



**FACULTY OF ENGINEERING AND
TECHNOLOGY**

DEPARTMENT OF WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT

**RE-DESIGN AND CONSTRUCTION OF A VENTURI-BASED
DRAINAGE CLEANING SYSTEM**

BY

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CASE STUDY: BUSITEMA UNIVERSITY

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ABSTRACT

Drainage systems are increasingly facing sedimentation and clogging challenges due to urbanization and poor maintenance practices. Building on previous research, this study aimed at redesigning and constructing a venturi-based drainage cleaning system integrated with hydro water jetting for open channels. The objectives of this project were, to redesign the components of the components of the venturi-based drainage cleaning system, to fabricate the prototype of the system components, and to test and evaluate the performance of the system. The redesigned system optimized the throat and inlet geometries to improve suction performance, and incorporated high-pressure nozzles to enhance sediment dislodgement. A prototype was fabricated using selected materials based on hydraulic analysis. Performance testing showed improved sediment removal efficiency and operational reliability under varied flow and sediment conditions. The results validate the design strategy and address the short comings in the earlier design.

DECLARATION

I ***TWEBAZE IGNATIUS*** hereby declare that this final year project proposal report is my original work and has not been submitted to any higher institution of learning for the award of an academic document

Name: TWEBAZE IGNATIUS

Signature: 

Date 12/05/2025.....

APPROVAL

This is to certify that this work was done under the supervision of and has been approved for submission to the department of Water Resources Engineering at Busitema University.

Mr. **KUSEMERERWA JOSEPH**

Signature.... 

Date.....12/05/2025.....

DEDICATION

I dedicate this report to my grandfather Mr. Gakiza Epaphrah and his family and my mother Ms. Niyinfasha Justine. You have been my pillar of strength throughout my academic journey and your love, support, and encouragement has kept me going.

ACKNOWLEDGEMENT

I am overwhelmingly thankful to the Almighty God for his protection throughout my academic journey. Special appreciation goes to my supervisor Mr. Kusemererwa Joseph for the guidance and assistance extended towards the completion of my work. My sincere appreciation goes to my parents for continuously supporting me in this academic journey.

May the Almighty God reward you abundantly.

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LIST OF ACRONYMS

CCTV	Closed Circuit Camera
CFD	Computational Fluid Dynamics
FAO	Food and Agricultural Organisation
HDPE	High Density Polyethylene
PVC	Polyvinyl Chloride
SDG	Sustainable Development Goals
UBOS	Uganda Bureau of statistics
USGS	U.S Geological survey

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