COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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IN REPLY PLEASE
REFER TO FILE: BRC-2

March 19, 2024

MEDICAL EXAMINER – HIGH DESERT FACILITY REPLACEMENT
SPECS. NO. 7883; C.P. NO. 87890

NOTICE TO BIDDERS "B"

This Notice to Bidders "B" clarifies certain portions of the bid documents and provides responses to questions received, all of which are hereby made part of the contract documents.

PROJECT MANUAL:

1. Refer to Section 00 03 00, Form of Bid. **Delete** the Section in its entirety and **replace** with the attached revised Section 00 03 00 (Attachment 1).

QUESTIONS:

Question 1: What is the specification for the carpet tile and the vinyl tile flooring?

Answer: 1. Carpet specification: Shaw Contract group Captivate in Gondola
https://www.shawcontract.com/en-us/products/59554/colors/54500

2. LVT specification: Shaw Contract Group Terrain in Willow
https://www.shawcontract.com/en-us/products/4110v/colors/00170

3. Base: Johnsonite / Tarkett 4" top set TV traditional and cove at resilient floors. Color from manufacturers standard colors TBD.

Install all items per manufacturer's recommendations and directions. Prepare floors as needed prior to installation.

Question 2: Are there any specifications for electrical, plumbing, mechanical, wet utilities?

Answer: Refer to Mechanical Specification: M-0.02, M-0.03, and M-0.04
Plumbing Specification: P-0.02 and P-0.03
Electrical Specification: E-4.01, E-4.02, and E-4.03
Wet Utility Plan: C6.00 (Attachment 2)

Question 3: Is there any Haz-mat report for the existing building?

Answer: The Industrial Hygienist tested and confirmed that there is no asbestos and lead in the building.

Kindly notify your subcontractors to this effect. If you have any questions, please contact Mr. Joseph Chang at (626) 300-2346 or jochang@pw.lacounty.gov.

Very truly yours,

MARK PESTRELLA, PE
Director of Public Works

Soo Kim

SOO KIM
Division Chief
Business Relations and Contracts Division

BS:jc

Attach.

ATTACHMENT 1

_____ _____

Name of Bidder (Firm Name) Vendor Identification Number

SECTION 00 03 00

FORM OF BID TO BE USED BY BIDDERS

The undersigned proposes to furnish all materials, labor, and equipment required for the construction to complete the Medical Examiner – High Desert Facility Replacement, in accordance with Drawings and Specifications 7883, including addenda thereto, if any, adopted by the Board of Supervisors, and on file in the office of the Board of Supervisors, as follows:

The lowest bid price shall be determined by adding the following items: Lump Sum Bid in Words (1) + [Extended Overhead Daily Rate (3) x Multiplied by 30 days] = Total Lump Sum Bid. Preference as stated in Section 00 01 00, 1.30, will be applied to the Total Lump Sum Bid, if applicable, to determine the final total bid amount.

1. LUMP SUM BID:

The lump sum bid for the work, including Best Management Practices (BMP) and Construction and Demolition Debris Recycling, and Mandatory Jobs Coordinator requirements complete according to the Drawings and Specifications, will be:

($_____) (_____)

Lump sum bid in figures Lump sum bid in words

2. EXTENDED OVERHEAD DAILY RATE:

The daily rate for the sum of the Contractor's field office and home office overhead applicable to this project, for each day of compensable delay will be:

($_____) (_____)

Daily rate in figures Daily rate in words

3. COUNTY PROGRAM PREFERENCE:

The Local Small Business Enterprise Program Preference, Social Enterprise Program Preference, and Disabled Veterans Business Enterprise Program Preference are provided by the County for purposes of bid evaluation only, as specified in Article 1.30 of Section 00 01 00. If Bidder is a qualifying Local Small Business Enterprise, Social Enterprise Preference, and/or Disabled Veterans Business Enterprise check "yes" in the box below. Section 00 04 38 Request for County Program Preference Consideration must be submitted at the time of bid with a copy of the certification letter issued by the County of Los Angeles Department of Consumer and Business Affairs. If non-qualifying, check "no" in the appropriate box.

LSBE	Yes	☐	No	☐
SE	Yes	☐	No	☐
DVBE	Yes	☐	No	☐

4. RECEIPT OF NOTICE TO BIDDERS:

I hereby certify and declare that I have received, reviewed and incorporated Notice to Bidders A dated February 29, 2024, and Notice to Bidders B dated March 19, 2024, into my Bid.

Executed this day of _____ (Month and Year)

By: _____
(Authorized Signature of a Principal Owner, Officer, or Manager)

_____

NOTE: Any alteration or addition to the Form of Bid may invalidate same. All blank spaces shall be filled out completely. Line out nonapplicable blanks. An incomplete form may invalidate bid. The County reserves the right to waive any informalities or to reject any or all bids or to accept any alternatives when called for.

I (We) certify that on _____, 20____, License No. _____, license classification(s) _____, was issued to me (us), in the name of _____, by the Contractors' State License Board, pursuant to California Statutes of 1929, as amended, and that said license has not been revoked.

Firm Ownership Information
Check where applicable:

1. ( ) Minority-Owned
   ( ) Woman-Owned
   ( ) Disadvantaged-Owned
   ( ) Disabled Veteran-Owned
   ( ) LGBTQQ-Owned

2. ( ) An individual
   ( ) A corporation. Name state or territory of Incorporation
   _____
   ( ) A copartnership
   ( ) A joint venture

Race/Ethnic Composition
For statistical purposes only.
( ) Black/African American
( ) Hispanic/Latino
( ) Asian or Pacific Islander
( ) Native Americans
( ) Subcontinent Asian
( ) White

If a copartnership or joint venture, list names of individuals comprising same below
_____
_____
_____

Date signed _____, 20_____

Place _____
City and State

Respectfully submitted,

_____
Firm Name (if applicable)

Bidder's address, E-mail address, and telephone:

_____
Number and Street

_____
City and State Zip Code

_____
Telephone

_____
Fax

_____
Signature and Print Name

_____
Title and E-mail Address

_____
Signature and Print Name

_____
Title and E-mail Address

ATTACHMENT 2

SECTION 33 11 10 - SITE WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes water-distribution piping and specialties outside the building for the following:

1. Water services.

1.2 DEFINITIONS

A. Water-Distribution Piping: Domestic-water piping.

B. Water Service: Exterior domestic-water piping branch from service main into building to water distribution piping.

C. The following are industry abbreviations for piping materials:

1. PE: Polyethylene plastic.
2. PVC: Polyvinyl chloride plastic.
3. DI: Ductile iron.
4. ACP: Asbestos-cement pipe

1.3 SUBMITTALS

A. Product Data: For the following:
1. Valves and accessories.

B. Coordination Drawings: For piping and specialties including relation to other services in same area. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.

C. Field Quality-Control Test Reports: From Contractor.

D. Operation and Maintenance Data: For specialties to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section " Operation and Maintenance Data," include the following:

1. Valves.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of piping and specialties and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."

B. Regulatory Requirements:

1. Comply with requirements of utility company supplying water.
2. Comply with standards of utility company for disinfection of potable water service piping.

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

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

E. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.

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

G. NSF Compliance:

1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.
2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

H. Pre-installation conference: Conduct conference at Project site to comply with requirements of Division/Section “Project Management and Coordination`.

I. If tapping into transite piping, comply with EH&S Standards for handling transite. Coordinate removal of transite materials with EH&S.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves 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 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 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.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do 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. Notify Architect not less than two weeks in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without utility company permission. Utility company personnel will conduct all utility system shutdowns and startups.
3. If utility interruption is for more than four hours, provide temporary utility service.

1.7 COORDINATION

A. Coordinate connection to existing water main with utility company.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.
3. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Requirements”, Part 2 “Product Substitutions” Article. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.2 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

2.3 PVC PIPE AND FITTINGS

A. PVC, Schedule 40 (NPS 1/8 to NPS 3 ½): ASTM D 1785. Suitable for potable water distribution and manufactured in compliance with NSF Standards.
1. Fittings: PVC, Schedule 40 Socket Fittings: ASTM D 2466.

2.4 JOINING MATERIALS

A. Refer to Division 33 Section "Common Work Results For Utilities" for commonly used joining materials.

B. Transition Couplings:

1. Underground Piping, NPS 1-1/2 and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

2. Underground Piping, NPS 2 and Larger: AWWA C219, metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
3. Aboveground Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

C. Brazing Filler Metals: AWS A5.8, BCuP3 or BCuP4 Series.

D. Soldering Flux: ASTM B 813, water-flushable type.

E. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.

F. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Flange and gasket type and material recommended by piping system manufacturer. Bolts and nuts shall be stainless steel.

2.5 GATE VALVES

A. AWWA, Cast-Iron Gate Valves:

1. Manufacturers:

a. American Cast Iron Pipe Co.; American Flow Control Div.
b. American AVK.
c. Grinnell Corporation; Mueller Co.; Water Products Div.
d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
e. McWane, Inc.; Kennedy Valve Div.
f. McWane, Inc.; M&H Valve Company Division
g. United States Pipe and Foundry Company.
h. Or equal.

2. Non-rising-Stem, Resilient-Wedge Gate Valves: AWWA C509, ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut. Valves shall be full wall thickness whether using cast iron or ductile iron. The wall thickness reductions allowed by AWWA C515 shall not be used on University Projects.

a. Rated Operating Pressure: 250 psig.
b. Test Pressure : 500psig
c. End Connections: Mechanical joint or flanged.
d. Interior and exterior coating: Fusion-bonded, epoxy coated. Comply with ANS/AWWA C550, standard for Protective Interior Coating of hydrants and valves.
e. Body to Bonnet bolts: Stainless steel 18-8
f. Stem shall have an integral thrust collar. Two-piece assemblies shall not be provided.
g. Grate shall be fully encapsulated in EPDM or SBR. Gate shall have Delrin or other anti-friction insert (s) to reduce operating torque.
h. Valves in buried service shall have a 2 inch square operating nut.

3. OS&Y, Rising-Stem, Resilient-Seated Gate Valves: AWWA C509, UL 262, FM-approved cast-iron or ductile-iron body and bonnet, outside screw and yoke; with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem. Valves shall be full wall thickness whether using cast iron or ductile iron. The wall thickness reductions allowed by AWWA C515 shall not be used on University Projects.

a. Minimum Working Pressure: 200 psig.
b. End Connections: Flanged.
c. Interior and Exterior Coating: Complying with AWWA C550, epoxy.

2.6 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies: Comply with MSS SP-60. Include sleeve and valve compatible with drilling machine. Where line-stopping or other activity that is similar to tapping occurs, the same requirements for tapping sleeves shall be followed.

1. Manufacturers:

   a. Mueller Co.; Water Products Div.
   b. JCM Industries.

2. Tapping Sleeve: Cast- or ductile-iron or stainless steel, mechanical joint tapping sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve. The tapping sleeve shall provide a mechanical joint fitting at each end so that a failure of the pipe being tapped will not cause a leak. Unless it has positively been determined that the pipe to be tapped is not ACP, the sleeve shall be compatible for use with ACP.

   a. JCM Industries No. 414 mechanical joint tapping sleeve with fusion-bonded epoxy coating interior and exterior.
   b. Mueller Co.; H-615 or H-619 mechanical joint tapping sleeve with fusion- bonded epoxy coating interior and exterior.

3. Valve: AWWA, C509 cast-iron, fusion-bonded, epoxy coated. Non-rising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Include triangular top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve. The triangular top section is deliberately different from the Standards of the Irvine Ranch Water District for potable water.

1. Provide precast concrete valve box by Christy or equal with one-piece 8” SDR 35 or SCH 40 PVC extension to valve per standard detail 33 W-7a or
2. Provide cast-iron valve box complying with AWWA M44 with approximately 5-inch diameter barrel per standard detail 33 W-7a.
3. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.7 MISCELLANEOUS MATERIALS

A. Warning Tape; See Division 31 Section “Earth Moving.” Tape shall state “Caution Potable Water Line Buried Below.”

B. Tracer Wire; See Division 31 Section “Earth Moving.”

PART 3 - EXECUTION

3.1 EARTHWORK

A. Refer to Division 31 Section “Earth Moving” for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.

C. Do not use flanges, unions, or keyed couplings for underground piping.

D. Flanges, unions, keyed couplings, and special fittings may be used, instead of joints indicated, on aboveground piping.

E. Underground Water-Service Piping: Use the following piping materials for each size range:

NPS 4 to NPS 12; PVC, Schedule 40 (NPS 1/8 to NPS 3 ½): ASTM D 1785. Suitable for potable water distribution and manufactured in compliance with NSF Standards.

3.3 VALVE APPLICATIONS

A. General Application: Use mechanical-joint-or flanged-end valves for NPS 3 and larger underground installation. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation. All Valves shall be epoxy coated.

B. Valve types to be used:

1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, non-rising-stem, resilient-seated, epoxy coated gate valves with valve box.
2. Use the following for valves above ground:
   a. Gate Valves, NPS 3 and Larger: AWWA, cast iron, OS&Y rising or non-rising stem, resilient Wedge seated. Use rising stem valves in fire service and non-rising stems in potable water and regulating stations.

3.4 JOINT CONSTRUCTION

A. See Division 33 Section "Common Work Results For Utilities" for basic piping joint construction.

B. Make pipe joints according to the following:
1. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
2. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 33 Section "Common Work Results For Utilities" for joining piping of dissimilar metals.

C. Provide stainless steel bolts, nuts and washers both above ground and below ground.

3.5 PIPING SYSTEMS - COMMON REQUIREMENTS

A. See Division 33 Section "Common Work Results For Utilities" for piping-system common requirements.

3.6 PIPING INSTALLATION

A. Water-Main Connection:

1. Make connection using a tee fitting or tapping sleeve.
2. No taps or other connections shall be made to existing water mains prior to conducting an approved pressure test on the new water distribution system down stream from the tapping valve. Tapping sleeves shall be pressure tested in an approved manner in the

field, in the presence of the inspector, prior to tapping the main line. Tapping of the main line shall not proceed unless the inspector is present.

3. Expose connection point to the existing domestic water system for verification of horizontal and vertical location before starting new connection and piping.

B. Make connections larger than NPS 2 with tapping machine according to the following:

1. Install tapping sleeve and tapping valve according to MSS SP-60.
2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.

C. Make connections NPS 2 and smaller with drilling machine according to the following:

1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by University standards.
2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
4. Install corporation valves into service-saddle assemblies.
5. Install manifold for multiple taps in water main.
6. Install curb valve in water-service piping with head pointing up and with service box.

D. Install PVC, AWWA pipe according to the minimum requirements of NFPA 24 Table 10.1.1 Manufacturing Standards for Underground Pipe.

E. Bury piping with depth of cover over top of pipe according to the following and to also comply with the minimum requirements of NFPA 24 section 10.4.2.2:

1. Mains in paved areas: With at least 42 inches cover over top.
2. Mains in unpaved areas: With at least 48 inches cover over top.
3. Laterals to fire hydrants: With at least 48 inches cover over top.
4. Laterals 4 inches and smaller to buildings: With at least 36 inches cover over top.
5. Laterals 6 inches and larger to buildings: With at least 36 inches cover over top.
6. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.

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

G. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall.

1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.

H. Sleeves are specified in Division 33 Section "Common Work Results For Utilities."

I. Mechanical sleeve seals are specified in Division 22 Section "Common Work Results For Plumbing."

J. Install underground piping with restrained joints at horizontal and vertical changes in direction by use of: restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and/or other approved supports.

1. Thrust blocks shall be installed at all changes in direction, changes in size, valves and terminal ends, such as plugs, caps and tees.
2. Thrust blocks shall be concrete having a compressive strength of not less than 2000 psi after 28 days and shall be in accordance with Division 03, Section “Cast-In-Place Concrete.”
3. Thrust blocks shall be placed between solid ground and the fitting to be anchored. The base and the thrust bearing sides of the thrust blocks shall be poured directly against undisturbed earth.
4. The sides of the thrust blocks not subject to thrust may be poured against forms.
5. Thrust blocks shall be placed so that the joints for all fittings will be accessible for repair in the future. No pipe joint shall be embedded in concrete.
6. The thrust blocks shall provide for transfer of thrusts and reactions without exceeding the allowable stress of the concrete and shall be installed in accordance with OCFA Guideline B-03.

K. Anchor service-entry piping to building wall.

L. See Division 22 Section "Domestic Water Piping and Valves" for potable-water piping inside the building.

M. See Division 21 Sections for Water-Base Fire-Suppression System inside the building.

N. Buried metallic fittings shall be wrapped with double wrap of PE film before backfill. In addition, buried metallic fittings and appurtenances in PVC pipe installation shall be “bagged” or wrapped with polyethylene before concrete thrust blocks are poured. AWWA C105 applies.

O. Curbs in streets, drives or ring mall shall be inscribed with a “W” indicating location of domestic water service crossing curb.

P. Lay piping on a bed of sand, at least 6 inches thick, on firm undisturbed earth. Remove loose rock, clods, and debris from the trench before placing bedding sand and before laying any pipe.

3.7 ANCHORAGE INSTALLATION

A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:

1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
3. Fire-Service-Main Piping: According to NFPA 24.

B. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.8 VALVE INSTALLATION

A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box. Main line valves shall be accessible at all times during construction. Valves with over 48-inches of cover shall be provided with extension stem as per Campus Standard Detail drawing 33-W-8.

B. Main line valves shall be accessible during construction, and valve stem tops having over 48-inches of cover shall be provided with extension as per Campus Standard Detail drawing 33-W-8.

3.9 CONNECTIONS

A. Connect water-distribution piping to Site's existing water main. Use tapping sleeve and tapping valve or flanged tee.

B. Connect water-distribution piping to interior domestic-water and fire-suppression piping as required for the project.

C. Connect waste piping from drinking fountains to sanitary sewerage system. See Division 33 Section "Facility Sanitary Sewer" for connection to sanitary-sewer piping.

D. Ground equipment according to Division 26 Section "Grounding and Bonding For Electrical Systems."

E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.10 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests before joints are covered and after 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 150 psig or 1-1/2 times working pressure, whichever is greater, for 4 hours.

1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 2 hours; decrease to 0 psig. Slowly increase again to test pressure and hold for 2 more hours. 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.

C. Prepare reports of testing activities.

D. Fire main and water mains serving fire suppression risers and fire hydrant piping shall be pressure tested and flushed before backfilling according to the procedures set forth in NFPA 24. The DCFM shall witness an inspection of underground installation, back flush, and hydrostatic test. Hydrostatic testing shall be made with before joints are covered. Backfill between joints before testing to prevent movement of piping.

3.11 IDENTIFICATION

A. Install continuous underground warning tape during backfilling of trench for underground water-service piping. See Division 31 Section "Earth Moving" for underground warning tapes.

B. Install tracer wire on top of and attached to pipe for all non-ferrous piping. See Division 31 Section "Earth Moving" for tracer wirer.

C. Show termination points for tracer wire on record drawings.

3.12 CLEANING

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
2. Use purging and disinfecting procedure prescribed, use procedure described in AWWA C651 or as described below:

    a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
    b. An optional disinfecting procedure that can be used in lieu of paragraph above is to drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
    c. After standing time, flush system with clean, potable water until the chlorine residual equals that in the water system.
    d. Submit water samples in sterile bottles to the proper representative for review and acceptance. Repeat procedure if biological examination shows evidence of contamination.
    e. Underground mains shall be flushed at maximum flow.

B. Prepare reports of purging and disinfecting activities.

END OF SECTION 33 11 10

SECTION 33 31 00 - FACILITY SANITARY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes gravity-flow sanitary sewerage outside the building, with the following components.

Section Includes:

1. Pipe and fittings.
2. Cleanouts.

1.2 ACTION SUBMITTALS

A. Product Data: For expansion joints.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from sewer system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

PART 2 - PRODUCTS

2.1 PVC Pipe and Fittings

A. PVC Type PSM Sewer Piping:

1. Pipe: ASTM D 3034, SDR 35 PVC Type PSM sewer pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

2.2 CLEANOUTS

A. Plastic Cleanouts:

1. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.3 CONCRETE

A. General: Cast-in-place concrete complying with ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.

3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewer piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

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 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. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

F. Install gravity-flow, non-pressure, drainage piping according to the following:

1. Install piping pitched down in direction of flow, at minimum slope of 2 percent unless otherwise indicated.
2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place-concrete supports or anchors.
3. Install piping with 30-inch minimum cover.
4. Install PVC Type PSM sewer piping according to ASTM D 2321 and ASTM F 1668.

G. Clear interior of piping 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.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, non-pressure, drainage piping according to the following:
   1. Join PVC Type PSM sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.
   2. Join dissimilar pipe materials with non-pressure-type, flexible couplings.

B. Pipe couplings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

   1. Use non-pressure flexible couplings where required to join gravity-flow, non-pressure sewer piping unless otherwise indicated.

      a. Unshielded flexible couplings for pipes of same or slightly different OD.
      b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
      c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.4 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

   1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
   2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
   3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
   4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.6 CONNECTIONS

A. Make connections to existing piping and underground manholes.

   1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye fitting plus 6-inch overlap with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.

2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes by cutting opening into existing unit large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe or manhole wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.

    a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
    b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.

4. Protect existing piping and manholes to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.7 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tapes directly over piping and at outside edges of underground manholes.

1. Use detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground manholes.

3.8 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
    d. Infiltration: Water leakage into piping.
    e. Exfiltration: Water leakage from or around piping.

2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
3. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to requirements of authorities having jurisdiction.

3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:

    a. Fill sewer piping with water. Test with pressure of at least 10-foot head of water, and maintain such pressure without leakage for at least 15 minutes.
    b. Close openings in system and fill with water.
    c. Purge air and refill with water.
    d. Disconnect water supply.
    e. Test and inspect joints for leaks.

5. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

    a. Option: Test plastic gravity sewer piping according to ASTM F 1417.
    b. Option: Test concrete gravity sewer piping according to ASTM C 924.

6. Manholes: Perform hydraulic test according to ASTM C 969.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.9 CLEANING

A. Clean dirt and superfluous material from interior of piping. Flush with potable water.

END OF SECTION 22 13 13

SECTION 33 41 00 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Cleanouts.
3. Concrete for cast-in-place structures.
4. Catch basins.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings (If warranted):

1. Manholes: Include plans, elevations, sections, details, frames, and covers.
2. Catch basins and stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.

1.3 INFORMATIONAL SUBMITTALS (If warranted)

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1-inch equals 50 feet and vertical scale of not less than 1-inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

C. Product Certificates: For each type of cast-iron soil pipe and fitting, from manufacturer.

D. Field quality-control reports.

1.4 PROJECT CONDITIONS

A. Interruption of Existing Storm Drainage 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 requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Type PSM Sewer Piping:

1. Pipe: ASTM D 3034, SDR 35 PVC Type PSM sewer pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

B. PVC Pressure Piping:

1. Pipe: Schedule 40 PVC pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: PVC, Schedule 40 Socket Fittings: ASTM D 2466.

2.2 CLEANOUTS

A. Plastic Cleanouts:

1. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as storm sewer piping.

2.3 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

C. Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.

2. Benches: Concrete, sloped to drain into channel.

D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.4 CATCH BASINS (Unless otherwise indicated on plans):

A. Standard Precast Concrete Catch Basins:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Base Section: 4-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
3. Riser Sections: 4-inch minimum thickness and lengths to provide depth indicated.
4. Joint Sealant: ASTM C 990 bitumen or butyl rubber.
5. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include flat grate with small square or short-slotted drainage openings.

1. Size: Per plan.
2. Grate Free Area: Approximately 50 percent unless otherwise indicated.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

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 use of lubricants, cements, and other installation requirements.

C. Install manholes 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. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

F. Install gravity-flow, non-pressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.
2. Install piping **NPS 6** and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
3. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, non-pressure drainage piping according to the following:
   1. Join PVC corrugated sewer piping according to ASTM D 2321 for elastomeric-seal joints.
   2. Join dissimilar pipe materials with non-pressure-type flexible couplings.

3.4 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from storm sewer pipes to cleanouts at grade. Use PVC pipe fittings in sewer pipes at branches for cleanouts and PVC pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in storm sewer pipe.

B. Set cleanout frames and covers in earth in cast-in-place concrete block. Set with tops 1 inch above surrounding earth grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 MANHOLE INSTALLATION

A. General: Install manholes, complete with appurtenances and accessories indicated.

B. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.

C. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops **3 inches** above finished surface elsewhere unless otherwise indicated.

3.6 CATCH BASIN INSTALLATION

A. Set frames and grates to elevations indicated.

3.7 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

3.8 CONNECTIONS (Unless otherwise indicated on plans):

A. Make connections to existing piping and underground manholes.

   1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
   2. Make branch connections from side into existing piping, NPS 4 to NPS . Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
   3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe,

manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.

a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.

4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

B. Pipe couplings and expansion joints with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

3.9 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.

1. Use detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.10 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:

a. Alignment: Less than full diameter of inside of pipe is visible between structures.
b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
d. Infiltration: Water leakage into piping.
e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to requirements of authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate report for each test.
5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.
b. Option: Test plastic piping according to ASTM F 1417.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 33 41 00