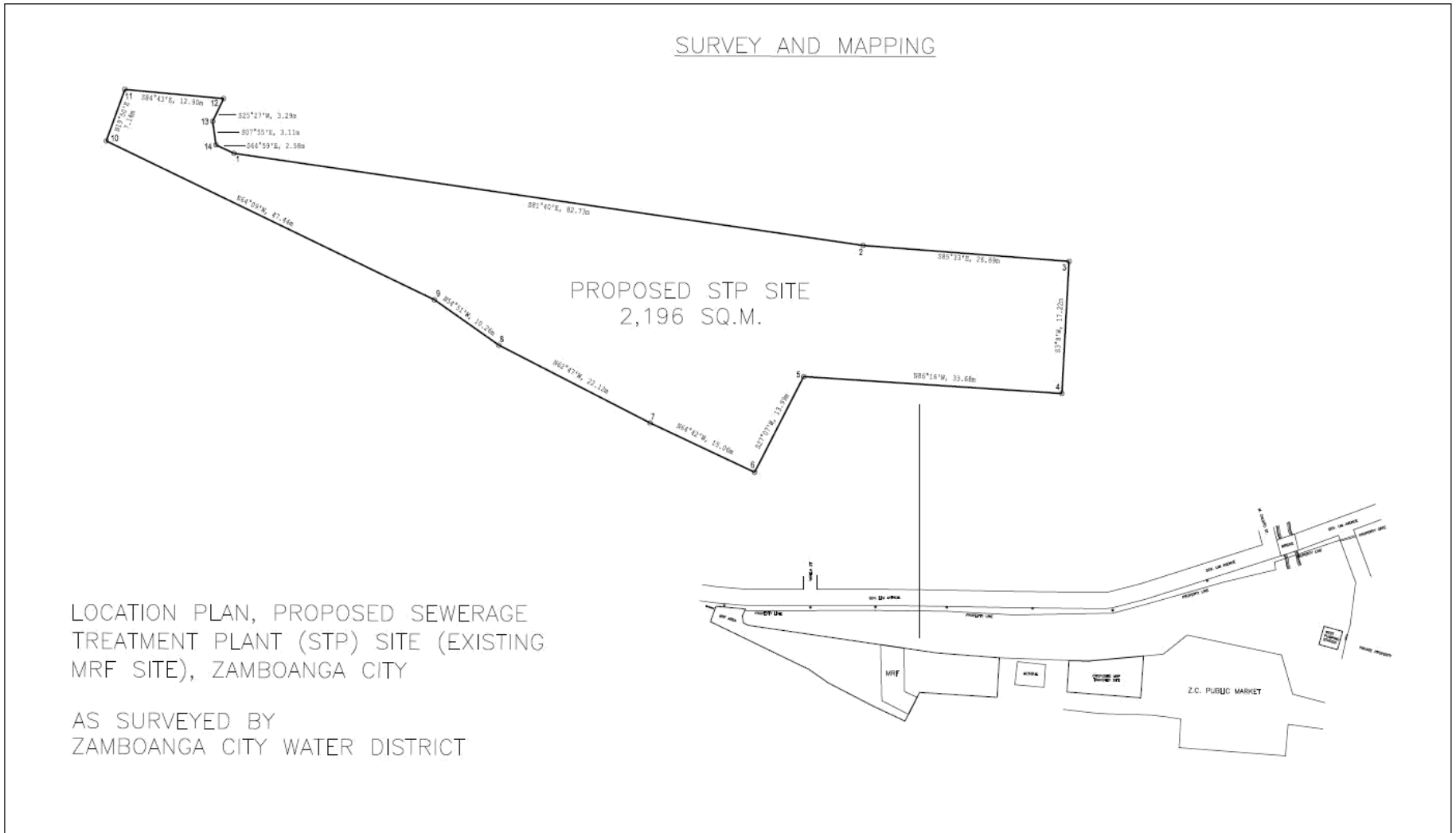
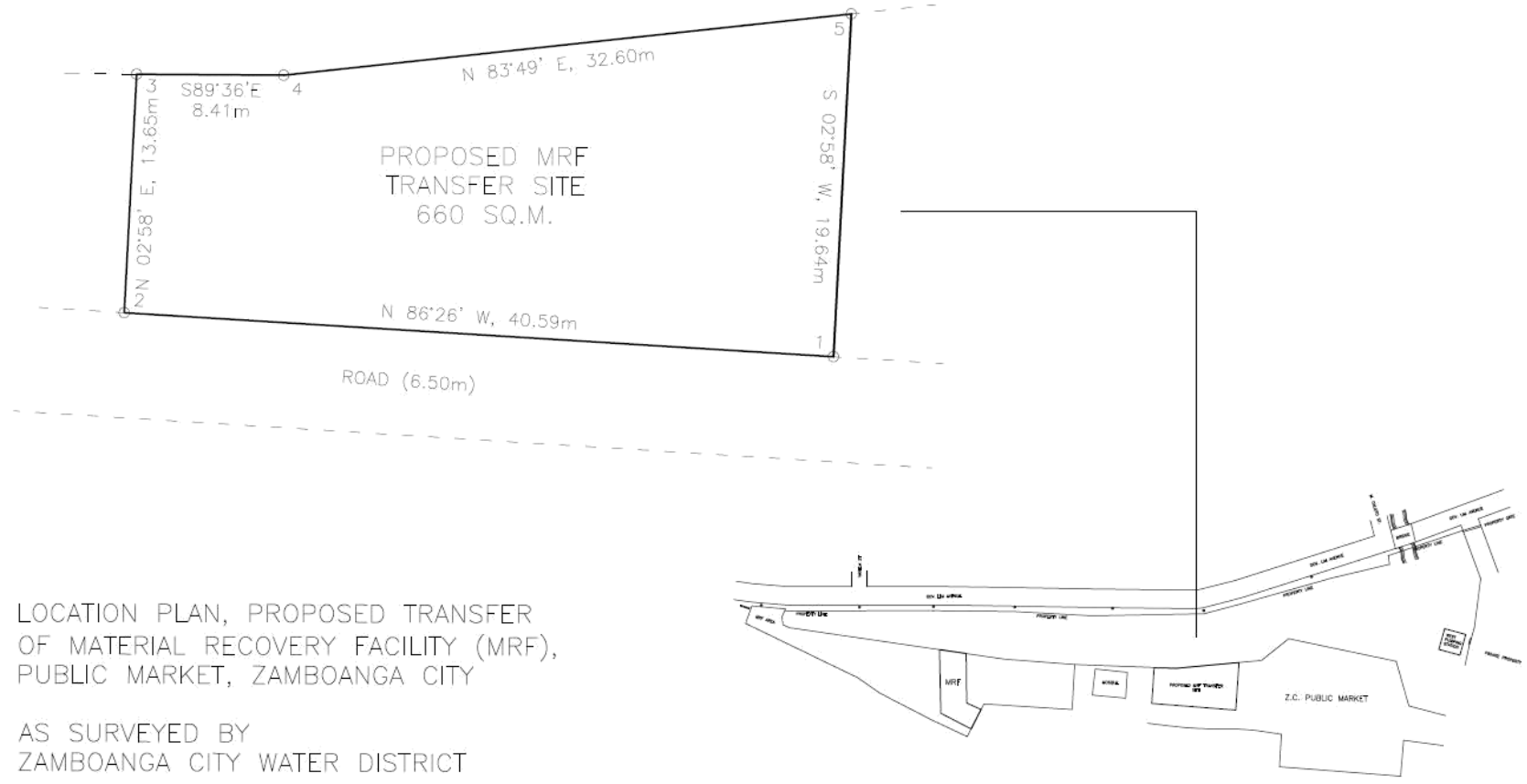


9. SURVEY AND MAPPING



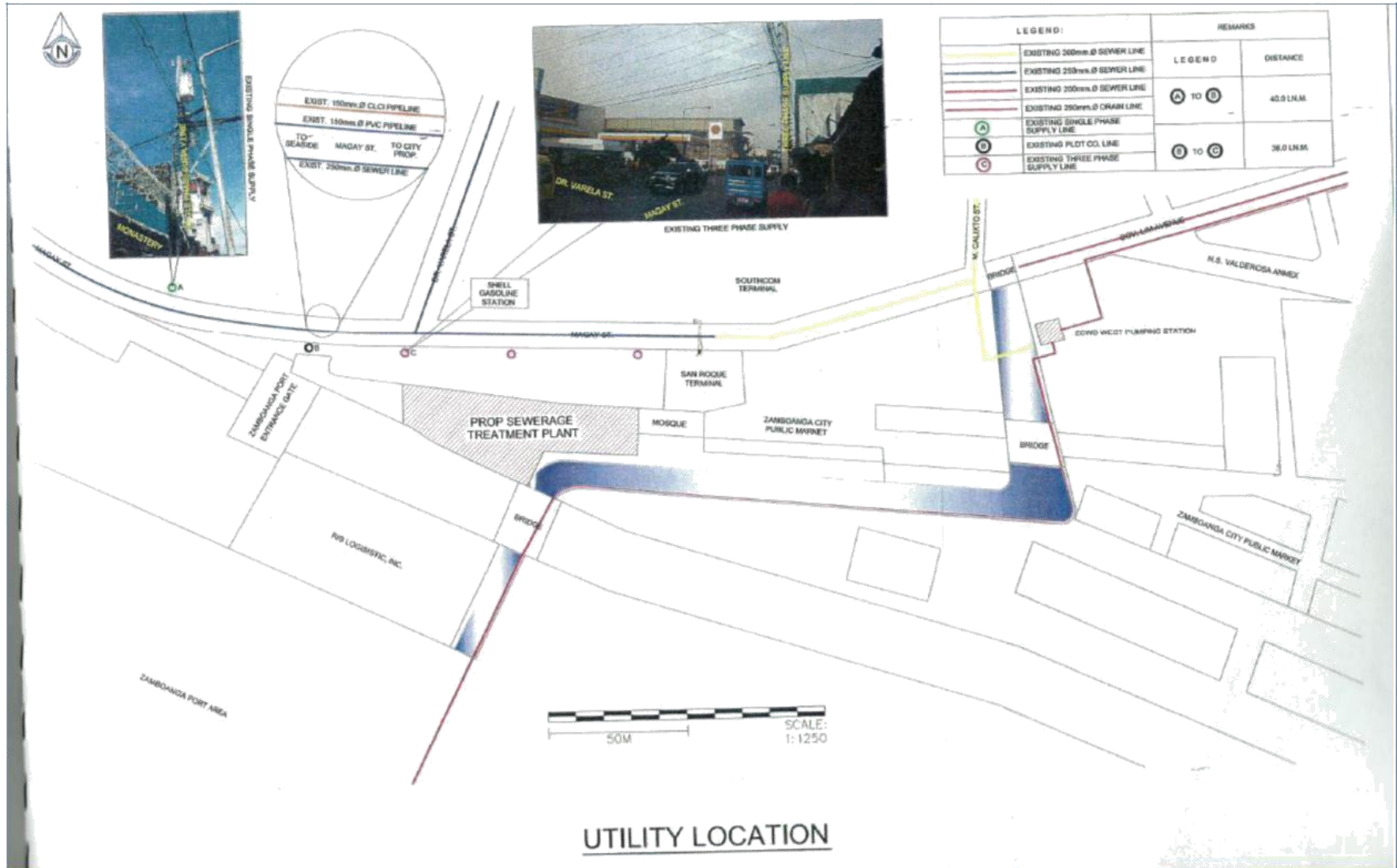
SURVEY AND MAPPING



LOCATION PLAN, PROPOSED TRANSFER
OF MATERIAL RECOVERY FACILITY (MRF),
PUBLIC MARKET, ZAMBOANGA CITY

AS SURVEYED BY
ZAMBOANGA CITY WATER DISTRICT

10. UTILITY LOCATIONS



11. GEOTECHNICAL INVESTIGATION

ADVANCED GEOTECHNICAL ENGINEERING SERVICES

Soil Investigation and Materials Testing Remote & Dynamic Pile Testing (PDA)
Pile Integrity Testing (PIT) Static Load Testing Cross-Hole (Ultrasonic) Testing



1. INTRODUCTION

This Final Geotechnical Report is in accordance with the contract Agreement entered into between AECOM International Development, Inc. – herein referred to as the “Client”; and Advanced Geotechnical Engineering Services (AGES) with main office address at 103 Dunhill Street, East Fairview, Quezon City, for the latter to conduct the geotechnical investigation work, in connection with the proposed Sewage Treatment Plant for Zamboanga Water District located at Magay St., Barangay Zone IV, Zamboanga City.

This Final Report contains the borehole location plan, idealized soil profile, final boring logs, laboratory test results, and photographs taken during the actual field work, and the final evaluation and recommendations for foundation design of the proposed project.

2. OBJECTIVE AND SCOPE OF WORK

The main objective of the investigation is to assess the general subsurface condition of the project site, and to provide recommendations relevant to the foundation design of the above-mentioned project.

The Client’s authorized Scope of Work calls for the drilling of two (2) boreholes to target depth of thirty (30) meters, the conduct of the necessary laboratory testing on selected soil samples, and the submission of this final geotechnical report.

The specifications, as set forth in the Contract, were adhered to in the conduct of the investigation.



3. THE PROJECT SITE

The proposed site, located at Magay St., Barangay Zone IV, Zamboanga City, is situated inside the compound of Material Recovery Facility near the Philippine Ports Authority (PPA) and main public market. The proposed site is currently surrounded by existing low-rise residential and commercial structures, and is near a creek.



Figure 3-1. Project Site Location from Google Earth

The perspective of the proposed sewage treatment plant provided by the client is shown in Figure 3-2 below.



Figure 3-2. Perspective of the Proposed Sewage Treatment Plant



The proposed sewage treatment plant will be constructed about 6m below the existing ground surface within the compound of the existing Material Recovery Facility (MRF). Some of the low-rise structures within the project site will be demolished to give way for the construction of the proposed sewage treatment plant.

Photographs of the actual borehole location and drilling activity are shown below.



Figure 3-3. Actual Borehole Location & Drilling Activity

Final Geotechnical Report for the Proposed Sewage Treatment Plant for Zamboanga Water District, Magay St., Brgy. Zone IV, Zamboanga City. ³



4. FIELDWORK

One set of hydraulically powered drilling equipment, complete with crew were mobilized for this project. Actual drilling work was started on September 18, 2015 and was completed on September 21, 2015.

The approximate location of the boreholes is shown in Appendix A entitled “Borehole Location Plan”.

The duration of work and the final depth of boreholes are tabulated as follows:

Table 4-1. Summary of drilling activities

Borehole I.D.	Work Started	Work Completed	Final Depth (meter)
BH-1	Sept. 18, 2015	Sept. 19, 2015	30.45
BH-2	Sept. 20, 2015	Sept. 21, 2015	30.45
TOTAL			60.90

4.1. DRILLING OF BOREHOLES

The drilling work was conducted using rotary, hydraulically-powered TDC-2 drilling machine.

4.1.1. Wash Boring Procedure

Drilling through ordinary soils was advanced using the Wash Boring Procedure. This is accomplished by first driving short pieces of casings into the ground to start the borehole. The casing is normally cleaned out by means of chopping bit attached to the lower end of the drill rods, with water exiting at high pressure at the side holes of the chopping bit, carrying the cuttings or loosened soil particles out of the borehole through the space between the casings and the drill rods.



NW size casings (76 mm inside diameter) were added to prevent the borehole from caving-in.

4.1.2. Standard Penetration Tests (ASTM D1586)

Standard Penetration Tests were conducted at 1.0 meter intervals for the first 3.0 meters and 1.5 meters thereafter.

Standard Penetration Tests (SPT) was performed using the Automatic Trip Hammer Mechanism with the Standard 50 mm outside-diameter split-spoon sampler, coupled to the end of a string of drill rods, and driven by a 63.5-kg hammer with a free-fall of 75 cm. The trip-hammer mechanism minimizes errors due to human intervention during the testing. The number of blows for the three successive 15-cm penetrations was then recorded.

The sum of the two 15-cm penetrations comprises the N value. These results are incorporated in the final logs in a semi-graphical form.

Disturbed and representative soil samples obtained from the split-spoon samplers were visually classified and then carefully sealed in properly labeled water-tight plastic bags. These were brought to AGES Laboratory in Quezon City for testing.

The soil consistency or in-situ relative density mentioned and shown in the attached final boring logs is based on the following: