



BAGUIO WATER DISTRICT
"Serving mankind is serving God"

TERMS OF REFERENCE

**EARTHWORK AND REMOVAL OF ACTUAL
STRUCTURES/OBSTRUCTION - FOR THE PROPOSED
INSTALLATION OF 8"Ø X 2,730M HDPE MAINLINE
FROM MARCOS HIGHWAY TO ASIN ROAD VIA
SUELLO ROAD**

TECHNICAL SPECIFICATIONS

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STANDARD TECHNICAL SPECIFICATIONS

This specific provision describes the technical requirements, which is basically the elaboration of work items within the scope of work that forms part of the Contract.

DIVISION I – GENERAL REQUIREMENTS

1.1 Mobilization / Demobilization

Mobilization shall include transportation to the site of Contractor's plant, materials provided by him, equipment, employees, furnishings and temporary facilities as defined in this Section.

Demobilization shall include dismantlement and removal from the site of Contractor's plant, materials and equipment and all temporary facilities. Demobilization shall also include clean up of the site after completion of the Contract Work as approved by the BWD Engineer and transportation from the site of Contractor's employees.

1.2 Permit and Licenses

The procurement of all excavation permits and other permits necessary in the project implementation shall be undertaken by BWD.

1.3 Personal Protective Equipment (PPE)

The Contractor shall provide all his workers with complete sets of PPEs such as but not limited to heavy duty gloves, dust mask, reflectorized vest, ear plug/muff, clear safety glasses, and hard hat.

1.4 Terms of Payment

The Contractor may submit a request for payment for work accomplished. Such request for payment shall be verified and certified by the BWD's Representative.

The BWD shall have the right to deduct from the Contractor's progress billing such amount as may be necessary to cover third party liabilities, as well as uncorrected discovered defects in the project.

Payments shall be adjusted by deducting therefore the amounts for advance payments and retention.

1.5 Contractor's Construction Equipment, Tools and Appliances

The Contractor shall provide backhoe with breaker, mini-dump truck, tools and appliances necessary to perform and insure a rate of progress sufficient to complete a satisfactory quality of work.

DIVISION II – EARTHWORK AND REMOVAL OF ACTUAL STRUCTURES/OBSTRUCTION

2.1 General

The Contractor shall perform all earthworks required.

All works under this Section shall comply to the conditions of the Excavation/Digging Permit to be issued by the CEO and/or DPWH.

2.2 Site Work

a. Scopes

Furnish all plant, labor, equipment, materials and perform all operations in connection with demolition, clearing and grubbing, earthwork for the construction of the Water Supply System, in strict accordance with this section or the Specifications and the applicable contract Drawings, subject to the terms and condition of the contract.

b. Clearing and Grubbing

- Clearing

All areas within which structure or related construction has to be accomplished shall be cleared of matted roots, trees, brush, snags, vegetation, rubbish, spoils, and other objectionable matters. All combustible materials from clearing operation shall be removed from site of work and disposed of as directed by the BWD Engineer.

- Grubbing

Grubbing shall consist of the removal of tree stumps, forest growth, brush and rubbish from the work areas to be occupied by permanent structures and from other areas within the indicated clearing limits as directed by the BWD Engineer.

- i. Trees and Shrubs to be retained shall be protected properly from damage,
- ii. Stumps shall be removed entirely. Roots and matted roots shall be grubbed out to at least 150mm below the existing surface

2.3 Cutting and Breaking of Pavement

a. General

The Contractor shall provide all labor, materials & equipment necessary for pavement breaking.

BWD shall commence cutting using concrete cutter before breaking the concrete pavement with concrete breaker by the Contractor to assure even trench and not to extent damage of pavement. Staking of pipeline route shall be applied and preserved for the contractor's guide.

2.4 Pipeline Trench Excavation

a. General

The Contractor shall provide all labor, materials & equipment necessary for trench excavation.

Debris from excavation shall be disposed of immediately by the Contractor. The hauling and disposal of the debris shall be shouldered by the Contractor.

Unless otherwise shown or ordered, excavation for pipelines shall be open – cut trenches. Except when otherwise shown or ordered by the Engineer, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe. The trench bottom shall be given a final trim using a string line for establishing grade, such that each pipe section when first laid will be wholly in contact with the ground or bedding along the extreme bottom of the pipe. Rounding out the trench to form a cradle will not be required.

The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing water distribution facilities and existing works of any other governmental or private utility. Work that is likely to interfere with any existing facility shall be programmed in cooperation with the BWD Engineer. The Contractor shall conduct exploratory excavation to determine underground obstruction and existing mains so that needed changes in grade can be made. No additional compensation will be allowed for exploratory excavations. Moreover, all information regarding existing water mains and other facilities, as shown on the Drawings are based on existing records and BWD assumes no responsibility for accuracy of such information or for any additional cost incurred by the Contractor as a result of such inaccurate information. In view thereof, all existing water facilities and other private utility facilities that were damaged during the execution of the excavation activity shall be repaired or replaced by the Contractor at his own expense.

b. Trench Over – Excavation to Clear Obstructions

Trenches shall be over – excavated to a depth approved by the BWD Engineer for pipeline clearance of obstructions. All work specified in this sub-section shall be performed by the Contractor at his own expense when the over – excavation plus the cover of the pipe measured to the existing ground surface does not exceed 1.50 meters; when the additional over – excavation plus the cover of the pipe measured to existing ground surface exceeds 1.50 meters, additional payment will be made to the Contractor for that portion of work located below said depth. Said additional payment will be made under separate unit price bid items for over – excavation if such bid items have been established; otherwise, payment will be made in accordance with negotiated prices.

c. Trench Over – Excavation When Ordered

Trenches shall be over – excavated beyond the depth shown when ordered by the BWD Engineer. Such over – excavation shall be to the depth ordered. The trench shall then be refilled to the grade of the bottom of the pipe with either selected granular material obtained from the excavation, sand, or crushed rock, at the option of the BWD Engineer. When crushed rock bedding is ordered, well-graded material

of 40-mm (1.6-in.) maximum size shall be used. Bedding material shall be placed in layers, brought to optimum moisture content, and shall be thoroughly compacted up to the compaction acceptable to the BWD Engineer. Payment will be made under separate unit price bid item for furnishing and installing bedding and backfill if such bid items have been established; otherwise, payment will be made in accordance with negotiated prices.

d. Over-Excavation Not Ordered, Specified, or Shown

Any over-excavation carried below the grade ordered specified or shown shall be refilled to the required grade with suitable selected granular material by the Contractor at his own expense. Such material shall be moistened as required and thoroughly compacted up to the compaction acceptable to the BWD Engineer.

e. Disposal of Excess Excavated Material

The Contractor shall remove and dispose all excess excavated material at his own expense and in a manner approved by the BWD Engineer.

f. Excavation in Vicinity of Trees

Except where trees are shown on the drawings to be removed, trees shall be protected from injury during construction operations; and no tree is to be removed without permission from the BWD Engineer. No tree roots over 50 mm (2 in.) in diameter shall be cut without the permission of the BWD Engineer. Trees shall be supported during excavation as may be directed by the BWD Engineer.

g. Rock Excavation

Rock excavation shall include removal and disposal of the following: (1) all boulders measuring 0.25 cubic meter (0.33 yd³) or more in volume; (2) all rock material in ledges, bedding deposits, and unstratified masses which cannot be removed without systematic drilling and blasting.

Said rock excavation whether shown or not shown in the drawing, but it is ordered by the BWD Engineer shall be performed by the Contractor to the specified depth and line of grade.

h. Stockpile of excavated materials

- Where space permits, stockpile of excavated materials shall be between the excavation and the traffic.
- In no case shall the stockpiled excavated materials create traffic.
- If sandy soil is encountered, it shall be placed separately from other materials to use as backfilling material after the sand backfill.
- Place of stockpile of excavated materials about 1200mm from the edge of the trench to prevent cave-ins. In no case should any materials be stockpiled closer than 600mm from the edge of the trench.

2.5 Sand Bedding & Backfill, Soil Backfilling, and Compaction

a. General

The Contractor shall provide all labor & equipment necessary for soil backfilling works. BWD shall furnish the sand bedding and conduct the compaction works.

All newly laid pipes shall be backfilled at the end of each day.

b. Backfill Around and Beneath Proposed Structures and Paved Areas

Except where otherwise specified for a particular structure or ordered by the Engineer, backfill placed around and beneath proposed structures and paved areas shall be placed in horizontal layers not to be exceed 200 mm (8 in.) in thickness, as measured before compaction, where compaction is attained by means of sheepsfoot rollers. Where the use of sheepsfoot rollers is impractical, the layers shall not be exceed 150 mm. (6 in.) in thickness before compaction, and compaction shall be attained by means of hand-operated power driven tampers. The backfill shall be brought up evenly with each layer moistened and compacted by mechanical means to a specified density to conform to the Compaction Test stated previously.

c. Pipeline Trench Backfill

c.1. Pipeline trenches shall be backfilled (bedding) to a level of 150mm (6 in.) below the pipe and 150mm (6 in.) above the top of the pipe with sand material.

c.2. After the initial portion of backfill has been placed as specified above, the remainder of the trench shall be backfilled. When compaction of the initial portion of backfill is obtained with excess water, not less than four (4) hours shall have elapsed between the placement of initial backfill and subsequent backfill. The remainder of the backfill shall be selected material obtained from the excavation and shall be placed in horizontal layers. Each layer shall be no more than 400 mm (16 in.) in depth.