SECTION 02510
WATER DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Eastern Municipal Water District Standards and Specifications (EMWD), latest Edition.

C. Standard Specifications for Public Works Construction (SSPWC), latest Edition.

D. California Plumbing Code (CPC), latest Edition.

1.2 SUMMARY

A. This Section includes water-distribution piping and related components outside the building.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride plastic.

B. DI: Ductile iron.

1.4 SUBMITTALS

A. Shall be submitted to the Architect for review and approval in accordance with SubSection 2-5.3 of the SSPWC and EMWD. The Contractor shall allow 10 working days for review by the Architect.

B. Product Data: As required by EMWD.

C. Shop Drawings: As required by EMWD.

D. Coordination Drawings: As required by EMWD.

E. Field quality-control test reports: As required by EMWD.

F. Operation and Maintenance Data: As required by EMWD.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Domestic water system shall be constructed in accordance with these plans and specifications, State of California Department of Health Services and EMWD.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:

1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. 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.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to EMWD requirements:

1. Do not proceed with interruption of water-distribution service without **Architect's** written permission.

1.8 COORDINATION

A. Coordinate all work including point of connection to water main(s) with EMWD.

B. Improvement plans and details indicate general location and arrangement of underground water piping. Location and arrangement of piping layout take design considerations into account. Contractor shall pothole join point(s), and where crossing possible existing utilities to determine horizontal and vertical locations and notify the Architect of any discrepancies or

conflicts before starting construction. Where specific installation is not indicated, follow piping manufacturer's written instructions.

1. Payment – Full compensation for potholing including pavement repair per City requirements shall be considered included in the contract unit prices paid for other items of work that are either incidental or appurtenant and shall be considered full compensation for furnishing all labor, materials, tools, equipment and incidentals for accomplishing the work as specified herein and no additional compensation will be allowed.

1.9 COPPER TUBE AND FITTINGS

A. Soft Copper Tube (Type "K") and fittings in accordance with EMWD.

1.10 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe in accordance with EMWD.

B. Push-on-Joint, Ductile-Iron Pipe in accordance with EMWD.

1.11 PVC PIPE AND FITTINGS

Plastic pipe smaller than 2" (ID) shall be Schedule 40, Plastic pipe smaller than 4" (ID) shall be C-200 with solvent weld or with rubber ring gaskets, plastic pipe 4" (ID) through 12" (ID) shall be AWWA C-900, Class 150, DR-18 or Class 200 and plastic pipe greater than 12" shall be AWWA C-905, DR-18.

A. PVC, Schedule 40 Pipe: ASTM D 1785.

1. PVC, Schedule 40 Socket Fittings: ASTM D 2466.

B. PVC, C-200 (SDR 21) Pipe:

1. Plastic pipe with solvent weld socket shall be rigid unplasticized polyvinyl chloride PVC 1220 (Type I, Grade 2), conforming to ASTM D-1785. Plastic pipe marked with product standard PS-21-70 conforms with this requirement.

2. Plastic pipe with rubber ring gaskets shall be rigid unplasticized polyvinyl chloride PVC 1120 (Type I, Grade 1), manufactured in accordance with ASTM D-2241. Plastic pipe marked with product standard PS-22-70 conforms with this requirement.

C. PVC, AWWA C-900, Class 150, with bell end with gasket, and with spigot end.

1. Push-on-Joint, Ductile-Iron Fittings in accordance with EMWD.

2. Mechanical-Joint, Ductile-Iron Fittings in accordance with EMWD.

D. PVC, AWWA C-900, DR-18 (Recycled Water), with bell end with gasket, and with spigot end.

1. Push-on-Joint, Ductile-Iron Fittings in accordance with EMWD.

2. Mechanical-Joint, Ductile-Iron Fittings in accordance with EMWD.

E. PVC, AWWA C-900, Class 200 (Recycled Water), with bell end with gasket, and with spigot end.

1. Push-on-Joint, Ductile-Iron Fittings in accordance with EMWD.

2. Mechanical-Joint, Ductile-Iron Fittings in accordance with EMWD.

3.

1.12 JOINING MATERIALS

A. Refer to Division 2 Section "Piped Utilities - Basic Materials and Methods" for commonly used joining materials.

B. Brazing Filler Metals in accordance with EMWD.

C. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material in accordance with EMWD.

1.13 PIPING SPECIALTIES

A. Transition Fittings shall be in accordance with EMWD.

B. Flexible Connectors shall be in accordance with EMWD.

1.14 CORROSION-PROTECTION PIPING ENCASEMENT

A. Shall be in accordance with EMWD.

1.15 GATE VALVES

A. Shall be in accordance with EMWD.

1.16 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies shall be in accordance with EMWD.

B. Valve Boxes shall be in accordance with EMWD.

C. Indicator Posts shall be in accordance with EMWD.

1.17 CHECK VALVES

A. Shall be in accordance with EMWD.

1.18 DETECTOR CHECK VALVES

A. Shall be in accordance with EMWD.

1.19 BUTTERFLY VALVES

A. Shall be in accordance with EMWD.

1.20 CORPORATION VALVES AND CURB VALVES

A. Shall be in accordance with EMWD.

1.21 WATER METERS

A. Shall be in accordance with EMWD.

1.22 PRESSURE-REDUCING VALVES

A. Shall be in accordance with EMWD.

1.23 RELIEF VALVES

A. Shall be in accordance with EMWD.

1.24 VACUUM BREAKERS

A. Shall be in accordance with EMWD.

1.25 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers shall be in accordance with EMWD.

B. Double-Check, Backflow-Prevention Assemblies shall be in accordance with EMWD.

C. Reduced-Pressure-Detector, Fire-Protection Backflow Preventer Assemblies shall be in accordance with EMWD.

D. Double-Check, Detector-Assembly Backflow Preventers shall be in accordance with EMWD.

1.26 WATER METER BOXES

A. Shall be in accordance with EMWD.

1.27 CONCRETE VAULTS

A. Shall be in accordance with EMWD.

1.28 PROTECTIVE ENCLOSURES

A. Shall be in accordance with EMWD.

1.29 FIRE HYDRANTS

A. Dry-Barrel Fire Hydrants shall be in accordance with EMWD.

B. Wet-Barrel Fire Hydrants shall be in accordance with EMWD.

1.30 FIRE DEPARTMENT CONNECTIONS

A. Fire Department Connections shall be in accordance with EMWD.

1.31 ALARM DEVICES

A. Alarm Devices shall be in accordance with EMWD

PART 2 - EXECUTION

2.1 EARTHWORK

A. Excavating, trenching, and backfilling for water system pipes smaller than 4" (ID) shall be in accordance with the plans, CPC and Division 2 Section "Earthwork" with the exception of pipes within public right-of-way they shall be per EMWD.

B. Excavating, trenching, and backfilling for water system pipes greater than 4-inches inside diameter (ID) shall be in accordance with the plans, Section 306 of the SSWPC and EMWD.

2.2 PIPING APPLICATIONS

A. Shall be in accordance with the plans, Section 306 of the SSWPC and EMWD.

2.3 VALVE APPLICATIONS

A. Shall be in accordance with EMWD.

2.4 PIPING SYSTEMS - COMMON REQUIREMENTS

A. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for piping-system common requirements.

B. Shall be in accordance with EMWD.

2.5 PIPING INSTALLATION

A. Water-Main Connection: Before tapping water main at location indicated on plans arrange with EMWD for requirements and inspection.

B. Plans and details indicate general location and arrangement of underground water piping. Location and arrangement of piping layout take design considerations into account. Contractor shall pothole join point(s), and where crossing possible existing utilities to determine horizontal

and vertical locations and notify the Architect of any discrepancies or conflicts before starting construction. Where specific installation is not indicated, follow piping manufacturer's written instructions.

C. Install ductile-iron in accordance with EMWD.

D. Install PVC in accordance with EMWD.

E. Depth of cover shall be in accordance with EMWD.

F. Install piping by tunneling or jacking, or combination of both, under streets and other obstructions that cannot be disturbed in accordance with EMWD.

G. Terminate water-service piping five (5) feet from building wall (P.O.C.). Terminate piping with caps, plugs, or flanges as required fro piping material and in accordance with EMWD.

H. Sleeves are specified in Division 15 Section "Basic Mechanical Materials and Methods and shall be in accordance with EMWD.

I. Mechanical sleeve seals are specified in Division 15 Section "Basic Mechanical Materials and Methods."

J. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping or thrust blocks in accordance with EMWD.

K. See Division 13 Section "Fire-Suppression Piping" for fire-suppression-water piping inside the building.

L. See Division 15 Section "Domestic Water Piping" for potable-water piping inside the building.

2.6 JOINT CONSTRUCTION

A. Install Water system with appurtenances and accessories indicated complete in place in accordance with the plans and EMWD

2.7 ANCHORAGE INSTALLATION

A. Install water-distribution piping with thrust blocks or restrained joints in accordance with EMWD.

B. Install thrust blocks or restrained joints for tees, plugs and caps, bends, crosses, valves, and hydrant branches in accordance with EMWD.

2.8 VALVE INSTALLATION

A. Gate Valves: In accordance with EMWD.

B. Corporation Valves and Curb Valves: In accordance with EMWD.

C. Pressure-Reducing Valves: In accordance with th EMWD.

2.9 DETECTOR-CHECK VALVE INSTALLATION

A. In accordance with EMWD.

2.10 WATER METER INSTALLATION

A. In accordance with EMWD.

2.11 ROUGHING-IN FOR WATER METERS

A. Rough-in piping and specialties for water meter installation in accordance with EMWD.

2.12 BACKFLOW PREVENTER INSTALLATION

A. In accordance with EMWD.

2.13 WATER METER BOX INSTALLATION

A. In accordance with EMWD.

2.14 CONCRETE VAULT INSTALLATION

A. In accordance with EMWD.

2.15 PROTECTIVE ENCLOSURE INSTALLATION

A. In accordance with EMWD.

2.16 FIRE HYDRANT INSTALLATION

A. In accordance with EMWD.

2.17 FIRE DEPARTMENT CONNECTION INSTALLATION

A. In accordance with EMWD.

2.18 ALARM DEVICE INSTALLATION

A. In accordance with EMWD.

2.19 CONNECTIONS

A. Piping installation requirements are specified in accordance with EMWD. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect water-distribution piping to existing water main per plan and in accordance with EMWD.

C. Connect water-distribution piping to interior domestic water piping and Specifications.

D. Ground equipment according to Division 16 Section "Grounding and Bonding."

E. Connect wiring according to Division 16 Section "Conductors and Cables."

2.20 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests in accordance with EMWD.

1. Hydrostatic Tests: Test in accordance with EMWD.

B. Prepare reports of testing activities in accordance with EMWD.

2.21 IDENTIFICATION

A. Install continuous detectable warning tape in accordance with EMWD.

2.22 CLEANING

A. Clean and disinfect water-distribution piping in accordance with EMWD.

B. Prepare reports of purging and disinfecting activities in accordance with EMWD.

END OF SECTION 02510

SECTION 02518
INTERLOCKING CONCRETE PAVERS

PART 1 GENERAL

A DESCRIPTION

1. SECTION INCLUDES:
Furnish and install concrete interlocking pavers 60mm and install in the pattern called for in the project plans.

2. Furnish and prepare sand leveling/interlock base.

B. RELATED WORK

A. Excavation, backfilling, and compaction of sub-base per section 02100.

PART 2 REFERENCES

A. SUBMITTAL

1. Submit samples of concrete paving units to indicate compliance with colors selected by Project Owner's Agent.

2. Submit sieve analysis for grading of leveling/interlock sand.

3. Submit test results for compliance of paving units to requirements of ASTM C936 from an independent testing laboratory.

B. MOCK UPS

1. Size of mock-up shall be determined based on extent of pattern to be adequately shown.

C. DELIVERY, STORAGE, AND HANDLING

1. Delivery and Handling: Pavers shall be delivered to and handled at the job site in the protective, shrink wrapped pallets as provided by the manufacturer.

2. Storage: Pallets shall be stored complete and unopened until time of use so that the label indicating the style and color within the pallet can be clearly viewed. Open pallets should be recovered at the end of each workday.

PART 3 PRODUCT INFORMATION

A. MANUFACTURERS

1. All Interlocking concrete Paving Stones shall be size as listed on the drawings x 60 mm thick by:
Manufacturer: Orco Pavingstones
Style: Antique Cobble
Color: Chatueu (B9)
Pattern: as indicated on drawings

2. Pavers available through: KRC Rock (760)744-1036, contact Issac Haupu

B. MATERIALS

1. All interlocking paving stones shall conform to the following specifications:

   a. Pavers shall have an average minimum compressive strength of 8,000 PSI with no individual unit less than 7,200 PSI with testing procedures in accordance with ASTM C-140.

2. Materials used to manufacture interlocking paving stones shall conform to the following:

   a. Cement B ASTM C-150 (Portland Cement)

   b. Aggregates B ASTM C-33 (washed graded sand and rock, no expanded shale or lightweight aggregates)

3. Size, shape design, and colors shall be in accordance with details as noted on plans.

4. Requirements under ASTM 936 Sections 4.3 (Resistance to Freezing and Thawing), and 4.4 (Abrasion Resistance) shall be waived if it is shown that the climatic and service conditions in which the paver units are to be used do not warrant said requirements.

C. SAND FOR LEVELING/INTERLOCK BED COURSE

1. Sand used for the leveling/interlock bed course shall be clean, non-plastic, free from deleterious or foreign matter. The sand shall be natural or manufactured. Grading samples shall be done according to ASTM C-136. The particle shall be sharp conforming to the requirements of ASTM C-33 with 100% passing the #4 sieve size and a maximum of 3% passing the #200 sieve size. Test results for washed concrete sand supplied by rock and sand producers indicating compliance with ASTM C-33 shall be acceptable.

PART 4 INSTALLATION

A. PREPARATION

1. Verify compacted subgrade is dry and ready to support paving and imposed loads.

2. Verify that the upper 6 inches of soil sub-grade is compacted to minimum 90 percent relative compaction.

3. Verify gradients and elevations of sub-grade are correct.

4. Do not begin installation until conditions relative to sub-grade are satisfactory. Start of installation equates to acceptance of substrate.

B. PLACING AGGREGATE BASE

1. Do not deposit aggregate base upon any portion of the sub-grade until the sub-grade has been approved by the Owner's Soil Engineer.

2. Place aggregate base in thin lifts to avoid segregation.

3. Spread aggregate base on the prepared sub-grade to such a depth that when thoroughly compacted it will conform to the grades called for in the project's plans.

4. Uniform moisture condition and compact aggregate base to 95 percent relative compaction. The finished sub-grade shall be smooth, hard, consistent, and true to line and grade.

C. SAND FOR INTERLOCKING/LEVEL BED COURSE

1. Do not deposit sand bed course upon any portion of the aggregate base course until the base course has been approved by the Owner's Engineer.

2. Spread the sand evenly over the area to be paved.

3. Screed the sand to a level that will produce a 1 inch thickness when the paving stones have been placed and vibrated. Adjust the sand level to insure that the final pavement elevation will be 1/4 to 3/8 inches higher than adjacent edge restraints (curb, gutter, etc.)to allow for proper surface drainage paver's chamfered edges.

D. PAVER INSTALLATION

1. Paver shall be clean and free from foreign materials before installation.

2. Installation should start from a corner or straight edge and proceed forward over the undisturbed sand laying course.

3. Paving work shall be plumb, level, and true to line grade; shall be installed properly, coincide and align with adjacent work and elevations.

a. Paving stones should be installed hand tight on the undisturbed sand laying course. String lines should be used to hold pattern lines true.

b. Gaps between the edge of the paver surface shall be filled with standard pavers or with pavers cut to fit. Cut pavers should be no smaller than one third the size of full pavers. Care should be taken when establishing the laying pattern to insure that less than one third pavers are minimized.

c. Pavers are set into the sand laying course by roller or plate vibrator capable of 3,000 to 5,000 compaction force. Vibration shall be conducted in crossing paths until the pavement surface is smooth and required elevation is achieved. Gaps between pavers should at this point be filled to about two thirds of the paver's full height. Gaps between edges should be no more than 3/16" wide after vibration. Gaps greater than 3/16" suggest that less than satisfactory interlock will be achieved. Pavers within three feet of unrestrained edges must not be compacted.

d. Once pavers are vibrated into place, clean, dry sand shall be broomed over the pavement surface and vibrated once more into the remaining unfilled gaps between pavers to the height of the joint bevel. Surplus sand should be swept from the pavement surface and disposed of.

e. The completed paving stone installation should be washed down and cleaned to provide a clean finished workmanlike installation.

END OF SECTION - 02518

SECTION 02530
SANITARY SEWERAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Eastern Municipal Water District Standards and Specifications (EMWD), latest Edition.

C. Standard Specifications for Public Works Construction (SSPWC), latest Edition.

1.2 SUMMARY

A. This Section includes gravity-flow sanitary sewerage outside the building.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride plastic.

1.4 PERFORMANCE REQUIREMENTS

A. Sanitary sewer pipe shall be PVC SDR 35 Pipe conforming to Section 207-17 of the SSPWC.

1.5 SUBMITTALS

A. Shall be submitted to the Architect for review and approval in accordance with SubSection 2-5.3 of the SSPWC and EMWD. The Contractor shall allow 10 working days for review by the Architect.

B. Product Data: For the following:

1. Pipe.
2. Pipe fittings.

C. Shop Drawings: For the following:

1. Manholes/ cleanouts: Include plans, elevations, sections, details, and frame and cover also shall include design calculations, and concrete design-mix report for cast-in-place manholes.

D. Field quality-control test reports: As required by EMWD.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic pipe, and fittings in direct sunlight.

B. Protect pipe, fittings, and seals from dirt and damage.

C. Handle manholes according to manufacturer's written rigging instructions.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Sewerage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to EMWD requirements:

1. Do not proceed with interruption of service without **Architect's** written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Sanitary sewer pipe shall be PVC SDR 35 Pipe conforming to Section 207-17 of the SSPWC and in accordance with EMWD.

2.2 BACKWATER VALVES

A. Manufacturer must be in accordance with EMWD.

2.3 CLEANOUTS

A. Sanitary sewer cleanouts shall be in accordance with the plans and EMWD.

2.4 CORROSION-PROTECTION PIPING ENCASEMENT

A. Shall be in accordance with EMWD.

2.5 MANHOLES

A. Sanitary sewer manholes shall be in accordance with the plans and EMWD.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling for the sanitary sewer system shall be in accordance with the plans, Section 306 of the SSWPC and in accordance with EMWD.

3.2 PIPING APPLICATIONS

A. Shall be in accordance with the plans, Section 306 of the SSWPC and EMWD.

3.3 PIPING INSTALLATION

A. General Locations and Arrangements: Improvement plans and details indicate general location and arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Contractor shall pothole join point(s), and where crossing possible existing utilities to determine horizontal and vertical locations and notify the Architect of any discrepancies or conflicts before starting construction.

1. Payment – Full compensation for potholing including pavement repair per City requirements shall be considered included in the contract unit prices paid for other items of work that are either incidental or appurtenant and shall be considered full compensation for furnishing all labor, materials, tools, equipment and incidentals for accomplishing the work as specified herein and no additional compensation will be allowed.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.

C. Install manholes/ cleanouts for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. Install piping by tunneling or jacking, or combination of both, under streets and other obstructions that cannot be disturbed in accordance with EMWD.

F. Install Sanitary sewer system in accordance with the plans, Section 306 of the SSWPC and EMWD.

G. Install corrosion-protection piping encasement per EMWD.

H. Clear interior of piping and manholes of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

3.4 PIPE JOINT CONSTRUCTION

A. Install Sanitary Sewer system with appurtenances and accessories complete in place where indicated per the plans and EMWD.

3.5 MANHOLE INSTALLATION

A. Install manholes complete in place with appurtenances and accessories where indicated per the plans and EMWD.

3.6 BACKWATER VALVE INSTALLATION

A. Install backwater valves complete with appurtenances and accessories where indicated in place per the plans or as directed per EMWD.

3.7 CLEANOUT INSTALLATION

A. Install cleanouts complete in place with appurtenances and accessories where indicated per the plans or as directed by EMWD.

3.8 CONNECTIONS

A. Connections to existing piping and manholes shall be where indicated per the plans and in accordance with EMWD.

3.9 ABANDONED SANITARY SEWERAGE SYSTEMS

A. Abandoned Piping: Piping shall be abandoned per Section 306-5 of the SSPWC or as directed by EMWD.

B. Abandoned Manholes: Manholes shall be abandoned per Section 306-5 of the SSPWC or as directed by EMWD.

C. Backfill to grade according to Division 2 Section "Earthwork" or as directed by EMWD.

3.10 IDENTIFICATION

A. Install warning tape as directed by EMWD.

3.11 FIELD QUALITY CONTROL

A. Contractor shall arrange for and pass inspections as required by EMWD.

B. Contractor shall test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects as required by EMWD. If system fails for any reason the Contractor shall make repairs as required by EMWD until the system passes.

3.12 CLEANING

A. Clean interior of piping and manholes per EMWD.

END OF SECTION – 02530

SECTION 02547
GRANULAR SURFACING

PART 1 – GENERAL

1.1 The provisions of the Standard Specifications for Public Works Construction (SSPWC), latest Edition, apply except as modified herein.

a. Work Included in this Section:

1. Site layout for ballfield
2. Site preparation for ballfield.
3. Fine finish grading.
4. Furnishing and installing infield surface.
5. Furnishing and installing warning track surface.
6. Furnishing and installing batter's box and pitcher's mound clay.
7. Furnishing and installing Stabilized Decomposed Granite

1.2 Work not Included:

a. Site demolition.
b. Rough and finish grading.
c. Irrigation.
d. Fencing.
e. Concrete.
f. Play Equipment.

1.3 Related Work Specified Elsewhere:

a. Soil Treatment, Section 02280.
b. Earthwork, Section 02200

1.4 Approvals:

a. All rough and finish grading shall be inspected and approved before start of any work of this section.

b. All sprinkler work affecting the work of this section shall be inspected and approved before installation of topping.

PART 2 – MATERIALS

2.1 Granular Surfacing

a. Infield Mix/Brick Dust

Shall be Stabilized Pro Gold Infield Mix by Gail Materials (800) 442-ROCK or approved equal. Provide samples for review and approval. Contractor will be required to provide proof that any substitute material is the same or greater quality of performance in relation to durability, drainage, and maintenance.

b. Warning Track Surface:

Shall be Stabilized 1/4" Pro Gold Warning Track by Gail Materials (800) 442-ROCK or approved equal. Provide samples for review and approval.

c. Batter's Box and Pitcher's Mound Clay;

The batter's box and pitcher's mound clay shall be constructed of "Hilltopper" from Gail Materials or approved equal. Provide samples for review and approval.

d. Stabilized Decomposed Granite for Trail:

1. Decomposed granite shall meet the following Sieve Analysis (Cal Trans 202) as follows:

Sieve Size	% Passing
3/8" (9.5 mm)	100
No. 4 (4.75 mm)	90-100
No. 8 (2.36 mm)	75-80
No. 16 (1.18 mm)	55-65
No. 30	40-50
No. 50	25-35
No. 100	15-20
No. 200	10-15

The R value shall be a minimum of 70.

2. A Non-toxic, organic binder/stabilizer that is colorless and odorless concentrated powder that binds decomposed granite or crushed aggregate 3/8" or ¼" minus.

3. For the trail the stabilized granite shall be placed to a minimum depth of 3" compacted for pedestrian pathways and groundcover. Place stabilized granite to a minimum depth of 6" for vehicular pathways.

4. Stabilized Decomposed granite shall 3/8" Coyote Gold as supplied by KRC ROCK INC. 700 N. Twin Oaks Valley Road, San Marcos, CA 92069; phone(800)KRC-ROCK , contact: Issac Haupu

e. Submittals:

Contractor to furnish conformance tests and obtain approval of material prior to delivery.

2.2 Excess Material

a. Provide Owner's representative with the following excess materials for use in future Decomposed Granite paving repairs: 40 to 50 lbs. bags of the aggregate paving blended with the proper amount of Stabilizer

PART 3 – EXECUTION

3.1 Infield Surface:

a. Subcut infield area to four inches below finish grade. Remove all rock ½" and larger a minimum of 4" below subgrade by dragging the area. Maintain uniform subgrade slope to drain. Thoroughly moisten the soil without flooding and roll with a minimum 3 ton roller. Prior to placement of four inch (4") deep infield mix, the graded area shall be treated with a non-translocating, pre-emergent herbicide (see Soil Treatment - Section 02280).

b. Evenly distribute sufficient infield mix to bring grades to required level after incorporation and compaction. Grade to uniform slope. Thoroughly moisten without flooding and roll with minimum 3 ton road roller. Match finish elevations to existing infield edge.

c. Warning Track

Subcut warning track area to three inches below finish grade. Remove all rock ½" and larger a minimum of 3" below subgrade by dragging the area. Maintain uniform subgrade slope to drain. Thoroughly moisten the soil without flooding and roll with a minimum 3 ton roller. Prior to placement of three inch (3") warning track mix, the graded area shall be treated with a non-translocating, pre-emergent herbicide (see Soil Treatment - Section 02280).

Evenly distribute sufficient warning track mix to bring grades to required level after incorporation and compaction. Grade to uniform slope. Thoroughly moisten without flooding and roll with minimum 3 ton road roller. Match finish elevations to existing outfield edge.

d. Maintenance:

Remove all vegetation in infield areas and in warning track areas as it appears. Contractor may use a contact weed killer that does not stain or leave a residue to control vegetation.

3.2 Blending Stabilizer

a. Blend 12 to 16 lbs (call manufacturer for exact blend) of Stabilizer per 1-ton of decomposed granite or crushed 3/8" or ¼" minus aggregate screenings. It is critical that Stabilizer be thoroughly and uniformly mixed throughout decomposed granite or crushed ¼" or 3/8" minus aggregate screenings. Bucket blending is not acceptable. Blending with a rake and or shovel is not acceptable.

3.3 Watering

a. Water heavily to achieve full depth moisture penetration of the Stabilized pathway Profile. Water activates Stabilizer. To achieve saturation of Stabilized pathway Profile, 25 to 45 gallons of water per 1-ton must be applied. During water application randomly test for depth using a probing device to the final depth.

3.4 Compaction

a. Upon thorough moisture penetration, compact aggregate screenings to 85% relative compaction by compaction equipment such as; a 2 to 4-ton double drum roller or a 1,000 lb. Single drum roller with vibratory plate tamp. Do not begin compaction for 6 hours after placement and up to 48 hours.

b. Take care in compacting decomposed granite or crushed 3/8" or ¼" minus aggregate screenings when adjacent to planting and irrigation systems. Hand tamping with 8" or 10" hand tamp recommended.

3.5 Inspection

a. Finished surface of pathway shall be smooth, uniform and solid. There shall be no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on the surface. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

3.6 Maintenance

a. Remove debris, such as paper, grass clippings, leaves or other organic material by mechanically blowing or hand raking the surface as needed. Any plowing program required during winter months shall involve the use of a rubber baffle on the plow blade or wheels on the plow that lifts the blade 1/4" off the paving surface.

b. During the first year, a minor amount of loose aggregate will appear on the paving surface (1/16" to 1/4"). If this material exceeds a 1/4", redistribute the material over the entire surface. Water thoroughly to the depth of 1". Compact with power roller of no less than 1000 lbs. This process should be repeated as needed.

c. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8" – 10" hand tamp plate.

3.7 Repairs

a. Excavate damaged area to the depth of the Stabilized aggregate and square off sidewalls.

b. If area is dry, moisten damaged portion lightly.

c. Pre-bend the dry required amount of Stabilizer powder with the proper amount of aggregate in a concrete mixer.

d. Add water to the pre-blended aggregate and Stabilizer. Thoroughly moisten mix with 25 to 45 gallons per 1-ton of pre-blended material or to approximately 10% moisture content.

e. Apply moistened pre-blended aggregate to excavated area to finish grade.

f. Compact with an 8" to 10" hand tamp or 250 to 300 pound roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

END OF SECTION 02547