

Resolven Aqueduct Listed Building Consent Brief Outline Methodology

Removal of Existing Weir

The existing stone sets within the weir shall be removed, where possible, by hand using bolster chisels and hammers. Where stones are not removable by hand, small handheld mechanical breakers shall be used. When removing stone sets all chisels shall be spade headed, not pointed, and chisel heads shall be placed between the joints of each stone to ensure no damage occurs to the facing of the stonework.

All stonework is to be stored neatly on pallets in the site compound for re-use alongside the existing washed out stone sets which have previously been recovered from the watercourse and retained by MGroup for re-use.

When all stonework has been removed from the weir, the existing concrete patch repair which has previously been carried out by others, date unknown, will be broken out using a mechanical breaker. The concrete will be removed from the watercourse and disposed of offsite by a licensed waste haulier. When all stone sets and concrete has been removed, the backfill below the weir shall be benched and blinded ready for the RC works.



Figure 1 existing concrete to be broken up and removed

Reinforced Concrete Works

The reinforced concrete works shall commence with the construction of the stilling basin immediately downstream of the weir then working upstream to the transition and finally the RC slabs beneath the new stonework weir.

The RC works will consist of 7 concrete pours in total with most notably the pour to the transition being undertaken in 4 staged pours. Each of the pours to the transition will be poured with a curved top shutter with letterbox openings cut out to allow access for concrete poker to ensure sufficient compaction. The joints between each pour will be green cut the following day to ensure sufficient bonding between each pour and prevent any cold joints from forming.

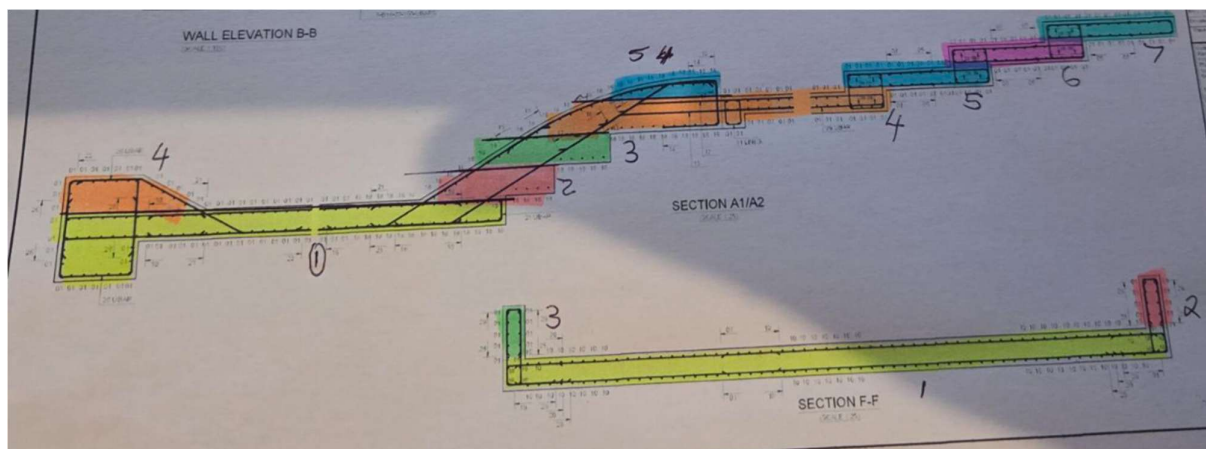


Figure 2 Reinforced Concrete Pour Sequencing

Reinstatement of the Stone Weir

Due to a large number of existing stones missing, the stonework weir shall be reinstated using a combination of stonework recovered from the watercourse, the stonework removed from the weir and newly imported punch faced stone supplied by Traditional Stone Supplier. All new stonework will match existing in colour, lithology, strength, durability and freeze thaw resistance. However, due to the existing stonework being severely weathered from years of river channel flows the facework on the majority of the existing stonework is now smooth, only from the existing stones on the channel sides have we been able to determine that the stonework was originally punch faced.

When placing the stone sets, Mgroup could undertake whichever of the following is preferred by the Listed Building Authority:

- All stone sets, new and existing to be mixed together.
- New stone sets to be placed at the bottom of the weir, with existing stone concentrated to the top.

The engineer will mark out the required levels on the wing walls either side of the weir using non-permanent chalk. This will ensure the existing 'S' shape is retained. When placing stone sets string lined will be used from channel side to channel side to ensure a consistent gradient is laid horizontally across the structure.

All stonework will be laid by hand but may be carried to the work area on pallets or in bulk bags by mechanical means.

Stone sets shall be laid on a mortar bed with a minimum thickness of 5mm. This mortar bed will be haunched where required to form the S shape from the underside of the stone where it meets the steps in the RC bases. The stonework will be laid from the bottom of weir working up towards the crest. The remaining tolerance gap at the crest between the stone sets and the bridge deck is to be infilled with mass concrete.

Stone will be dry jointed and stone dimensioned to allow closed gaps with a tolerance of between 0mm to 5mm. Upon completion of placement the dry joints are to be brushed with a fine grout to fill any small gaps to full depth. The grout shall be a minimum compressive strength of 6MPa.



Figure 3 Punch faced Stone Supplied by Traditional Stone