FORT ORD REUSE AUTHORITY

WATER AND SEWER ABANDONMENT

TECHNICAL SPECIFICATIONS

S201-ITB3

CONSTRUCTION DOCUMENTS

VOLUME 2 of 2

Deadline for Submission of Bids:

XXXX at 2:00 PM

S201-ITB3, Volume 2

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 31 – EARTHWORK

DIVISION 33 – UTILITIES

S201-ITB3, Volume 2 - SECTION 01 11 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED IN THE CONTRACT

A. Work Included in the Contract, includes, but is not limited to the following: Work will consist of the the abandonment of water and sewer facilities in the Surplus II area. An additive bid item is to abandon the sewer facilities at the Stockade Area.

1. Site preparation.
2. Site utilities.
3. Site security.

1.03 PROTECT THE WORK FROM VANDALISM

A. During Work Hours. Protect the Work from theft, vandalism, and unauthorized entry. The Contractor shall have the sole responsibility for job site security.

B. During Off-Work Hours. During all hours that Work is not being prosecuted, furnish such watchman's services as Contractor may consider necessary to safeguard materials and equipment in storage on the Project site, including Work in place and in process of fabrication, against theft, acts of malicious mischief, vandalism, and other losses or damages.

1.04 PERMITS, LICENSES AND FEES

A. Permits, Licenses and Fees, General: Refer to the Contract Agreement.

B. Licenses: Contractor shall obtain and pay all licenses associated with construction activities, such as business licenses, contractors' licenses and vehicle and equipment licenses. All costs for licenses shall be included in the Contract Amount.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 11 00

S201-ITB3, Volume 2 - SECTION 01 14 00 –WORK RESTRICTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 CONTRACTOR'S USE OF PREMISES AND SITE, GENERAL

A. Contractor's Use of Premises and Site, General: Refer to Article 2 of the Contract Agreement.

1.03 USE OF PREMISES

A. Use of Site: Limit use of premises to work within the limits of Work as indicated in the Drawings. Do not disturb portions of site the Construction site.

Where existing buildings and site areas are outside of the limits of Work, make provisions to continued use by scheduling and sequencing of Work under the Contract. Make provisions for temporary barriers, enclosures, covers, directional signage and other construction facilities and temporary controls to enable continuing use.

1.04 CONTRACTOR'S USE OF PROJECT AREA

A. Location of Work: The Work shall be accomplished within the limits of Work as indicated on Drawings. Use of other areas shall be subject to approval by FORA Construction Manager.

1. Contractor shall not unreasonably encumber the site with materials or equipment.
2. Contractor shall assume full responsibility for protection and safekeeping of products stored on the premises.
3. Contractor shall move any stored products which interfere with operations of FORA or contractors performing work under separate contracts for FORA.
4. If temporary closures or restrictions of use of public thoroughfares are necessary to accomplish the Work, they shall be made only as approved in advance by public safety and parking authorities having jurisdiction.

B. Contractor's Use of the Project Area: Unless otherwise specified or indicated on the Drawings, during the construction period the Contractor shall have full use of the area delineated by the limits of Work as indicated on the Drawings. FORA shall have the right to perform construction operations with its own forces or to employ separate contractors on portions of the Project in accordance with the Article 5 of the Contract Agreement.

Note: Other contractors may be in the area performing work not included in this contract. Contractor shall coordinate work with other contractors so as not to impede their progress. Any disputes shall be brought to the attention of FORA.

C. Protection of Existing Improvements and Facilities: Contractor shall protect property adjacent to the Project Area and all existing improvements and facilities within the Project Area, including paving and landscaping indicated to remain.

1. All existing improvements and facilities, except those specifically indicated for removal or reconstruction, shall be protected with temporary barriers, enclosures and passageways. Refer to additional requirements specified in Section 01 56 00 - Temporary Barriers and Enclosures.

2. After completion of Work, existing improvements and facilities shall be restored to original condition and location. Project Area shall be cleaned and restored to presentable condition, equivalent to or better than the condition prior to start of Work.

3. Should existing improvements and facilities be damaged or soiled beyond renovation or repair, new products shall be provided by Contractor equivalent to existing products, as directed by the FORA Construction Manager.

D. Project Area Access: The Contractor is allowed to use City streets to access Project Site. Do not restrict access to adjacent facilities.

1. Access to and egress from Project Site shall be in strict conformance to prearranged routes approved by FORA Construction Manager, with the understanding that curtailment of construction traffic or alternate access routes may be required on short notice if because of excessive noise or problems of safety.

2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to service and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

E. Emergency Access: Provide pathways, drives, gates, directional signage and other provisions as required by authorities having jurisdiction for emergency access to Project Area and adjoining campus facilities.

F. Emergency Egress: Maintain all pathways, drives, gates, and other means of egress during construction as required by public safety authorities having jurisdiction.

1.05 TIME RESTRICTIONS

A. Hours of operation are stated in Article 2.24 of the Contract Agreement.

B. Utility Outages and Shutdown: Schedule utility outages and shutdowns to nights, weekends, holidays or times and dates acceptable to, and approved by, FORA Construction Manager.

Restrictions on Interrupting utilities or operations:

1. The Contractor must maintain all utilities affected by the construction of this project in an operable and functioning condition (including data, voice, video and irrigation systems) to all buildings, facilities, and services at the Project Site at no additional cost to FORA.

2. If any utility affecting any occupied facility is interrupted, the Contractor must provide a temporary connection to the affected utility / facility / area within the noted time frame with due diligence, at no additional cost to FORA. If the Contractor does not perform repairs with due diligence within the time frames noted below, the FORA shall

enforce the terms and conditions of the Contract Agreement for Contractor's failure to perform work in a timely manner.

Security Alarm System	Within 4 hours of occurrence
Radio Communication or 911 System ...	Within 4 hours of occurrence
Telephone / Data Communications System, including payphones, fiber backbone, copper, etc.)	Within 4 hours of occurrence
Energy Management Control System....	Within 4 hours of occurrence
Exterior Lighting / Street Lighting.....	Within 4 hours of occurrence
Building Power	Within 4 hours of occurrence
Potable Water	Within 6 hours of occurrence, depending on impact of loss of water
Gas	Within 4 hours of occurrence
Sewer	Within 24 hours of occurrence
Storm Drain.....	Within 48 hours of occurrence
Irrigation, including reclaimed water	Within 72 hours of occurrence - provide alternate methods of irrigation if needed during outages to prevent damage to landscape

1.06 NOISE AND VIBRATION RESTRICTIONS

A. Noise Restrictions: Minimize noise from construction activities. Limit loud construction activities to times when classes are not in session in adjacent facilities.

B. Vibration Restrictions: Do not perform activities that cause vibrations in adjacent occupied spaces, including spaces above and below location where Work is performed.

1.07 FORA'S USE OF SITE AND PREMISES

A. FORA Use of Site and Premises: FORA reserves the right to occupy and to place and install equipment in completed or partially completed areas of buildings and site. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED

END OF SECTION 01 14 00

SECTION 01 15 1A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit After Award of Contract and Prior to Start of Work)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	TO:

Reuse, Recycling or Disposal Processes To Be Used

Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:

01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
08 - Disposal at a landfill or transfer station.
09 - Other (please describe) _____

Types of Material To Be Generated

Use these codes to indicate the types of material that will be generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage	W = Wood	O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.

Type of	Type	Facility to be Used,	Total Truck	Total Quantities		
Material	of Activity	Location	Loads	Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion			-	-	-	-

SECTION 011511A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued

SECTION II - DISPOSED MATERIALS						
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.						
Type of Material	Type of Activity	Facility to be Used, Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				-	-	-

SECTION III - TOTAL MATERIALS GENERATED						
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				-	-	-
b. Total Disposed				-	-	-
c. Total Generated				-	-	-

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION					
Add totals from Section I + Section II					
	Tons	Cubic Yards	Other Wt.		
a. Materials Re-Used and Recycled	-				
b. Materials Disposed	-				
c. Total Materials Generated (a. + b. = c.)	-	-	-		
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!				

** Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled*

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

Notes:

1. Section 01151A is a Division 01 General Requirement under CSI MasterFormat 1998 Edition.
   For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows:
   Under Division 00, Procurement and Contracting Requirements, Project Forms 00 60 00
   Use: Section 00 62 22 Construction Waste Diversion Plan

2. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
   Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
   Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
   Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
   Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
   Drywall Scrap: .20
   Wood Scrap: .16

SECTION 01 15 1B

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

(Submit With Each Progress Payment)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Period Covered:	From:	To:

Reuse, Recycling or Disposal Processes Used

Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:

01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
08 - Disposal at a landfill or transfer station.
09 - Other (please describe) _____

Types of Material Generated

Use these codes to indicate the types of material that were generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage	W = Wood	O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling occurred.

Type of Material	Type of Activity	Facilities Used, Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion			-	-	-	-

SECTION 011511B

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

Continued

SECTION II - DISPOSED MATERIALS						
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling occurred.						
Type of Material	Type of Activity	Facilities Used, Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				-	-	-

SECTION III - TOTAL MATERIALS GENERATED						
This section calculates the total materials generated during the project period (Reuse/Recycle + Disposal = Generation						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				-	-	-
b. Total Disposed				-	-	-
c. Total Generated				-	-	-

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION					
Add totals from Section I + Section II					
	Tons	Cubic Yards	Other Wt.		
a. Materials Re-Used and Recycled	-				
b. Materials Disposed	-				
c. Total Materials Generated (a. + b. = c.)	-	-	-		
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!				

** Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled*

Contractor's Comments (*Provide any additional information pertinent to planned reuse, recycling, or disposal activities*):

Notes:

1. Section 01151A is a Division 01 General Requirement under CSI MasterFormat 1998 Edition.
   For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows:
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2. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
   Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
   Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
   Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
   Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
   Drywall Scrap: .20
   Wood Scrap: .16

S201-ITB3, Volume 2 - 01 27 00 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Description

1. This section defines the Bid Schedule, and describes measurement and payment provisions for each of the bid items. There is a Base Bid and Additive Item Bid.

2. Payment for all items of the Bid Schedule whether lump sum or unit price shall include all compensation to be received by Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidental appurtenances to the items of work being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety and the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor.

3. Contractor to include the cost of Work not specifically listed in the Bid Schedule and Measurement and Payment language, but necessary to complete the Work, in the various related work items in the Bid Schedule so the total amount of bid establishes the total cost of Work in its entirety. No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, and all costs shall be included in the prices named.

B. The bid schedule for this project includes the Base Bid and Additive Bid Item A.

1.03 BASE BID

A. BID ITEM No.1 – GENERAL CONSTRUCTION

1. No unit measurement shall be made for this item.

2. Payment for GENERAL CONSTRUCTION shall be made at the lump sum price named in the Bid Schedule, which price shall constitute full compensation for completion of all work for GENERAL CONSTRUCTION including but not limited to mobilization, temporary

facilities and utilities, meetings, demobilization, clean up, bonds and insurance, supervision, planning, design, design engineering fees, Division 01 "General Requirements" measures, complete as defined within these Contract Documents, with the sole exclusion of the payments to be made as defined herein for the other items in the Bid Schedule.

3. Progress payments shall be based on the percent complete of the entire Work.

B. BID ITEM No. 2 – SHEETING, SHORING, AND BRACING

1. No unit measurement shall be made for this item.

2. Lump Sum Bid Item shall full compensation for furnishing all equipment, materials, labor to install sheeting and shoring complete and in place. The Bid Item Price shall include all work related to the installation of the sheeting and shoring including, but not limited to, meeting all OSHA requirements preparation and approved sheeting and shoring plan, and any other work as required by the CONTRACT DOCUMENTS.

3. Payment shall be determined on percent complete of this item

C. BID ITEM No. 3 – WATER POLLUTION CONTROL

1. No unit measurement shall be made for this item.

2. Lump Sum Bid Item shall full compensation for furnishing all equipment, materials, labor to water pollution control measures complete and in place. The Bid Item Price shall include all work related to the installation of the water pollution control measures including, but not limited to, fiber rolls, fiber swales, construction fencing, and any other work as required by the CONTRACT DOCUMENTS.

3. Payment shall be determined on percent complete of this item

D. BID ITEM No. 4 – STRAIGHT LINE WATER CONNECTIONS

1. STRAIGHT LINE WATER CONNECTIONS shall be measured per each (EA) installed.

2. The Contract unit price for STRAIGHT LINE WATER CONNECTIONS shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of STRAIGHT LINE WATER CONNECTIONS including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of AC pipe, PVC pipe, transition couplings, grout plug, disinfection, testing, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

E. BID ITEM No. 5 – 90 ELBOW AND TEE

1. 90 ELBOW AND TEE shall be measured per each (EA) installed.

2. The Contract unit price for 90 ELBOW AND TEE shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of 90 ELBOW AND TEE including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of AC pipe, PVC pipe, ductile iron fittings, transition couplings, grout plug, thrust blocks, disinfection, testing, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

F. BID ITEM No. 6 – 90 ELBOW

1. 90 ELBOW shall be measured per each (EA) installed.

2. The Contract unit price for 90 ELBOW shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of 90 ELBOW including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of AC pipe, PVC pipe, ductile iron fitting, transition couplings, grout plug, thrust blocks, disinfection, testing, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

G. BID ITEM No.7 – BLIND FLANGE

1. BLIND FLANGE shall be measured per each (EA) installed.

2. The Contract unit price for BLIND FLANGE shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of BLIND FLANGE including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of AC pipe, blind flange, grout plug, thrust block, disinfection, testing, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

H. BID ITEM No. 8 – WATER UTILITY PLUG

1. WATER UTILITY PLUG shall be measured per each (EA) installed.

2. The Contract unit price for WATER UTILITY PLUG shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of WATER UTILITY PLUG including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of AC pipe, restraint harness, AC pipe restraint, grout plug, thrust block, disinfection, testing, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

I. BID ITEM No. 9 – FIRE HYDRANT REMOVAL

1. FIRE HYDRANT REMOVAL shall be measured per each (EA) removed.

2. The Contract unit price for FIRE HYDRANT REMOVAL shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of FIRE HYDRANT REMOVAL including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of any ductile iron pipe, fittings, and fire hydrant, grout plug, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity removed.

J. BID ITEM No. 10 –WATER MAIN ABANDONMENT

A. No unit measurement shall be made for this item.

B. Payment for WATER MAIN ABANDONMENT shall be made at the Lump Sum price named in the Bid Schedule for this item, which price shall constitute full compensation for furnishing all labor, materials, equipment, tools, and incidentals for doing all the work of WATER MAIN ABANDONMENT, including, but not limited to, excavation, backfill, compaction, disposal of excess materials, imported backfill, grout plug, slurry fill, and pavement restoration or grading to match existing, complete in place, as specified within these Contract Documents.

C. Payment shall be based on the percent complete of this item.

K. BID ITEM No. 11 – SEWER MANHOLE ABANDONMENT

1. SEWER MANHOLE ABANDONMENT shall be measured per each (EA) abandoned.

2. The Contract unit price for SEWER MANHOLE ABANDONMENT shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of SEWER MANHOLE ABANDONMENT including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of VCP pipe, grout plug, and grade to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

L. BID ITEM No. 12 – SEWER MANHOLE BENCH REPAIR IN STREET

1. SEWER MANHOLE BENCH REPAIR shall be measured per each (EA) abandoned.

2. The Contract unit price for SEWER MANHOLE BENCH REPAIR shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for

doing all the work of SEWER MANHOLE BENCH REPAIR including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of VCP pipe, grout plug, bench repair, and pavement restoration grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

M. BID ITEM No. 13 – SEWER MANHOLE BENCH REPAIR IN UNPAVED AREAS

1. SEWER MANHOLE BENCH REPAIR IN UNPAVED AREAS shall be measured per each (EA) abandoned.

2. The Contract unit price for SEWER MANHOLE BENCH REPAIR IN UNPAVED AREAS shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of SEWER MANHOLE BENCH REPAIR IN UNPAVED AREAS including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of VCP pipe, grout plug, bench repair, and pavement restoration grade to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

1.04 ADDITIVE BID ITEM A

A. BID ITEM No. A1 – GENERAL CONSTRUCTION

1. No unit measurement shall be made for this item.

2. Payment for GENERAL CONSTRUCTION shall be made at the lump sum price named in the Bid Schedule, which price shall constitute full compensation for completion of all work for GENERAL CONSTRUCTION including but not limited to mobilization, temporary facilities and utilities, meetings, demobilization, clean up, bonds and insurance, supervision, planning, design, design engineering fees, Division 01 “General Requirements” measures, complete as defined within these Contract Documents, with the sole exclusion of the payments to be made as defined herein for the other items in the Bid Schedule.

3. Progress payments shall be based on the percent complete of the entire Work.

B. BID ITEM No. A2 – SHEETING, SHORING, AND BRACING

1. No unit measurement shall be made for this item.

2. Lump Sum Bid Item shall full compensation for furnishing all equipment, materials, labor to install sheeting and shoring complete and in place. The Bid Item Price shall include all work related to the installation of the sheeting and shoring including, but not limited to, meeting all OSHA requirements preparation and approved sheeting and shoring plan, and any other work as required by the CONTRACT DOCUMENTS.

3. Payment shall be determined on percent complete of this item

C. BID ITEM No. A3 – WATER POLLUTION CONTROL

1. No unit measurement shall be made for this item.

2. Lump Sum Bid Item shall full compensation for furnishing all equipment, materials, labor to water pollution control measures complete and in place. The Bid Item Price shall include all work related to the installation of the water pollution control measures including, but not limited to, fiber rolls, fiber swales, construction fencing, and any other work as required by the CONTRACT DOCUMENTS.

3. Payment shall be determined on percent complete of this item

D. BID ITEM No. A4 – SEWER MANHOLE ABANDONMENT AT STOCKADE

1. SEWER MANHOLE ABANDONMENT AT STOCKADE shall be measured per each (EA) abandoned.

2. The Contract unit price for SEWER MANHOLE ABANDONMENT AT STOCKADE shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of SEWER MANHOLE ABANDONMENT AT STOCKADE including, but not limited to, traffic control, excavation, backfill, compaction, removal of manhole cone and rings, manhole cover and frame, and grade rings, disposal of excess materials, imported backfill, removal and disposal of VCP pipe, grout plug, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

E. BID ITEM No. A5 – GREASE INTERCEPTOR REMOVAL

1. GREASE INTERCEPTOR REMOVAL shall be measured per each (EA) abandoned.

2. The Contract unit price for GREASE INTERCEPTOR REMOVAL shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of GREASE INTERCEPTOR REMOVAL including, but not limited to, traffic control, excavation, backfill, compaction, removal of grease interceptor and all appurtenances, disposal of excess materials, imported backfill, removal and disposal of pipe connections, grout plug, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

F. BID ITEM No. A6 – STRAIGHT LINE WATER CONNECTIONS

1. STRAIGHT LINE WATER CONNECTIONS shall be measured per each (EA) installed.

2. The Contract unit price for STRAIGHT LINE WATER CONNECTIONS shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work of STRAIGHT LINE WATER CONNECTIONS including, but not limited to, traffic control, excavation, compaction, backfill, disposal of excess materials, imported backfill, removal and disposal of AC pipe, PVC pipe, transition couplings, grout plug, disinfection, testing, and pavement restoration or grading to match existing, complete in place, and as specified within these Contract Documents.

3. Payment shall be determined using the unit price and the quantity installed.

PART 2- PRODUCTS (NOT USED)

PART 3- EXECUTION (NOT USED)

END OF SECTION 01 27 00 – MEASUREMENT AND PAYMENT

S201-ITB3, Volume 2 - SECTION 01 31 13.1 – REQUESTS FOR INTERPRETATION (RFI)

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Procedures for submitting requests for interpretation (RFI).

B. Limitations on use of RFI to obtain interpretation and clarification.

1.03 DEFINITIONS

A. Request for Interpretation: A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as an RFI.

1.04 CONTRACTOR'S REQUESTS FOR INTERPRETATION (RFIs)

A. Contractor's Requests for Interpretation (RFIs): Should Contractor be unable to determine from the Contract Documents the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of Work is described differently at more than one place in the Contract Documents; the Contractor shall request that the FORA Construction Manager make an interpretation of the requirements of the Contract Documents to resolve such matters. Contractor shall comply with procedures specified herein to make Requests for Interpretation (RFIs).

B. Submission of RFIs: RFIs shall be prepared and submitted on a form provided by the FORA Construction Manager.

1. Forms shall be completely filled in, and if prepared by hand, shall be fully legible after copying by xerographic process.

2. Each RFI shall be given a discrete, consecutive number.

3. Each page of the RFI and each attachments to the RFI shall bear the FORA's project name, project number, date, RFI number and a descriptive title.

4. Contractor shall sign all RFIs attesting to good faith effort to determine from the Contract Documents the information requested for interpretation. Frivolous RFIs shall be subject to reimbursement from Contractor to FORA Construction Manager for fees charged by FORA's consultants and other design professionals engaged by the FORA.

C. Subcontractor-Initiated and Supplier-Initiated RFIs: RFIs from subcontractors and material suppliers shall be submitted through, be reviewed by and be attached to an RFI prepared, signed and submitted by Contractor. RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.

1. Contractor shall review all subcontractor- and supplier-initiated RFIs and take actions to resolve issues of coordination, sequencing and layout of the Work.

2. RFIs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without interpretation. Such issues are solely the Contractor's responsibility.

3. Contractor shall be responsible for delays resulting from the necessity to resubmit an RFI due to insufficient or incorrect information presented in the RFI.

D. Requested Information: Contractor shall carefully study the Contract Documents, in particular, Article 2 of the Contract Agreement, to ensure that information sufficient for interpretation of requirements of the Contract Documents is not included. RFIs that request interpretation of requirements clearly indicated in the Contract Documents will be returned without interpretation.

1. In all cases in which RFIs are issued to request clarification of issues related to means, methods, techniques and sequences of construction, for example, pipe and duct routing, clearances, specific locations of Work shown diagrammatically, apparent interferences and similar items, the Contractor shall furnish all information required for the FORA Construction Manager to analyze and/or understand the circumstances causing the RFI and prepare a clarification or direction as to how the Contractor shall proceed.

2. If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.

E. Unacceptable Uses for RFIs: RFIs shall not be used to request the following:

1. Approval of submittals (use procedure specified in Section 01 33 00 - Submittals Procedures)

2. Approval of substitutions (refer to Section 01 63 00 - Product Substitution Procedures)

3. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Article 5 of the Contract Agreement, as discussed in detail during pre-construction meeting).

4. Different methods of performing Work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Article 5 of the Contract Agreement).

F. Disputed Requirements: In the event the Contractor believes that a clarification by the FORA Construction Manager results in additional cost or time, Contractor shall comply with Article 22 of the Contract Agreement.

G. RFI Log: Contractor shall prepare and maintain a log of RFIs, and at any time requested by the FORA Construction Manager, the Contractor shall furnish copies of the log showing all outstanding RFIs.

H. Review Time: FORA Construction Manager will return RFIs to Contractor within seven calendar days of receipt. RFIs received after 12:00 noon shall be considered received on the next regular working day for the purpose of establishing the start of the seven-calendar day response period.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 31 13.1

S201-ITB3, Volume 2 - SECTION 01 31 20 – PROJECT MEETINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

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1.02 REQUIREMENTS INCLUDED

A. Preconstruction meeting.

B. Construction progress meetings.

1.03 RELATED REQUIREMENTS

A. Section 01 45 00 - Quality Control: General requirements for construction quality, to be reviewed at construction progress meetings.

1.04 RECONSTRUCTION MEETING

A. Preconstruction Meeting: FORA Construction Manager will administer a preconstruction meeting immediately prior to Contractor mobilization onto the project site.

1. Contractor and major subcontractors, as appropriate, shall attend.

B. Schedule: Schedule preconstruction meeting within five days of construction start date established in the Notice to Proceed.

C. Location: Preconstruction meeting will be held at a location as directed by the FORA Construction Manager.

D. Agenda: Preconstruction meeting shall cover the following topics as a minimum.

1. Special Project Procedures: Site access restrictions, if any, and requirements to avoid disruption of operations at adjoining facilities. Present FORA's requirements for use of Project Site.

2. Designation of Key Personnel: Contractor shall designate key personnel and provide a name and address list that includes the following.

a. Contractor: Project Manager and Superintendent.

b. Major subcontractors: Principal/Project Manager and Superintendent.

c. Major materials suppliers: Contact person.

3. Subcontractors List: Distribute and discuss list of subcontractors and suppliers.

4. Coordination: Review requirements for Contractor's coordination of Work. Review sequence and schedule for work being performed for University under separate contracts. Discuss coordination of construction to minimize impacts on nearby businesses and construction activities.

5. Project Communication Procedures: Review requirements and administrative requirements for written and oral communications.
6. Construction Schedule: Distribute and discuss initial construction schedule and critical work sequencing of major elements of Work, including coordination of other FORA contractors and work under separate contracts by serving utility agencies and companies.
7. Site Security: Review requirements for Contractor to develop and implement site security.
8. Safety Program: Review requirements for Contractor to develop and implement safety program in compliance with Contract Agreement.
9. Site Access by FORA and FORA Construction Manager Representative: Review requirements and administrative procedures Contractor may wish to institute for identification and reporting purposes.
10. Permits and Fees: Review Contract requirements and review schedule and process for obtaining permits and paying fees.
11. Project Layout: Review requirements for laying out of Work, including surveying requirements.
12. Construction Facilities: Designate storage and staging areas, construction office areas and parking areas and review site access requirements.
13. Temporary Utilities: Requirements for establishing and paying for temporary water, power, lighting and other utility services during construction, including metering and allowances. Refer to Section 01 51 00 - Temporary Utilities.
14. Construction Progress Schedules: Review requirements for preparation and updating of construction progress and submittals schedules.
15. Payment Procedures: Review requirements for preparation and submission of applications for progress payments and for final payment.
16. Change Procedures: Review requirements and administrative procedures for Change Orders, Field Instructions and Contractor's Requests for Interpretation (RFI).
17. Testing and Inspection: Review tests and inspections to be performed by the following.
    a. Independent testing and inspection agency.
    b. Serving utilities and public agencies.
    c. Authorities having jurisdiction.
18. Contract Closeout: Review requirements specified in Section 01 77 00 - Contract Closeout Procedures, including procedures for filing of Notice of Completion, final payment and submittals.

1.05 CONSTRUCTION PROGRESS MEETINGS

A. Construction Progress Meetings: Meetings will be held to review progress and quality of construction. The essence of the discussion of each meeting shall be entered into the written record (minutes) of the meeting by the Contractor.

B. Schedule: Construction progress meetings shall be weekly throughout progress of the Work.

C. Administration: Contractor shall make physical arrangements for meetings. Contractor shall prepare agenda with copies for participants, preside at meetings, record minutes and distribute copies within two working days to FORA and FORA Construction Manager, and participants and those affected by decisions made at meetings. Each discussion item at construction progress meetings shall be numerically identified and carried through subsequent meeting minutes until resolved.

D. Attendance: Contractor's project manager and jobsite superintendent shall attend each meeting. Contractor's subcontractors and suppliers may attend as appropriate to subject under discussion. FORA and/or FORA Construction Manager will attend each meeting.

E. Suggested Agenda for Each Construction Progress Meeting:

1. Meeting Minutes: Review and correct, if necessary, minutes of previous meeting.
    a. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
    b. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
    c. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.
2. Progress of the Work: Since last meeting and proposed progress.
    a. Identify potential problems which might impede progress.
    b. Develop corrective measures and procedures, including but not necessarily limited to additional manloading to regain planned schedule.
    c. Review three-week "look ahead" construction schedule, including identification of conflicts and delays.
3. RFI Status: Review status of Requests for Interpretation (RFI) status.
4. Contract Modifications: Pending Change Orders and Field Orders. Review status of proposed substitutions.
5. Old Business: Active discussion topics carried over from previous meetings.
6. New Business: New topics of discussion affecting construction progress and quality.
7. Quality Control: Review maintenance of quality standards and identification of non-conforming Work, including proposed remedial measures to be taken by Contractor.
8. Environmental and Safety Issues.
9. Other items affecting progress and quality of the Work.

F. Meeting Time and Location: As mutually agreed by the Contractor, and the FORA Construction Manager at on-site location.

G. Special Meetings: As necessary, the Contractor, or the FORA Construction Manager may convene special meetings to discuss specific construction issues in detail and to plan specific activities.

1.06 CONTRACT COMPLETION MEETING

A. Contract Closeout Meeting: As specified in Section 01 77 00 - Contract Closeout Procedures.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 31 20

S201-ITB3, Volume 2 - SECTION 01 33 00 – SUBMITTALS PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Administrative requirements for shop drawings, product data and samples submittals.

B. Administrative requirements for submittals reporting results of tests and inspections, during field Work.

C. Contractor's review of submittals.

D. Shop drawing submittals.

E. Reports of results of tests and inspections.

1.03 RELATED SECTIONS

A. Construction Progress Schedules: Submittals Schedule.

B. Section 01 45 00 - Quality Control

C. Section 01 77 00 - Contract Closeout Procedures

1.04 DEFINITIONS

A. Shop Drawings, Product Data and Samples: Instruments prepared and submitted by Contractor, for Contractor's benefit, to communicate to FORA Construction Manager the Contractor's understanding of the design intent, for review and comment by Architect on the conformance of the submitted information to the general intent of the design. Shop drawings, product data and samples are not Contract Documents.

B. Shop Drawings: Drawings, diagrams, schedules and illustrations, with related notes, specially prepared for the Work of the Contract, to illustrate a portion of the Work.

C. Product Data: Standard published information ("catalog cuts") and specially prepared data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work.

D. Other Submittals: Technical data, test reports, calculations, surveys, certifications, special warranties and guarantees, operation and maintenance data, extra stock and other submitted information and products shall also be not be considered to Contract Documents but shall be information from Contractor to Architect to illustrate a portion of the Work for confirmation of understanding of design intent.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Administrative Requirements for Submittals: Submittals shall be made in accordance with requirements specified in the Technical Specifications, as represented on the drawings. See

also Article 5 of the Contract Agreement for additional requirements especially those regarding requests for alternatives or equals and for substitutions.

B. Contractor Coordination of Submittals: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

   2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination. The FORA Construction Manager will return without action submittals requiring coordination with other submittals until related submittals are coordinated.

C. Submittals List: Contractor shall prepare and submit a Submittals List for review and approval by the FORA Construction Manager. Submittals List shall identify all specified submittals to be made and shall serve as checklist for submittals.

   1. Format shall be suitable for Project and shall be subject to acceptance by FORA Construction Manager. Comply with directions by FORA Construction Manager for scope and format of Submittals List.

   2. Submittals list shall include the following submittal types and headings:

      SD = Shop Drawings are required

      PD = Product Data required

      SA = Samples required

      CO = Color samples required

      SS = Site Sample installations are required

      LM = List of Materials

      RD = Record Drawings required

      CE = Certificates are required

      PR = Manufacturer's instructions or specifications required

      OM = Operation and Maintenance manuals are required

      Q = Maintenance materials/equipment are required

      WA = Warranties and/or guarantees are required

      LR = Laboratory Reports are required

      FT = Factory Test reports are required

      ST = Site Test reports required

      RP = Submittal to the Architect for record purposes only and not for review or approval

      O = Other submittal requirements as specified in Section

D. Transmission of Submittals: Package each submittal appropriately for shipping and handling. Transmit all submittals from Contractor to FORA Construction Manager, unless otherwise directed, using a transmittal form. Submittals received from sources other than the

Contractor will be returned without action. Include all information specified below for identification of submittal and for monitoring of review process.

E. Timing of Submittals: Make submittals sufficiently in advance of construction activities to allow shipping, handling and review by the FORA Construction Manager. Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

1. Submittal review time will be 20 calendar days.
2. If an intermediate submittal is necessary, process the same as the initial submittal.
3. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

F. Submittals Identification:

1. Provide a space approximately four-inches by five-inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken. Include the following information on the label for processing and recording action taken:

   a. Project name and Trustees project number
   b. Submission date
   c. Name and address of Contractor
   d. Name and address of subcontractor
   e. Name and address of supplier
   f. Name of manufacturer
   g. Number and title of appropriate Specification Section
   h. Drawing number and detail references, as appropriate.

2. Identify each submittal by Specification Section number followed by a number indicating sequential submittal for that Section. Resubmittals shall use same number as original submittal, followed by a letter indicating sequential resubmittal. For example:

09250-1	First submittal for Section 09250 - Gypsum Board.
09250-2	Second submittal for Section 09250 - Gypsum Board.
09250-2A	Resubmittal of second submittal for Section 09250 - Gypsum Board.
09250-2B	Second resubmittal of second submittal for Section 09250 Gypsum Board.

3. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

G. Grouping of Submittals: Unless otherwise specifically permitted by the FORA Construction Manager, make all submittals in groups containing all associated items. The FORA Construction Manager may reject partial submittals as incomplete or hold them until related submittals are made.

H. Unsolicited Submittals: Unsolicited submittals may be returned unreviewed.

I. Record Submittals: When record submittals are specified, submit three copies or sets only. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.

1.06 SUBMITTALS SCHEDULE

A. Submittals Schedule: As specified in the Construction Progress Schedules.

1.07 CONTRACTOR'S REVIEW OF SUBMITTALS

A. Contractor's Review of Submittals: Prior to submission to FORA Construction Manager for review, Contractor shall review each submittal for completeness and conformance to specified requirements. Contractor shall stamp each submittal with a review action stamp and sign each copy of submittal. Submittals without stamp and signature will not be reviewed and will be returned. Contractor's submittal action stamp shall certify the following actions by Contractor:

1. Field measurements have been determined and verified.
2. Conformance with requirements of Contract Drawings and Specifications is confirmed.
3. Catalog numbers and similar data are correct.
4. Work being performed by various subcontractors and trades is coordinated.
5. Field construction criteria have been verified, including confirmation that information submitted has been coordinated with the work being performed by others for University and actual site conditions.
6. All deviations from requirements of Drawings and Specifications have been identified and noted.

B. Changes in Work: Changes in the Work shall not be authorized by submittals review actions. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work. Changes shall only be authorized by separate written direction from the FORA Construction Manager, in accordance with the Contract Agreement.

1.08 REVIEW OF SUBMITTALS BY FORA CONSTRUCTION MANAGER

A. Review of Submittals by FORA Construction Manager: Submittals shall be a communication aid between Contractor and FORA Construction Manager by which interpretation of Contract Documents requirements may be confirmed in advance of construction.

1. Reviews by FORA Construction Manager and FORA’s consultants shall be only for general conformance with the design concept of the Project and general compliance with the information given in the Drawings and Specifications.
2. Except for submittals for record, information or similar purposes, where action and return is required or requested, the FORA Construction Manager will review each submittal, mark to indicate action taken, and return promptly.

B. Review Action: FORA Construction Manager or FORA’s consultants will stamp each submittal with a uniform, self-explanatory action stamp. Stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Re-submittal: When submittal is marked "Not Approved, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

   a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

   b. Note: Any work performed prior to receiving a fully approved submittal shall be done at the Contractor's risk and shall be subject to being replaced if Contract requirements are not met.

C. Contract Requirements:

1. Review actions by FORA Construction Manager or FORA's consultants shall not relieve the Contractor from compliance with requirements of the Contract Drawings and Specifications.

2. No review action, implicit or explicit, shall be interpreted to authorize changes in the Work. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract Agreement.

1.09 PRODUCT DATA SUBMITTALS

A. Product Data: Catalog cuts, photographs, illustrations, standard details, standard schedules, performance charts, material characteristics, color and pattern charts, test data, roughing-in diagrams and templates, standard wiring diagrams and performance curves and listings by Code authorities and nationally-recognized testing and inspection services. Where product data must be specially prepared because standard printed data is not suitable for use, submit according to requirements for shop drawings, specified below.

B. Modifications to Standard Product Data: Modify manufacturer's standard catalog data to indicate precise conditions of the Project.

1. Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, mark copies to highlight applicable information.

2. Include the following information:

   Manufacturer's printed recommendations,
   Compliance with recognized trade association standards,
   Compliance with recognized testing agency standards,
   Application of testing agency labels and seals,
   Notation of dimensions verified by field measurement,
   Notation of coordination requirements.

3. Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.

4. Proceed with installation only using reviewed copy of product data. Do not permit use of unmarked copies of product data in connection with construction.

C. Copies: Contractor shall submit one electronic copy of the submittal to the FORA Construction Manager. For shop drawings including samples, submit the electronic copy of the submittal and separately transmit six (6) sample pieces.

1.10 SHOP DRAWINGS SUBMITTALS

A. Shop Drawings: Drawings, diagrams, schedules and other graphic depictions to illustrate fabrication and installation of a portion of the Work. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Identification of products and materials included

2. Compliance with referenced standards

3. Notation of coordination requirements

4. Dimensions

5. Notation of dimensions established by field measurement.

B. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.

C. Preparation of Shop Drawings: Prepare and submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

1. Prepare shop drawings on minimum sheet size of 8-1/2 inches by 11-inches. Maximum size shall be 24-inches by 36-inches.

2. Do not use Shop Drawings without an appropriate final review stamp indicating action taken in connection with construction.

D. Distribution of Reviewed Shop Drawings: Distribution of reviewed shop drawings will be by FORA Construction Manager. Contractor shall submit one electronic copy of the submittal to the FORA Construction Manager. For shop drawings including samples, submit the electronic copy of the submittal and separately transmit eight (8) sample pieces.

1.11 1MANUFACTURER'S INSTRUCTIONS

A. Manufacturer's Instructions: Submit manufacturer's instructions for preparation, mixing, assembly, handling, application and installation of products, as applicable and as specified in product Sections of the Specifications.

1. Include applicable ICBO ES Evaluation Reports. Evaluation Reports shall be current and shall be annotated for applicable products.

2. Include applicable Material Safety Data Sheets, for Project record only.

3. Include written recommendations, as applicable, from manufacturer for Project conditions.

B. Copies: Submit five copies minimum. Distribution will be:

1. University's Representative: One copy
2. Architect: One copy
3. Architect's consultant: One copy
4. Project Inspector: One copy
5. Contractor: As necessary, retained by Contractor.
6. Reviews by Architect and University's Representative: Manufacturer's instructions shall be for information and will not be reviewed by Architect or University's Representative.

1.12 REPORTS OF RESULTS OF INSPECTIONS AND TESTS

A. Reports of Results of Inspections and Tests: Submit technical data, test reports, calculations, surveys, and certifications based on field tests and inspections by independent inspection and testing agency and by authorities having jurisdiction.

1. Reports of results of inspections and tests shall not be considered Contract Documents.
2. Refer to Section 01450 - Quality Control for additional requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 33 30

S201-ITB3, Volume 2 - SECTION 01 33 50 SPECIAL PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Environmental protection procedures

B. Smoke/odor control procedures

C. Noise control procedures

D. Dust and air pollution control procedures

E. Hazardous materials procedures

F. Welding and burning mitigation procedures

G. Erosion and sediment control procedures (Storm Water Pollution Protection Plan)

H. Disposal operations procedures

I. Cultural resources procedures

J. Alteration project procedures.

1.03 SITE DECORUM

Contractor shall control the conduct of labor forces and prevent unwanted interaction initiated by workers with the FORA staff, students or other individuals other than those associated with the Project.

In the event that any worker initiates unwanted interaction, uses profanity, or in the opinion of the FORA Construction Manager, conducts him/herself in an offensive or unprofessional manner, the Contractor shall immediately remove the worker from the project and replace said worker with another of equivalent technical skill at no cost to the FORA.

All Contractor personnel associated with the project shall wear shirts at all times and conduct themselves professionally in the presence of FORA staff and other people in the vicinity of the Project Site.

No smoking is allowed within any FORA facility.

No radios, other than 2-way communication type, will be allowed on the Project Site.

1.04 DIVERTED WASTE GOAL

FORA has a goal of participating in global sustainability. It is for this reason the Contractor must meet the goal of diverting 90% of the waste from the landfill and into recycling.

Per AB939, California Integrated Solid Waste Management Act of 1989, requires FORA to reduce the amount of solid waste diverted to the land fill.

Before the release of retention, the Contractor must submit a spreadsheet to the FORA Construction Manager similar to the attached. The Contractor will also include original copies of the weight tickets with the spreadsheet. A $10,000.00 penalty will be assessed from retention if the Contractor does not make this goal.

1.05 ENVIRONMENTAL PROTECTION PROCEDURES

A. Environmental Protection Procedures, General: Requirements specified in this Section are in addition to those of Article 3 of the Contract Agreement.

   1. During the progress of the work, keep the premises occupied in a neat and clean condition and protect the environment both on site and off site, throughout and upon completion of the construction project.

   2. In coordination with the FORA, develop an Environmental Protection Plan in detail and submit to FORA Construction Manager for approval within 7 calendar days from the date of commencement specified in the Notice to Proceed. Distribute approved plan to all employees and to all subcontractors and their employees. Environmental Protection Plan shall include, but not be limited to, the following items:

      a. Copies of required permits

      b. Proposed sanitary landfill site

      c. Other proposed disposal sites

      d. Noise Control

      e. Dust Control

      f. Erosion and Sediment Control

      g. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Such agreements made by Contractor shall be invalid if their execution causes violation of local or regional grading or land use regulations.

B. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

   1. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

2. Comply with noise control requirements specified below.

C. Construction Operations: All construction operations shall comply with all applicable Federal, State and local Codes, ordinances, statutes and regulations pertaining to water, air, solid waste and noise pollution. It shall be Contractor's responsibility to identify and determine necessary measures to be taken to comply with such Codes, ordinances, statutes and regulations.

D. Definitions of Contaminants:

1. Sediment: Soil and other debris that have been eroded and transported by runoff water

2. Solid waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings

3. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous"

4. Sewage: Domestic sanitary sewage

5. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.

6. Excavations around trees: Refer to Section 01 56 80 - Tree and Plant Protection.

7. Repair and restoration: Repair or replace trees or other landscape feature scarred or damaged by equipment or construction operations as specified below. Repair and restoration plan shall be reviewed and approved by FORA Construction Manager prior to its initiation.

E. Protection of Natural Resources: It is intended that the natural resources within the Project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the drawings. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities such that ponding of stagnant water conducive to mosquito breeding habitat will not occur at any time.

1. Land resources protection: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the Project area without permission from FORA Construction Manager. Such improvements shall be removed and replaced, if required, by the Contractor at no change in Contract Time and Contract Sum.

2. Landscaping protection: Protect trees that are located near the limits of Project area which may possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No ropes, cables or guys shall be fastened to or be attached to any existing nearby trees or shrubs for anchorages. Refer to additional requirements specified in Section 01 56 00 - Temporary Barriers and Controls.

3. Temporary construction:

    a. Remove all signs of temporary construction facilities such as work areas, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the FORA Construction Manager.

    b. Level all temporary roads, parking areas and any other areas that have become compacted or shaped.

    c. Unpaved areas where vehicles have been operated shall receive suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Trustees.

    d. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction materials dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.

4. Water resources: Comply with all applicable Federal, State and local Codes, ordinances, statutes and regulations pertaining to discharge (directly or indirectly) of pollutants to underground and natural waters.

    a. Perform all Work under the Contract in a manner that any adverse environmental impacts are reduced to a level that is acceptable to FORA Construction Manager and authorities having jurisdiction.

5. Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the areas. All soil or water that is contaminated with oily substances due to Contractor's operations shall be disposed of in accordance with applicable regulations, at no change in Contract Time and Contract Sum.

1.06 SMOKE/ODOR CONTROL PROCEDURES

A. Smoke/Odor Control: Protect primary fresh air intakes to existing buildings from exhaust from internal combustion engines, paint and solvent fumes and other noxious fumes and vapors.

1. Implement control methods such as snorkels from engines exhausts to 50 feet away from air intakes. Provide carbon filters on air intakes as necessary, including periodic replacement of filters to ensure effectiveness.

2. All other activities generating fumes shall be limited to minimum distance of 50 feet from air intake grilles.

3. If fume-generating procedures must occur within 50 feet of an air intake, Contractor shall do the following:

    a. Notify FORA Construction Manager at least 14 calendar days in advance of such activities.

    b. Perform Work when it least impacts the other activities at the Project Site (evenings, weekends or particularly windy days).

c. Provide carbon filter media, plastic barriers, or other control methods to ensure fresh air only enters into the building ventilation system.

1.07 NOISE CONTROL PROCEDURES

A. Noise Control Procedures, General: Maximum noise levels within 1,000 feet of classrooms, laboratories, residences, businesses, adjacent buildings and other populated areas:

1. Noise levels for trenchers, pavers, graders and trucks: Not exceeding 90 dBA at 50 feet as measured under noisiest operating conditions.

2. Noise levels for all other equipment: Not exceeding 85 dBA at 50 feet.

B. Noise Control of Equipment:

1. Equip jackhammers with exhaust mufflers and steel muffling sleeves.

2. Use air compressors of a quiet type such as a "whisperized" compressor. Compressor hoods shall be closed while equipment is in operation.

3. Use electrically-powered rather than gasoline or diesel powered fork-lifts.

4. Provide portable noise barriers around jack hammering, with barriers constructed of 3/4 inch plywood lined with 1-inch thick ductliner type fiberglass on Work side.

C. Noise Control of Construction Operations:

1. Keep noisy equipment as far as possible from noise-sensitive site boundaries.

2. Machines shall not be left idling.

3. Use electric power in lieu of internal combustion engine power whenever possible.

4. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.

D. Scheduling of Noisy Operations: Schedule construction activities to minimize time of noisy operations and disruption to occupants of adjoining facilities. Notify University's Representative in advance of performing Work creating unusual noise and schedule such Work at times mutually agreeable.

E. Accessory Noise: Do not play radios, tape recorders, televisions, and other similar items at construction site.

1.08 DUST AND AIR POLLUTION CONTROL PROCEDURES

F. Dust and Air Pollution Control Procedures, General: Requirements of this Section are in addition to those of Article 3 of the Contract Agreement. Employ measures to prevent or minimize creation of dust and air pollution. Contractor shall appoint a dust control monitor to oversee and implement all measures specified in this Article.

1. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.

2. Store all volatile liquids, including fuels or solvents in closed containers.

3. No on-site burning of debris, lumber and other scrap shall be permitted.

4. Properly maintain equipment to reduce gaseous pollutant emissions.
5. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders or paved, as appropriate, as soon as possible.
6. Cover stockpiles of soil, sand and other loose materials.
7. Cover trucks hauling soil, debris, sand or other loose materials.
8. Sweep project area streets at least once daily. Refer to Section 01 74 00 - Cleaning Requirements.

1.09 WELDING AND BURNING MITIGATION PROCEDURES

A. Welding and Burning Mitigation Procedures: Eliminate welding and burning of steel as much as possible. Where unavoidable, perform welding and burning with all possible precaution to avoid fire hazard. Provide a fire watch for minimum of 30 minutes after burning stops. Provide protection for all adjacent surfaces.

1.10 EROSION AND SEDIMENT CONTROL PROCEDURES

A. Erosion and Sediment Control Procedures: Refer to runoff control requirements specified in Section 01 57 00 - Temporary Controls. Obtain and comply with Storm Water Pollution Protection Plan (SWPPP) and project-specific requirements indicated on Civil Drawings.

1.11 DISPOSAL OPERATIONS PROCEDURES

A. Solid Waste Management:
   1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
   2. Washing of concrete containers where wastewater may reach adjacent property, storm drains or natural water courses will not be permitted. Remove any excess concrete to the sanitary landfill.

B. Chemical Waste and Hazardous Materials Management: furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.

C. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.

D. Grading Spoil and Landscape Debris: Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable Federal, State and local Codes, ordinances, statutes and regulations

E. Excavated Materials:
   1. Native soil complying may be used for backfill, fill and embankments

2. Remove all material which is excavated in excess of that required for backfill. Dispose of unsuitable excavated material from the site and dispose of it legally.

    a. Excess suitable backfill material shall be hauled off site. No additional compensation will be paid to the Contractor for such off haul. Include all such costs in the Contract Sum.

    b. Unsuitable backfill material shall be disposed of off-site in accordance with applicable regulations, in a disposal site indicated in the Environmental Protection Plan.

    c. Remove rubbish and materials unsuitable for backfill immediately following excavation.

    d. Remove material in excess of that required for backfill immediately following backfill operations.

1.12 CULTURAL RESOURCES PROCEDURES

A. Cultural Resources Procedures:

1. It is conceivable that unrecorded archaeological sites could be discovered during the excavation of the Rolling Pin building basement.

2. In the event that artifacts, human remains, or other cultural resources are discovered during subsurface excavations at locations of the Work, the Contractor shall protect the discovered items, cease work for a distance of 35 feet radius in the area, notify the FORA Construction Manager and comply with applicable law.

3. Trustees may retain an Archaeologist to monitor and recover data and artifacts during period that work has ceased.

4. All items found which are considered to have archaeological significance are the property of FORA.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 33 50

S201-ITB3, Volume 2 - SECTION 01 33 55 – Safety and Health Procedures

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Procedures for health and safety protection and requirements for reporting accidents.

1.03 RELATED SECTIONS

A. Section 01 56 00 - Temporary Barriers and Enclosures

1.04 SUBMITTALS

A. Accident Reporting: A copy of each accident report, which FORA and FORA Construction Manager as soon as possible, but in no event later than seven (7) calendar days after the day the accident occurred.

B. Other Submittals: If agreed to in writing at the preconstruction safety meeting, other submittals shall be required. One such submittal that may be included is a plan of action for handling hazardous materials to contain the following:

1. Number, type, and experience of employees to be used for the Work
2. Description of how safety and health regulations and standards shall be met
3. Type of protective equipment and work procedures to be used
4. Emergency procedures for accidental spills or exposures.

PART 2 - PRODUCTS

2.01 GENERAL

A. Special facilities, devices, equipment, clothing, and similar items used by the Contractor in the execution of the Work shall comply with applicable regulations.

PART 3 - EXECUTION

3.01 STOP WORK ORDERS

A. Stop Work Orders:

1. When the Contractor or its subcontractors are notified by FORA Construction Manager of an incident of noncompliance with the provisions of the Contract, and the action(s)

to be taken, the Contractor shall immediately, if so directed, or within 48 hours after receipt of a notice of violation, correct the unsafe or unhealthy condition.

2. If the Contractor fails to comply promptly, all or any part of the work performed may be stopped by with a "Stop Work Order." When, in the opinion of the FORA Construction Manager, satisfactory corrective action has been taken to correct the unsafe and unhealthy condition, a start order will be given immediately.

3. The Contractor shall not be allowed any extension of time or compensation for damages by reason of or in connection with such work stoppage.

3.02 PROTECTION

A. Protection: Contractor shall take all necessary precautions to prevent injury to the public, building occupants, or damage to property of others.

1. For the purposes of the Contract, the public or building occupants shall include all persons not employed by the Contractor or a subcontractor working under the Contractor's direction.

2. Work shall not be performed in any area occupied by the public or FORA's contractors unless specifically permitted by the Contract or the FORA Construction Manager and unless adequate steps are taken for the protection of the public and the FORA's contractors.

3. Whenever practicable, the work area shall be fenced, barricaded, or otherwise blocked off from the public or building occupants to prevent unauthorized entry into the work area.

B. Alternate Precautions: When the nature of the Work prevents isolation of the work area, and the public or building occupants may be in or pass through, under or over the work area, alternate precautions such as the posting of signs, the use of signal persons, the erection of barricades or similar protection around particularly hazardous operations shall be used as appropriate.

C. Public Thoroughfare: When Work is to be performed over a public thoroughfare such as a sidewalk, lobby, or corridor, the thoroughfare shall be closed, if possible, or other precautions taken such as the installation of screens or barricades. When the exposure to heavy falling objects exists, as during the erection of building walls or during demolition, special protection of the type detailed in 29 CFR 1910/1926 shall be provided.

D. Hazardous Conditions: Storing, positioning or use of equipment, tools, materials, scraps, and trash in a manner likely to present a hazard to the public or building occupants by its accidental shifting, ignition, or other hazardous qualities is prohibited.

END OF SECTION 01 33 55

S201-ITB3, Volume 2 - SECTION 01 41 00 – REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 AUTHORITY AND PRECEDENCE OF CODES, ORDINANCES AND STANDARDS

A. Authority: All codes, ordinances and standards referenced in the Drawings and Specifications shall have the full force and effect as though printed in their entirety in the Specifications.

B. Precedence:

1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.

2. Where the Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings and Specifications shall take precedence so long as such increase is legal.

3. Where no requirements are identified in the Drawings or Specifications, comply with all requirements of applicable codes, ordinances and standards of authorities having jurisdiction.

1.1 APPLICABLE CODES, LAWS AND ORDINANCES

A. Applicable Codes, Laws and Ordinances: Refer also to Section 01 11 00 - Summary of Work regarding permits and licenses.

1. Performance of the Work shall meet or exceed the minimum requirements of California Code of Regulations (CCR), Title 24, including the following:

a. CCR Title 24, Part 1: 2016 California Administrative Code.

b. CCR Title 24, Part 2: 2016 California Building Code (CBC), Based on the 2015 International Building Code (IBC) Volumes 1 and 2.

c. CCR Title 24, Part 3: 2016 California Electrical Code (CEC); Based on the 2014 National Electrical Code (NEC), NFPA 70 (NEC).

d. CCR Title 24, Part 4: 2016 California Mechanical Code (CMC); Based on the 2015 Uniform Mechanical Code (UMC).

e. CCR Title 24, Part 5: 2016 California Plumbing Code (CPC); Based on the 2015 Uniform Plumbing Code (UPC).

f. CCR Title 24, Part 6: 2016 California Energy Efficiency Standards (CES).

g. CCR Title 24, Part 9: 2016 California Fire Code (CFC); Based on the 2015 International Fire Code.

h. CCR Title 24, Part 11: 2016 California Green Buildings Standards Code (CAL GREEN).

i. CCR Title 24, Part 12: 2016 California Reference Standards Code.

j. ADA Title II and III (2010 Standards).

k. NFPA 13: Automatic Sprinkler Systems, 2016 Edition.

l. NFPA 72: National Fire Alarm and Signaling Code, 2016 Edition.

2. Performance of the Work shall also comply with applicable requirements of California Code of Regulations (CCR) as follows:

a. Title 19 – C.C.R. Public Safety, SFM Regulations, 2016 edition.

b. Title 22 - Social Security, 2016 edition.

3. References on the Drawings or in the Specifications to "code", "Code" or "building code" similar terms, not otherwise identified, shall mean the codes specified above, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.

4. The applicable edition of all codes shall be that adopted at the time of issuance of permits by the authority having jurisdiction and shall include all modifications and additions adopted by that authority. The applicable date of laws and ordinances shall be that of the date of performance of the Work.

B. Other Applicable Laws, Ordinances and Regulations:

1. Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of Federal, State, County, City and special district agencies and jurisdictions having authority over the Project.

2. Performance of the Work shall be accomplished in conformance with all rules and regulations of public utilities, utility districts and other agencies serving the facility.

3. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the execution date of the Agreement.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 41 00

S201-ITB3, Volume 2 - SECTION 01 42 00 – REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Use of references in Drawings and Specifications, including requirements for copies of reference standards at Project site.

B. Definitions of terms used in Specifications and Drawings, including abbreviations, acronyms, names and terms which may be used in Specifications.

1.03 RELATED SECTIONS

A. Section 01 41 00 - Regulatory Requirements

1.04 USE OF REFERENCES

A. References: The Drawings and Specifications contain references to various standards, standard specifications, codes, practices and requirements for products, execution, tests and inspections. These reference standards are published and issued by the agencies, associations, organizations and societies listed in this Section or identified in individual product specification Sections.

1. Wherever term "Agency" occurs in Standard Specifications, it shall be understood to mean the term used for FORA for purposes of the Contract.

2. Wherever term "Engineer" occurs in Standard Specifications, it shall be understood to mean FORA consultant or other responsible design professional for purposes of the Contract.

3. Where reference is made to Standard Details, such reference shall be to the Standard Details accompanying the Standard Specifications.

B. Relationship to Drawings and Specifications: Such references are incorporated into and made a part of the Drawings and Specifications to the extent applicable.

C. Referenced Grades Classes and Types: Where an alternative or optional grade, class or type of product or execution is included in a reference but is not identified on the Drawings or in the Specifications, provide the highest, best and greatest of the alternatives or options for the intended use and prevailing conditions.

D. Copies of Reference Standards:

1. Reference standards are not furnished with the Drawings and Specifications because it is presumed that the Contractor, subcontractors, manufacturers, suppliers, trades and crafts are familiar with these generally-recognized standards of the construction industry.

2. Copies of reference standards may be obtained from publishing sources.

E. Jobsite Copies:

1. Contractor shall obtain and maintain at the Project site copies of reference standards identified on the Drawings and in the Specifications in order to properly execute the Work.

2. At a minimum, the following shall be readily available at the site, as applicable to the Work:

a. State Building Codes: As referenced in Section 01 41 10 - Regulatory Requirements.

b. Safety Codes: Occupational Safety and Health Act (OSHA) regulations and State of California, California Administrative Code, California Code of Regulations (CCR), Title 8 - Industrial Relations, Chapter 4, Subchapter 7, General Industry Safety Orders (Cal-OSHA), to extent applicable to the Work.

c. General Standards:

1. CCR Title 24, Part 2, Volume 3: 2016 California Building Code (CBC) Material, Testing and Installation Standards.

2. CCR Title 24, Part 12: 2016 California Referenced Standards Code.

3. Underwriters Laboratories, Inc. (UL) Building Products Listing.

4. Factory Mutual Research Organization (FM) Approval Guide.

5. American Society for Testing and Materials (ASTM) Standards in Building Codes.

6. American National Standards Institute (ANSI) standards.

d. Fire and Life Safety Standards: All referenced standards pertaining to fire rated construction and exiting.

e. Common Materials Standards: American Concrete Institute (ACI), American Institute of Steel Construction (AISC), American Welding Society (AWS), Gypsum Association (GA), National Fire Protection Association (NFPA), Tile Council of America (TCA) and Woodwork Institute of California (WIC) standards to the extent referenced within the Contract Specifications.

f. Research Reports: ICC Evaluation Service, Inc. (ICC-ES), formerly ICBO Evaluation Service, Inc. (ICBO ES) Research Reports and National Evaluation Service, Inc. Reports (NER), for products not in conformance to prescribed requirements stated in California Building Code (CBC).

g. Product Listings: Approval documentation, indicating approval of authorities having jurisdiction for use of product within the applicable jurisdiction.

F. Edition Date of References:

1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of the Contract Drawings and Contract Specifications.

2. All amendments, changes, errata and supplements as of the effective date shall be included.

G. ASTM and ANSI References: Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision or amendment. It is presumed that the Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

1.05 DEFINITIONS OF TERMS

A. Basic Contract Definitions: Words and terms governing the Work are defined in the Contract Agreement.

B. Words and Terms Used on Drawings and in Specifications: Additional words and terms may be used in the Drawings and Specifications and are defined as follows:

1. "Applicable:" As appropriate for the particular condition, circumstance or situation.

2. "Approve(d):" Approval action shall be limited to the duties and responsibilities of the party giving approval, as stated in the Conditions of the Contract. Approvals shall be valid only if obtained in writing and shall not apply to matters regarding the means, methods, techniques, sequences and procedures of construction. Approval shall not relieve the Contractor from responsibility to fulfill Contract requirements.

3. "And/or:" If used, shall mean that either or both of the items so joined are required.

4. "Directed:" Limited to duties and responsibilities of the FORA Construction Manager as stated in the Contract Agreement, meaning "as instructed by the FORA Construction Manager, in writing, regarding matters other than the means, methods, techniques, sequences and procedures of construction. Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by FORA or the FORA Construction Manager", "requested by FORA or the FORA Construction Manager", and similar phrases. No implied meaning shall be interpreted to extend the responsibility of the FORA Construction Manager or FORA's consultants into the Contractor's supervision of construction.

5. "Equal" or "Equivalent:" As determined by FORA Construction Manager or other responsible design professional as being equivalent, considering such attributes as durability, finish, function, suitability, quality, utility, performance and aesthetic features.

6. "Furnish:" Means "supply and deliver, to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."

7. "Indicated:" The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help the reader locate the reference. There is no limitation on location.

8. "Install:" Describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
9. "Installer:"
    a. "Installer" refers to the Contractor or an entity engaged by the Contractor, such as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
    b. "Experienced Installer:" The term "experienced," when used with "installer" means having a minimum of five (5) previous Projects similar in size to this Project, knowing the precautions necessary to perform the Work, and being familiar with requirements of authorities having jurisdiction over the Work.
10. "Jobsite:" Same as site.
11. "Necessary:" With due considerations of the conditions of the Project and as determined in the professional judgment of the FORA Construction Manager or other responsible design professional as being necessary for performance of the Work in conformance with the requirements of the Contract Documents, but excluding matters regarding the means, methods, techniques, sequences and procedures of construction.
12. "Noted:" Same as "Indicated."
13. "Per:" Same as "in accordance with," "according to" or "in compliance with."
14. "Products:" Material, system or equipment.
15. "Project Site:" Same as "Site."
16. "Proper:" As determined by the or other responsible design professional as being proper for the Work, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, which are solely the Contractor's responsibility to determine.
17. "Provide:" Means "furnish and install, complete and ready for the intended use."
18. "Regulation:" Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as and rules, conventions and agreements within the construction industry that control performance of the Work.
19. "Required:" Necessary for performance of the Work in conformance with the requirements of the Contract Documents, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, such as:
    a. Regulatory requirements of authorities having jurisdiction.
    b. Requirements of referenced standards.
    c. Requirements generally recognized as accepted construction practices of the locale.
    d. Notes, schedules and graphic representations on the Drawings.
    e. Requirements specified or referenced in the Specifications.
    f. Duties and responsibilities stated in the Bidding and Contract Requirements.
20. "Scheduled:" Same as "Indicated."

21. "Selected:" As selected by FORA or the FORA Construction Manager or other responsible design professional from the full selection of the manufacturer's products, unless specifically limited in the Contract Documents to a particular quality, color, texture or price range.
22. "Shown:" Same as "Indicated."
23. "Site:" Same as "Site of the Work" or "Project Site;" the area or areas or spaces occupied by the Project and including adjacent areas and other related areas occupied or used by the Contractor for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.
24. "Supply:" See "Furnish."
25. "Testing Laboratory" or "Testing Laboratories:" An independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests. Refer to Section 01 45 80 - Testing Laboratory Services.
26. "Testing and Inspection Agency:" Same as "Testing Laboratory."

1.06 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

A. Abbreviations, Acronyms, Names and Terms: Where acronyms, abbreviations, names and terms are used in the Drawings, Specifications or other Contract Documents, they shall mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable.

B. Abbreviations, General: The following are commonly-used abbreviations which may be found on the Drawings or in the Specifications:

AC or ac	Alternating current or air conditioning (depending upon context)
AMP or amp	Ampere
C	Celsius
CFM or cfm	Cubic feet per minute
CM or cm	Centimeter
CY or cy	Cubic yard
DC or dc	Direct current
DEG or deg	Degrees
F	Fahrenheit
FPM or fpm	Feet per minute
FPS or fps	Feet per second
FT or ft	Foot or feet
Gal or gal	Gallons
GPM or gpm	Gallons per minute
IN or in	Inch or inches
Kip or kip	Thousand pounds
KSI or ksi	Thousand pounds per square inch
KSF or ksf	Thousand pounds per square foot
KV or kv	Kilovolt
KVA or kva	Kilovolt amperes

KW or kw	Kilowatt
KWH or kwh	Kilowatt hour
LBF or lbf	ounds force
LF or lf	Lineal foot
M or m	Meter
MPH or mph	Miles per hour
MM or mm	Millimeter
PCF or pcf	Pounds per cubic foot
PSF or psf	Pounds per square foot
PSI or psi	Pounds per square inch
PSY or psy	Per square yard
SF or sf	Square foot
SY or sy	Square yard
V or v	Volts

C. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

D. Undefined Abbreviations, Acronyms, Names and Terms: Words and terms not otherwise specifically defined in this Section, in the Instructions to Bidders, in the Contract General Conditions, on the Drawings or elsewhere in the Specifications, shall be as customarily defined by trade or industry practice, by reference standard and by specialty dictionaries such as the following:

1. Dictionary of Architecture and Construction, Third Edition (Cyril M. Harris, McGraw-Hill Book Company, 2000).
2. The American Institute of Architects (AIA) Document M101, "Glossary of Construction Industry Terms."
3. Encyclopedia of Associations, published by Gale Research Co., commonly available in public libraries.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 42 00

S201-ITB3, Volume 2 - SECTION 01 45 00 – QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Regulatory requirements for testing and inspection.

B. Contractor's quality control.

C. Quality of the Work.

D. Inspections and tests by authorities having jurisdiction.

E. Inspections and tests by serving utilities.

F. Inspections and tests by manufacturer's representatives.

1.03 RELATED SECTIONS

A. Section 01 41 00 - Regulatory Requirements.

B. Section 01 45 80 - Testing Laboratory Services.

1.04 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

A. Building Code Requirements: Comply with requirements for testing and inspections in the California Building Code (CBC), as interpreted by authorities having jurisdiction. Additional requirements for testing and inspection, as adopted by authorities having jurisdiction, shall be included in the Contract Sum and Contract Time.

B. Requirements of Fire Regulations: Comply with testing and inspection requirements of the Fire Marshal having jurisdiction. All tests and inspections shall be included in Contract Sum and Contract Time.

1.05 CONTRACTOR'S QUALITY CONTROL

A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the Work and by utilizing only suitably qualified personnel.

B. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the

best accepted practices of the construction industry for the locale of the Project, for projects of this type.

C. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.

D. Coordination of Field Quality Control: Contractor shall coordinate and schedule field quality control activities of FORA's independent testing and inspection agency and inspectors from authorities having jurisdiction.

1.06 QUALITY OF THE WORK

A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.

B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.

C. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the FORA Construction Manager.

D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.

E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

F. Verification of Quality: Work shall be subject to verification of quality by FORA Construction Manager in accordance with provisions of the Contract Agreement.

1. Contractor shall cooperate by making Work available for inspections and observations by FORA Construction Manager and FORA's consultants.

2. Such verification may include mill, plant, shop, or field inspection, as required.

3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.

4. Provide all information and assistance as necessary, including that from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by FORA Construction Manager.

5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the Contract Agreement.

G. Observations by FORA and/or FORA Construction Manager: Periodic and occasional observations of Work in progress will be made by FORA Construction Manager as deemed necessary to review progress of Work and general conformance with the design intent.

H. Limitations on Inspection, Test and Observations: Employment of an independent testing and inspection agency and observations by FORA Construction Manager shall not relieve Contractor of the obligation to perform Work in full conformance to all requirements of Contract Documents and applicable Building Code and other regulatory requirements.

I. Rejection of Work: FORA and FORA Construction Manager reserves the right to reject any and all Work not in conformance to the requirements of the Contract Documents.

J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.

K. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the FORA Construction Manager, shall not relieve the Contractor of the obligation to correct such Work.

L. Contract Adjustment for Non-conforming Work: Should FORA Construction Manager determine that it is not feasible or not in FORA's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between FORA Construction Manager and Contractor.

M. Non-Responsibility for Non-Conforming Work: Architect and Architect's consultants disclaim any and all responsibility for Work produced that is not in conformance with the Contract Drawings and Contract Specifications.

1.07 INSPECTIONS AND TESTS BY AUTHORITIES HAVING JURISDICTION

A. Inspections and Tests by Authorities Having Jurisdiction: Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract.

1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility.

2. All time required for inspections and tests by authorities having jurisdiction shall be included in the Contract Time.

3. Costs for inspections and tests by authorities having jurisdiction will be paid by FORA.

1.08 INSPECTIONS AND TESTS BY SERVING UTILITIES

A. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under the Contract.

1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility. All time required for inspections and tests by serving utilities shall be included in the Contract Time.

2. Except as specifically noted, all costs for inspections and tests by serving utilities shall be included in the Contract Sum.

1.09 INSPECTIONS BY INDEPENDENT TESTING AND INSPECTION AGENCY

A. Inspections by independent Testing Laboratory: Refer to Section 01 45 80 - Testing Laboratory Services.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 45 00

S201-ITB3, Volume 2 - SECTION 01 1 45 80 – TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Administrative and procedural requirements for quality control services.

1. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, and governing authorities. They do not include Contract enforcement activities performed by the FORA Construction Manager.

2. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

3. This section covers the Geotechnical Testing required on this project. Additional Testing be required by the Contractor as it related to Hazardous Materials and will be covered in additional sections.

1.03 RELATED SECTIONS

A. Section 01 45 00 - Quality Control.

B. Individual Product Specifications Sections: Specific requirements for inspections and tests.

1.04 RESPONSIBILITIES

A. Testing Laboratory: FORA will engage and pay for the services of an independent agency to perform inspections and tests specified as the FOR A's responsibility.

1. Where FORA have engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Trustees, unless otherwise agreed in writing with the Trustees.

B. Retesting: The Contractor is responsible for the cost of retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's

1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested.

D. Coordination: The Contractor, Project Manager/Inspector, and each agency engaged to perform inspections, testing and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for communicating to the Project Manager/Inspector the scheduling times for inspections, tests, taking samples and similar activities.

E. Payment for Testing Laboratory Services:

1. Unless otherwise specified, Trustees will pay for tests and inspections performed by Testing Laboratory, as specified in individual product Sections of the Specifications. Overtime costs due to scheduling for the convenience of the Contractor or to make up for Work behind schedule shall be deducted by Change Order from Contract Sum.

2. When tests and inspections are required on an overtime basis, initial payment will be made by FORA. All costs for overtime testing and inspections shall be deducted by Change Order from Contract Sum.

3. Unless otherwise specified, Contractor shall be back-charged for mileage and travel time for inspection services requiring more than 60 miles from Project site to test products purchased by Contractor.

    a. Testing laboratory shall forward all billings and records of such costs to FORA Construction Manager for approval.

    b. Such costs, if determined by FORA Construction Manager to be attributable to the Contractor under this provision, shall be deducted by Change Order from Contract Sum.

4. Contractor shall pay all costs for repeated observations, reinspection or retesting by Testing Laboratory due to non-conforming Work. Costs shall be deducted by Change Order from Contract Sum.

5. Additional Tests, Inspections and Related Services: Contractor shall be charged costs for additional tests, inspections and related services, due to the following. Such costs shall be deducted by Change Order from Contract Sum.

    a. Work is not ready to inspect when inspectors arrive.

    b. Failure to properly schedule or notify testing and inspection agency or authorities having jurisdiction.

    c. Changes in sources, lots or suppliers of products after original tests or inspections.

    d. Changes in means methods, techniques, sequences and procedures of construction that necessitate additional testing, inspection and related services.

    e. Changes in mix designs for concrete and mortar after review and acceptance of submitted mix design.

    f. Multiple off-site fabrication sites.

    g. Fabrication and installation errors.

    h. Inefficient, sporadic, or poorly organized manufacturing that causes additional testing costs to be incurred.

F. Segregation in Billing of Overtime Services: Billings for overtime services shall have straight time and overtime costs segregated and shall have substantiation by detailed explanations justifying necessity of services on overtime basis.

G. Obligation to Perform Work According to Contract Documents: Employment of Testing Laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents and applicable Codes.

H. Limits on Testing Laboratory's Authority:

1. Testing Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

2. Testing Laboratory may not approve or accept any portion of the Work.

3. Testing Laboratory may not assume any duties of Contractor.

4. Testing Laboratory shall have no authority to stop Work.

I. Contractor's Responsibilities to Testing Laboratory: Contractor shall make the Work in all stages of progress available for personal and continuous observation by the Testing Laboratory.

1. Testing Laboratory shall have free access to any and all parts of the Work at all times.

2. Contractor shall provide the Testing Laboratory with reasonable facilities for Testing Laboratory to obtain such information as Testing Laboratory determines is necessary for Testing Laboratory to be kept fully informed of the progress and manner of performance of the Work and character of products, according to Testing Laboratory's duties and responsibilities.

3. Observation and inspection of the Work by Testing Laboratory shall not relieve Contractor from any obligation to fulfill the requirements of the Contract.

J. Retesting: When materials tested fall to meet requirements herein specified, they shall be promptly corrected or removed and replaced and retested in a manner required by FORA Construction Manager. Costs involved in retesting shall be deducted by Change Order from Contract Sum.

1.05 TESTS AND INSPECTIONS

A. Tests and Inspections, General: All construction work shall be subject to inspection by the Trustees and the Architect and all such construction or work shall remain accessible and exposed for inspection purposes until approved by FORA.

1. FORA Construction Manager will provide project personnel, including inspectors, to be available at the project site.

2. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of the building code or of other ordinances of the jurisdiction, including plans and specifications. Inspections presuming to give authority to violate or cancel the provisions of code, or of plans and specifications shall not be valid.

3. It shall be the duty of the Contractor to cause the work to remain accessible and exposed for inspection purposes. Neither the Inspector nor the Trustees or Architect shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

B. Inspection Requests: It shall be the duty of the Contractor doing the work to notify the Inspector that such work is ready for inspection. FORA requires that such work is ready for inspection. FORA requires that every request for inspection be filed at least two working days before such inspection is desired. Such requests shall be in writing.

C. Approval Required: Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector. The Inspector, upon notification, shall make the requested inspections and shall either indicate in writing that portion of the construction is satisfactory as completed, or shall notify the Contractor that same fails to comply with plans and specifications. Any portions of Work that do not comply shall be corrected by the Contractor, and such portion shall not be covered or concealed until authorized by the Inspector.

   1. There shall be a final inspection and approval of all buildings and structures when completed and ready for occupancy and use.

D. Inspection Coordination: Contractor shall provide, on a weekly basis, an anticipated Inspection Requirements Schedule, coordinated with the three-week look ahead schedule, showing the anticipated inspection needs for the following three weeks to facilitate appropriate campus coordination and interface as well as mobilization of required inspection staffing.

E. Required Inspections:

   1. The Contractor shall be responsible for reviewing all of the Contract Documents for all inspection requirements.

1.06 SUBMITTALS

A. Reports: FORA's independent testing agency shall submit a certified written report of each inspection, test or similar service, to FORA Construction Manager (two copies), FORA, and the Contractor (two copies).

B. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:

Date of issue
Project title and number
Name, address and telephone number of testing agency
Dates and locations of samples and tests or inspections
Names of individuals making the inspection or test
Designation of the Work and test method
Identification of product and Specification Section
Complete inspection or test data
Test results and an interpretation of test results
Ambient conditions at the time of sample-taking and testing
Comments or professional opinion as to whether inspected or tested
Work complies with Contract Document requirements
Name and signature of laboratory inspector
Recommendations on retesting.

1.07 SCHEDULES FOR TESTING

A. Testing and Inspection Schedule: After discussion with FORA Construction Manager and Testing Laboratory in advance of performance of testing and inspection services, Contractor shall determine dates and times necessary for Testing Laboratory to schedule performance of required tests and inspections and determine due dates for issuance of reports.

B. Revising Testing and Inspection Schedule: When changes of the construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.

C. Adherence to Testing and Inspection Schedule: When the Testing Laboratory is ready to test according to the determined schedule but is prevented from testing or taking specimens due to incompleteness of the work, all extra costs for testing attributed to the delay may be back-charged to the Contractor and shall not be borne by the FORA.

1.08 CONTRACTOR'S RESPONSIBILITIES

A. Contractor's Responsibilities for Inspections and Tests:

1. Notify FORA Construction Manager and Testing Laboratory two working days in advance of expected time for operations requiring inspection and testing services.

2. Deliver to Testing Laboratory or designated location, adequate samples of materials proposed to be used which require advance testing, together with proposed mix designs.

3. Cooperate with FORA Construction Manager, Testing Laboratory, Project Inspector, and FORA’s consultants. Provide access to Work areas and off-site fabrication and assembly locations, including during weekends and after normal work hours.

4. Provide incidental labor and facilities to provide safe access to Work to be inspected and tested, to obtain and handle samples at the Work site or at source of products to be tested, and to store and cure test samples.

5. Provide at least 15 days in advance of first inspection or test of each type, a schedule of tests or inspections indicating types of tests or inspections and their scheduled dates.

6. Provide two working days notice to FORA Construction Manager, and, as applicable, responsible design consultant, of each test and inspection.

1.09 INSPECTIONS TESTS BY OTHERS

A. Inspections by Others: Refer to Section 01 45 00 - Quality Control.

B. Tests by Others: Refer to Section 01 45 00 - Quality Control.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

A. Repair and Protection: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

1. Protect construction exposed by or for quality control service activities, and protect repaired construction.

2. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01 45 80

S201-ITB3, Volume 2 - SECTION 01 51 00 – TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Temporary utilities and services, including:
   1. Heating and cooling during construction
   2. Ventilation during construction
   3. Temporary water service
   4. Temporary sanitary facilities
   5. Temporary power and lighting
   6. Construction telephone service.
B. Removal of temporary utilities.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work

1.1 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, applicable meter readings and similar procedures performed on temporary utilities.

1.04 TEMPORARY UTILITIES AND SERVICES

A. Temporary Utilities and Services, General: All utilities and other services necessary for proper performance of the Work shall be provided by Contractor, unless specifically noted otherwise. Temporary utilities and services shall conform to all applicable requirements of authorities having jurisdiction and serving utility companies and agencies, including the following:
   1. Requirements of authorities having jurisdiction, including:
      a. Cal OSHA
      b. California Building Code (CBC) requirements
      c. Health and safety regulations
      d. Utility agency and company regulations
      d. Police, Fire Department and Rescue Squad rules

e. Environmental protection regulations

2. Standards:

a. NFPA Document 241 - Building Construction and Demolition Activities.

b. ANSI A10 Series - Safety Requirements for Construction and Demolition.

c. NECA Electrical Design Library - Temporary Electrical Facilities.

d. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with California Electrical Code (CEC).

B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

C. Temporary Connections and Fees: Contractor shall arrange for services and pay all fees and service charges for temporary power, water, sewer, gas and other utility services necessary for the Work.

1. Contractor shall apply for and obtain permits for temporary utilities, including permits for temporary generators, from authorities having jurisdiction.

1. All costs for temporary connections, including fees charged by serving utilities, shall be included in Contract Sum.

D. Use of Temporary Utilities: Enforce strict discipline in use of temporary utilities to conserve on consumption. Limit use of temporary utilities to essential and intended uses to minimize waste and abuse.

1.05 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site.

1.06 TEMPORARY WATER SERVICE

A. Water Service: Water may be taken from existing system with metering provided by Marina Coast Water District. Water may be taken in such quantities and at such times as they are available. Point of connection for water service shall be coordinated with the FORA Construction Manager and Marina Coast Water District. Use charges for temporary water facilities are not chargeable to the FORA or FORA's consultants and shall be included in the Contract Sum. Contractor shall furnish, install, and maintain all temporary supply connections, meters, piping, fittings, etc., as necessary for the Work. Before final acceptance, all temporary connections and piping installed by Contractor shall be removed in a manner approved by the FORA Construction Manager.

1. Install necessary source protection and meter at the point of connection to water system.

2. Drinking water shall be furnished by the Contractor.

3. Obtain approval from the FORA and the Federal (Naval Support Activity) Fire Department prior to using fire hydrants as a water supply. All water drawn from fire hydrants shall be metered by the Contractor.

1.07 TEMPORARY SANITARY FACILITIES

A. Temporary Sanitary Facilities: Provide and maintain adequate temporary sanitary facilities and enclosures for use by construction personnel.

2. Number of temporary toilets shall be suitable for number of workers.

3. Provide wash-up sink with soap, towels and waste disposal.

B. Use of Permanent Sanitary Facilities: Do not use permanent sanitary facilities.

1.08 TEMPORARY POWER AND LIGHTING

A. Temporary Electric Power Service: Electricity shall be taken from the existing system as available. Coordinate the installation with the FORA Construction Manager, as applicable, to identify point of connection and metering location(s).

1. Furnish, install, and maintain all necessary temporary electrical equipment, meter(s), connections, etc., as necessary for the Work. All temporary and permanent power used by the Contractor on this project shall be drawn and metered from no more than a maximum of 2 meters. Points of connection to the existing electrical system shall be coordinated with the FORA Construction Manager. Before final acceptance, all temporary equipment and connections installed by Contractor shall be removed in a manner approved by the FORA Construction Manager.

2. Service connections shall be made by Contractor to the existing electrical distribution system. Provide meter, conduit and wires, drops, circuit breakers, and disconnect switches as required. Characteristics of current are limited to that existing and available; if current or other characteristics or quantity is required by Contractor, Contractor shall supply the power as necessary at no extra cost to the FORA.

a. Provide ground fault circuit interrupters and reset button with pilot light for plug-in connection of power hand tools. All extension cords shall be “hard-service” cords where exposed to traffic and abrasion.

b. Provide temporary lighting for Work in progress, inspection, protection, and security at the following minimum levels:

1) General construction open floor area lighting; 1 – 200 watt lamp per each open 1,000 square feet to achieve uniform illumination.

2) Corridors and similar traffic areas: 1 – 100 watt lamp per each 50 lineal feet.

3) Stairways, ladder runs, and similar traffic areas: 1 – 75 watt lamp located to illuminate each landing and flight.

3. At Contractor’s own expense, Contractor shall repair and make good all damage to existing electrical facilities caused by Contractor's use, as requested and approved.

B. Protection: Provide weatherproof enclosures for power and lighting components as necessary. Provide overcurrent and ground-fault circuit protection, branch wiring and

distribution boxes located to allow convenient and safe service about site of the Work. Provide flexible power cords as required.

C. Service Disruptions: When necessary for energizing and de-energizing temporary electric power systems, minimize disruption of service to those served by public mains. Schedule transfers at times convenient to neighboring occupants.

1.09 CONSTRUCTION TELEPHONE SERVICE

A. Construction Telephone Service: Provide telephone service to Contractor's field staff by means of cellular telephones to enable communications between FORA Construction Manager and Contractor.

1. All costs of cellular telephone service shall be included in Contract Sum.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials: Contractor shall provide new materials. If acceptable to the FORA Construction Manager, undamaged previously used materials in serviceable condition may be used. Provide materials that are suitable for the use intended. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and standards.

B. Equipment: Contractor shall provide new equipment; or, if acceptable to the Trustees, Contractor may provide undamaged, previously used equipment in serviceable condition. Provide equipment that is suitable for use intended.

PART 3 - EXECUTION

3.01 TEMPORARY UTILITIES INSTALLATION

A. Temporary Utilities Installation, General: Contractor shall engage the appropriate local utility company or personnel to install temporary service or connect to existing service.

1. Use Charges: Cost or use charges for temporary facilities are the Contractor's responsibility.

2. Allowance for Utilities Charges: When Contract includes an allowance for metering of utility services, whether through temporary or permanent facilities, unused amount shall be returned to the FORA by deductive change order.

B. Temporary Electric Power Service: The Contractor must arrange and pay for electric service through the local utility or furnish his own portable power. All permanent power used by the Contractor prior to Occupancy by the FORA shall be metered and paid for by the Contractor.

C. Temporary Telephones: Contractor shall have telephone facility available at its business office for the duration of contract where the Contractor and its superintendent may be contacted.

D. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, Contractor shall install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Contractor shall comply

with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations." Contractor shall:

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

E. Maintenance of Temporary Utilities and Services: Contractor shall maintain temporary utilities and services in good operating condition until removal. Contractor shall protect from utilities and services from environmental and physical damage.

3.02 TERMINATION AND REMOVAL OF TEMPORARY UTILITIES AND SERVICES

A. Termination and Removal of Temporary Utilities and Services: Unless the FORA Construction Manager requires that it be maintained longer, Contractor shall remove each temporary facility when the need has ended.

B. Removal of Temporary Underground Utilities and Restoration: Remove temporary underground utility installations to a minimum depth of two-feet below utility services. Contractor shall:

1. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.
2. Restore paving damaged by temporary utilities. Refer to requirements specified in Section 01 73 20 - Cutting and Patching Requirements.

C. Cleaning and Repairs: Contractor shall clean exposed surfaces and repair damage caused by installation and use of temporary utilities and services. Where determined by FORA Construction Manager that repair of damage is unsatisfactory, Work, Contractor shall replace construction with matching finishes. Refer to requirements specified in Section 01 73 20 - Cutting and Patching Requirements.

END OF SECTION 01 51 00

S201-ITB3, Volume 2 - SECTION 01 52 00 – CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Field offices and sheds.

B. Removal of construction facilities.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work

B. Section 01 51 00 - Temporary Utilities

C. Section 01 52 50 - Construction Staging Areas

D. Section 01 74 00 - Cleaning Requirements

1.04 MAINTENANCE OF CONSTRUCTION FACILITIES CONTROLS

A. Maintenance: Contractor shall use all means necessary to maintain construction facilities in proper and safe condition throughout progress of the Work.

B. Replacement: In the event of loss or damage, Contractor shall promptly restore temporary construction facilities by repair or replacement at no change in the Contract Sum or Contract Time.

1.05 CONTRACTOR'S FIELD OFFICES AND SHEDS

A. Contractor's Field Office: Contractor shall provide a mobile field office of weather-tight construction, with lighting, power, ventilation, heating and cooling to house Contractor. Unless otherwise indicated on the Drawings, Contractor shall locate field office at in staging area described in Section 01 52 50 - Construction Staging Areas. Contractor shall comply with FORA's requirements transmitted through FORA Construction Manager.

1. Contractor shall provide temporary utilities to serve Contractor's field office. Refer to Section 01 51 00 - Temporary Utilities.

2. Contractor's Field Office shall present neat, business-like appearance at all times, internally and externally.

3. Contractor shall ensure that neither Contractor's Field Office nor other jobsite facilities are used for living quarters.

B. Storage Sheds for Tools, Materials, and Equipment: Contractor shall provide weather-tight sheds, all with the following:

1. heat and ventilation appropriate for storage of products requiring controlled conditions,
2. adequate space for organized storage and access, and
3. lighting for inspection of stored materials.

C. Layout of Field Offices and Sheds: Within five working days of the Notice to Proceed, Contractor shall submit to FORA Construction Manager a proposed layout for field offices, sheds and storage areas. FORA Construction Manager will review and respond within five working days with comments and directions. Contractor shall comply with directions of FORA Construction Manager.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 INSTALLATION OF CONSTRUCTION FACILITIES

A. Layout of Field Offices and Sheds: Within five working days of the Notice to Proceed, Contractor shall submit to FORA Construction Manager a proposed layout for field offices, sheds and storage areas. FORA Construction Manager will review and respond within five working days with comments and directions. Contractor shall comply with directions of FORA Construction Manager.

1. Coordinate with requirements specified in Section 01 52 50 - Construction Staging Areas.
2. Coordinate installation of construction fencing as specified in Section 01 56 00 - Temporary Barriers and Enclosures.

3.02 REMOVAL OF CONSTRUCTION FACILITIES

B. Removal of Construction Facilities: Unless otherwise mutually agreed by FORA Construction Manager and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review.

3. Coordinate removal with requirements specified in Section 01 51 00 - Temporary Utilities, Section 01 52 00 - Construction Facilities, Section 01 55 00 - Vehicular Access and Parking and Section 01 56 00 - Temporary Barriers and Enclosures.
4. Completely remove in-ground construction facilities to minimum depth of two feet. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.

C. Cleaning and Repairs: Clean and repair damage caused by installation or use of temporary construction facilities on public and private rights-of-way.

END OF SECTION 01 52 00

S201-ITB3, Volume 2 - SECTION 01 52 50 – CONSTRUCTION STAGING AREAS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Contractor Staging Area requirements.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work
B. Section 01 54 10 - Security
C. Section 01 55 00 - Vehicular Access and Parking
D. Section 01 56 00 - Temporary Barriers and Enclosures
E. Section 01 57 00 - Temporary Controls

1.04 SUBMITTALS

A. Shop Drawings: Prior to site mobilization, Contractor shall prepare and submit for review by FORA Construction Manager a site plan indicating detailed layout of Contractor Staging Area, including:
   1. Temporary utilities
   2. Construction aids
   3. Vehicular access ways and on-site parking
   4. Temporary barriers and enclosures
   5. Storm water pollution prevention measures

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONTRACTOR STAGING AREA REQUIREMENTS

A. Contractor Staging Areas: Contractor Staging Areas shall be contained within the Limits of Work as noted on the Drawings.
   1. Contractor shall use only site areas designated specifically the FORA Construction Manager as Contractor Staging Area for the Project.

2. Contractor Staging Area for the Project shall be clearly indicated by the Contractor and approved by FORA. Contractor shall remove equipment placed or located outside of areas designated for Contractor Staging Area to within Contractor Staging Area at no change in Contract Time and Contract Sum.

3. Contractor shall keep access to Contractor Staging Areas and other construction accessways and thoroughfares clear at all times. Contractor shall provide traffic and parking control signage acceptable to FORA Construction Manager.

B. Cleanliness: Contractor shall keep Contractor Staging Area clear of trash and debris and in neat order. Contractor shall be responsible for cleanliness and order of assigned Contractor Staging Areas, as acceptable to FORA Construction Manager.

3.02 REMOVAL OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Removal of Construction Facilities and Temporary Controls: Unless otherwise mutually agreed by FORA Construction Manager and Contractor, Contractor shall remove temporary materials, equipment, services, and construction prior to Contract Completion review. Contractor shall coordinate removal with requirements specified in Section 01 51 00 - Temporary Utilities, Section 01 55 00 - Vehicular Access and Parking and Section 01 56 00 - Temporary Barriers and Enclosures.

B. Cleaning and Repairs: Contractor shall clean and repair damage caused by installation or use of temporary facilities on public and private rights-of-way.

C. Removal of Temporary Utilities and Restoration: Contractor shall remove temporary underground utility installations to a depth of two feet. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.

END OF SECTION 01 52 50

S201-ITB3, Volume 2 - SECTION 01 54 10 – SECURITY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Contractor Security requirements.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work

B. Section 01 56 00 - Temporary Barriers and Enclosures

1.04 SECURITY

A. In addition to security requirements contained in the Article 3 of the Contract Agreeement, Contractor shall adhere to the following requirements for security:

1. Contractor shall protect the Work from theft, vandalism an unauthorized entry. Contractor shall have sole responsibility for job site security.

2. Contractor shall maintain security throughout construction until the FORA Construction Manager acceptance.

3. Provide Inspector Access. Contractor shall provide the FORA Construction Manager with keys necessary to gain access to locked areas of the Work. The FORA Construction Manager will be responsible for such keys and will return them to the Contractor upon acceptance of the project or area as complete.

1.05 ENTRY CONTROL

A. Contractor shall restrict entrance of persons and vehicles into project site to authorized persons with proper identification and as required by Section 01 11 00 – Summary of the Work.

B. Contractor shall allow building entrance only to authorized persons with proper identification.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 54 10

S201-ITB3, Volume 2 - SECTION 01 55 00 – Vehicular Access and Parking

PART 1 - GENERAL

1.01 RELATED DOCUMENT

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Requirements for vehicular access to Work areas

B. Requirements for construction parking

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work

B. Section 01 52 50 - Construction Staging Areas.

C. Section 01 56 00 - Temporary Barriers and Enclosures

D. Section 01 57 00 - Temporary Controls

1.04 PROTECTION OF EXISTING CONDITIONS

A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01 11 00 - Summary of the Work. Contractor shall protect existing, adjacent facilities from damage, including soiling and debris accumulation.

1.05 SITE ACCESS

A. Site Access: Use of designated existing on-site streets and driveways for construction traffic is permitted. Contractor shall review access routes with FORA Construction Manager and comply with FORA Construction Manager directions.

1. Contractor shall ensure that tracked vehicles shall not use paved areas.

2. Contractor shall provide unimpeded access for emergency vehicles. Contractor shall maintain 20-foot width driveways with turning space between and around combustible materials.

3. Contractor shall provide and maintain access to fire hydrants free of obstructions.

4. Contractor shall clean and restore paving and other site features after construction use.

B. Traffic Control:

1. Contractor shall comply with all traffic regulations, including speed limits. Contractor shall pay all parking and traffic fines.

2. Blockage of site roadways and access to site parking lots and parking structures shall be only with approval of FORA Construction Manager. Contractor shall comply with City of Seaside restrictions on blocking roadways and parking areas.
3. Contractor shall employ trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on vehicular and pedestrian traffic lanes.
4. Contractor shall provide signage, cones and other suitable devices to direct traffic. Contractor shall use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

1.06 TRAFFIC SIGNS AND SIGNALS

A. Traffic Signs and Signals: Contractor shall provide temporary signs and signals as required by authorities having jurisdiction and in compliance with City of Seaside's requirements transmitted through FORA Construction Manager. Contractor shall relocate signs and signals as necessary during construction.

1.07 CONSTRUCTION PARKING

A. Construction Parking:
1. Contractor shall not park on public roadways unless approved by police and fire authorities.
2. Contractor shall maintain clear access ways and parking for emergency vehicles, as required by police and fire authorities.
3. Contractor shall provide on-site parking for construction purposes.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01. MAINTENANCE OF PARKING AND ACCESS ROADS

A. Maintenance: Contractor shall maintain traffic and parking areas in a sound condition. Contractor shall repair breaks, potholes, low areas, standing water and other deficiencies, to maintain paving and drainage in original or specified condition.

B. Cleaning of Roadways and Parking Areas: Contractor shall keep public and private rights-of-way and parking areas clear of construction-caused soiling, dust and debris, especially debris hazardous to vehicle tires. Contractor shall perform cleaning as frequently as necessary. Contractor shall coordinate with requirements specified in Section 01 57 00 - Temporary Controls.

END OF SECTION 01 55 00

S201-ITB3, Volume 2 - SECTION 01 56 00 – TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Temporary construction barriers, enclosures and passageways.
   1. Dust and debris barriers.
   2. Security barriers.
   3. Temporary chain link fencing.
   4. Covered passageways.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work
B. Section 01 51 00 – Temporary Utilities
C. Section 01 52 50 - Construction Staging Areas
D. Section 01 54 10 - Security
E. Section 01 55 00 - Vehicular Access and Parking
F. Section 01 56 80 - Tree and Plant Protection
G. Section 01 57 00 - Temporary Controls

1.04 CODES AND REGULATIONS

A. California Building Code (CBC): Comply with California Building Code (CBC) Chapter 33, Section 3303, Protection of Pedestrians During Construction or Demolition.

B. Fire Regulations: Comply with requirements of fire authorities having jurisdiction, including California Fire Code (CFC) Article 87 during performance of the Work.

C. Safety Regulations: Comply with requirements of all applicable Federal, State and local safety rules and regulations. Contractor shall be solely responsible for jobsite safety.

D. Barricades and Barriers: As required by governing authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas and adjacent to embankments and excavations for protection of workers and the public.

1.05 PROTECTION OF EXISTING CONDITIONS

A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01 11 00 - Summary of the Work: Protect existing, adjacent facilities from damage, including soiling and debris accumulation.

B. Protection of Existing Fixtures and Equipment: As applicable, provide temporary enclosures, barriers and covers to protect existing fixtures and equipment remaining in Project area during construction.

1.06 MAINTENANCE OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Maintenance: Use all means necessary to maintain temporary barriers and enclosures in proper and safe condition throughout progress of the Work.

B. Replacement: In the event of loss or damage, promptly restore temporary barriers and enclosures by repair or replacement at no change in the Contract Sum or Contract Time.

1.07 TEMPORARY BARRIERS, ENCLOSURES AND PASSAGEWAYS

A. Temporary Barriers, General: Provide temporary fencing, barriers and guardrails as necessary to provide for public safety, to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

1. Refer to temporary fencing and phasing plan in the Drawings. Comply with requirements indicated.

2. Note requirements for continued occupancy and use of existing buildings and site areas during construction.

3. Comply with applicable requirements of California Building Code (CBC) and authorities having jurisdiction, including industrial safety regulations.

4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting.

5. Paint temporary barriers and enclosures with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard.

6. Where appropriate and necessary, provide warning lighting, including flashing red or amber lights.

B. Temporary Chain-Link Fencing: Provide temporary portable chain-link fencing. See Section 01 52 50 - Staging Area for requirements for layout of fencing.

1. Portable Chain-Link Fencing: Minimum 2-inches 11-gauge, galvanized steel, chain-link fabric fencing; minimum 8-feet high with galvanized steel pipe posts; minimum 2-3/8-inches OD line posts and 2-7/8-inches OD corner and pull posts, with 1-5/8-inches OD top and bottom rails.

a. Provide concrete or galvanized steel bases for supporting posts.

b. Provide protective barriers at bases to prevent tripping by pedestrians.

C. Barricades, Warning Signs and Lights, General: Comply with standards and code requirements for erection of structurally adequate barricades. Paint barricades with appropriate colors, graphics and warning signs to inform personnel and the public when protecting them against a hazard. Where appropriate and needed provide lighting, including flashing red or amber lights.

D. Temporary Access, Passage and Exit Ways: Construct temporary stairs, ramps, and covered walkways, with related doors, gates, closures, guardrails, handrails, lighting and protective devices, to maintain access and exit ways to existing facilities to remain operational.

1. Design and location of temporary construction shall be by Contractor, subject to review by FORA Construction Manager and authorities having jurisdiction.

2. Provide temporary lighting, illuminated interior exit signage, non-illuminated directional and instructional signage, and temporary security alarms for temporary exits and exit passageways.

3. Temporary measures shall suit and connect to existing building systems, and shall be approved by FORA Construction Manager and authorities having jurisdiction.

1.08 REMOVAL OF TEMPORARY BARRIERS AND ENCLOSURES

A. Removal of Temporary Barriers and Enclosures: Unless otherwise mutually agreed by FORA Construction Manager and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review. Coordinate removal with requirements specified in Section 01 51 00 - Temporary Utilities, Section 01 52 00 - Construction Facilities, Section 01 55 00 - Vehicular Access and Parking and Section 01 56 0 - Temporary Barriers and Enclosures.

B. Cleaning and Repairs: Clean and repair damage, soiling and marring caused by installation or use of temporary barriers and enclosures.

PART 2 – PRODUCTS (NOT USED)

PART 3– PRODUCTS (NOT USED)

END OF SECTION 01 56 00

S201-ITB3, Volume 2 - SECTION 01 57 00 – TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Protection of existing conditions, including video record of existing conditions.

B. Life safety and fire protection.

C. Security.

D. Runoff control.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work

B. Section 01 55 00 - Vehicular Access and Parking

C. Section 01 56 00 - Temporary Barriers and Enclosures

1.04 CODES AND REGULATIONS

A. Fire Regulations: Comply with requirements of fire authorities having jurisdiction, including California Fire Code (CFC) Article 87 during performance of the Work.

B. Safety Regulations: Contractor shall be solely responsible for jobsite safety. Minimum requirements shall include the following.

1. Comply with requirements of all applicable Federal, State and local safety rules and regulations.

C. Barricades and Barriers: As required by authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas and adjacent to embankments and excavations for protection of workers and the public. See Section 01 56 00 - Temporary Barriers and Controls for additional requirements.

1.05 PROTECTION OF EXISTING CONDITIONS

A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01 11 00 - Summary of the Work. Protect existing, adjacent facilities from damage, including soiling and debris accumulation.

B. Video Record of Existing Conditions: Contractor shall produce video record of all existing conditions within and adjacent to Project area.

1. Video record shall made on DVD with sound to record comments to identify locations and describe conditions.
2. FORA Construction Manager will accompany Contractor during recording of existing conditions but will not direct recording process.
3. Video shall record state of existing features, including but not limited to:
    a. Paving.
    b. Landscaping.
    c. Building surfaces.
    d. Utilities.
    e. Lighting standards, fencing, signage and other site appurtenances.
4. Contractor shall retain one copy and deliver one copy of video record to FORA Construction Manager within seven calendar days after the video record was produced.
5. Video record shall be used to verify restoration of existing conditions after completion of construction activities.
6. Existing feature not recorded shall be restored as directed by FORA Construction Manager, including reconstruction and refinishing as determined necessary by FORA Construction Manager.

1.06 FIRE PROTECTION

A. Fire Protection Responsibility: Protection of Project from fire shall be solely Contractor's responsibility.

B. Fire Protection Provisions, General: Maintain, at a minimum, the Work in conditions to minimize fire hazards and provide adequate fire protection devices, such as suitable fire extinguishers, blankets, warning signs and storage containers.
    1. Store combustible materials in containers in fire-safe locations.
    2. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
    3. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Special Fire Protection Provisions: During hazardous construction activities, maintain adequate fire protection devices immediately available for use at the location of such activities.

D. Fire Extinguishers for Protection During Construction: Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.
    1. Provide hand carried, portable UL-rated, Class "A" fire extinguishers for temporary offices and similar spaces.
    2. In other locations, provide hand-carried, portable, UL-rated, Class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

E. Installation of Fire Extinguishers for Protection During Construction: Locate fire extinguishers in field offices, storage sheds, tool houses, other temporary buildings and throughout the Work site. Comply with directions of Fire Marshal having jurisdiction.

1. In the area under construction, provide at least one fire extinguisher for each 5,000 square feet of building floor area.

2. Locate fire extinguishers no greater than 100 feet travel distance apart.

1.07 SECURITY

A. Security Responsibility: Security of the Project area shall be solely the Contractor's responsibility until completion of the Work.

B. Security Provisions, General: Provide security program and facilities to protect Work from unauthorized entry, vandalism, and theft.

C. Guard Service: At Contractor's discretion, employ guards to protect the site after working hours.

1.08 RUNOFF CONTROL

A. Erosion and Sedimentation Control: Erosion and sedimentation control provisions shall meet or exceed minimum requirements of authorities having jurisdiction. When provisions are indicated on Drawings, they are minimum requirements. If no sedimentation control system is shown, then Contractor shall design and provide system to prevent siltation of adjacent property as required by authorities having jurisdiction. See Civil Drawings for additional requirements and details.

1. Implement erosion and sedimentation control provisions prior to commencing site clearing, grading, backfilling and compacting or other construction activities which will expose soil to erosion and potential for sediment-laden runoff.

2. Ensure that sediment-laden water does not enter drainage systems.

3. Maintain erosion and sedimentation control provisions until Contract Completion review is completed for landscaping, or sooner if approved by authorities having jurisdiction.

4. Implementation, maintenance, replacement and additions to erosion and sedimentation control provisions shall solely be the responsibility of the Contractor. As construction progresses and seasonal conditions dictate, more erosion and sedimentation controls may be required. If so, Contractor shall provide additional provisions over and above minimum requirements as necessary.

B. Drainage: Grade site and other Work areas to drain.

1. Provide temporary drainage ditches and diversion measures as necessary to protect construction.

2. Provide erosion control measures as necessary and as required by authorities having jurisdiction. Comply with local water quality control requirements, as applicable.

C. De-Watering: Maintain excavations free of water. Provide and operate pumping equipment as necessary.

1. Removal of contaminated water from excavations, dewatering of contaminated

groundwater and discharging of contaminated soils via surface erosion is prohibited.

2. Dewatering of non-contaminated groundwater shall be performed only after Contractor obtains a National Pollutant Discharge Elimination System Permit from the State or Regional Water Quality Control Board having authority. Costs of such permit shall be included in the Contract Sum.

D. Runoff Control: Storm water runoff and other waters may be encountered at various times during construction. Contractor, by signing the Agreement, acknowledges that risks arising from storm water runoff and other waters have been investigated and considered, and Contract Sum and Contract Time include all costs associated with runoff control.

1. It shall be responsibility of Contractor to protect Work from detrimental effects of all waters encountered.

2. It shall be responsibility of Contractor to protect Work from detrimental effects of runoff.

3. Should damage to the Work due to surface or other water occur prior to acceptance of the Work by FORA Construction Manager, Contractor shall repair or replace Work at no change in Contract Time or Contract Sum.

E. National Pollutant Discharge Elimination System: Contractor shall comply with requirements of environmental protection and storm drainage authorities having jurisdiction.

1. Project Area and other areas affected by Work under the Contract shall be maintained in such condition that anticipated storm runoff does not carry wastes and other pollutants off the site.

2. Discharges of material other than storm water will be allowed only when necessary for performance of the Work and where such discharge does not cause the following:

a. Cause or contribute to a violation of applicable water quality standard.

b. Cause or threaten to cause pollution, contamination or nuisance, as determined by Authorities having jurisdiction. Potential pollutants include but are not limited to:

1) Solid or liquid chemical spills.

2) Wastes from paints, stains, sealants, adhesives, limes, pesticides, herbicides, wood preservatives and solvents.

3) Asbestos fibers, paint flakes or fragments of plaster and drywall.

4) Fuels, lubricants, hydraulic fluids, coolants, battery electrolytes.

5) Vehicle or equipment, degreasing, steam cleaning and wash water.

6) Concrete, mortar and plaster mix and cleaning water.

7) Detergents and floatable wastes.

8) Superchlorinated potable water line flushings.

c. Contain hazardous substances in a quantity reportable under Federal Regulations 40 CFR Parts 117 and 302.

3. During performance of the Work, disposal of such materials shall occur at a temporary on-site location, physically separated from potential storm water runoff, with ultimate disposal in compliance with all applicable local, regional, State and Federal requirements.

4. Contractor shall obtain and comply with Storm Water Pollution Prevention Plan (SWPPP). Contractor shall be responsible for payment of the permit and all fines for non-compliance with the SWPPP, at no change in Contract Sum.

F. Pavement Clearing and Cleaning: Keep site accessways, parking areas and building access and exit facilities clear of mud.

1. Remove mud, soil and debris and dispose in a manner which will not be injurious to persons, property, plant materials and site.

2. Comply with runoff control requirements stated above and as required by authorities having jurisdiction.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 57 00

S201-ITB3, Volume 2 - SECTION 01 61 00– BASIC PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

B. General requirements for products used for the Work, including:
   1. General characteristics of products
   2. Product options
   3. System completeness
   4. Transportation and handling requirements
   5. Storage and protection of products
   6. Installation of products.

1.03 RELATED SECTIONS

A. Section 01 33 00 - Submittals Procedures
B. Section 01 41 00 - Regulatory Requirements
C. Section 01 42 00 - Reference Standards and Abbreviations
D. Section 01 63 00 - Product Substitution Requirements
E. Section 01 65 00 - Product Delivery Requirements
F. Section 01 66 00 - Product Storage and Handling Requirements

1.04 GENERAL PRODUCT REQUIREMENTS

A. Products, General: "Products" include items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock, and include materials, equipment, assemblies, fabrications and systems.
   1. Named Products: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.
   2. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.
   3. Equipment: A product with operating parts that are motorized or manually operated and require connections such as wiring or piping.

B. Specific Product Requirements: Refer to requirements of Section 01 45 00 - Quality Control and individual product

C. Minimum Requirements: Specified requirements for products are minimum requirements. Refer to general requirements for quality of the Work specified in Section 01 45 00 - Quality Control and elsewhere herein.

D. Product Selection: Provide products that fully comply with the Contract Documents, are undamaged and unused at installation. Comply with additional requirements specified herein in Article titled "PRODUCT OPTIONS".

E. Standard Products: Where specific products are not specified, provide standard products of types and kinds that are suitable for the intended purposes and that are usually and customarily used on similar projects under similar conditions. Products shall be as selected by Contractor and subject to review and acceptance by the FORA Construction Manager.

F. Code Compliance: All products, other than commodity products prescribed by Code, shall have a current ICBO Evaluation Service (ICBO ES) Research Report or National Evaluation, Inc. Report (NER). Refer to additional requirements specified in Section 01 41 00 - Regulatory Requirements.

G. Interchangeability: To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work. When options are specified for the selection of any of two or more products, the product selected shall be compatible with products previously selected.

H. Product Nameplates and Instructions:

1. Except for required Code-compliance labels and operating and safety instructions, locate nameplates on inconspicuous, accessible surfaces. Do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.

2. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:

   Name of manufacturer

   Name of product

   Model and serial number

   Capacity

   Operating and Power Characteristics

   Labels of Tested Compliance with Codes and Standards

3. For each item of service-connected or power-operated equipment, provide operating and safety instructions, permanently affixed and of durable construction, with legible machine lettering. Comply with all applicable requirements of authorities having jurisdiction and listing agencies.

1.05 PRODUCT OPTIONS

A. Product Options: Provisions of Public Contract Code Section 03400 shall apply, as supplemented by the following general requirements.

B. Products Specified by Description: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that has the specified attributes and otherwise complies with specified requirements.

C. Products Specified by Performance Requirements: Where Specifications require compliance with performance requirements, provide product(s) that comply and are recommended by the manufacturer for the intended application. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.

D. Products Specified by Reference to Standards: Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified. Refer to general requirements specified in Section 01 42 00 - Reference Standards and Abbreviations regarding compliance with referenced standards, standard specifications, codes, practices and requirements for products.

E. Products Specified by Identification of Manufacturer and Product Name or Number:

1. Sole, source, no other product shall be accepted: Provide the specified product(s) of the specified manufacturer.

2. "Acceptable Manufacturers": Product(s) of the named manufacturers, if equivalent to the specified product(s) of the specified manufacturer, will be acceptable in accordance with the requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS."

3. Unnamed manufacturers: Products of unnamed manufacturers will be acceptable only as follows:

a. Unless specifically stated that equals will not be accepted or considered, the phrase "or equal" shall be assumed to be included in the description of specified product(s). Equivalent products of unnamed manufacturers will be accepted in accordance with the "or equal" provision specified herein, below.

b. If provided, products of unnamed manufacturers shall be subject to the requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS."

4. Quality basis: Specified product(s) of the specified manufacturer shall serve as the basis by which products by named acceptable manufacturers and products of unnamed manufacturers will be evaluated. Where characteristics of the specified product are described, where performance characteristics are identified or where reference is made to industry standards, such characteristics are specified to facilitate evaluation of products by identifying the most significant attributes of the specified product(s).

F. Products Specified by Combination of Methods: Where products are specified by a combination of attributes, including manufacturer's name, product brand name, product catalog or identification number, industry reference standard, or description of product characteristics, provide products conforming to all specified attributes.

G. "Or Equal" Provision: Where the phrase "or equal" or the phrase "or approved equal" is included, product(s) of unnamed manufacturer(s) may be provided as specified above in subparagraph titled "Unnamed manufacturers."

1. The requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS" shall apply to products provided under the "or equal" provision.
2. Use of product(s) under the "or equal" provision shall not result in any delay in completion of the Work, including completion of portions of the Work for use by FORA or for work under separate contract by FORA.
3. Use of product(s) under the "or equal" provision shall not result in any costs to FORA, including design fees and permit and plan check fees.
4. Use of product(s) under the "or equal" provision shall not require substantial change in the intent of the design, in the opinion of the FORA Construction Manager. The intent of the design shall include functional performance and aesthetic qualities.
5. The determination of equivalence will be made by the FORA Construction Manager, and such determination shall be final.

H. Visual Matching: Where Specifications require matching a sample, the decision by the FORA Construction Manager on whether a proposed product matches shall be final. Where no product visually matches, but the product complies with other requirements, comply with provisions for substitutions for selection of a matching product in another category.

I. Selection of Products: Where requirements include the phrase "as selected from manufacturer's standard colors, patterns and textures", or a similar phrase, selections of products will be made by indicated party or, if not indicated, by the FORA Construction Manager. The FORA Construction Manager will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.

1.06 "OR EQUAL" PRODUCTS

A. "Or Equal" Products: Products are specified typically by indicating a specified manufacturer and specific products of that manufacturer, with acceptable manufacturers identified with reference to this "or equal" provision. If Contractor proposes to provide products other than the specified products of the specified manufacturer, provisions of any relevant Contract Agreement Article, and Public Contract Code section 3400 shall apply. Contractor shall submit if and when directed by FORA Construction Manager, complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.

1. Submit a minimum of four copies. Form and other administrative requirements shall be as directed by the FORA Construction Manager.
2. Include appropriate product data for the specified product(s) of the specified manufacturer, suitable for use in comparison of characteristics of products.
    a. Include a written, point-by-point comparison of characteristics of the proposed equal product with those of the specified product.
    b. If the proposed equal is accepted, Contractor shall include a detailed description in written or graphic form as appropriate, indicating all necessary changes or modifications to other elements of the Work and to construction to be performed by the FORA and others under separate contract with FOR A .
3. "Or Equal" product submissions shall include a statement indicating the equal's effect on the Construction Schedule. Contractor shall indicate the effect of the proposed products

on overall Contract Time and, as applicable, on completion of portions of the Work for use by FORA for work under separate contract by FORA.

4. "Or Equal" product submissions shall include signed certification that the Contractor has reviewed the proposed products and has determined that the products are equivalent or superior in every respect to product requirements indicated or specified in the Contract Documents, and that the proposed products are suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.
5. "Or Equal" product submissions shall include a signed waiver by the Contractor for change in the Contract Time or Contract Sum because of the following:
    a. "Or equal" product failed to perform adequately.
    b. "Or equal" product required changes in on other elements of the Work.
    c. "Or equal" product caused problems in interfacing with other elements of the Work.
6. If, in the opinion of the FORA Construction Manager, the "or equal" product request is incomplete or has insufficient data to enable a full and thorough review of the proposed products, the proposed products may be summarily refused and determined to be unacceptable.

B. Product Substitutions: For products not governed by the "or equal" provision, comply with substitution provisions of Article 2 of the Contract Agreement and requirements specified in Section 01 63 00 - Product Substitution Procedures.

1.07 SYSTEM COMPLETENESS

A. System Completeness

1. The Contract Drawings and Specifications are not intended to be comprehensive directions on how to produce the Work. Rather, the Drawings and Specifications are instruments of service prepared to describe the design intent for the completed Work.
2. It is intended that all equipment, systems and assemblies be complete and fully functional even though not fully described. Provide all products and operations necessary to achieve the design intent described in the Contract Documents.
3. Refer to related general requirements specified in Section 01 41 00 – Regulatory Requirements regarding compliance with minimum requirements of applicable codes, ordinances and standards.

B. Omissions and Misdescriptions: Contractor shall report to FORA Construction Manager immediately when elements essential to proper execution of the Work are discovered to be missing or misdescribed in the Drawings and Specifications or if the design intent is unclear.

1. Should an essential element be discovered as missing or misdescribed prior to receipt of Bids, an Addendum will be issued so that all costs may be accounted for in the Contract Sum.
2. Should an obvious omission or misdescription of a necessary element be discovered and reported after execution of the Agreement, Contractor shall provide the element as though fully and correctly described, and a no-cost Change Order shall be executed.
3. Refer to related general requirements specified in Section 01 31 00 - Coordination regarding construction interfacing and coordination.

1.08 TRANSPORTATION, DELIVERY AND HANDLING

A. Transportation, Delivery and Handling, General: Contractor shall comply with manufacturer's instructions and recommendations for transportation, delivery and handling, in addition to the following.

B. Transportation: Contractor shall transport products by methods to avoid product damage.

C. Delivery:

1. Contractor shall schedule delivery to minimize long-term storage and prevent overcrowding construction spaces. Contractor shall coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

2. Contractor shall deliver products in undamaged condition in manufacturer's original sealed container or packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

D. Handling:

1. Contractor shall provide equipment and personnel to handle products by methods to prevent soiling, marring or other damage.

2. Contractor shall promptly inspect products on delivery to ensure that products comply with Contract Documents, quantities are correct, and to ensure that products are undamaged and properly protected.

1.09 STORAGE AND PROTECTION

A. Storage and Protection, General: Contractor shall store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.

1. Contractor shall periodically inspect to ensure products are undamaged, and are maintained under required conditions.

2. Contractor shall remove and replace products damaged by improper storage or protection with new products at no change in Contract Sum or Contract Time.

3. Contractor shall store sensitive products in weather tight enclosures.

B. Inspection Provisions: Contractor shall arrange storage to provide access for inspection and measurement of quantity or counting of units.

C. Structural Considerations: Contractor shall store heavy materials away from the structure in a manner that will not endanger supporting construction.

D. Weather-Resistant Storage:

1. Contractor shall store moisture-sensitive products above ground, under cover in a weather tight enclosure or covered with an impervious sheet covering. Contractor shall provide adequate ventilation to avoid condensation.

2. Contractor shall maintain storage within temperature and humidity ranges required by manufacturer's instructions.

3. For exterior storage of fabricated products, Contractor shall place products on raised blocks, pallets or other supports, above ground and in a manner to not create ponding or misdirection of runoff. Contractor shall place on sloped supports above ground.
4. Contractor shall store loose granular materials on solid surfaces in a well-drained area. Contractor shall prevent mixing with foreign matter.

E. Protection of Completed Work:

1. Contractor shall provide barriers, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.
2. Contractor shall remove protective measures when no longer required and prior to Contract Completion review of the Work.
3. Contractor shall comply with additional requirements specified in Section 01 56 00 - Temporary Barriers and Enclosures.

PART 2 – PRODUCTS (N0T USED)

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Installation of Products:

1. Contractor shall comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified and necessary due to Project conditions or are required by authorities having jurisdiction.
2. Contractor shall anchor each product securely in place, accurately located and aligned with other Work.
3. Contractor shall clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Contract Completion review. Contractor shall refer to additional requirements specified in Section 01 74 00 - Cleaning Requirements and Section 01 56 00 - Temporary Barriers and Enclosures.

END OF SECTION 01 61 00

S201-ITB3, Volume 2 - SECTION 01 63 00 – PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

B. General requirements applicable to substitutions of materials, products, equipment and systems.

1.03 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. Substitutions, General: Catalog numbers and specific brands or trade names are used in materials, products, equipment and systems required by the Specifications to establish the standards of quality, utility and appearance required. Alternative products which are of equal quality and of required characteristics for the purpose intended may be proposed for use provided the Contractor complies with provisions of Article 2 of the Contract Agreement, subject to the following provisions.

1. See Section 01 61 00 - Basic Product Requirements for requirements regarding product options.
2. Substitutions will only be authorized by properly executed Change Order or Field Instruction.
3. Note: FORA has no obligation to entertain substitutions.

B. Substitution Provisions:

1. Documentation: Substitutions will not be considered if they are indicated or implied on shop drawing, product data or sample submittals. All requests for substitution shall be by separate written request from Contractor. See paragraph below for documentation required in the submission of request for substitution.
2. Cost and Time Considerations: Substitutions will not be considered unless a net reduction in Contract Sum or Contract Time results to FORA's benefit, including redesign costs, life cycle costs, plan check and permit fees, changes in related Work and overall performance of building systems.
3. Design Revision: Substitutions will not be considered if acceptance will require substantial revision of the Contract Documents or will substantially change the intent of the design, in the opinion of the FORA Construction Manager. The intent of the design shall include functional performance and aesthetic qualities.
4. Data: It shall be the responsibility of the Contractor to provide adequate data demonstrating the merits of the proposed substitution, including cost data and information regarding changes in related Work.

5. Determination by FORA Construction Manager: FORA Construction Manager and FORA consultants will determine the acceptability of proposed substitutions, and FORA Construction Manager will notify Contractor in writing of acceptance or rejection. The determination by the FORA Construction Manager regarding functional performance and aesthetic quality shall be final.
6. Non-Acceptance: If a proposed substitution is not accepted, Contractor shall immediately provide the specified product.
7. Substitution Limitation: Only one request for substitution will be considered for each product.

C. Request for Substitution Procedures: Comply with provisions of Article 2 of the Contract Agreement and the following.

1. Contractor shall prepare a request for substitution and submit the request to FORA's consultant through FORA Construction Manager for review and recommendation for acceptance. Acceptance and approval of substitutions shall be by FORA Construction Manager
    a. Submit a minimum of four copies.
    b. Present the request for substitution using form provided by FORA Construction Manager.
    c. Comply with other administrative requirements shall be as directed by FORA Construction Manager.
2. Substitution requests shall include complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.
3. Substitution requests shall include appropriate product data for the specified product(s) of the specified manufacturer, suitable for use in comparison of characteristics of products.
    a. Include a written, point-by-point comparison of characteristics of the proposed substitute product with those of the specified product.
    b. Include a detailed description, in written or graphic form as appropriate, indicating all changes or modifications needed to other elements of the Work and to construction to be performed by the FORA and by others under separate contracts with FORA that will be necessary if the proposed substitution is accepted.
4. Substitution requests shall include a statement indicating the substitution's effect on the Construction Schedule. Indicate the effect of the proposed substitution on overall Contract Time and, as applicable, on completion of portions of the Work for use by FORA or for work under separate contracts by FORA.
5. Except as otherwise specified, substitution requests shall include detailed cost data, including a proposal for the net change, if any, in the Contract Sum.
6. Substitution requests shall include signed certification that the Contractor has reviewed the proposed substitution and has determined that the substitution, in combination with the cost or time savings, represents an equivalent or superior condition in every respect to product requirements and value indicated or specified in the Contract Documents, and that the substitution is suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.

7. Substitution requests shall include a signed waiver by the Contractor for change in the Contract Time or Contract Sum because of the following:
    a. Substitution failed to perform adequately.
    b. Substitution required changes in on other elements of the Work.
    c. Substitution caused problems in interfacing with other elements of the Work.
    d. Substitution was determined to be unacceptable by authorities having jurisdiction.
8. If, in the opinion of the FORA Construction Manager, the substitution request is incomplete or has insufficient data to enable a full and thorough review of the intended substitution, the substitution may be summarily refused and determined to be unacceptable.

D. Contract Document Revisions:

1. Should a Contractor-proposed substitution or alternative sequence or method of construction require revision of the Contract Drawings or Specifications, including revisions for the FOR A's consultant who is the responsible design professional will make revisions as approved in writing in advance by FORA Construction Manager.
2. Contractor shall pay for services of FORA's consultants, other responsible design professionals and FORA for researching and reporting on proposed substitutions or alternative sequence and method of construction when such activities are considered additional services to the design services contracts of FORA's consultant.
3. Contractor shall pay for costs of services by FORA's consultants, other responsible design professionals and FORA. These costs may include travel, reproduction, long distance telephone and shipping costs reimbursable at cost plus usual and customary mark-up for handling and billing.
4. Contractor shall pay such fees whether or not the proposed substitution or alternative sequence or method of construction is ultimately accepted by FORA and a Change Order is executed.

PART 2 – PRODUCTS (NOT USED)

PART 3– PRODUCTS (NOT USED)

END OF SECTION 01 63 00

S201-ITB3, Volume 2 - SECTION 01 65 00 – PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

B. Protect products scheduled for use in the work by means including, but not necessarily limited to, those described in this Section.

1.03 RELATED SECTIONS

C. Section 01 61 00 - Basic Product Requirements

D. Section 01 66 00 - Product Storage and Handling Requirements

1.04 QUALITY ASSURANCE

E. Contractor's Quality Assurance: Contractor shall include within the Contractor's quality assurance program procedures as necessary to ensure protection of products upon delivery. Contractor shall be solely responsible for all products upon delivery to Work site and in off-site storage.

1. Contractor shall schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

2. Contractor shall coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Contractor shall inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

F. Manufacturer's Requirements: Contractor shall determine and comply with manufacturer's instructions and recommendations for product handling.

G. Packaging: Contractor shall deliver products to Work site in manufacturer's original containers, with labels intact and legible.

1. Products delivered to Work site shall be in undamaged condition, in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

2. Contractor shall maintain packaged materials with seals unbroken and labels intact until time of use.

3. Products will be subject to rejection if they do not bear required identification or are unsuitably packaged.

H. Delivery:

1. Contractor shall address and deliver products to Project site. Do not deliver products to FORA. Address deliveries to Contractor and Project name. Do not address products "care of" FORA.

2. FORA will not be responsible for misaddressed and misdelivered products, including claims for damage and delay.

I. Damaged Products: In event of damage, Contractor shall promptly make replacements and repairs to packaging and contents, as acceptable to FORA Construction Manager, at no change in Contract Sum and Contract Time.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 65 00

S201-ITB3, Volume 2 - SECTION 01 66 00 – PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Storage and protection requirements to ensure that products intended for use in the Work will not be damaged and will not deteriorate from time of delivery to time of incorporation into the Work.

1.03 RELATED SECTIONS

A. Section 01 52 50 - Construction Staging Areas

B. Section 01 56 00 - Temporary Barriers and Enclosures

C. Section 01 61 00 - Basic Product Requirements

D. Section 01 65 00 - Product Delivery Requirements

1.04 QUALITY ASSURANCE

A. Contractor's Quality Assurance: Contractor shall include within the Contractor's quality assurance program procedures as necessary to ensure protection of products after delivery to Work site. Contractor shall be solely responsible for all products stored on site and in off-site storage.

1. Contractor shall protect stored products from damage.

2. Contractor shall store products to allow for inspection and measurement of quantity or counting of units.

3. Contractor shall store materials in a manner that will not endanger Project structure.

4. Contractor shall store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.

B. Manufacturer's Handling Requirements: Contractor shall determine and comply with product manufacturer's written instructions for handling products.

C. Manufacturer's Storage Requirements: Contractor shall determine and comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

D. Storage: Contractor shall provide secure locations and enclosures at Project site for storage of materials and equipment. Contractor shall coordinate location with Contractor storage and staging areas. Refer to Section 01 52 00 - Construction Facilities and Section 01 52 50 - Construction Staging Areas.

   1. Contractor shall maintain packaged materials with seals unbroken and labels intact until time of use.

   2. Products will be subject to rejection if they do bear required identification or are unsuitably packaged.

E. Damaged Products: In event of damage, Contractor shall promptly make replacements and repairs to packaging and contents, as acceptable to FORA Construction Manager, at no change in Contract Sum and Contract Time.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 66 00

S201-ITB3, Volume 2 - SECTION 01 72 00 – PREPARATION REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Requirements for preparation prior to installing, applying and placing products to determine acceptable conditions for the Work.

B. Layout of the Work and other engineering services necessary to accomplish the Work.

1.03 RELATED SECTIONS

A. Section 01 3 10 - Coordination

B. Section 01 31 20 - Project Meetings

C. Section 01 32 10 - Construction Progress Schedules

D. Section 01 73 20 - Cutting and Patching

E. Section 01 77 00 - Contract Closeout Procedures

F. Section 01 78 10 - Survey and Layout Data.

G. Selective Demolition: Removal of existing construction in preparation of performance of specified Work, as represented on drawings.

1.04 LAYOUT OF WORK

A. Surveyor: Contractor shall select and pay for services of a land surveyor, registered in the State of California, for proper performance of the Work.

1. Services of surveyor shall be suitable for layout and verification of location of buildings and site elements.

2. For the Project record, Contractor shall submit the name, address and telephone number of land surveyor before starting survey Work.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PREPARATION

A. Manufacturer's Requirements: Contractor shall determine product manufacturer's requirements and recommendations prior to commencing Work.

B. Preparations: Contractor shall perform preparation actions according to manufacturer's instructions and recommendations and according to specified procedures.

1. Contractor shall perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.

2. Contractor shall notify FORA Construction Manager in writing of unsuitable conditions preventing proper performance of the Work.

C. Existing Utility Information: Contractor shall furnish information to serving utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Contractor shall coordinate with FORA Construction Manager and with authorities having jurisdiction.

D. Existing Utility Interruptions: Contractor shall not interrupt utilities serving facilities occupied by others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Contractor shall notify FORA Construction Manager not less than two working days in advance of proposed utility interruptions.

2. Contractor shall not proceed with utility interruptions without written permission from FORA Construction Manager.

E. Field Measurements: Contractor shall take field measurements as required to fit the Work properly. Contractor shall recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, Contractor shall verify dimensions of other construction by field measurements before fabrication. Contractor shall coordinate fabrication schedule with construction progress to avoid delaying the Work.

F. Space Requirements: Contractor shall verify space requirements and dimensions of items shown diagrammatically on Drawings.

G. Review of Contract Documents and Field Conditions: Immediately upon discovery of the need for clarification of the Contract Documents, Contractor shall submit a Request for Interpretation (RFI) to FORA Construction Manager. Contractor shall include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Contractor shall submit requests in accordance with requirements specified in Section 01 31 13.1 - Requests for Interpretation (RFI), using form as directed by FORA Construction Manager.

H. Verification of Construction Layout: Before proceeding to lay out the Work, Contractor shall verify layout information shown on Drawings, in relation to the property survey and existing benchmarks, and locate survey reference points. If discrepancies are discovered, Contractor shall promptly notify FORA Construction Manager.

3.02 FIELD ENGINEERING

A. Examination: Contractor shall verify locations of survey control and reference points prior to starting Work. If discrepancies are discovered, Contractor shall promptly notify FORA Construction Manager.

B. Survey Control and Reference Points: Contractor shall locate and protect survey control and reference points. Control datum for survey shall be as indicated on Civil Drawings. Notwithstanding the data on Civil Drawings, Contractor shall use NAD 83 State Plane Coordinate System for survey control and reference points.

1. Business and Professions Code section 8771 provides for the preservation of Survey Monuments in construction projects. This legislation mandates that, prior to construction, monuments shall be referenced in the field and "Corner Records" shall be prepared for filing in the Office of the County Surveyor. Contractor shall ensure that these shall be performed prior to Contract Completion of the Work.

2. Contractor shall comply with requirements of authorities having jurisdiction for survey monumentation preservation on capital improvement projects where monumentation points are present.

3. Contractor shall be responsible for preparing and submitting proper documentation to the Office of the County Surveyor in compliance with Business and Professions Code section 8771.

4. Contract Completion and release of retainage shall be contingent upon obtaining documentation from Contractor's project surveyor or engineer that monuments have been set or restored and that Corner Records have been filed with and to the satisfaction of the County Surveyor.

5. All costs and actions necessary for compliance with Business and Professions Code section 8771 shall be included in the Contract Sum and Contract Time.

3.03 SURVEYING AND FIELD ENGINEERING SERVICES

A. Surveying and Field Engineering Services: Contractor shall provide surveying and field engineering services as necessary for performance of the Work.

1. Contractor shall be responsible for the accuracy and adequacy of surveying and field engineering services.

2. Contractor shall utilize recognized engineering practices.

3. Contractor shall check the location, level and plumb, of every major element as the Work progresses.

4. Contractor shall preserve construction survey stakes and marks for the duration of their usefulness.

5. If construction survey stakes are lost or disturbed, and require replacement, Contractor shall perform replacement at no change in Contract Sum and Contract Time.

6. Contractor shall excavate all holes necessary for line and grade stakes.

B. Surveying for Layout and Control of the Work: Contractor shall establish elevations, lines and levels for all Work under the Contract. Contractor shall locate and lay out by instrumentation and similar appropriate means:

1. Site improvements, including pavements, curbs, headers, sewers, storm drains, structures, and paving. Note on Project Record Drawings utility locations, slopes and invert elevations.
2. Stakes for cutting, filling, grading and topsoil placement, to establish finished grade or flow line indicated on Contract Drawings.
    a. Contractor shall preserve construction survey stakes and marks for the duration of their usefulness.
    b. If construction survey stakes are lost or disturbed, and require replacement, Contractor shall perform replacement at no change in Contract Sum and Contract Time.
    c. Contractor shall excavate all holes necessary for line and grade stakes.
3. Grid or axis for structures, building foundation, column locations and ground floor elevations.
4. Contractor shall establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
5. Contractor shall establish dimensions within tolerances indicated. Contractor shall not scale Drawings to obtain required dimensions.
6. Contractor shall inform installers of lines and levels to which they must comply.
7. When deviations from required lines and levels exceed allowable tolerances, Contractor shall notify University's Representative, Architect and Project Inspector.
8. Contractor shall close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Monuments: Contractor shall establish a minimum of two permanent monuments on site, referenced to established control points. Contractor shall record locations, with horizontal and vertical data, on Project Record Drawings.

1. In accordance with Business and Professions Code section 8772, any monument set by a licensed land surveyor or registered civil engineer to mark or reference a point on a property or land line shall be permanently and visibly marked or tagged with the certificate number of the surveyor or civil engineer setting it, each number preceded by the letters "L.S." or "R.C.E." respectively, as the case may be, or, if the monument is set by a public agency, it shall be marked with the name of the agency and the political subdivision it serves.
2. Nothing in this Section shall prevent the inclusion of other information on the tag which will assist in the tracing or location of survey records which relate to the tagged monument.
3. Contractor shall ensure that centerline ties filed with the County Surveyor will be checked for compliance with this law.

D. Site Grading Verification: Upon completion of grading, Contractor shall survey graded areas and establish that elevations are correct and within acceptable tolerances for paving and finish grading.

E. Verification of Work: Contractor shall periodically verify layout and completed conditions of the Work by same means.

END OF SECTION 01 72 00

S201-ITB3, Volume 2 - SECTION 01 66 00 – EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. General requirements for installing, applying and placing products.

B. General requirements for correction of defective Work.

1.03 RELATED SECTIONS

A. Section 01 31 20 - Project Meetings: Pre-installation and coordination conferences where procedures for installing, applying and placing products prior to performance of the Work.

1.04 EXECUTION

A. Manufacturer's Requirements: Contractor shall determine product manufacturer's requirements and recommendations prior to commencing Work.

B. Execution: Contractor shall perform installation, application and placement actions according to manufacturer's instructions and recommendations and according to specified procedures.

1. Contractor shall perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.

2. Contractor shall notify FORA Construction Manager in writing of unsuitable conditions preventing proper performance of the Work.

PART 2 – PRODUCTS (NOT USED

PART 3 – EXECUTION (NOT USED)

3.1 INSTALLATION, APPLICATION AND PLACEMENT OF PRODUCTS

A. Manufacturer's Instructions: Contractor shall comply with manufacturer's written instructions and recommendations for installing, applying, placing and finishing products.

B. Installation, Application and Placement, General: Contractor shall locate the Work and components of the Work accurately, in correct alignment, orientation and elevation, as indicated.

1. Contractor shall make vertical work plumb and make horizontal work level.

2. Where space is limited, Contractor shall install components to maximize space available for maintenance and ease of removal for replacement.

3. Contractor shall conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

4. Contractor shall maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling, unless otherwise directed.

5. Contractor shall install products at the time and under conditions that will ensure the best possible results. Contractor shall maintain conditions required for product performance until acceptance of the Work.

6. Contractor shall conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

C. Tools and Equipment: Contractor shall not use tools or equipment that produce harmful noise levels.

D. Anchors and Fasteners: Contractor shall provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, Contractor shall mount components at heights directed by Architect.

2. Contractor shall allow for building movement, including thermal expansion and contraction.

E. Hazardous Materials: Contractor shall use products, cleaners, and installation materials that are not considered hazardous.

F. Cleaning: Contractor shall comply with requirements specified in Section 01 74 00 - Cleaning Requirements. See individual product Specifications Sections for specific cleaning procedures to be performed.

G. Protection: Contractor shall provide barriers, covers and other protective devices as recommended by manufacturer and complying with general requirements specified in Section 01 56 00 - Temporary Barriers and Enclosures.

1. Contractor shall comply with manufacturer's written instructions for temperature and relative humidity.

2. See individual product Specifications Sections for specific protective measures to be provided.

H. Limiting Exposures: Contractor shall supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.2 CORRECTION OF THE WORK

A. Correction of the Work, General: Contractor shall repair or remove and replace defective construction. Contractor shall restore damaged substrates and finishes to match original and new surrounding construction.

   1. Contractor shall comply with requirements in Section 01 73 20 - Cutting and Patching Requirements.

   2. Repairing shall include replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

   3. Contractor shall remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

   4. Contractor shall repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

   5. Contractor shall remove and replace chipped, scratched, and broken glass.

B. Restoration of Existing Conditions: Contractor shall restore permanent facilities used during construction to their original condition or to match new construction.

END OF SECTION 01 73 00

S201-ITB3, Volume 2 - SECTION 01 73 20 – CUTTING AND PATCHING REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Requirements and procedural requirements for cutting and patching, including:
   1. Cutting and patching not required to be performed as part of the Work specified in other Sections.
   2. Cutting and patching existing construction altered or disturbed to accommodate Work.
   3. Cutting and patching existing construction damaged or defaced during Work as required to restore to existing or better condition at the time of award of Contract.
   4. Cutting and patching required to:
      a. Install or correct non-coordinated Work.

B. Refer to other Sections and drawings for specific requirements of the extent and limitations applicable to cutting and patching, demolishing, or altering existing construction of individual parts of the Work.

1.03 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work

B. Section 01 56 00 - Temporary Barriers and Enclosures

C. Section 01 74 00 - Cleaning Requirements

1.04 SUBMITTALS

A. Written Requests for Cutting and Alteration: Coordinate with requirements as specified on drawings
   1. Contractor shall submit written request in advance of cutting or alteration which affects:
      a. Work by FORA's construction forces or by others under separate contract with FORA.
      b. Existing construction not otherwise indicated to be revised by Work under the Contract.
   2. Contractor shall include in requests for cutting and alteration:

a. Identification of Project.

b. Location and description of affected Work. Include shop drawings as necessary to identify locations and communicate descriptions.

c. Explanation of necessity for cutting and patching.

d. Description of proposed Work and products to be used.

e. Alternatives to cutting and patching.

f. Effect on existing construction.

g. Effect on work by FORA's construction forces or by separate contractors performing work for FORA.

3. Contractor shall include written evidence that those performing work under separate contract for FORA have been notified and acknowledge that cutting and patching work will be occurring. Contractor shall include written permission for intended cutting and patching, included scheduled times.

4. Contractor shall indicate date and time cutting and patching Work will be performed, including duration.

5. Contractor shall describe the extent of cutting and patching required and how it is to be performed.

6. Contractor shall describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.

7. Contractor shall list products to be used and firms or entities that will perform work.

8. Contractor shall list utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Contractor shall indicate how long service will be disrupted.

9. Approval by the FORA Construction Manager to proceed with cutting and patching does not waive the FORA Construction Manager right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

10. Contractor shall minimize effects on FORA operations and on concurrent operations construction by other contractors.

PART 2 - PRODUCTS

2.01 PATCHING MATERIALS

A. Patching at Paving: At Portland cement concrete paving, Contractor shall use concrete mix with maximum 3/8-inch aggregate and minimum 3000 psi 28-day compressive strength. Contractor shall provide dowels to existing paving and reinforce new paving with minimum No. 3 reinforcing steel bars at 16-inches on center each way. Welded wire fabric reinforcement will not be acceptable.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examination, General: Before cutting existing surfaces, Contractor shall examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Contractor shall take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered. Contractor shall inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

1. Before proceeding, Contractor shall meet at the site with parties involved in cutting and patching, including asbestos abatement, mechanical and electrical trades. Contractor shall review areas of potential interference and conflict. Contractor shall coordinate procedures and resolve potential conflicts before proceeding.

2. Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Contractor to be acceptable.

3. After uncovering existing Work, Contractor shall inspect conditions affecting proper accomplishment of Work.

3.02 PREPARATION

A. Protection: Contractor shall protect existing facilities during cutting and patching to prevent damage. Contractor shall provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

B. Contractor shall avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

C. Contractor shall take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building lateral.

D. Weather Protection: Contractor shall provide protection from elements for areas which may be exposed by uncovering Work. Contractor shall maintain excavations free of water.

3.03 CUTTING AND PATCHING

A. Cutting and Patching, General: Contractor shall execute cutting, fitting, and patching, excavation and fill, as necessary to complete the Work. Contractor shall employ skilled workers to perform cutting and patching. Contractor shall proceed with cutting and patching at the earliest feasible time and complete without delay. Contractor shall:

1. Coordinate installation or application of products for integrated Work. Avoid having to cut and patch new substrates and finishes.

2. Uncover completed Work as necessary to install or apply products out of sequence.

3. Cut, remove and replace defective and non-conforming Work.

4. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of

pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

5. Concrete pavement, which has not been overlaid with asphalt concrete, shall be removed to neatly sawed edges. Saw cuts shall be made to a minimum depth of 1-1/2 inches. If a saw cut falls within 3 feet of a construction joint, cold joint, expansion joint, or edge, the concrete shall be removed to the joint or edge. The edges of existing concrete pavement adjacent to trenches, where damaged subsequent to saw cutting of the pavement, shall again be saw cut to neat, straight lines for the purpose of removing the damaged pavement areas. Such saw cuts shall be either parallel to the original saw cuts or shall be cut on an angle that departs from the original saw cut not more than 1 inch in each 6 inches.

6. Concrete Curb, Walk, Gutters, Cross Gutters, Curb Ramps, Driveway, and Alley Intersections. Concrete shall be removed to neatly sawed edges with saw cuts made through the entire thickness. Concrete sidewalk or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than 30 inches (750 mm) in either length or width. If the saw cut in sidewalk or driveway would fall within 30 inches (750 mm) of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge, except that where the saw cut would fall within 12 inches (300 mm) of a score mark, the saw cut shall be made in and along the score mark. Curb and gutter shall be sawed on a neat line at right angles to the curb face.

B. Cutting: Contractor shall:

1. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations. Provide appropriate surfaces to receive final finishing.

2. Execute cutting and patching of weather-exposed, moisture-resistant elements and surfaces exposed to view by methods to preserve weather, moisture and visual integrity.

C. Patching: Contractor shall inspect and test patched areas to demonstrate integrity of the installation.

3.04 CLEANING

A. Cleaning: Contractor shall thoroughly clean areas and spaces where cutting and patching is performed or used as access. Contractor shall remove completely paint, mortar, oils, putty and items of similar nature. Contractor shall thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Contractor shall restore damaged pipe covering to its original condition.

END OF SECTION 01 73 20

S201-ITB3, Volume 2 - SECTION 01 74 00 – CLEANING REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Cleaning during construction.

B. Cleaning for Contract Completion review and final acceptance of the Work.

1.03 RELATED SECTIONS

A. Additional Requirements: Cleaning for specific products or elements of Work are described in individual product Specification Sections as represented on drawings.

1.04 SUBMITTALS

A. Product List: Contractor shall submit complete list of all cleaning agents and materials for FORA Construction Manager's review and approval.

B. Cleaning Procedures: Contractor shall submit description of cleaning processes, agents and materials to be used for final cleaning of the Work. Processes and degree of cleanliness shall be as directed by FORA Construction Manager. All cleaning processes, agents and materials shall be subject to FORA Construction Manager's review and approval.

1.05 QUALITY ASSURANCE

A. Cleaning and Disposal Requirements, General: Contractor shall conduct cleaning and disposal operations in compliance with all applicable codes, ordinances and regulations, including environmental protection laws, rules and practices.

B. Cleaning Workers: Contractor shall employ experienced workers or professional cleaners for final cleaning. Contractor shall clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Contractor shall comply with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents and Materials: Contractor shall use only those cleaning agents and materials which will not create hazards to health or property and which will not damage or degrade surfaces. Contractor shall:

1. Use only those cleaning agents, materials and methods recommended by manufacturer of the material to be cleaned.
2. Use cleaning materials only on surfaces recommended by cleaning agent manufacturer.

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION

A. Garbage Control: Contractor shall control accumulation of debris, waste materials and rubbish. Periodically, Contractor shall dispose of debris, waste and rubbish off-site in a legal manner.

B. Cleaning, General: Contractor shall clean sidewalks, driveways and streets frequently to maintain public thoroughfares free of dust, debris and other contaminants.

C. Parking Area Cleaning: Contractor shall keep parking areas clear of construction debris, especially debris hazardous to vehicle tires.

D. Thoroughfare Clearing and Cleaning: Contractor shall keep site accessways, parking areas and building access and exit facilities clear of mud, soiling and debris. Contractor shall:

1. Remove mud, soil and debris and dispose in a manner which will not be injurious to persons, property, plant materials and site.
2. Comply with runoff control requirements stated above and as required by governing authorities having jurisdiction.

E. Cleaning Frequency: At a minimum, Contractor shall clean Work areas daily.

F. Failure to Clean: Should cleaning by Contractor not be sufficient or acceptable to FORA Construction Manager cleaning and deduct costs for such cleaning from sums owed to Contractor.

3.02 CONTRACT COMPLETION REVIEW CLEANING, GENERAL

A. Contract Completion Review Cleaning, General: Contractor shall execute a thorough cleaning prior to Contract Completion review by FORA Construction Manager. Contractor shall complete final cleaning before submitting final Application for Payment. Contractor shall:

1. Conduct cleaning in compliance with regulations of authorities having jurisdiction and industrial safety standards for cleaning.
2. Employ professional building cleaners to thoroughly clean building.
3. Complete cleaning operations specified below before requesting inspection for Certification of Completion. Contractor shall clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.

B. Waste Disposal, Contractor shall:

1. Remove waste materials from the site and conduct disposal in a lawful manner.
2. Do not burn waste materials.

3. Do not bury debris or excess materials on the Project Site.
4. Do not discharge volatile, harmful or hazardous materials into drainage systems.
5. Where extra materials of value remaining after completion of associated work have become the FORA's property, arrange for disposition of these materials as directed.

3.03 EXTERIOR CLEANING

A. Site Cleaning: Contractor shall broom clean exterior paved surfaces. Contractor shall rake clean other surfaces of the grounds. Contractor shall:
   1. Remove from the site all construction waste, unused materials, excess soil and other debris resulting from the Work. Legally dispose of waste.

3.04 PEST CONTROL

A. Pest Control: Contractor shall engage an experienced, licensed exterminator to inspect and rid the project area of insects, rodents and other pests.
   1. Exterminator shall prepare and submit report of inspection and extermination.
   2. Extermination materials shall comply with applicable pest control regulations and not leave toxic residue harmful to humans.

3.05 CLEANING INSPECTION

A. Cleaning Inspection: Prior to Final Payment or acceptance by FORA for partial occupancy or beneficial use of the premises, Contractor and FORA Construction Manager shall jointly conduct an inspection of interior and exterior surfaces to verify that entire Work is acceptably clean.
B. Inadequate Cleaning: Should final cleaning be inadequate, as determined by FORA Construction Manager, and Contractor fails to correct conditions, FORA may engage cleaning service under separate contract and deduct cost from Contract Sum.

END OF SECTION 01 74 00

S201-ITB3, Volume 2 - SECTION 01 78 90 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Requirements for Project Record Documents to be submitted for Contract closeout.

1.03 PROJECT RECORD DOCUMENTS

A. Project Record Documents, General: Contractor shall not use Record Documents for construction purposes. Contractor shall protect from deterioration and loss in a secure, fire-resistive location

B. Record Drawings: Contractor shall record information continuously as Work progresses. Contractor shall not conceal Work permanently until all required information is recorded. Contractor shall:

1. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual cut & cap of utilities as accurately as possible.

2. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

3. Legibly and to scale, mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the work.

4. Note related Change Order numbers where applicable.

5. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

6. Store Record Documents separate from documents used for construction.

C. Submission:

1. Contractor shall keep Project Record Documents current, as they will be reviewed for completeness by Architect, Inspector, and University's Representative as condition for certification of each Progress Payment Application.

2. Prior to the date of the Notice of Completion, Contractor shall submit marked Record Documents to Architect for review, approval and further processing.

PART 2 – PRODUCTS (NOT USED)

PART 3– PRODUCTS (NOT USED)

END OF SECTION 01 78 90

S201-ITB3, Volume 2 - SECTION 31 14 00– STOCKPILING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Requirements for stockpiling construction wastes.

1.03 RELATED SECTIONS

A. Section 01 33 55 – Safety and Health Procedures

B. Section 01 57 00 – Temporary Controls

C. Section 01 33 00 - Submittal Procedures

1.04 SUMMARY

A. Construction of lined stockpile areas for all potential impacted soil or waste materials requiring stockpiling.

B. Movement, drying and monitoring of stockpiled materials.

C. Management of wastes and soils in stockpiles, including temporary environmental controls and covers.

D. Relocation or construction of additional stockpile areas to accommodate stockpiled materials or as necessary by the Contractor's phasing of the Work.

E. Installation of erosion and sediment control measures around stockpile area.

F. Demolition of stockpile areas including linings and any impacted soils underlying the stockpiles as a result of the failure of any such linings.

1.05 SUBMITTALS

A. All submittals shall be prepared in accordance with Section 01 33 00 Submittal Procedures.

B. Stockpiling plans showing locations and details for stockpiles

C. Stockpile Management Plan, including phasing, equipment, storm water controls, odor and dust management, and demolition.

D. Contractor shall obtain any necessary permits for stockpiling of construction materials.

PART 2 – PRODUCTS

2.01 GEOMEMBRANE LINERS AND COVERS

A. Geomembrane liners and covers shall be either high density polyethylene (HDPE) or linear low density polyethylene (LLDPE) with a minimum thickness of 10mm.

2.02 EQUIPMENT

A. General

1. Equipment used in performing the Work shall be in good working order and shall be operated in accordance with manufacturer's instructions and recommendations.

2. All the equipment used in management of stockpiles shall be cleaned properly prior to leaving stockpile areas.

3. Any soils contaminated by discharge of fluids from leaky or faulty equipment or stockpile environmental control and containment systems shall be removed and properly disposed. The contaminated area shall be backfilled with clean soil, at no additional cost to the project.

PART 3 – EXECUTION

3.01 STOCKPILE LINER DESIGN

A. Minimum Stockpile Liner Design shall include use of geomembrane to protect against contamination of underlying soil. Geomembrane shall be either high density polyethylene (HDPE) or linear low density polyethylene (LLDPE) as described in Part 2 and shall be anchored in anchor trenches outside the limits of the stockpile footprint.

B. Stockpile liners shall be graded in a manner to control and contain storm water run-off from a 100-year 24-hour storm event.

C. Construct stockpiles in accordance with the approved Stockpile Management Plan.

3.02 STORM WATER MANAGEMENT

A. Storm water management includes handling, storage and disposal of surface water generated within stockpile areas during construction.

B. Storm water that comes into contact with stockpiles shall be collected, tested and, if contaminated, treated and discharged according to the discharge permit obtained by the Contractor. All testing and treatment shall be paid for by the Contractor.

C. All stockpiled materials shall be placed and stored in accordance with the requirements of the Storm Water Pollution Prevention Plan.

D. Contractor shall take measures to prevent contact of storm water and waste, including but not limited to use of berms, tarps and grading to divert run off.

3.03 STOCKPILE CONSTRUCTION AND MANAGEMENT

A. Contractor shall maintain stockpiles until the stockpiled material is transported off site for disposal or is classified and accepted by the Engineer to be reused as fill. Import granular fill stockpiles shall be maintained and kept segregated from other materials until the material is placed in designated excavation areas.

B. Management of stockpiles, including location within the work area, phasing of their construction, and abandonment shall be at the sole discretion of the Contractor, provided adequate measures for drainage, storm water control and environmental protection are implemented as approved by the Engineer.

C. Stockpiles shall be located such that they will not interfere with construction operations or designated traffic routes. Separate stockpiles shall be maintained for materials as directed by the Engineer.

D. The ground surface at stockpile locations shall be cleared, grubbed and proof-rolled. Stockpiles shall be protected from contamination that may affect the suitability of material for backfill.

E. Stockpiles shall be constructed at slopes no steeper than 2:1 (horizontal: vertical) and graded to drain. Outside slope shall be track walked to protect it from erosion.

F. Stockpiles shall not be located close to the edge of steep slopes, where the stockpiles could cause slope instability as determined by the Engineer.

G. Stockpiled wastes shall be covered at the end of each day or prior to a predicted wind or rain event.

H. Storage of wastes within stockpiles shall be minimized to the extent possible. After the Contractor has identified the disposition of stockpiled materials, the Contractor shall load and haul the materials to the final disposal location within five (5) working days.

END OF SECTION 31 14 00

S201-ITB3, Volume 2 – 31 23 10 - TRENCHING, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. This section includes materials, testing, and installation for trench excavation, backfilling, and compacting.

1.03 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures
B. Section 33 04 00 – Abandonment of Wet Utilities
C. Section 33 11 00 – Water Distribution Piping
D. Section 31 40 00 – Sheeting Shoring and Bracing

1.04 DEFINITIONS

A. Pavement Zone - The pavement zone includes the asphalt concrete and aggregate base pavement section placed over the trench backfill.

B. Street Zone - The street zone is the top 18 inches of the trench or depth determined by the jurisdictional agency immediately below the pavement zone in paved areas.

C. Trench Zone - The trench zone includes the portion of the trench from the top of the pipe zone to the bottom of the street zone in paved areas or to the existing surface in unpaved areas.

D. Pipe Zone - The pipe zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level 12 inches above the top of the pipe. Where multiple pipes or conduits are placed in the same trench, the pipe zone shall extend from the bottom of the lowest pipes to a horizontal level 12 inches above the top of the highest or topmost pipe.

E. Pipe Bedding - The pipe bedding shall be defined as a layer of material immediately below the bottom of the pipe or conduit and extending over the full trench width in which the pipe is bedded. Thickness of pipe bedding shall be as shown on the drawings or as described in these specifications for the particular type of pipe installed.

1.05 STANDARDS

A. American Society for Testing and Materials (ASTM)

A. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3))

B. ASTM D 4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table

C. ASTM D 75 - Standard Practice for Sampling Aggregates

1.06 SUBMITTALS

A. All submittals shall follow the requirements of Section 01 33 00 Submittal Procedures

B. All product requirements listed in Part 2.

1.07 QUALITY ASSURANCE

A. Determine the density of soil in place by the use of a sand cone, drive tube, or nuclear tester.

B. Determine laboratory moisture-density relations of existing soils by ASTM D 1557.

C. Determine the relative density of cohesionless soils by ASTM D 4253.

D. Sample backfill materials by ASTM D 75.

E. Express "relative compaction" as the ratio, expressed as a percentage of the in place dry density to the laboratory maximum dry density.

F. Compaction shall be deemed to comply with the specifications when no test falls below the specified relative compaction.

G. The developer will secure the services of a soils tester and pay the costs of all compaction testing. On capital projects, the District will secure the service of a soils tester and pay the cost of initial testing. The Contractor will be responsible for the cost of all retests in failed areas. Test results will be furnished by the District representative.

PART 2 - MATERIALS

2.01 NATIVE EARTH BACKFILL

A. Native earth, segregated from topsoil, may be used for trench backfill.

B. Clean native sand, free from roots, and debris, or imported sand, may be used in the pipe zone.

2.02 IMPORTED BACKFILL MATERIAL

A. Whenever the excavated material is not suitable for backfill, the Contractor shall arrange for and furnish suitable imported backfill material that is capable of attaining the required relative density.

B. The Contractor shall dispose of the excess trench excavation as specified in the preceding section. Backfilling with imported material shall be done in accordance with the methods described herein.

2.03 GRANULAR MATERIAL

A. Granular material shall be defined as soil having a minimum sand equivalent of 30 as determined in accordance with State of California, Division of Highways, Test "California 217," with not more than 20% passing a 200-mesh sieve.

2.04 IMPORTED SAND

A. Imported sand shall have a minimum sand equivalent of 30 per State of California, Division of Highways, Test "California 217" with 100% passing a 3/8-inch sieve and not more than 20% passing a 200-mesh sieve. Certification that the sand meets this requirement shall be provided.

2.05 CRUSHED ROCK AND GRAVEL

A. Crushed rock shall be the product of crushing rock or gravel. Fifty percent of the particles retained on a 3/8-inch sieve shall have their entire surface area composed of faces resulting from fracture due to mechanical crushing. Not over 5% shall be particles that show no faces resulting from crushing. Less than 10% of the particles that pass the 3/8-inch sieve and are retained on the No. 4 sieve shall be weatherworn particles. Gravel shall not be added to crushed rock.

B. Gravel shall be defined as particles that show no evidence of mechanical crushing, are fully weatherworn, and are rounded. For pipe bedding, where gravel is specified, crushed rock may be substituted or added.

C. Where crushed rock or gravel is specified in the bedding details on the plans, the material shall have the following gradations:

Sieve Size	1-1/2 Inch Max Gravel % Passing	1-inch Max Gravel % Passing	¾ Inch Max Crushed Rock % Passing
2”	100		
1-1/2”	90 – 100	100	
1”	20 – 55	90 – 100	100
¾”	0 - 15	60 – 80	90 – 100
½”	-	-	30 – 60
3/8”	0 - 5	0 - 15	0 - 20
No. 4	-	0 - 5	0 - 5

2.06 SAND-CEMENT SLURRY

A. Sand-cement slurry shall consist of one sack (94 pounds) of Portland cement per cubic yard of sand and sufficient moisture for workability.

PART 3 - EXECUTION

3.01 SAFETY

A. All excavations shall be performed, protected, and supported as required for safety and in the manner set forth in the operation rules, orders, and regulations prescribed by the Division of Industrial Safety of the State of California.

B. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrians and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely refilled.

C. No trench or excavation shall remain open during non-working hours. The trench or excavation shall be covered with steel plates, spiked in place, or secured with temporary A.C. pavement around the edges, or backfilled.

3.02 COMPACTION REQUIREMENTS

A. Unless otherwise shown on the drawings or otherwise described in the specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as described below:

1. Pipe zone and pipe base: 95% relative compaction

2. Trench zone not beneath paving: 90% relative compaction

3. Trench zone to street zone in paved areas: 95% relative compaction

4. Street zone in paved areas: per agency requirements or 95% relative compaction. The most stringent agency requirements shall prevail

5. Rock refill material for foundation stabilization: 90% relative density

6. Rock refill for over excavation: 90% relative density

3.03 MATERIAL REPLACEMENT

A. Removal and replacement of any trench and backfill material which does not meet the specifications shall be the Contractor's responsibility.

3.04 CLEARING AND GRUBBING

A. Areas where work is to be performed shall be cleared of all trees, shrubs, rubbish, and other objectionable material of any kind which, if left in place, would interfere with the proper performance or completion of the contemplated work, would impair its subsequent use, or would form obstructions therein.

B. Organic material from clearing and grubbing operations will not be incorporated in the trench backfill.

C. Organic material from clearing and grubbing operations will be disposed of at a proper waste disposal facility.

3.05 SIDEWALK, PAVEMENT, AND CURB REMOVAL

A. Saw cut bituminous or concrete pavements regardless of their thickness prior to excavation for the structure in accordance with the requirements of the city, or agency having jurisdiction.

B. Haul removed pavement and concrete materials from the site, to a proper disposal facility. These materials are not permitted for use as trench backfill. If the material to be removed exceeds 50 cubic yards, the Contractor shall obtain a haul route permit from the city(s) having jurisdiction.

3.06 TRENCHING

A. Excavation for pipe, fittings, and appurtenances shall be open trench to the depth and in the direction necessary for the proper installation of the facilities as shown on the plans.

B. Trench banks shall be kept as near to vertical as possible and shall be properly braced and sheeted.

3.07 BRACING

A. The Contractor's design and installation of bracing and shoring shall be consistent with the rules, orders, and regulations of the State of California Construction Safety Orders. See SECTION 31 40 00 Sheeting Shoring and Bracing.

B. Excavations shall be so braced, sheeted, and supported that they will be safe such that the walls of the excavation will not slide or settle and all existing improvements of any kind, either on public or private property, will be fully protected from damage.

C. The sheeting, shoring, and bracing shall be arranged so as not to place any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide ample strength.

D. Care shall be exercised in the drawing or removal of sheeting, shoring, bracing, and timbering to prevent the caving or collapse of the excavation faces being supported.

3.08 TRENCH WIDTHS

A. Excavation and trenching shall be true to line so that a clear space of not more than 8 inches or less than 6 inches in width is provided on each side of the largest outside diameter of the pipe in place measured at a point 12 inches above the top of the pipe. For the purpose of this article, the largest outside diameter shall be the outside diameter of the bell on bell and spigot pipe or the pipe collar.

B. Where the sewer trench width, measured at a point 12 inches above the top of the bell of the pipe, is wider than the maximum set forth above, the trench area around the pipe shall be backfilled with crushed rock, Class B concrete, or slurry to form a cradle for the pipe at the discretion of the Marina Coast Water District (MCWD) representative.

3.09 DE-WATERING

A. The Contractor shall provide and maintain at all times during construction ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the work. De-watering shall be done by methods that will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. De-watering methods may include well points, sump points, suitable rock or gravel placed below the required bedding for drainage and pumping, temporary pipelines, and other means, all subject to the approval of the District representative. Water shall be discharged in accordance with the requirements of the project's NPDES permit.

B. <u>In no event shall the sewer system be used as drains for de-watering the construction trenches.</u>

C. De-watering shall commence when groundwater is first encountered and shall be continuous until such times as water can be allowed to rise. No concrete shall be poured in water, nor shall water be allowed to rise around the concrete or mortar until it has set at least eight hours.

3.10 EXCAVATED MATERIAL

A. All excavated material shall not be stockpiled in a manner that will create an unsafe work area or obstruct driveways. Gutters shall be kept clear or other satisfactory measures shall be taken to maintain street or other drainage.

B. In confined work areas, the Contractor may be required to stockpile the excavated material off-site, as determined by the project permits.

3.11 PLACING PIPE BEDDING

A. Place the thickness of pipe bedding material over the full width of trench necessary to produce the required bedding thickness when the material is compacted to the specified relative density. Grade the top of the pipe bedding ahead of the pipe to provide firm, uniform support along the full length of pipe.

B. Excavate bell holes at each joint to permit assembly and inspection of the entire joint.

3.12 PLACING MOUNDS TO SUPPORT PIPE (DIP ONLY)

A. As an alternate to placing continuous imported sand pipe bedding material, the ductile iron pipe may be supported on mounds of imported sand.

B. The mounds shall be of imported sand and extend the full trench width. The mounds shall provide a minimum of 6 inches of contact with the pipe.

C. The pipe shall be supported to maintain its design line and grade.

D. The mounds shall be located 2½ feet from the bell/spigot of the pipe.

3.13 BACKFILLING WITHIN PIPE ZONE

A. After pipe has been installed in the trench, place pipe zone material simultaneously on both sides of the pipe, keeping the level of backfill the same on each side. Carefully place the material around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Use particular care in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling.

B. Compact material placed within 12 inches of the outer surface of the pipe by hand tamping only.

3.14 BACKFILL WITHIN TRENCH ZONE

A. Compact per the detailed piping specification for the particular type of pipe and per the following.

B. Push the backfill material carefully onto the backfill previously placed in the pipe zone. Do not permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Do not drop sharp, heavy pieces of material directly onto the pipe or the tamped material around the pipe.

C. The remaining portion of the trench to the street zone or ground surface, as the case may be, shall be backfilled, compacted and/or consolidated by approved methods to obtain the specified relative compaction.

1. Compaction using vibratory equipment, tamping rollers, pneumatic tire rollers, or other mechanical tampers shall be done with the type and size of equipment necessary to accomplish the work. The backfill shall be placed in horizontal layers of such depths as are considered proper for the type of compacting equipment being used in relation to the backfill material being placed. Each layer shall be evenly spread, properly moistened, and compacted to the specified relative density. The Contractor shall repair or replace any pipe, fittings, manholes, or structures as directed by the MCWD representative damaged by the Contractor's operations.

3.15 BACKFILL WITHIN STREET ZONE

A. The street zone within roadbed areas shall be compacted using approved hand, pneumatic, or mechanical type tampers to obtain the required relative compaction.

B. All work shall be done in accordance with the requirements and to the satisfaction of the city or the agency having jurisdiction.

3.16 EXCESS EXCAVATED MATERIAL

A. The Contractor shall make the necessary arrangements for and shall remove and dispose of all excess excavated material unless indicated differently in the special provisions for any job.

B. It is the intent of these specifications that all surplus material not required for backfill or fill shall be properly disposed of by the Contractor at his expense at a proper disposal site.

C. No excavated material shall be deposited on private property unless written permission from the owner thereof is secured by the Contractor. Before the MCWD will accept the work, the Contractor shall file a written release signed by all property owners with whom he has entered into agreements for disposing excess excavated material, absolving the MCWD from any liability connected therewith.

D. The Contractor shall obtain a haul route permit from the city or agency having jurisdiction.

END OF SECTION 31 23 10

S201-ITB3, Volume 2 - 31 40 00 – SHEETING SHORING AND BRACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Sheeting and shoring for basement and utility excavations.

1.03 RELATED SECTIONS

A. Section 01 11 00 – Summary of Work

B. Section 01 33 30 – Submittal Procedures

C. Section 01 51 00 – Temporary Utilities

1.04 DESCRIPTION

A. Provide protective installation consisting of shores, wales, braces, posts, piling, sheeting, anchorages and fastenings, both temporary and permanent, for accomplishment and protection of work including, but not limited to, the following:

1. Temporary shoring and sheeting for construction of basement, buried pipelines, and other structure excavations.

1.05 SUBMITTALS

A. Sheet and Shoring Plan. The Contractor, prior to beginning any trench or structure excavation 5 feet deep or over shall submit to the District's Representative and shall be in receipt of the FORA Construction Manager written acceptance of the Contractor's detailed plan showing design of all shoring, bracing, sloping of the sides of excavation, or other provisions for worker protection against the hazard of caving ground during the excavation of such trenches or structure excavation. Submit complete calculations of the sheeting system including sheeting size, wales, rakers, anchor system, struts, earth anchors, anchor piles, tie rods or any other components pertinent to the design prior to the start of any work involving sheeting and bracing. The plans shall be prepared by a Civil or Structural Engineer licensed in the State of California.

1. As a part of the plan, a note shall be included stating that the registered civil or structural engineer certifies that the plan complies with the CALOSHA Construction Safety Orders. Each copy of the plan shall have an original seal and "wet" signature of a Civil or Structural Engineer registered in the State of California across the seal.

2. If the Contractor's trench protection system includes the use of a shield, the shield design shall be approved by the Division of Industrial Safety. Structural details shall indicate the maximum pressure the shield can safely withstand, the trench configuration and supporting calculations indicating the maximum pressure against the shield. In portions of the trench near critical existing facilities and areas of dry granular soils, the Contractor shall use sheeting as required by the District's Representative in lieu of a shield.

3. The plan shall include surcharge loads for nearby embankments and structures, for spoil banks, and for construction equipment and other construction loadings. The plan shall indicate for all trench conditions the minimum horizontal distances from the side of the trench at its top to the near side of the surcharge loads.

4. The Sheeting and Shoring Plan is submitted for record purposes only. The acceptance of the plan only indicates the submission of plan and does not imply approval of the plan or relieve registered engineer responsibility for the plan. Nothing contained in the section shall be construed as relieving the Contractor of the full responsibility for providing shoring, bracing, sloping, or other provisions which are adequate for worker protection.

5. Nothing in this section is intended to relieve the Contractor of his responsibility to carefully examine the contract documents and the site where the Work is to be performed; to familiarize himself with all the local conditions and federal, state, and, local laws, ordinances, rules, and regulations that may affect the performance of any Work; to study all surveys and investigation reports about subsurface and latent physical conditions pertaining to the site; to perform any additional surveys and investigations as the Contractor deems necessary to complete the Work at his bid price; and to correlate the results of all such data with the requirements of the contract documents.

1.06 ALTERNATIVES

A. The use or application of alternative methods and materials, and the employment of proprietary systems under lease or franchise in lieu of that specified herein, may be allowed. Demonstration of suitability and compliance with these Specifications to the satisfaction of FORA will be required.

1.07 SAFETY

A. Except as otherwise indicated, the following codes apply to the Work of this Section:

1. Title 8, California Administrative Code, Chapter 4, Subchapter 4, Construction Safety Orders, Article 6, Excavations, Trenches, Earthwork, Section 1542, Shafts.

PART 2 - MATERIALS

2.01 PRODUCTS

A. Use new or used materials complying with provisions of the approved shoring, bracing and sheeting design drawings. Materials shall be free from defects and damage that might in any way impair their protective function.

B. Steel sheet piling shall be continuous interlocking type ASTM A 328 of appropriate shape and provided with at least one 2-1/2-inch-diameter handling hole on the centerline of the web located at least 6 inches from each end of the sheet pile.

C. Fabricated connections and accessories, steel H-piles, WF shapes, and other structural steel shall conform to the requirements of ASTM A 36, unless otherwise approved.

D. Concrete shall be as specified in SECTION 03 30 00 CAST-IN-PLACE CONCRETE

1. For encasement of steel soldier piles below the final level of excavation, 2,500 psi shall be used.

2. For encasement of soldier piles above the final level of excavation, lean concrete shall be used, the strength of which shall be adequate to protect the excavated faces of the augured hole.

E. Wood lagging shall be dimension lumber with minimum allowable stress of 1100 psi.

1. The stress grade of the lagging shall be in conformance with the allowable stresses of the UBC, Chapter 25.

2. Lumber shall be grade marked by WWPA or WCLIB with species and grade conforming with those shown on approved Shop Drawings.

PART 3 – EXECUTION

3.01 GENERAL

A. The support system shall extend the main excavation bottom elevation to a depth adequate to prevent lateral movement and to adequately support applied vertical loads. In areas where additional excavation is required below the main excavation subgrade provisions shall be made to prevent movement of main excavation supports. Damage to existing utilities during installation of excavation support system shall be avoided. In flow of ground water shall be prevented and the base of the excavation subgrade shall be maintained in a stable, intact state.

3.02 SOLDIER PILES

A. Soldier piles shall be installed by pre-boring or other approved pre-excavation methods to tip elevation shown on approved Shop Drawings. Prevent pre-bored or other pre-excavated holes from collapsing.

B. Pre-bored hole shall be filled with lean concrete from bottom of hole to subgrade dependent upon analysis of vertical support requirements.

C. Remaining pile length shall be filled with lean concrete, completely encasing the pile.

D. Concrete shall be placed from the bottom of the hole upwards by means of a flexible pipe connected to a hopper.

3.03 SHEETING AND LAGGING

A. Sheeting and lagging shall be installed with no gap between the boards unless specifically approved. As installation progresses, the voids between the excavation face and the lagging or sheeting shall be backfilled with sand or soil rammed into place. Materials such as hay or

burlap shall be used where necessary to allow drainage of groundwater without loss of soil or packing material. If gaps in the lagging are allowed, the gap width between lagging boards shall be limited to 1/2-inch maximum.

B. If unstable material is encountered, suitable measures shall be taken to retain it in place or to otherwise prevent soil displacement.

C. Extend lagging down to final subgrade.

D. A sufficient quantity of material shall be on hand for sheeting, shoring, bracing, and other operations for protection of work and for use in case of accident or emergency.

3.04 STEEL SHEET PILING

A. Steel sheet piling may be used only where existing subsurface conditions are suitable for installation of sheet piling to the full depth of penetration required, and to proper alignment and plumbness, specified herein, without damage to the sheet piling or rupture of its interlocks. The use of steel sheet piling will not be permitted where sheeting would be required to penetrate boulders, rock or other materials which may prevent the proper installation of sheet piling.

B. Steel sheet piling shall be installed in plumb position with each pile interlocked with adjoining piles for its entire length so as to form a continuous diaphragm throughout the length of each run of wall, bearing tightly against original ground. Install sheeting to depth required for design. Exercise care during installation so that interlocking members can be extracted, if required, without injury to adjacent ground. The installation equipment shall be suitable to the type and nature of the subsurface materials anticipated to be encountered. The equipment and methods of installation, cutting, and splicing shall conform to the approved Shop Drawings.

C. Liner plate shall be installed to proper line and grade and dimensions which will enable final liner to be placed in accordance with tolerances specified by the Engineer. Annular void, if present by method of ground support shall be filled with tunnel grout as specified by the Engineer.

3.05 INTERNAL BRACING SUPPORT SYSTEM

A. All bracing support members shall be installed and maintained in tight contact with each other and with the surface being supported.

B. Bracing members shall be preloaded by jacking the struts and shores in accordance with loads, methods, procedures, and sequence as described on the approved Shop Drawings. Coordinate excavation work with bracing installation and preloading. Use steel shims and steel wedges welded or bolted in place to maintain the preloading force in the bracing after release of the jacking equipment pressure. Use procedures so as to produce uniform bracing member loading without appreciable eccentricities, overstressing, or support member distortion.

C. Struts shall be provided with intermediate bracing as needed to enable them to carry their maximum design load without distortion or buckling. Provide diagonal bracing as necessary to maintain the stability of the system. Web stiffeners, plates, or angles shall be provided as needed to prevent rotation, crippling, or buckling of connectors at points of bearing between

structural steel members. Allow for eccentricities resulting from field fabrication and assembly.

D. Excavations shall be to a depth no more than 2-feet below the elevation of the support member about to be placed. The support member shall be installed and preloaded immediately after installation and prior to continuing excavation.

3.06 REMOVAL OF SUPPORT SYSTEMS

A. Where removal is required wholly or in part, such removal shall be performed in a manner that will not disturb or damage adjacent new or existing construction or utilities. Fill all voids immediately with lean concrete, or other approved means.

B. All elements of support systems shall be removed to a minimum depth of 6-feet below final ground surface. However, when a structure poured against the sheeting system extends above the 6-foot limit, removal of the sheeting system shall be to the top of the structure.

C. All damage to property resulting from removal shall be promptly repaired at no cost to the District. The Engineer shall be the sole judge as to the extent and determination of the materials and methods for repair.

END OF SECTION 31 40 00

S201-ITB3, Volume 2 – 33 04 00 ABANDONMENT OF WET UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. This section includes abandonment in place of existing pipelines and manholes, when indicated on the Drawings for abandonment.

1.03 RELATED SECTIONS

A. Section 31 23 10 – Trenching, Backfilling, and Compacting

B. Section 33 11 00 – Water Distribution Piping

1.04 DEFINITIONS

A. Abandonment – Pipeline abandonment consists of filling or plugging portion of existing pipelines with flowable fill or grout plugs as indicated in the Contract Documents.

B. Flowable Fill – Flowable fill shall be controlled low strength material consisting of fluid mixture of cement, fly ash, aggregate, water and with admixtures as necessary to provide workable properties. Placement of flowable fill may be by grouting techniques in pipelines or other restrictive areas, or as mass placement by chutes or tremie methods in unrestrictive locations with open access.

C. Backgrouting – Secondary stage pressure grouting to ensure that voids have been filled within abandoned pipes. Backgrouting shall only be required at critical locations indicated on the Contract Documents of if there is incomplete flowable fill placements.

1.05 STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C150 – Standard Specification for Portland Cement

2. ASTM C494 – Standard Specification for Chemical Admixture for Concrete

3. ASTM C618 – Standard Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for use as Mineral Admixture in Portland Cement Concrete

4. ASTM C940 – Standard test Method for Expansion and Bleeding of Freshly Mixed Grout for Replaced Aggregate Concrete in the Laboratory

5. ASTM C1017 – Standard Specification for Chemical Admixture for Use in Producing Flowing Concrete

6. ASTM C1107 – Standard Specification for Packaged Dry, Hydrailic-Cemeent Grout (Non-Shrink)

1.06 SUBMITTALS

A. All submittals shall follow the requirements of SECTION 01 33 00 SUBMITTAL PROCEDURES

B. Flowable fill mix design report

1. Flowable fill type and production method. Describe if fill will be mixed to final proportions and consistency in batch plant or if constituents will be added in transit mixer atplacement location.

2. Aggregate gradation of fill. Aggregate gradation of mix shall be used as pilot curve forquality control during production.

3. Fill mix constituents and proportions including materials by weight and volume, and aircontent. Give types and amounts of admixtures including air entrainment or air generating compounds.

4. Fill densities and viscosities, including wet density at point of placement.

5. Initial time of set.

6. Bleeding and shrinkage.

7. Compressive strength.

C. Submit technical information for equipment and operational procedures including projected injection rate, grout pressure, method for controlling grout pressure, bulkhead and vent design and number of stages for grout application.

PART 2 - PRODUCTS

2.01 FLOWABLE FILL

A. Design Mix Criteria. Provide design of one or more mixes to meet design criteria and conditions for placement. Present information required by Part 1, Paragraph E.1 in mix design, to include the following:

1. Cement: ASTM C150 Type I or II. Volume and weight per cubic yard of fill. Provide minimum cement content of 50 pounds per cubic yard.

2. Fly ash: ASTM C618, Class C or F. Volume and weight per cubic yard of fill. Provide minimum fly ash content of 200 pounds per cubic yard.

3. Potable water: Volume and weight per cubic yard of fill. Amount of water determined by mix design testing.

4. Aggregate gradation: 100 percent passing 3/8-inch sieve and not more than 10 percent passing No. 200 sieve. Mix design report shall define pilot gradation based on following sieve sizes: 3/8 inch, No. 4, 8, 16, 30, 50 100 and 200. Do not deviate from pilot gradation by more than plus or minus 10 percentage points for any sieve for production material.

5. Aggregate source material: Screened or crushed aggregate, pit or bank run fine gravels or sand, or crushed concrete. If crushed concrete is used, add at least 30 percent natural aggregate to provide workability.

6. Admixtures: use admixtures meeting ASTM C494 and ASTM C1017 as needed to improve pumpability, to control time of set and to reduce bleeding.

7. Fluidifier: Use fluidifier meeting ASTM C937 as necessary to hold solid constituents in suspension. Add shrinkage compensator if necessary.

8. Performance additive: Use flowable fill performance additive, if needed, to control fill properties.

2.02 FLOWABLE FILL REQUIREMENTS

A. Unconfined compressive strength: minimum 75 psi and maximum 150 psi at 56 days as determined based on an average of three tests for same placement. Present at least three acceptable strength tests for proposed mix design in mix design report.

B. Placement characteristics: self-leveling.

C. Shrinkage characteristics: non-shrink.

D. Water bleeding for fill to be placed by grouting method in pipes: not to exceed 2 percent according to ASTM C940.

E. Minimum wet density: 90 pounds per cubic foot.

2.03 GROUT PLUGS

A. Cement-based dry-pack grout conforming to ASTM C1107, Grade B or C.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Pipes greater than 8-inch diameter indicated on the Drawings to be abandoned in place shall be completely filled with flowable fill.

B. Pipes equal or less than 8-inch diameter indicated on the Drawings to be abandoned in place shall be cut and a grout plug set at each end.

3.02 PREPARATION

A. Notify inspector at least 24-hours in advance of grouting with flowable fill.

B. Select fill placement equipment and follow procedures with sufficient safety and care to avoid damage to existing underground utilities and structures. Operate equipment at pressure that will not distort or imperil portions of the work, new or existing.

C. Cut and cap portions of the piping system to remain, as shown on the Drawings. Drain water mains to be abandoned.

D. Clean sewer lines. During placement of fill, compensate for irregularities in sewer pipe, such as obstructions or open joints, to ensure no voids remain unfilled.

E. Perform demolition work prior to starting fill placement. Clean placement areas for pipes and manholes of debris that may hinder fill placement. Remove excessive amounts of sludge and other substances that may degrade performance of the fill. Do not leave sludge or other debris in place if filling more than 2 percent of placement volume. Dispose of waste material in accordance with applicable codes and regulations.

F. Remove free water prior to fill placement.

3.03 EQUIPMENT

A. Mix flowable fill in automated batch plant and deliver it to site in ready-mix trucks. Performance additives may be added at placement site if required by mix design. 2. Use concrete or grout pumps capable of continuous delivery at planned placement rate.

3.04 ABANDONMENT OF SEWER MANHOLES

A. **Surplus II Site**: Sewer manholes shall be abandoned in place. Cover and frames shall be left and manhole shall be abandoned empty.

B. **Stockade Site**: The sewer manhole and main abandonment is an additive bid item. The manhole structures at the Stockade site shall be taken down to the manhole bench. All manhole covers, cones, and rings shall be removed and disposed. The manhole shelf can remain. Sewer mains shall be plugged and abandoned per the detail shown on the Construction Drawings. The areas shall be backfilled, compacted, and paved or graded to match existing.

3.05 INSTALLATION OF FLOWABLE FILL

A. Abandon pipelines, as required in Section 3.01, by completely filling with flowable fill.

B. Place flowable fill equal to volume of pipe being filled. Continuously place flowable fill from manhole to manhole with no intermediate pour points, but not exceeding 500 linear feet of pipe per fill segment.

C. Perform operation with experienced crews with equipment to monitor density of flowable fill and to control pressure.

D. Temporarily plug or cap pipe segments which are to remain in operation during filling to keep lines free of flowable fill.

E. Pump flowable fill through bulkheads or use other suitable construction methods to contain flowable fill in lines to be abandoned.

F. Place flowable fill under pressure flow conditions into properly vented open system until flowable fill emerges from vent pipes. Pump flowable fill with sufficient pressure to overcome friction. Fill sewers from the downstream end to vent at upstream end.

G. Backfill excavations per SECTION 31 23 10 TRENCHING, BACKFILLING AND COMPACTING.

H. Collect and dispose of excess flowable fill material and debris.

3.06 INSTALLATION OF GROUT PLUGS

A. Clean inside surface of pipe at least 12-inches from ends, achieving firm bond and seal grout plug to pipe surface. Similarly clean and prepare exterior surface if manufactured cap is to be used.

B. Place temporary plug or bulkhead approximately 12-inches inside pipe. Fill pipe end completely with dry-pack grout mixture.

C. Backfill excavations per SECTION 31 23 10 TRENCHING, BACKFILLING AND COMPACTING.

D. Collect and dispose of excess grout material and debris.

3.07 REMOVAL OF ASBESTOS CEMENT PIPE (ACP)

A. Removal of ACP shall be removed in whole sections where possible. Cutting or breaking of ACP to facilitate removal shall be in compliance with California Regulations, Title 8, and Section 1529.

B. Non-friable ACP. If non-friable asbestos cement pipe (ACP) is identified, the Contractor shall employ adequate care to maintain the pipe in a non-friable condition. At a minimum, the Contractor shall follow the following requirements for ACP that is to be cut or broken:

1. The Contractor shall evacuate the area of unauthorized or untrained personnel, post warning signs, and provide a demarcation zone and adequate barrier to keep unauthorized personnel out of the area.

2. The Contactor shall provide personal protective equipment (respiratory apparatus, gloves, etc.) to minimize asbestos exposure.

3. The area to be cut or broken shall be adequately wetted with amended water to reduce fiber emission. The method employed by the Contractor shall minimize fiber release. Power saw cutting will not be allowed. All related debris from the cutting or breaking of ACP shall be considered friable. The Contractor shall dispose of friable material in accordance with California Regulations, Title 8 and Section 5208.

C. Friable asbestos-containing materials is defined as material that can be crumbled, pulverized, or reduced to powder by hand pressure. All friable asbestos-containing materials shall be considered hazardous waste and shall be transported by a licensed hazardous waste hauler. Procedures for handling friable asbestos-containing material shall conform to the requirements of California Regulations, Title 8.

D. The Contractor is responsible for all ACP removal and associated contamination. Disposal of all ACP shall be in accordance with of California Regulations, Title 8, in an authorized disposal site.

3.08 QUALITY CONTROL

A. Provide batch plant tickets for each truck delivery of flowable fill. Note on tickets addition of admixtures at site.

B. Check flow characteristics and workability of fill as placement proceeds.

C. Obtain at least three test cylinders for each placement area for determination of 56-day compressive strength and bleeding. Acceptance of placement will be based on average strength of three tests.

D. Record volume of flowable fill placement to demonstrate that voids have been filled. If voids exceed 10% of pipeline volume, injection grouting may be required at the direction of the Project Manager.

3.09 PROTECTION OF PERSONS AND PROPERTY

A. Provide safe working conditions for employees throughout demolition and removal operations. Observe safety requirements for work below grade.

B. Maintain safe access to adjacent property and buildings. Do not obstruct roadways or passageways adjacent to the work.

END OF SECTION 33 04 00

S201-ITB3, Volume 2 – 33 11 00 - WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and Contact Agreement, including any Addenda, including other Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Abandonment of water facilities and installation of cut and plugs, straightline water main connections, elbows, tees and blind flanges.

1.03 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures

B. Section 31 23 10 – Trenching, Backfilling, and Compacting

C. Section 31 40 00 – Sheeting, Shoring, and Bracing

1.04 STANDARDS

A. American National Standards Institute/American Water Works Association (ANSI/AWWA)

1. ANSI/AWWA C104/A21.5 – Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water

2. ANSI/AWWA C110/A21.10 – Ductile-Iron and Gray-Iron Fittings 3-in Through 48-in for Water and Other Liquids

3. ANSI/AWWA C111/A21.11 – Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings

4. ANSI/AWWA C210 – Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines

5. ANSI/AWWA C217– Petrolatum and Petroleum Wax Tape Coatings for the Exterior of Connections and Fittings for Steel Water Pipelines.

6. ANSI/AWWA C219 – Standard for Bolted, Sleeve-Type Couplings for Plain-End Pipe

7. ANSI/AWWA C600 – Installation of Ductile-Iron Water Mains and Appurtenances

8. AWWA C651- Disinfecting Water Mains

9. AWWA C800 – Standard for Underground Service Line Valves and Fittings

10. ANSI/AWWA C900 – Polyvinyl Chloride (PVC) Pressure Pipe 4-in Through 12-in for Water Distribution

11. AWWA Manual M23 – PVC Pipe - Design and Installation

B. American Society for Testing and Materials (ASTM)

1. ASTM D1784 – Standard Specification for Rigid for Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

2. ASTM D1785 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

3. ASTM D2464 – Standard Specification for Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80

4. ASTM D2467 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80

5. ASTM D2564 – Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems

6. ASTM F645 – Standard Guide for Selection, Design, and Installation of Thermoplastic Water Pressure Piping Systems

7. ASTM B584 – Standard Specification for Copper Alloy Sand Castings for General Applications

8. Bronze ASTM B62 – Standard Specification for Composition Bronze or Ounce Metal Castings (NOT USED)

9. ASTM B16 – Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines

10. ASTM B99 – Standard Specification for Copper-Silicon Alloy wire for General Applications

11. ASTM A47 – Standard Specification for Ferritic Malleable Iron Castings

C. Standard Specifications for Public Works Construction (2015) (SWPPC).

1.05 SUBMITTALS

A. All submittals shall follow the requirements of SECTION 01 33 00 SUBMITTAL PROCEDURES.

B. Manufacturer’s catalog cuts on materials identified in Part 2.

C. Disinfection Plan and testing results.

1.06 COORDINATION WITH MARINA COAST WATER DISTRICT

A. The Contractor shall coordinate with the Marina Coast Water District (MCWD) for all water main shutdowns a minimum of seven (7) days in advance of shutdown.

B. MCWD shall observe all installation of water materials.

C. Contractor shall coordinate with MCWD for notification of shutdown to affected customers. Contractor shall provide the notifications by written letter to each affected party.

D. The Contractor shall be responsible for all plan review and inspection fees related to connections to the MCWD system.

1.07 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of MCWD requirements including, but not limited to, potable-water-service piping materials, installation, testing, and disinfection.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. NSF Compliance: Comply with NSF 61 for materials for all water-service piping and specialties for domestic water.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

B. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

C. Protect specialties from moisture and dirt.

D. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.10 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by MCWD or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:

1. Notify Engineer no fewer than three days in advance of proposed interruption of service.

2. Do not proceed with interruption of water-distribution service without Engineer written permission.

3. Existing fire hydrants shall remain in service until closest proposed fire hydrant is in service.

PART 2 - PRODUCTS

2.01 AWWA C900 PIPE AND FITTINGS

A. Pipe Dimensions: Dimensions for PVC pressure pipe from 4- through 12-inch diameter shall conform to Table 1 of ANSI/AWWA C900 for cast iron pipe equivalent outside diameters.

B. Pipe Marking: Pipe shall be marked in conformance with ANSI/AWWA C900 including nominal size, outside diameter, pressure class, seal of testing agency, etc.

C. Pipe shall have DR14, 305 psi.

2.02 DUCTILE-IRON FITTINGS FOR PVC

A. Ductile-iron fittings shall be manufactured in accordance with AWWA C110 or C153. All fittings shall be epoxy coated and epoxy lined per AWWA C116.

B. Non-restrained fittings may be used where a thrust block is used. Non-restrained fittings may be mechanical to mechanical fittings, mechanical to flange fittings, one-bolt fittings, and flange to flange fittings. Push-on to push-on fittings shall not be used unless restraints are provided as described below.

Restrained fittings shall be used where a thrust block is not specified. Where restrained joints are called, push-on joints shall be restrained with locking gasket rated for 250 psi operating pressure for DIP. Push-on joints shall be restrained with a mechanical type bell restraint for C-900 PVC pipe. Mechanical joint restraints shall be EBBA IRON, INC., MEGALUG, UNIFLANGE Series 1400, One-Bolt, or approved equal. Flanged fittings may be used.

All fittings shall consist of stainless steel bolts and nuts, except wedge bolts, etc.

C. All buried ductile iron fittings shall have a factory applied bituminous coating of not less than 1 mil in thickness. The fittings shall be wax-tape coated per AWWA C217 and have polyethylene wrap per AWWA C105.

D. Unless otherwise indicated on the drawings, all fittings with flanged ends shall be ductile iron class 150. The gasket surface shall have a serrated finish of approximately 16 serrations per inch, approximately 1/32-inch deep, with serrations in either a concentric or spiral pattern. All flanges shall be flat faced. In addition, all flanges shall meet the following tolerances:

Bolt circle drilling	+1/16 inch
Bolt hole spacing	+1/32 inch
Eccentricity of bolt circle and Maximum facing with respect to bore	+1/32 inch

2.03 GASKETS

A. Gaskets for flanged joints shall be 1/8-inch thick, cloth-inserted rubber. Full face type gaskets with pre-punched holes shall be used where both flanges are flat face. Ring gaskets extending to the inner edge of the bolts may be used where a raised face flange is present.

B. Rubber gaskets for push-on joints shall be synthetic or natural rubber manufactured in accordance with AWWA C111.

2.04 BOLTS AND NUTS

A. All bolts and nuts shall be Type 316 stainless steel conforming to ASTM F593 G or H for bolts, and ASTM F594 with Tripac 2000 Blue Coating for nuts.

B. The length of each bolt or stud shall be such that between 1/4 inch and 3/8 inch will project through the nut when drawn tight.

2.05 PIPING SPECIALTIES

A. Transition Couplings: Manufactured coupling with pressure rating at least equal to and ends compatible with piping to be joined.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Smith-Blair 413
b. Romac 501, or approved equal.

2. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.

a. Standard: AWWA C219.
b. Sleeve Material: Ductile Iron per ASTM A 536
c. Sleeve Dimensions: Of thickness and minimum width of 12-inches required to provide pressure rating.
d. Gasket Material: O-rings made of SBR rubber per ASTM D2000, unless otherwise indicated.
e. Pressure Rating: 200 psig minimum.
f. Nuts and Bolts: Type 316 stainless steel conforming to ASTM A 193 (Grade B8M) for bolts and ASTM A 194 (Grade 8M) for nuts
g. Metal Component Finish: Fusion bonded epoxy per AWWA C116. Minimum DFT shall be 12 mils.

B. Flexible Coupling: Manufactured coupling with pressure rating at least equal to and ends compatible with piping to be joined

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Smith-Blair 411
    b. Romac 501, or approved equal.

2. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.

    a. Standard: AWWA C219.
    b. Sleeve Material: Ductile Iron per ASTM A536.
    c. Sleeve Dimensions: Of thickness and minimum width of 12-inches required to provide pressure rating.
    d. Gasket Material: O-rings made of SBR rubber per ASTM D2000, unless otherwise indicated.
    e. Nuts and Bolts: Type 316 stainless steel conforming to ASTM A 193 (Grade B8M) for bolts and ASTM A 194 (Grade 8M) for nuts.
    f. Pressure Rating: 200 psig minimum.
    g. Metal Component Finish: Fusion bonded epoxy per AWWA C116. Minimum DFT shall be 12 mils.

C. Asbestos Cement Restrainer

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. JCM 630, or approved equal

2. Description: Metal, bolted, split-sleeve-type, restained coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.

    a. Standard: AWWA C219.
    b. Sleeve Material: Steel per ASTM A285 Grade C or better.
    c. Sleeve Dimensions: Of thickness and minimum width of 8-inches required to provide pressure rating.
    d. Gasket Material: O-rings made of SBR rubber per ASTM D2000, unless otherwise indicated.
    e. Nuts and Bolts: Type 304 stainless steel conforming to ASTM A 193 (Grade B8M), epoxy coated for bolts and ASTM A 194 (Grade 8M) for nuts.
    f. Pressure Rating: 200 psig minimum.
    g. Metal Component Finish: Fusion bonded epoxy per AWWA C213. Minimum DFT shall be 12 mils.

2.06 THRUST BLOCKS

A. All Portland cement concrete shall conform to the provisions of Section 201 of the SSPWC except as herein modified.

B. Portland cement concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, and water proportioned and mixed to produce a smooth dense workable mixture. It can be of the ready-mix variety as produced by any reliable ready-mix concrete firm.

C. Portland cement, including Portland cement used in precast products, shall be Type V conforming to ASTM C 150.

D. Concrete for thrust blocks shall conform to 560-C-3250 per the SSPWC.

2.07 Wax Tape External Coating

A. Wax Tape Coating: All buried non-mortar coated fittings and appurtenances such as valves, flanges, insulating flanges, couplings, etc. shall be coated with a wax tape primer and wrap per AWWA C217 and the District Standard Drawings.

B. Primer: All exposed non-mortar coated surfaces including flanges, bolts and nuts shall be prime coated with a blend of petrolatum, plasticizer, inert fillers, and corrosion inhibitor having a paste-like consistency.

C. Wax Tape: Wrap primed surfaces with a synthetic felt tape saturated with a blend of petrolatum, plasticizers, and corrosion inhibitors that is easily formable over irregular surfaces. A compatible petrolatum filler should be used to smooth over irregular surfaces.

D. Outer Covering: The primed and wax-tape wrapped flange shall be wrapped with a plastic tape covering consisting of three (3) layers of 1.5 mil, polyvinylidene chloride or PVC, high cling membranes wound together as a single sheet.

E. Protective Overwrap: The edges of flanges 18-inches in diameter and larger shall be wrapped with 10-mil pipe tape (two layers, 50% overlap) to protect wax tape during backfilling process.

2.08 DISINFECTING MATERIALS

A. Contractor shall furnish all equipment and labor to perform disinfection activities.

B. Chlorination can be accomplished with calcium hypochlorite tables with average weight of 0.009 pounds each and shall contain not less than 70% available chlorine or by liquid chlorine meeting the requirements of AWWA C651 Sections 4.1.1 or 4.1.2.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION

A. Install PVC, AWWA pipe according to ASTM F645 and AWWA M23.

B. Bury piping with depth of cover over top at least 36 inches.

C. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

3.02 JOINT CONSTRUCTION

A. AWWA C900 Pipe. Make pipe joints according to the following AWWA M23.

3.03 THRUST BLOCKS

A. Thrust blocks shall be constructed where shown on the drawings.

B. The area and design of the bearing surface shall be per MCWD Standard Plans W-13 and W-14.

C. The bearing surface shall be against undisturbed ground in all cases, except where unstable conditions are encountered. In unstable conditions, the bearing surface shall be as directed by the MCWD representative.

D. Unless otherwise directed by the MCWD representative, the blocking shall be placed so that the pipe and fitting joints are accessible for repair.

E. Metal harness of tie rods and pipe clamps shall be used to prevent movement if shown on the plans or directed by the MCWD representative.

F. Exposed non-steel rods and clamps shall be coated with bituminous mastic consisting of coal tar pitch with minimum 68% soils by volume.

G. Reinforcing steel tie-down rods shall be used on all line valves.

3.04 PIPE COUPLINGS

A. Install flexible, transitions, and restrained couplings per manufacturer’s instructions.

B. Clean oil, scale, rust, and dirt from pipe ends. Clean gaskets in flexible pipe couplings before installing. Install expansion joints per manufacturer's recommendations. Install expansion joints so that 50% of total travel is available for expansion and 50% is available.

C. Lubricate bolt threads with graphite and oil prior to installation.

D. Wrap the couplings with 8-mil polyethylene wrap per AWWA C105.

3.05 ASBESTOS CEMENT PIPE

A. See Section 33 04 00 – Abandonment of Wet Utilities for the handling of asbestos cement pipe.

3.06 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.

B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.

1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

2. Prepare reports of testing activities.

3.07 IDENTIFICATION

A. Install continuous underground warning tape during backfilling of trench for underground water-distribution piping. Locate warning tape a minimum of 1 foot above and centered on the pipe. The warning tape shall be installed continuously in the trench.

B. Plastic warning tape shall be an inert plastic film specifically formulated for prolonged underground use. The minimum thickness shall be 4 mils and the minimum width of the tape shall be 6 inches. Printing shall be a minimum of 2-inch block letters.

C. Warning tape for domestic water pipelines shall be blue with black printing having the words "CAUTION: DOMESTIC WATER-LINE BURIED BELOW."

3.08 PROOF OF DISINFECTION

A. Contractor shall submit a Disinfection Plan for approval by the MCWD. The Disinfection Plan shall address trench treatment, sampling and bacteriological testing procedures, and per AWWA C651. The Contractor shall submit this plan 7 working days prior to beginning this work.

B. Procedure

1. Contractor shall notify the MCWC two (2) working days prior to chlorination of facilities.

2. Cutting into Existing Mains. Following the opening of an existing domestic water main, the interior of all accessible pipes and fittings shall be swabbed with a hypochlorite solution. The drained portion of the existing line and any new section shall be flushed from two directions toward the cut-in, if possible.

3. Mains shall be filled but isolated from the system until disinfection has been proved through bacteriological testing.

4. Contractor shall be responsible for taking samples for bacteriological testing.

C. Bacteriological Testing

1. The sampling and bacteriological testing procedure for the newly disinfected facilities shall be in accordance with AWWA C651-99, Section 5.1. The sampling and bacteriological testing procedure for main repairs shall be in accordance with AWWA C651-99, Section 4.7. The Contractor shall provide sampling containers approved by the MCWD and the Contractor shall notify the MCWD two (2) working days prior to collecting samples. A MCWD representative shall be present during the collection of the samples. The Contractor shall deliver the samples to a California DOHS approved testing laboratory. The Contractor shall be required to provide the MCWD with signed copies of all test results and chain of custody documents.

   All mains and services must successfully pass bacteriological tests prior to connecting to the existing system. Services must be tested per the following procedure.

END OF SECTION 33 11 00