐	☐		
Startup Verifications					
Walkthrough with Startup Team has been completed.	☐	☐	☐		
Startup punch list items have been documented.	☐	☐	☐		

If any of the above are marked "NO", provide explanation or comment and details of any agreed action:

Comments:

Certification: This document certifies that the construction and installation of the area/system and its associated equipment complies with the Specifications and Design-Build Agreement documents and that this area/system is ready to commence commissioning.

Verified by Subcontractor:	Name:
Date:	Signature:
Approved by Design-Builder:	Name:
Date:	Signature: