

ACCRA URBAN TRANSPORT PROJECT-CONSTRUCTION OF THE POKUASE INTERCHANGE & LOCAL ROADS

THE POKUASE INTERCHANGE PROJECT PLANNING AND CONSTRUCTION UPDATE

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OUTLINE OF PRESENTATION



ABOUT ASSOCIATED CONSULTANTS LIMITED (ACON)

ABOUT ACON



A leading Infrastructure Consulting firm in Ghana specialized in Architecture, Engineering and Quantity Surveying services.



Multi-disciplinary firm which maintains World-Class Technical Expertise.



Maintains high standards for Quality, Health and Safety and is committed to delivering projects on budget and on schedule to the complete satisfaction of Clients.



Wholly Ghanaian owned firm founded on July 1, 1968 and has over 50 years of dedicated and efficient service.

WHAT WE DO



WHAT WE DO



PROJECT OVERVIEW

THE PROJECT





An integrated, viable and sustainable transport infrastructure for poverty reduction and ECOWAS regional integration

THE PROJECT



KEY STAKEHOLDERS

Ministry of Roads and Highways (Represented by DUR)

Supervision

Associated Consultants Limited and Bigen Group

Funding

African Development Bank

Construction

Zhongmei Engineering Group

SCOPE OF WORKS

- 1. Construction of 4-Tier Stack Interchange at Pokuase
- 2. Construction of Storm Drains
- 3. Construction of 10km of Local Roads
- 4. Construction of 6.6km of Awoshie-Pokuase-Kwabenya Road
- 5. Widening of 2.0km of Accra-Kumasi Road
- 6. Provision of pedestrian facilities including walkways, footbridges, signalized crossings
- 7. Streetlights
- 8. Free health screening exercises for communities within project catchment.

SCHEME DEVELOPMENT & SELECTED OPTION

SCHEME DEVELOPMENT

Seven Schemes Explored:

- At-grade Signalised Intersection
- 3-Tier Rotary Interchange
- Partial Cloverleaf Interchange
- Full Cloverleaf Interchange
- 3-Tier Directional Interchange
- 3-Tier Semi-Directional Interchange
- 3-Tier Single-Point Urban Interchange (Selected Option)

SCHEME DEVELOPMENT

Advantages of Selected Option:

- No conflicts between opposing left-turn movements
- Right-turns are free-flowing
- Relatively smaller footprint (landtake)

Fatal Flaws (with Mitigations Measures) of Selected Option:

- High Cost due to lengths of bridges (Reduce lengths of bridges)
- Vulnerable to signal failure due to interruptions in electricity supply (Use Solar-Powered Signals)
- Provision for pedestrians are complex (Provide pedestrian bridges and underpasses where feasible)

TYPICAL CROSS SECTIONS OF APPROACH ROADS

ARTIST IMPRESSION OF THE 3-TIER SPUI

- Pedestrian Tunnel under Tier 1
- Network of walkways
- Pedestrian Bridge at Pokuase Junction
- Drainage
- Street Lighting
- Road Furniture
- Barriers

GEOTECHNICAL INVESTIGATIONS & FOUNDATION DESIGN

GEOTECHNICAL INVESTIGATIONS

Geotechnical Investigations

- Confirmatory investigations at pier locations
- Results recommended the provision of piles at all pier/abutment locations.

Borehole Drilling Machine for geotechnical investigations

GEOTECHNICAL INVESTIGATIONS

Sample schematic representation of Geological Formation

Samples from the drilling in core boxes

FOUNDATION DESIGN

 Based on recommendations from Geotechnical Investigations:

- Provide RC bored piles at every pier location
- Short RC bored piles for competent rock formation at shallow depths
- Deep RC bored piles for competent rock formation are at deeper depths

VALUE ENGINEERING

VALUE ENGINEERING - WARRANT

 The Contractor opted for Value Engineering after assessing:

The construction methodology

Cost of bridge construction

Time constraints

Traffic management requirements

VALUE ENGINEERING - SCHEME

- 4-Tier Stack
 Interchange alternative
 proposed
- Middle tier split into two levels
- Pedestrian tunnel replaced with foot bridge

VALUE ENGINEERING – BRIDGE SECTIONS

General Description of the Interchange Bridges The 4th (Top) Tier Bridge

VALUE ENGINEERING – BRIDGE SECTIONS

General Description of the Interchange Bridges

4-TIER STACK INTERCHANGE (ACCRA-KUMASI ROAD)

4-TIER STACK INTERCHANGE(3RD TIER RAMPS)

4-TIER STACK INTERCHANGE (WALKWAYS AND FOOT BRIDGE)

VIEW OF INTERCHANGE AT NIGHT

PROGRESS TO DATE

PROGRESS TO DATE

Awoshie-Kwabenya Road Accra-Kumasi Road

Local Roads

Interchange

Overall Progress

PROGRESS TO DATE-*INTERCHANGE*

PROGRESS TO DATE –*MODULAR BLOCK RETAINING WALLS*

PROGRESS TO DATE –*MSE RETAINING WALLS*

Construction of MSE Retaining Wall Base

PROGRESS TO DATE - *AWOSHIE-POKUASE ROAD*

Section of road with road markings

PROGRESS TO DATE – *ACCRA-KUMASI ROAD*

PROGRESS TO DATE- STORM DRAINS

PROJECT CHALLENGES

CHALLENGES

- Relocation of Utility services
- Relocation of Project-Affected
 Persons (PAP's)
- Traffic Management on Accra-Kumasi Road
- Outfall Drains for local roads
- Covid-19 Pandemic
- Electoral Commission
 Registration Exercise

