CASE STUDY

Project: Lingfield WTW Civil Engineering
Location: Lingfield, Surrey
Client: Principal Contractor – CMDP JV (Costain/MWH Delivery Partnership) Client – Southern Water

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Project Introduction

Coleman Construction & Utilities Limited has successfully delivered a major 70-week civil engineering wastewater treatment works sub-contract for Principal Contractor CMDP JV, on behalf of Southern Water in Lingfield, Surrey, at £3.6m, its largest value contract to date.

As part of the AMP capital investment programme, Southern Water had identified the need for Phosphorus removal (regulatory date 22 December 2024): Lingfield WwTW was already required to achieve P removal, however, a more stringent permit was introduced at the site this AMP Control Period, with new assets required to meet the revised permit conditions. In addition to this, the project was to implement improvements at the site to facilitate an increase of the full flow to treatment (FFT) from 83 l/s to 127 l/s, which involved the installation of new process assets to provide additional biological treatment capacity and accommodate projected population growth to 13,390 of Lingfield and its surrounding villages at the design horizon of 2035.

The works comprised therefore, of an upgrade to the existing 30m3 Ferric Dosing Facility, a new Tertiary Treatment Plant, converting/upgrading the existing Pumping Station, upgrading the Sewage Pumps, a new 12.5m diameter Radial Settlement Tank, a new 31m diameter Trickling Filter, new cross site pipework and ductwork installations and an upgrade to the site power supplies and telemetry to meet the Environment Agency and Wtaer Industry National Environment Programme requirements.

Coleman Construction & Utilities Limited's contracted civil engineering scope comprised bulk excavation, new chambers, pipework, drainage and manholes, extension of a roadway and provision of hardstanding's, site wide ducting, draw pits and new reinforced concrete structures.

The contract was underpinned throughout by a collaborative approach with CMDP JV and Southern Water, as well as other project stakeholders, providing the basis for proactive communication and highly coordinated activities, resulting in the safe and successful completion of this Wastewater civil engineering project.

Project Deliverables - Civil Engineering Scope

Trickle filter:

- 30m circular concrete tank.
- 64t of rebar fixed.
- 410m3 of concrete poured.

Humus tank:

Particularly challenging due to existing pipework diversions and existing concrete structures needing to be broken out. Groundwater managed using 6" hydraulic pumps filtered through a silt buster.

- 8.5m sheet piles driven using silent piling gear.

- Excavated using 24t machine on the outside and 8t machine inside the cofferdam.
- 42t of rebar fixed.
- 510m3 of concrete poured.

MCC x 2:

- Sheet and frame temporary works installed.
- Timber formwork and rebar fixed for underground concrete walled MCC base

Caustic dosing area:

- Reinforced concrete walled structure for caustic tanks.
- Concrete delivery bund.
- Shower base.
- Interceptor.

Tertiary Area:

- Concrete bases and hardstanding's.

Generator Area:

- Generator base
- Fuel tank base
- Fuel delivery bund
- Blind tank
- 3-way valve chamber

Tertiary pump station:

- 2.4m concrete ring pump station 3.5m deep
- Sheet and frame temporary works

Ductwork:

Challenging due to 140No plus existing underground services avoided many of which unknown.

- Over 2000m of electrical duct installed.

Pipework:

Very challenging due to many underground services needing to be avoided.

- 500m of 400/280mm P E electro fusion pipe, pressure tested to 18bar.
- 170m of 350mm ductile iron pipe.
- 200m of 150mm upvc pipe.

Challenges and Solutions

Several challenges have been met throughout the project by Coleman Construction & Utilities Limited, which are detailed below:

- The considerable number of previously unidentified services in the area where construction was required. There were in excess of 140No services which needed to be found and avoided, many of these unidentified. Our site delivery team utilised Cable Avoidance Tools and Signal Generators, as well as Vacuum Excavators, to undertake multiple trial holes. During the works there were 45No permits to dig raised in order to safely establish the whereabouts of these buried services, through meticulous work, there were zero services hit.
- Another key challenge posed was the lack of space available on site. To overcome this challenge, the team installed a circular retaining wall for the new Humus Tank.
- The site was on a flood plain and due to the increased rainfall and weather conditions earlier in the year the site flooded and needed to be constantly pumped out to allow works to continue.
- Deliveries were part of a co-ordinated plan of plant and equipment logistics to ensure works kept on track.
- Interface with other contractors/stakeholders included collaborative early engagement meetings, regular planning, and liaison through weekly project meetings.

Benefits

- Coleman Construction & Utilities Limited provided a non-confrontational approach to commercial and contractual matters, preferring to work collaboratively in the interests of the project. As a result, working relationships with the client at all levels and across all disciplines are at an all-time high.
- Collaborative working has become a daily norm for Coleman Construction & Utilities staff. We always offer a solution-based approach.
- We are always striving for best practice working especially where health, safety and wellbeing are concerned - we aim for zero harm every day.
- We take pride in our work and aim to leave our sites snag free. Our attention to detail is second to none.
- We kept as much of the spoil on site as we could for backfill and subsoil, so as little as possible was sent to landfill.
- To enhance the environment, bat boxes were installed and upon completion of the works, these will aid local natural habitats. During works acoustic barriers have also been installed to limit environmental impact.