

GENERAL

- ALL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ANY OTHER WRITTEN INSTRUCTIONS ISSUED.
- WHERE APPROVAL IS REQUIRED, THIS SHALL BE OF THE SUPERINTENDENT OR HIS REPRESENTATIVE.
- ANY AMBIGUITY OR DISCREPANCY SHALL BE REFERRED FOR CLARIFICATION BEFORE WORK PROCEEDS.
- DIMENSIONS ARE IN PRESENTED MILLIMETERS WITH EQUIVALENT FOOT/INCH VALUE SHOWN IN BRACKETS.
EXAMPLE: 1000mm [3'-3 3/8"]
- REFER TO THE DRAWING DIMENSIONS FOR SETTING OUT THE WORKS. HOWEVER, ALL EXISTING DIMENSIONS AND LEVELS ARE APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR ON SITE.
- UNLESS NOTED OTHERWISE, ALL LEVELS ARE IN METRES [m]
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE STRUCTURE UNTIL ITS COMPLETION AND SHALL ENSURE THAT NO PART OF THE STRUCTURE IS OVERSTRESSED DURING THE WORKS.
- WHERE STANDARDS ARE REFERRED TO, THEY SHALL BE THE LATEST EDITION.
- PROPRIETARY ITEMS, PROPOSED BY THE CONTRACTOR, ARE TO BE REVIEWED AND APPROVED BY THE DESIGNING ENGINEER PRIOR TO USE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING WORK AREAS.
- ALL DEMOLITION SHALL BE IN AN ACCEPTABLE MANNER UNDER THE OCCUPATIONAL HEALTH AND SAFETY REGULATIONS 2009. ALL SURPLUS MATERIAL SHALL BE DISPOSED OF OFF SITE IN A LEGAL MANNER.

CONCRETE

- CONCRETE SHALL COMPLY WITH THE FOLLOWING SPECIFICATION:
 - MINIMUM CONCRETE STRENGTH AT SERVICE $F'c = 25 \text{ MPa}$ [3600PSI]
 - MINIMUM CEMENT CONTENT = 440 Kg/m³ [28 lb/ft³]
 - MAXIMUM WATER/CEMENT RATIO = 0.5
- CONCRETE MIX DESIGNS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- NO ADDITIVES TO BE USED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
- CAST IN ITEMS WITH LESS THAN 25mm COVER TO ATMOSPHERE SHALL BE HOT DIPPED GALVANISED IN ACCORDANCE WITH ASTM A153.
- ALL FORMWORK, SHORING AND RESHORING SHALL BE THE RESPONSIBILITY OF AND DESIGNED BY THE CONTRACTOR
- CONCRETE SHALL BE TESTED FOR SLUMP ON SITE. THE TEST CYLINDERS SHALL BE TAKEN FOR 3, 7 AND 28 DAY STRENGTHS.
- CONCRETE STRENGTH AND SLUMP TO BE AS FOLLOWS

| MIN. SPECIFIED 28 DAY STRENGTH | SLUMP |
|--------------------------------|--------------------------|
| 25 MPa [3600PSI] | 75mm ± 25mm [3" ± 1"] |

DESIGN

- THE DESIGN OF RETAINING WALLS AS SHOWN IN THIS PACKAGE OF DRAWINGS IS BASED ON THE FOLLOWING PARAMETERS:
 - SOIL PROPERTIES**
UNIT WEIGHT OF RETAINED = 20 kN/m³
SHEAR RESISTANCE ANGLE OF RETAINED = 35°
 - LOADING**
GROUND SURCHARGE = 10 kN/m²
 - PASSIVE RESISTANCE USED IN DESIGN. CALCULATIONS ASSUME NO FUTURE EXCAVATION TO THE EAST OF THE RETAINING WALL
- TO MEET BS EN 1992-1-1:2004
- A HIGH WATER TABLE HAS NOT BEEN CONSIDERED WITHIN THE DESIGN
- THIS RETAINING WALL DRAWING PACKAGE SHOULD ONLY BE USED IF THE ABOVE CONDITIONS ARE CORRECT FOR THE PROPOSED PROJECT

SHEET PILING

- THE CHOSEN SHEET PILING FOR THE PROJECT ARE FIBRE REINFORCED POLYMER (FRP) SUPERLOC SHEET PILES SERIES 1580 (SS860)
- IF CHOSEN SHEET PILING IS UNAVAILABLE, THE DESIGNING ENGINEER IS TO BE CONSULTED AND DESIGN TO BE REVISED ACCORDINGLY
- DUE TO THE SENSITIVE NATURE OF THE VULNERABLE DRY STONE WALL, HAMMER DRIVING OF SHEET PILING IS **NOT PERMITTED**.
- THE USE OF A CRANE TO INSTALL SHEET PILING IS **NOT PERMITTED** DUE TO OVERHEAD UTILITIES.

EXCAVATION AND EARTHWORKS

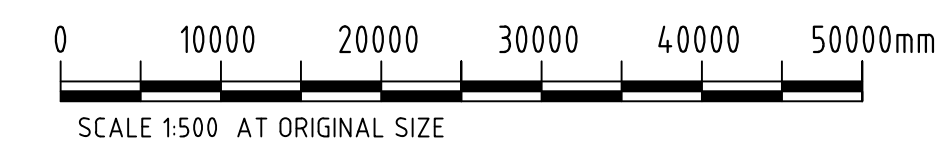
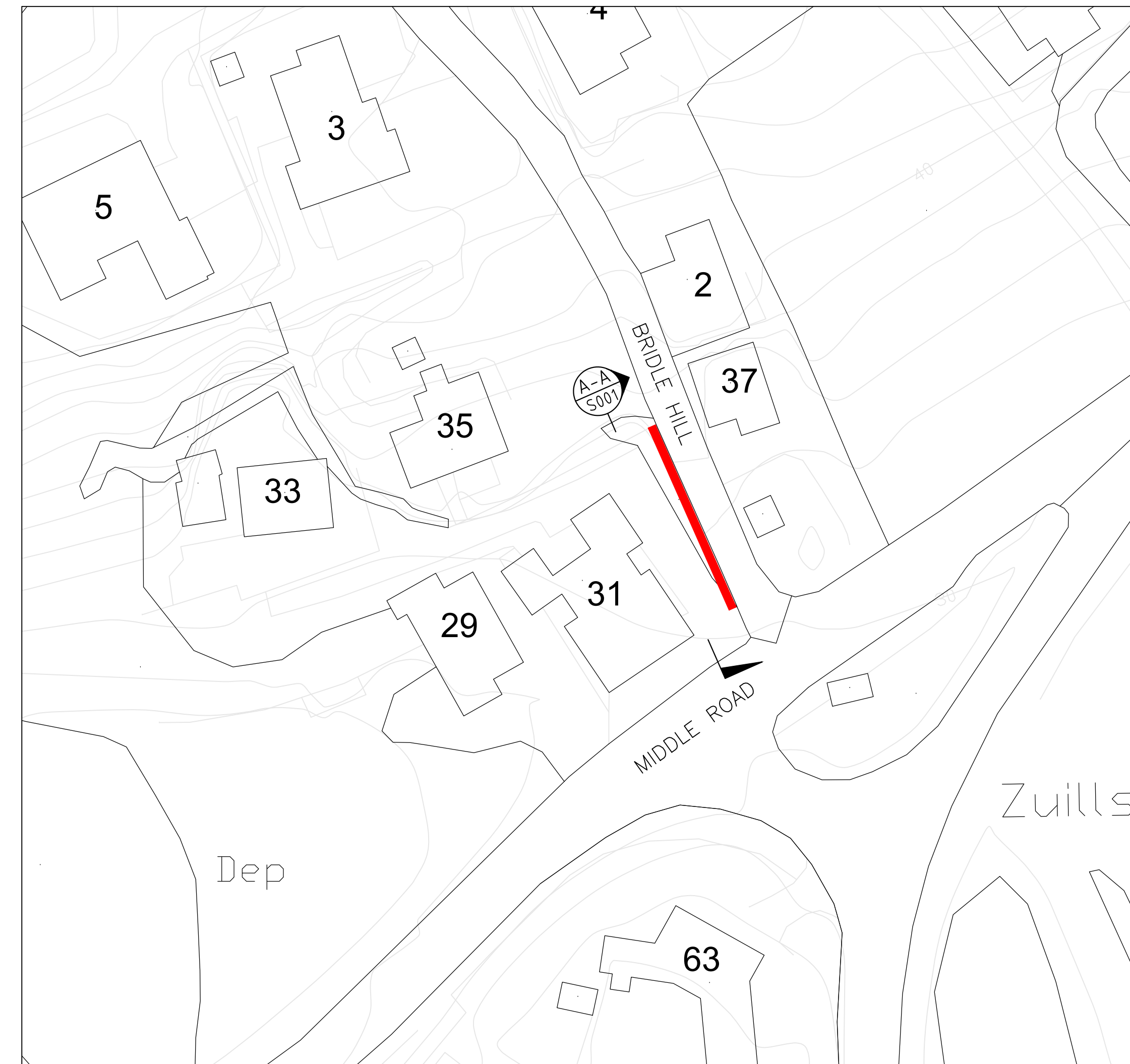
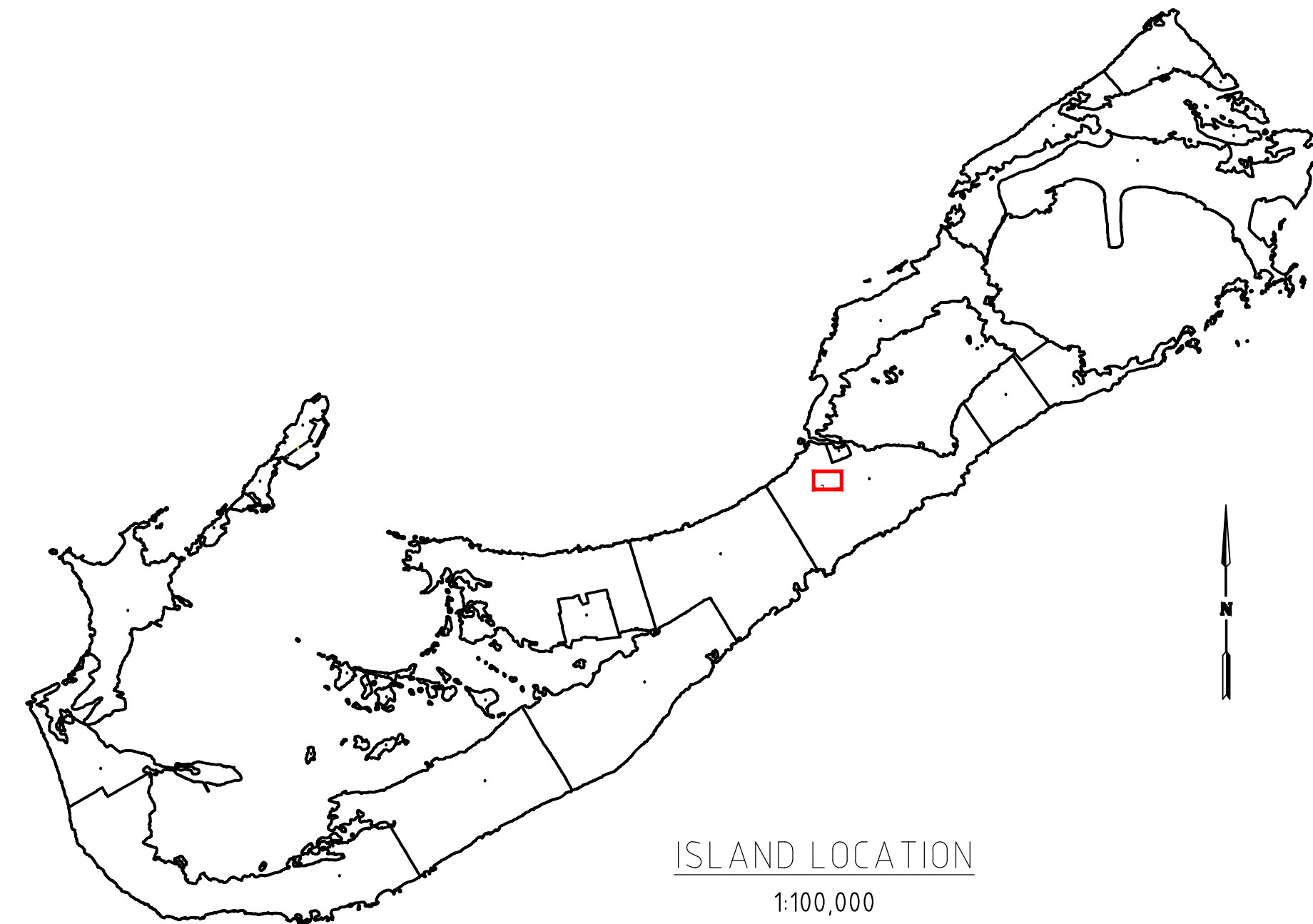
- FOUNDATIONS ARE TO BEAR ON UNDISTURBED AND SOUND GROUND/ROCK. BEARING MATERIAL IS TO REMAIN UNDISTURBED AND BE REVIEWED BY THE ENGINEER PRIOR TO POURING FOOTING.
- ALL SHORING, SHEETING AND DE-WATERING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR
- THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT ALL EXISTING AND SURROUNDING INFRASTRUCTURE
- ANY SOFT AREAS IN BEARING MATERIAL ARE TO BE REMOVED AND FILLED WITH MASS CONCRETE OF MINIMUM STRENGTH 25 MPa.
- NO BACKFILLING UNTIL 7 DAYS AFTER LAST CONCRETE POUR
- BACKFILL MATERIAL SHALL BE FREE FROM ORGANIC MATTER, CONSTRUCTION DEBRIS AND LARGE ROCKS.
- BACKFILL MATERIAL SHALL BE WELL GRADED AND PLACED IN LAYERS NOT EXCEEDING 150mm (6")
- BACKFILL MATERIAL TO BE COMPACTED EVERY 600mm (2')
- EXISTING VEGETATION ROOTS WITHIN THE EXTENTS OF THE NEW RETAINING WALL TO BE CUT/REMOVED AND TREATED WITH ROOT KILLER.
- IF UNEXPECTED MECHANICAL, ELECTRICAL OR STRUCTURAL ELEMENTS ARE ENCOUNTERED, THE CONTRACTOR SHALL SUBMIT DETAILS OF SUCH TO THE ENGINEER.
- AN INVESTIGATION PHASE HAS BEEN INCLUDED FOR THE CONTRACTOR TO LOCATE AND IDENTIFY EXISTING UNDERGROUND UTILITIES WITHIN THE SITE EXTENTS. THE CONTRACTOR SHALL ENSURE THAT THE UTILITIES ARE SUPPORTED AND PROTECTED THROUGHOUT THE WORKS.
- DEMOLITION OF DRY STONE WALL IS TO BE DONE BY HAND AND/OR LIGHT MACHINERY.
- ALL ROADS AND PUBLIC ACCESS ARE TO REMAIN OPEN AND UNOBSTRUCTED DURING INVESTIGATION WORKS.
- THE UPPER ROAD IS TO BE MONITORED DURING DEMOLITION OF THE WALL.
IF MOVEMENT OR SETTLEMENT IS SEEN, STOP WORKS AND MAKE AREA SAFE

REINFORCEMENT

- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS. IF SHOWN/PERMITTED, WELDS SHALL DEVELOP THE FULL STRENGTH OF THE REINFORCING ELEMENT.
- ALL REINFORCING STEEL TO HAVE A MINIMUM YIELD STRENGTH OF 410 MPa AND SHALL BE TYPE 2 DEFORMED BARS
- ALL REINFORCING STEEL SHALL BE CLASS II GALVANISED IN ACCORDANCE WITH ASTM A767. TIE WIRE SHALL ALSO BE GALVANISED.
- REINFORCEMENT SPACING NOT SHOWN SHALL BE TAKEN AS EQUAL.
- REINFORCING CHAIRS ARE TO BE CONCRETE AND AS SMALL AS PRACTICABLE. PROPRIETARY PLASTIC COVER SUPPORTS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
- REINFORCING BARS SHOWN ON THESE DRAWINGS ARE DIAGRAMMATIC ONLY.
- BARS SHOWN MAY REPRESENT MORE THAN ONE LENGTH AND/OR PROFILE.
- BARS MAY NOT BE SHOWN IN TRUE POSITION FOR CLARITY. ALL HOOKS, BENDS AND COGS ARE STANDARD AND SHALL BE IN ACCORDANCE WITH ACI 318 UNLESS NOTED OTHERWISE.
- LAP SPLICES TO ALTERNATE AND NO MORE THAN 50% OF SPLICES SHALL BE IN ANY ONE SECTION.
- BARS SHALL NOT BE CUT NOR BENT ON SITE WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
- BARS SHALL BE BENT COLD BY MACHINE OR OTHER APPROVED MEANS PRODUCING A GRADUAL AND EVEN MOTION. BARS INCORRECTLY BENT SHALL NOT BE RE-BENT AND INCORPORATED IN THE WORKS AND NO REINFORCEMENT SHALL BE BENT WHEN IN POSITION IN THE WORKS, WHETHER OR NOT IT IS PARTIALLY EMBEDDED IN HARDENED CONCRETE.
- CONTRACTOR TO PROVIDE 24 HOURS NOTICE FOR THE INSPECTION OF ALL REINFORCING PRIOR TO POURING CONCRETE.
- LAP LENGTHS SHALL BE AS TABULATED (SHOWN BELOW) UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

| MINIMUM ALLOWABLE LAP LENGTHS | |
|-------------------------------|----------------|
| BAR DIAMETER | MIN LAP LENGTH |
| T10 | 460mm [18"] |
| T12 | 600mm [24"] |
| T16 | 760mm [30"] |
| T20 | 900mm [36"] |
| T25 | 1500mm [60"] |

| ALTERNATIVE BAR SIZES | | |
|-----------------------|-------------------------|-----------------------------|
| METRIC BAR SIZE (mm) | IMPERIAL EQUIVALENT (") | FORMER IMPERIAL DESIGNATION |
| T10 | 3/8" | #3 |
| T12 | 1/2" | #4 |
| T16 | 5/8" | #5 |
| T20 | 3/4" | #6 |
| T25 | 1" | #8 |



THE MINISTRY OF PUBLIC WORKS

P.O. Box HM525
Hamilton HMCX Bermuda
Phone: (441) 295-5151

DEPARTMENT OF WORKS AND ENGINEERING

Fax: (441) 295-5658

ISSUED FOR: FOR TENDER -

| AMENDMENTS: | | | | |
|-------------|---|----|-----|----------|
| NO | REVISION | BY | APP | DATE |
| A | FOR TENDER | CF | AK | 01/12/23 |
| B | REVISED TO SHEET PILING FOLLOWING LAND SURVEY | CF | AK | 29/02/24 |
| | | | | |
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SCALE: AS SHOWN AT ANSI D

SURVEY
PREPARED BY: - DATE: -

DESIGN
PREPARED BY: C.FRASER DATE: 29/11/23
CHECKED BY: A.KENNY DATE: 01/12/23

DRAWING
PREPARED BY: C.FRASER DATE: 29/11/23
CHECKED BY: A.KENNY DATE: 01/12/23
APPROVED BY: A.KENNY DATE: 01/12/23

PROJECT NUMBER:
42-782B-100

**PROJECT NAME:
BRIDLE HILL
DRY STONE WALL**

**MIDDLE ROAD
SMITHS**

SHEET TITLE:
**LOCATION PLAN &
GENERAL NOTES**

SHEET NUMBER: **S000** | REVISION: **A**

ISSUED FOR: FOR TENDER -

AMENDMENTS:

| NO | REVISION | BY | APP | DATE |
|----|---|----|-----|----------|
| A | FOR TENDER | CF | AK | 01/12/23 |
| B | REVISED FOLLOWING MEETING WITH UTILITIES | CF | AK | 18/01/24 |
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SCALE: AS SHOWN AT ANSI D

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PREPARED BY: - DATE: -

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CHECKED BY: A.KENNY DATE: 01/12/23

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PREPARED BY: C.FRASER DATE: 29/11/23
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APPROVED BY: A.KENNY DATE: 01/12/23

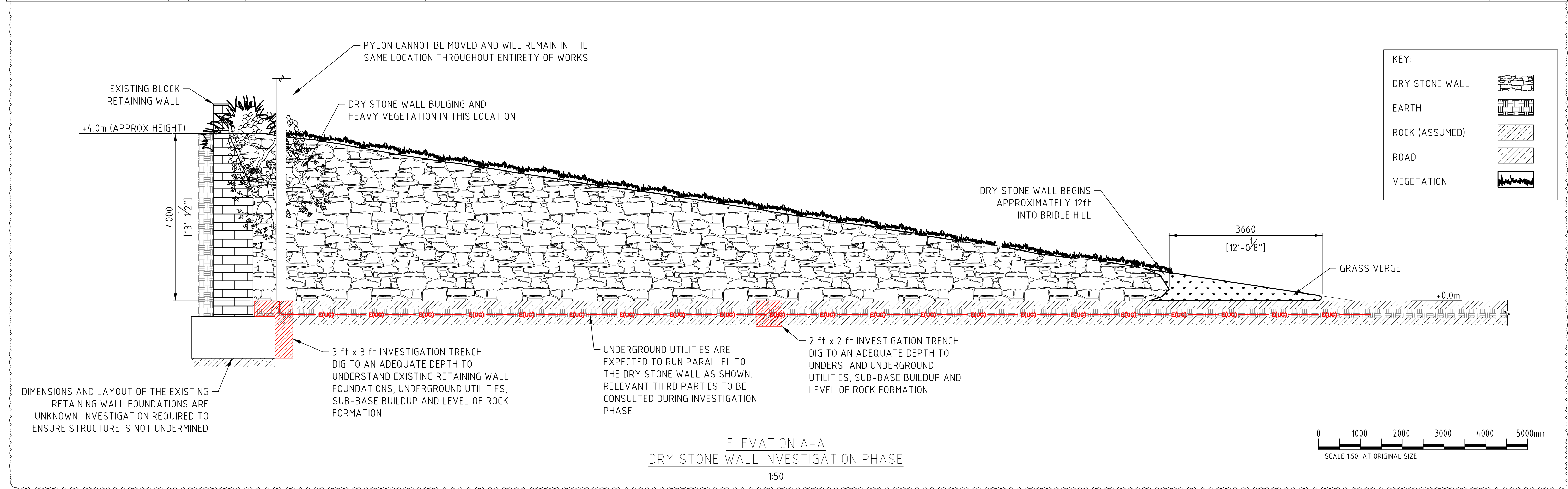
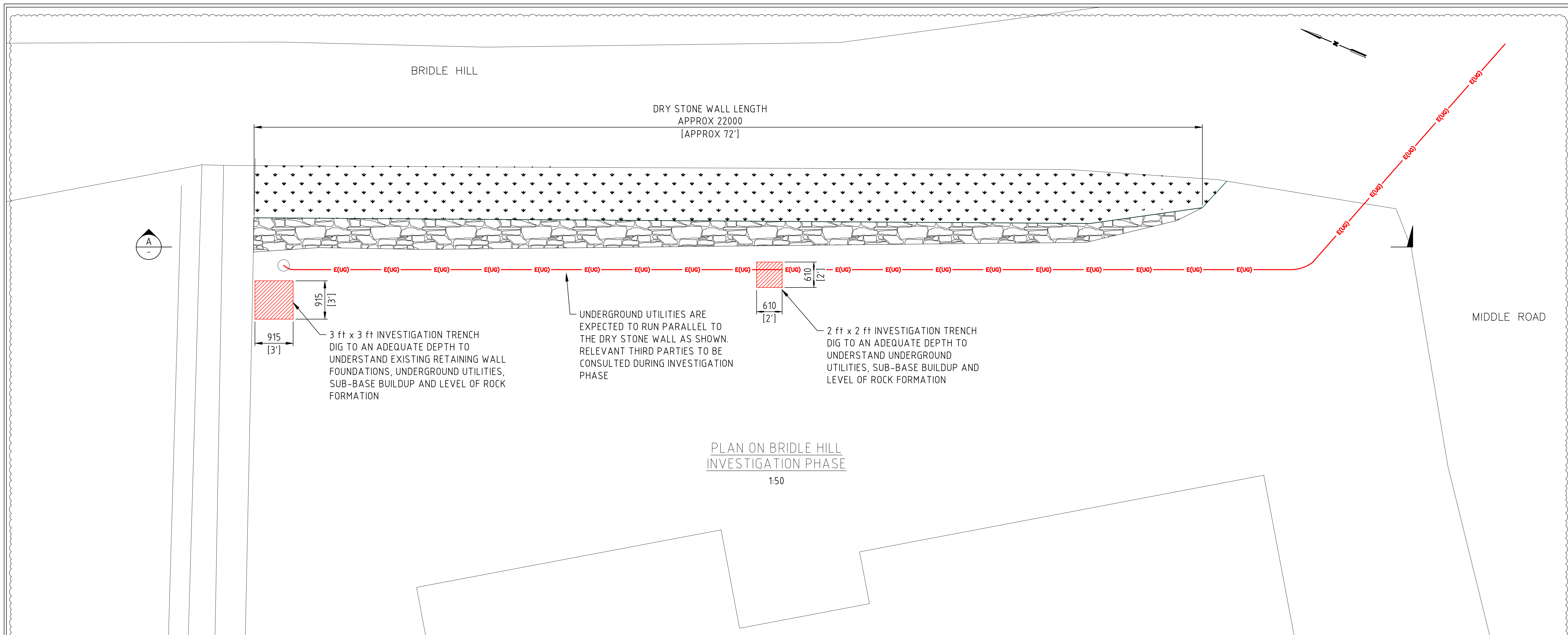
PROJECT NUMBER:
42-782B-100

PROJECT NAME:
**BRIDLE HILL
DRY STONE WALL**

MIDDLE ROAD
SMITHS

SHEET TITLE:
INVESTIGATION PHASE

SHEET NUMBER: **S001** REVISION: **B**



KEY:

| | |
|-------------------|--|
| DRY STONE WALL | |
| EARTH | |
| GRANULAR BACKFILL | |
| ROCK (ASSUMED) | |
| ROAD | |
| VEGETATION | |

ISSUED FOR: FOR TENDER -

AMENDMENTS:

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SURVEY
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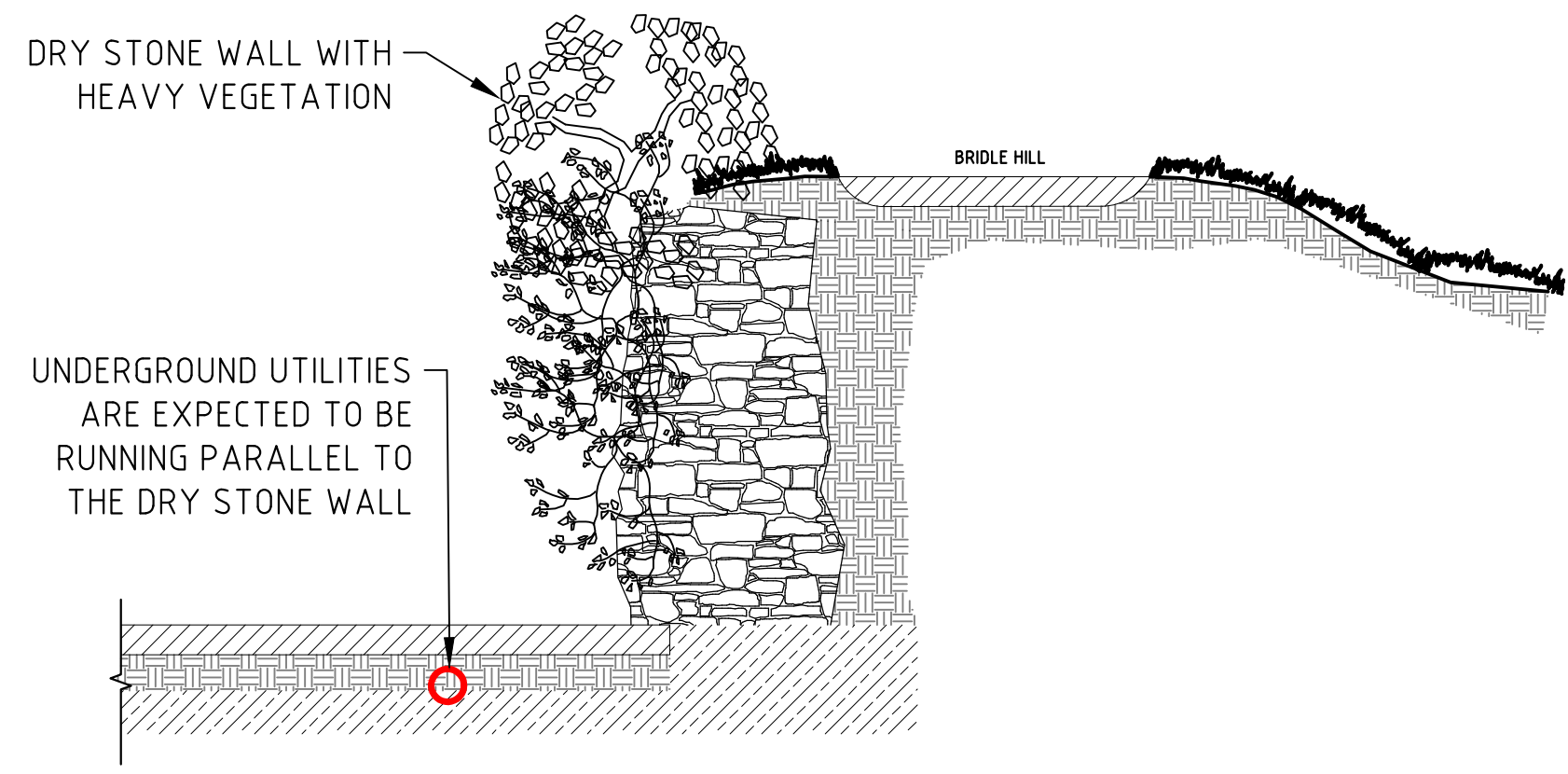
PROJECT NUMBER:
42-782B-100

PROJECT NAME:
**BRIDLE HILL
DRY STONE WALL**

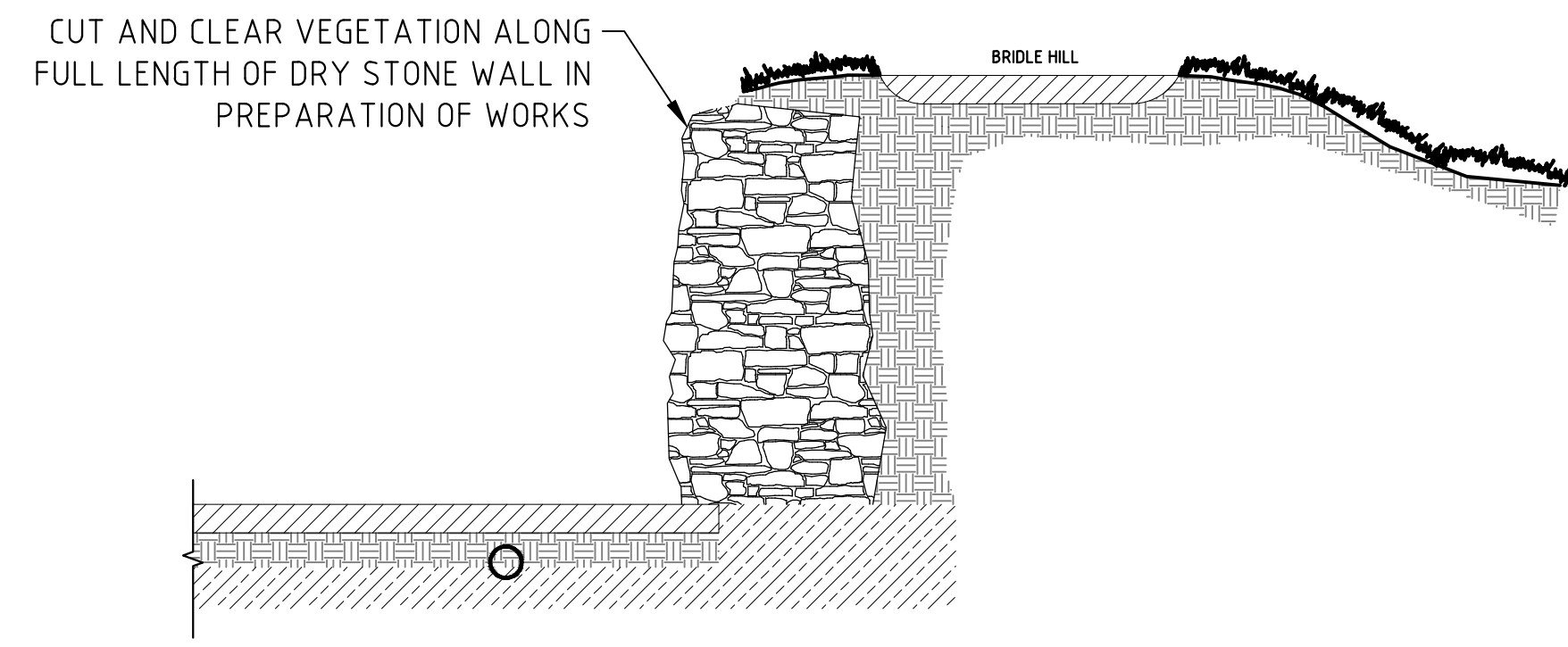
MIDDLE ROAD
SMITHS

SHEET TITLE:
**CONSTRUCTION
SEQUENCE**

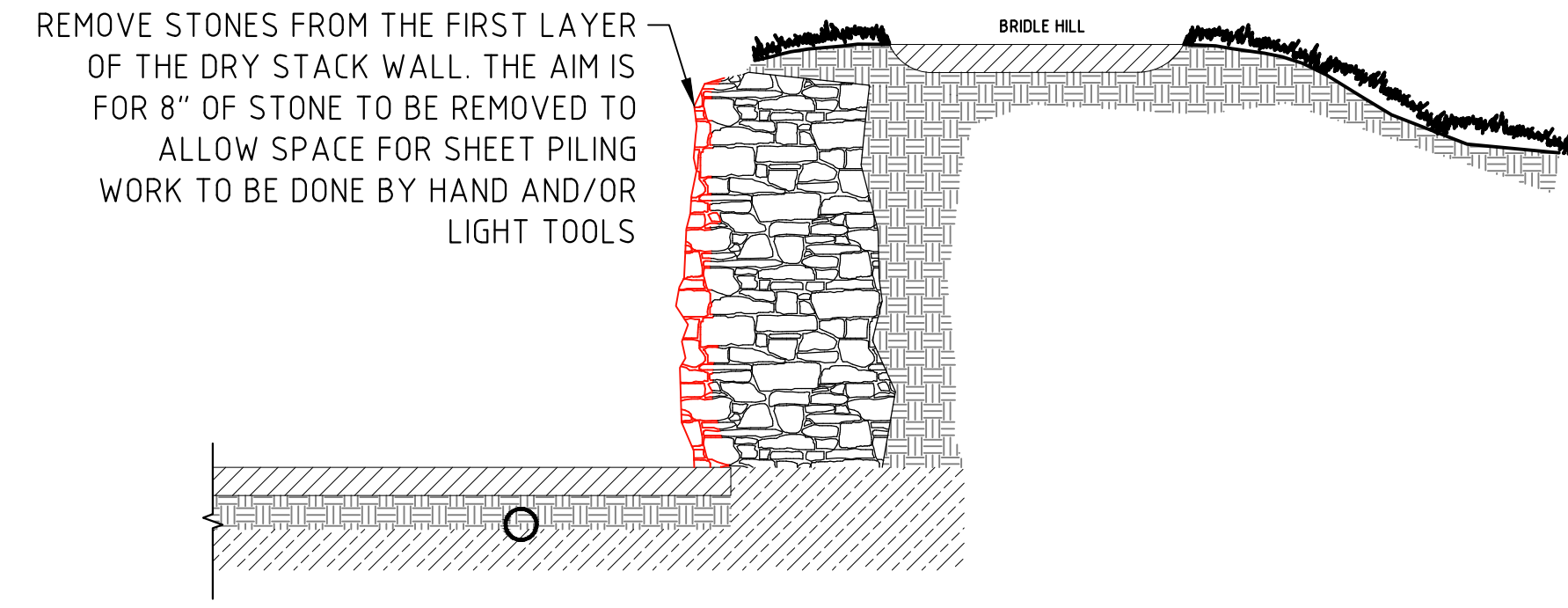
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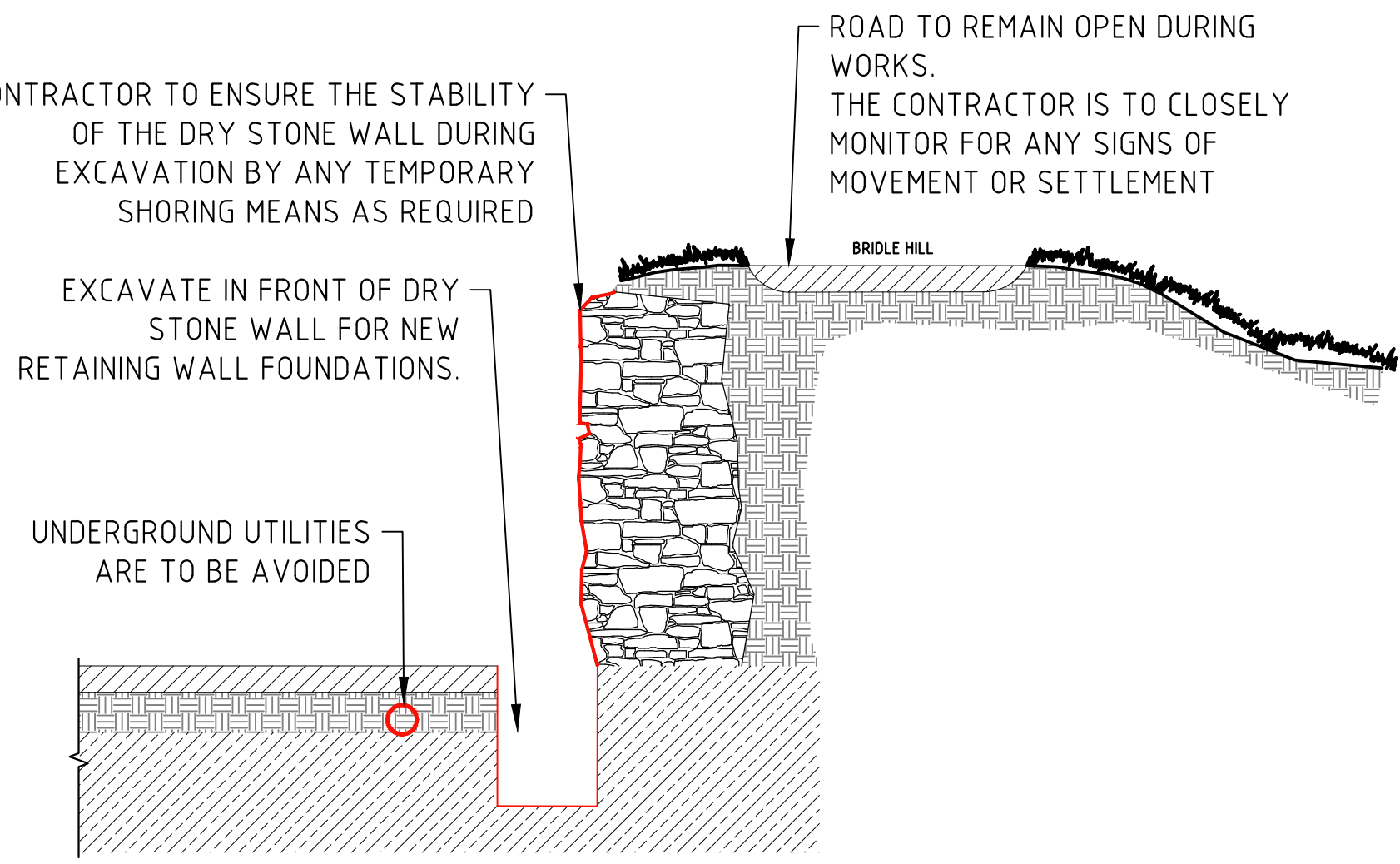
SECTION THROUGH DRY STONE WALL
EXISTING CONDITION
1:50



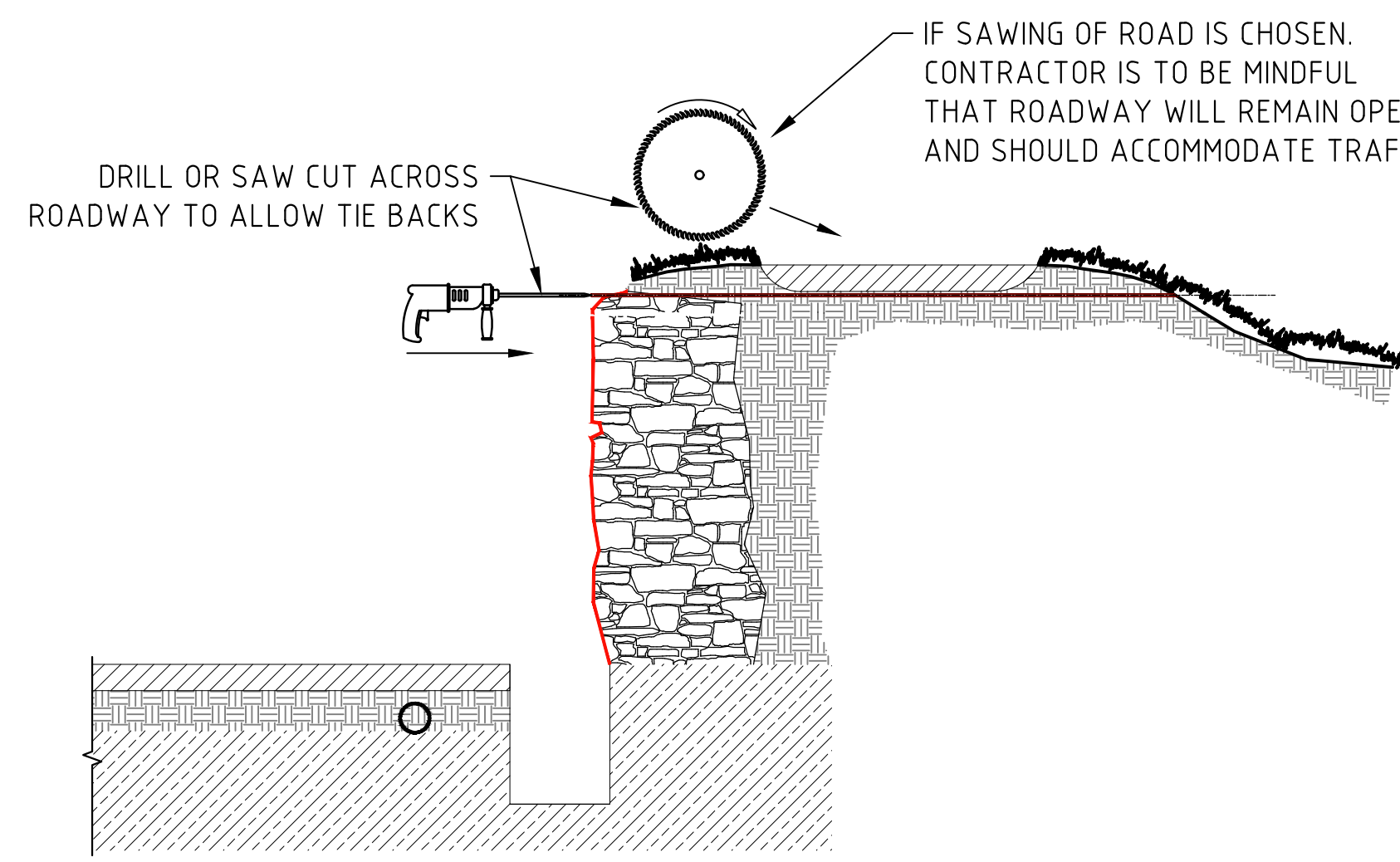
SECTION THROUGH DRY STONE WALL
STEP 1
1:50



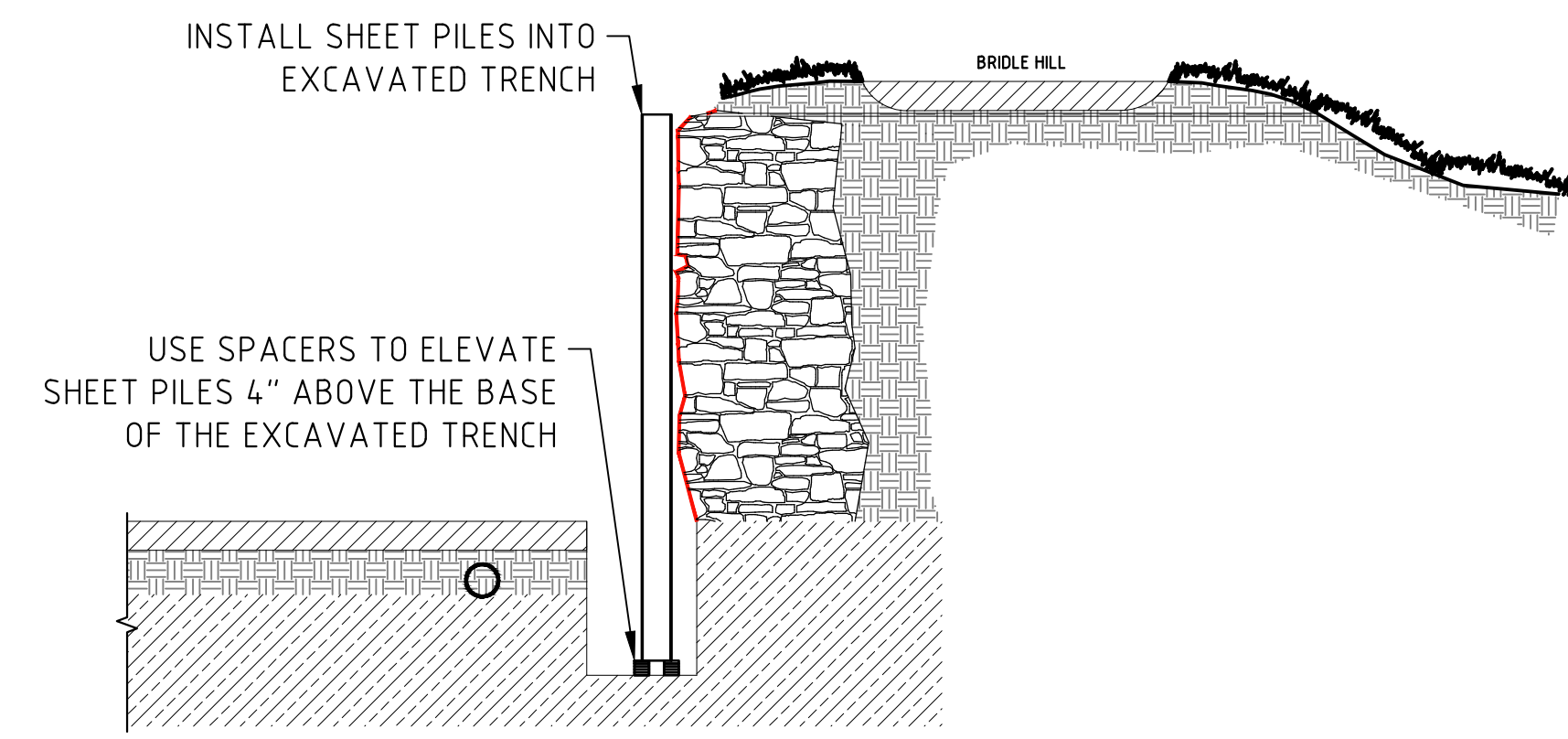
SECTION THROUGH DRY STONE WALL
STEP 2
1:50



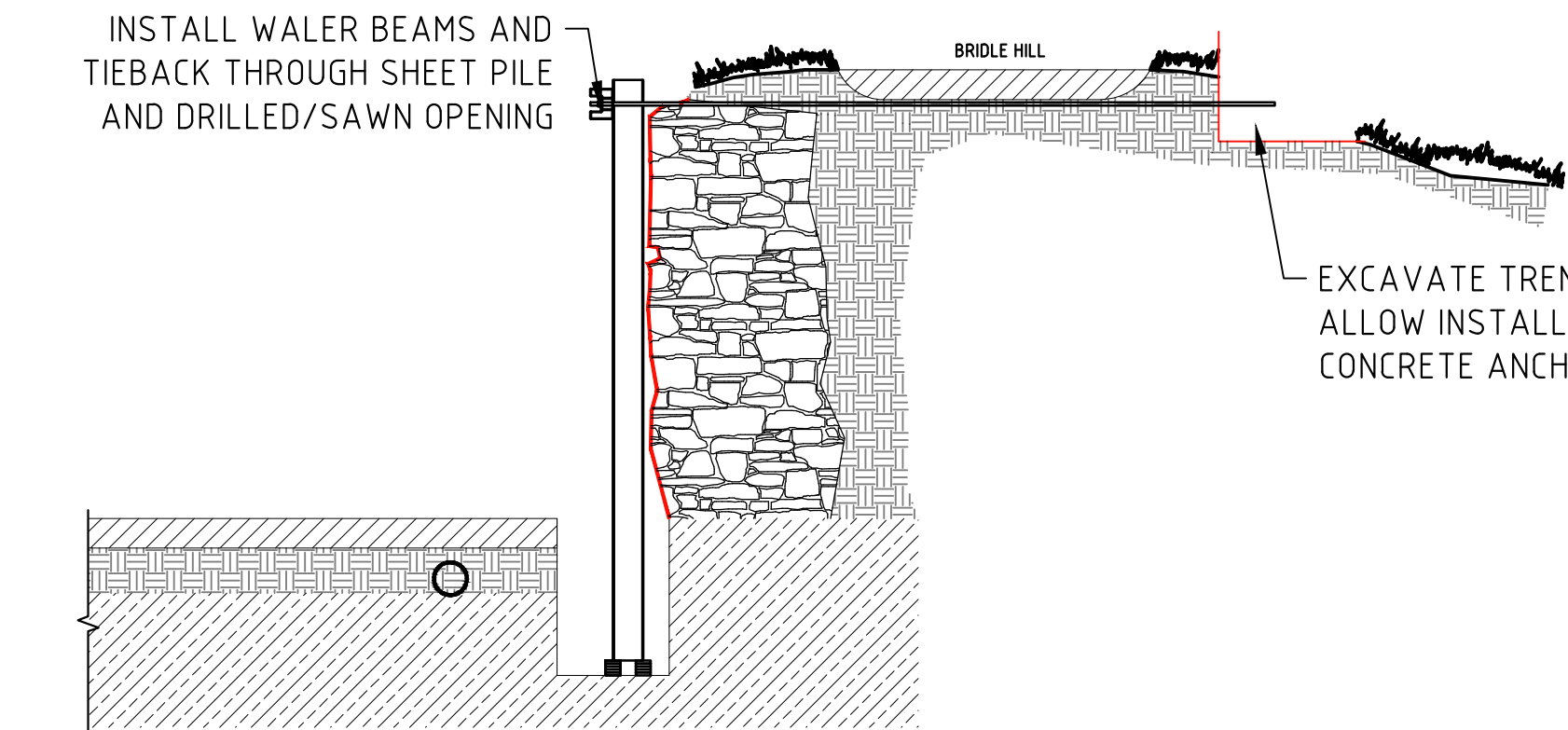
SECTION THROUGH DRY STONE WALL
STEP 3
1:50



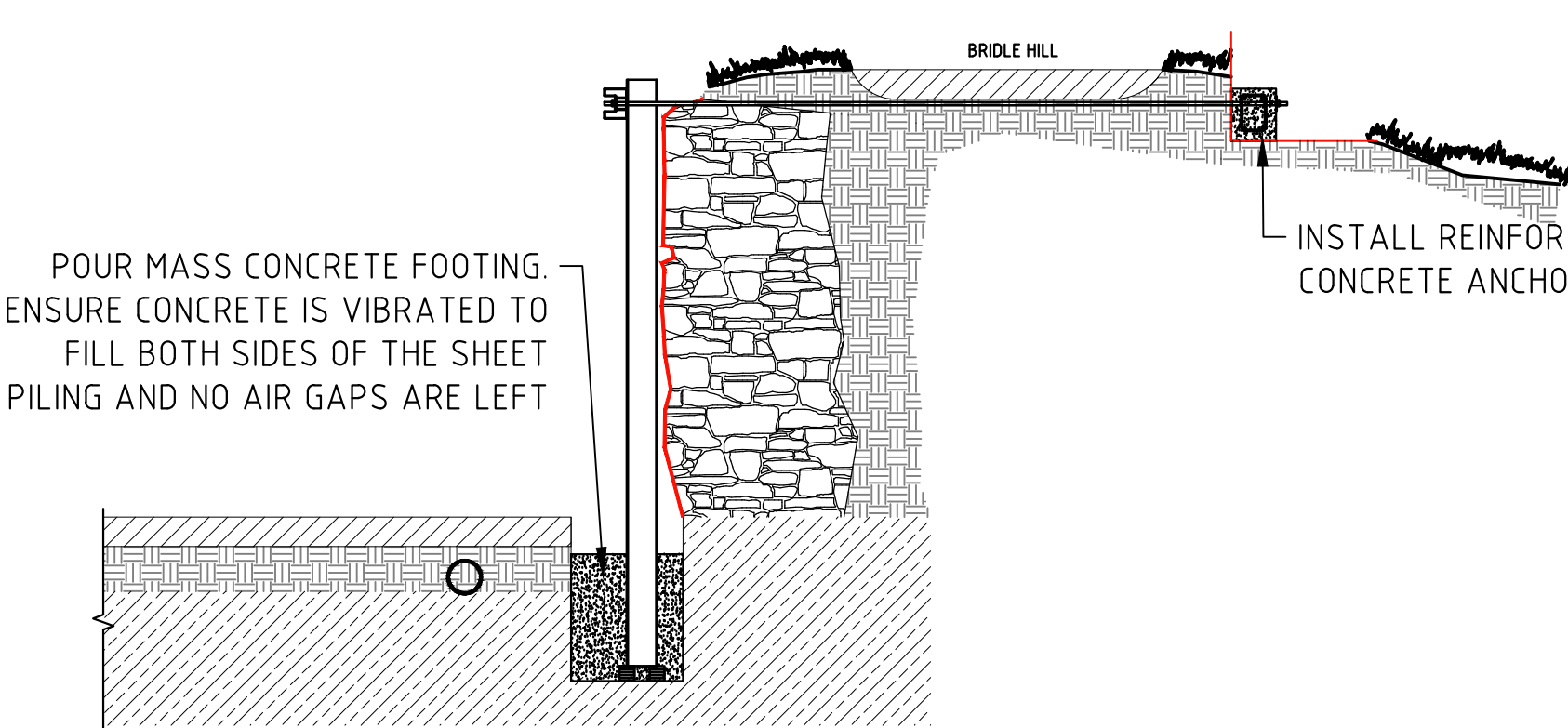
SECTION THROUGH DRY STONE WALL
STEP 4
1:50



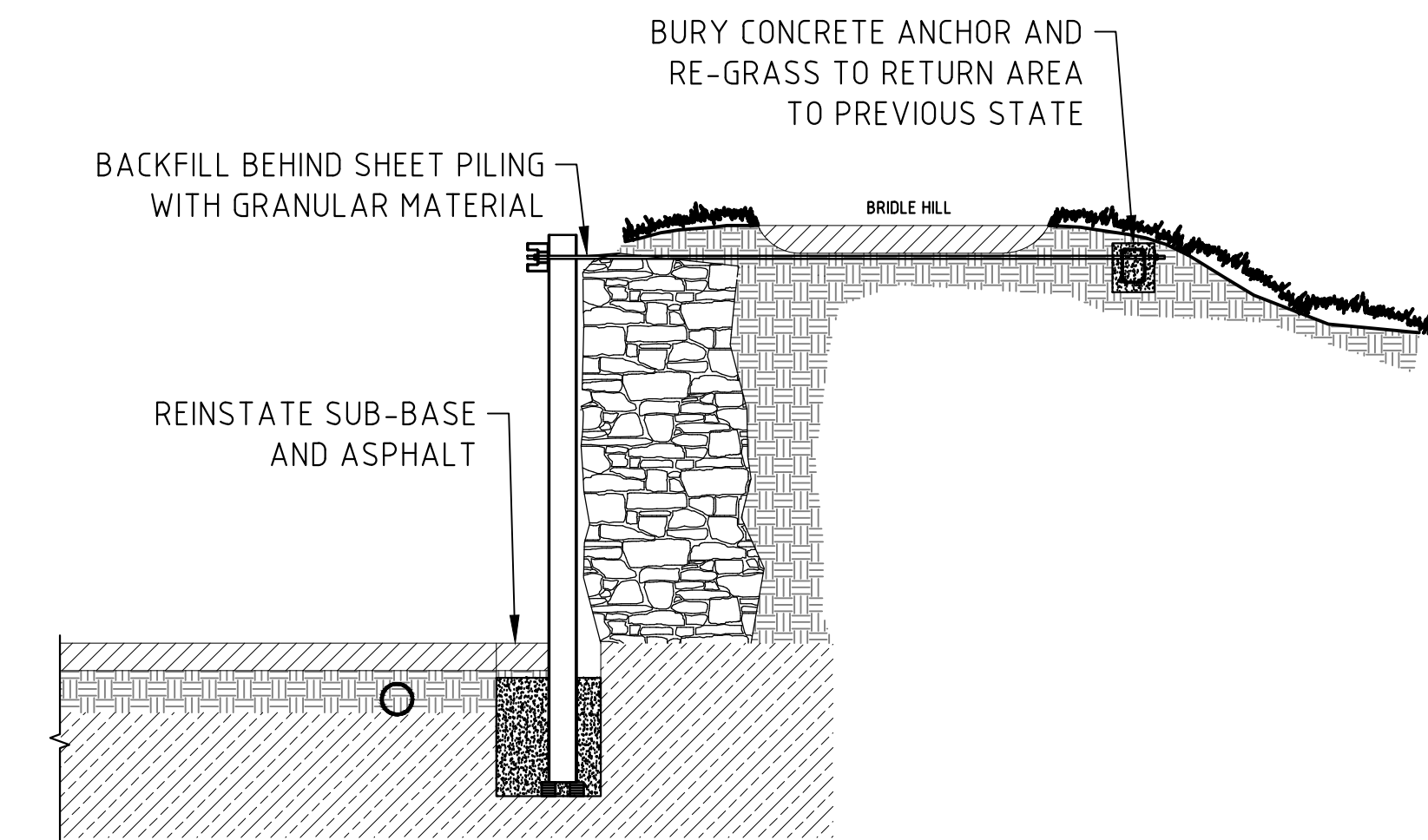
SECTION THROUGH DRY STONE WALL
STEP 5
1:50



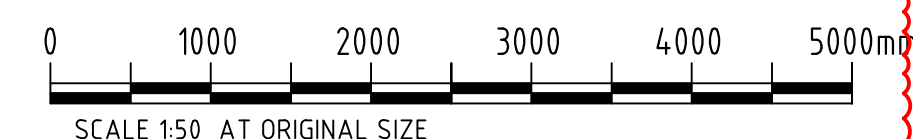
SECTION THROUGH DRY STONE WALL
STEP 6
1:50



SECTION THROUGH DRY STONE WALL
STEP 7
1:50



SECTION THROUGH DRY STONE WALL
STEP 8
1:50



ISSUED FOR: FOR TENDER -

AMENDMENTS:

| NO | REVISION | BY | APP | DATE |
|----|---|----|-----|----------|
| A | FOR TENDER | CF | AK | 01/12/23 |
| B | REVISED FOLLOWING MEETING WITH UTILITIES | CF | AK | 18/01/24 |
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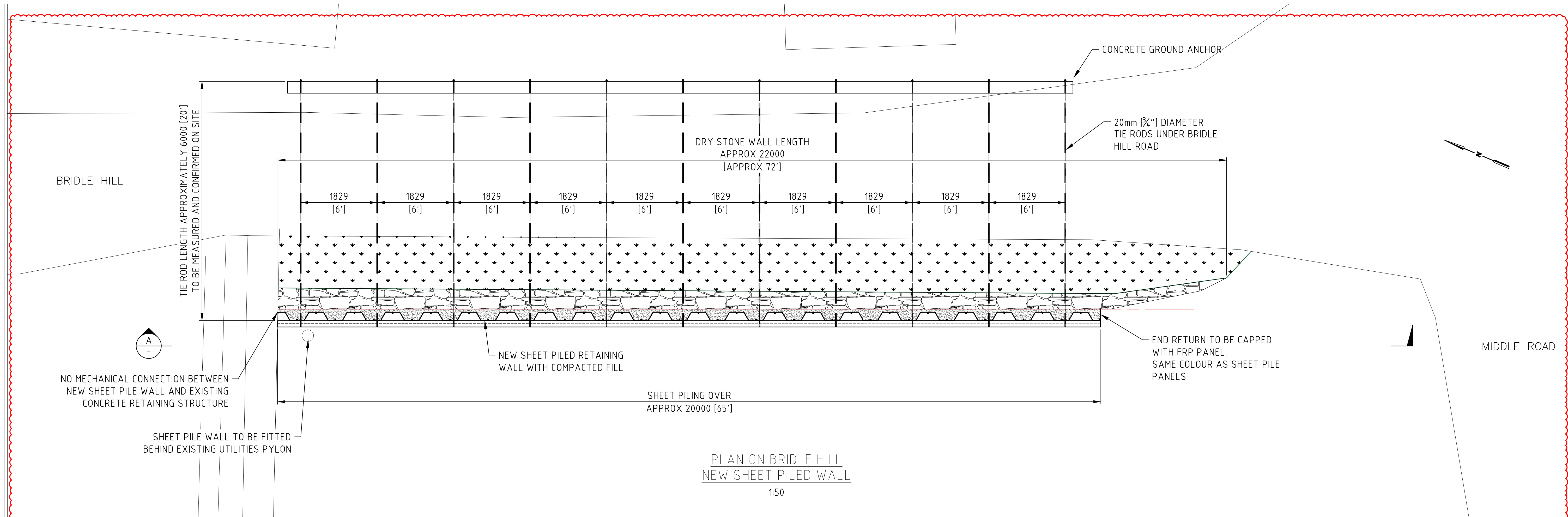
PROJECT NUMBER:
42-782B-100

PROJECT NAME:
**BRIDLE HILL
DRY STONE WALL**

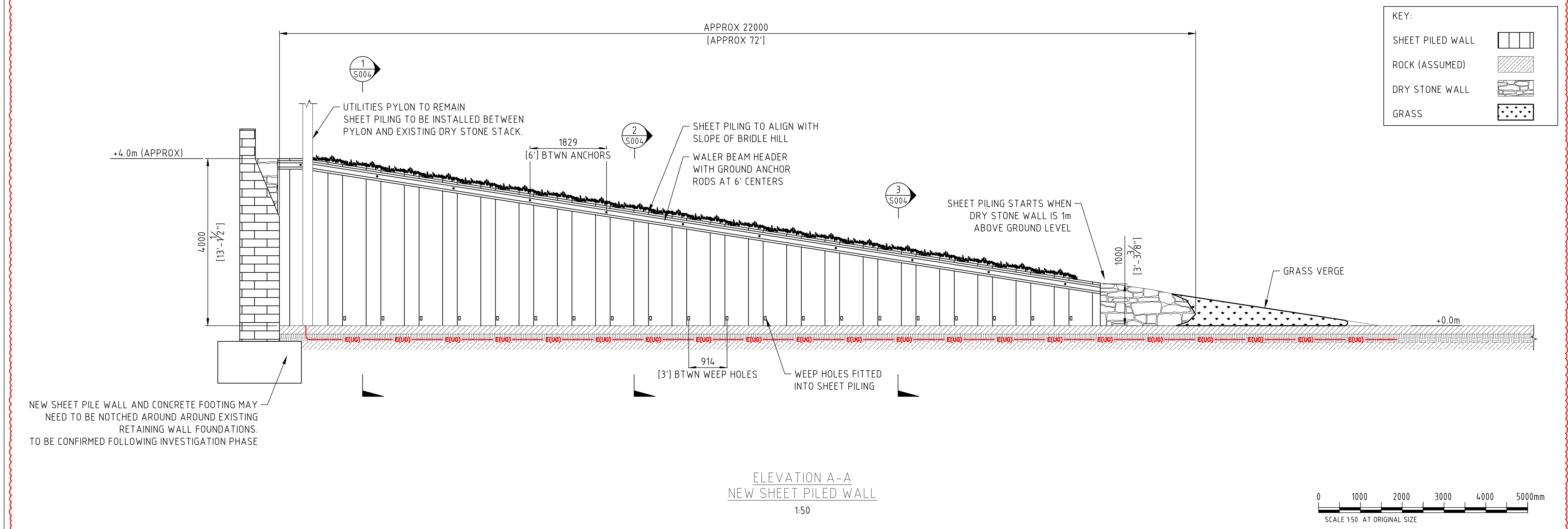
**MIDDLE ROAD
SMITHS**

SHEET TITLE:
**NEW RC WALL
GENERAL ARRANGEMENT**

SHEET NUMBER: **S003** REVISION: **B**

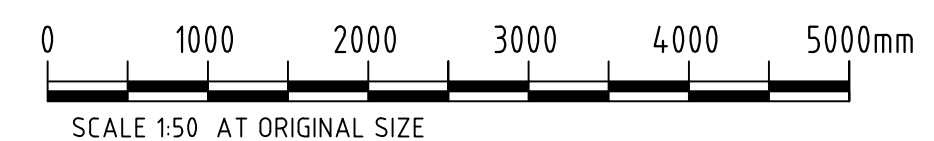


PLAN ON BRIDLE HILL
NEW SHEET PILED WALL
1:50



KEY:

| | |
|------------------|--|
| SHEET PILED WALL | |
| ROCK (ASSUMED) | |
| DRY STONE WALL | |
| GRASS | |



ISSUED FOR: FOR TENDER -

AMENDMENTS:

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|----|---|----|------|----------|
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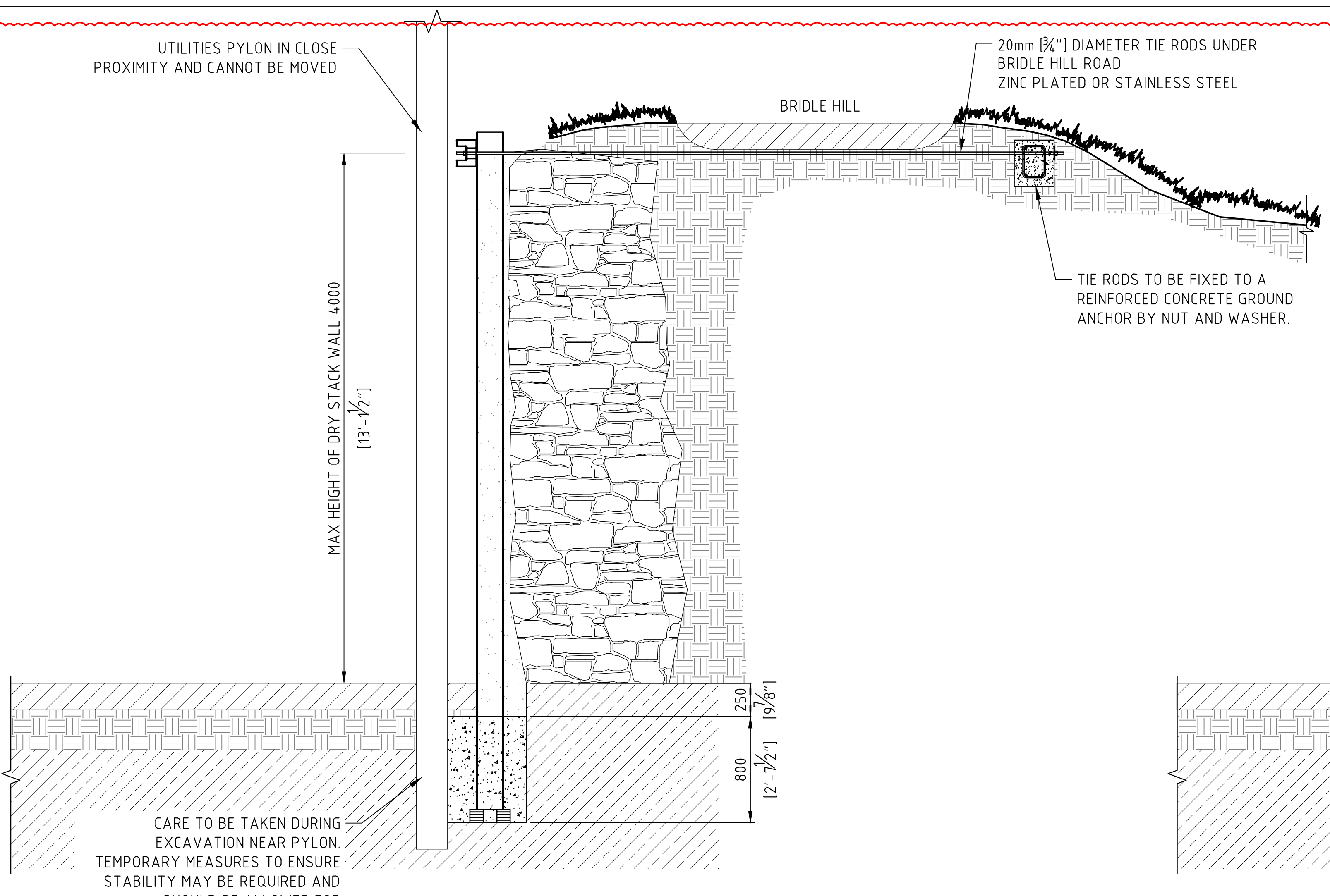
PROJECT NUMBER:
42-782B-100

PROJECT NAME:
**BRIDLE HILL
DRY STONE WALL**

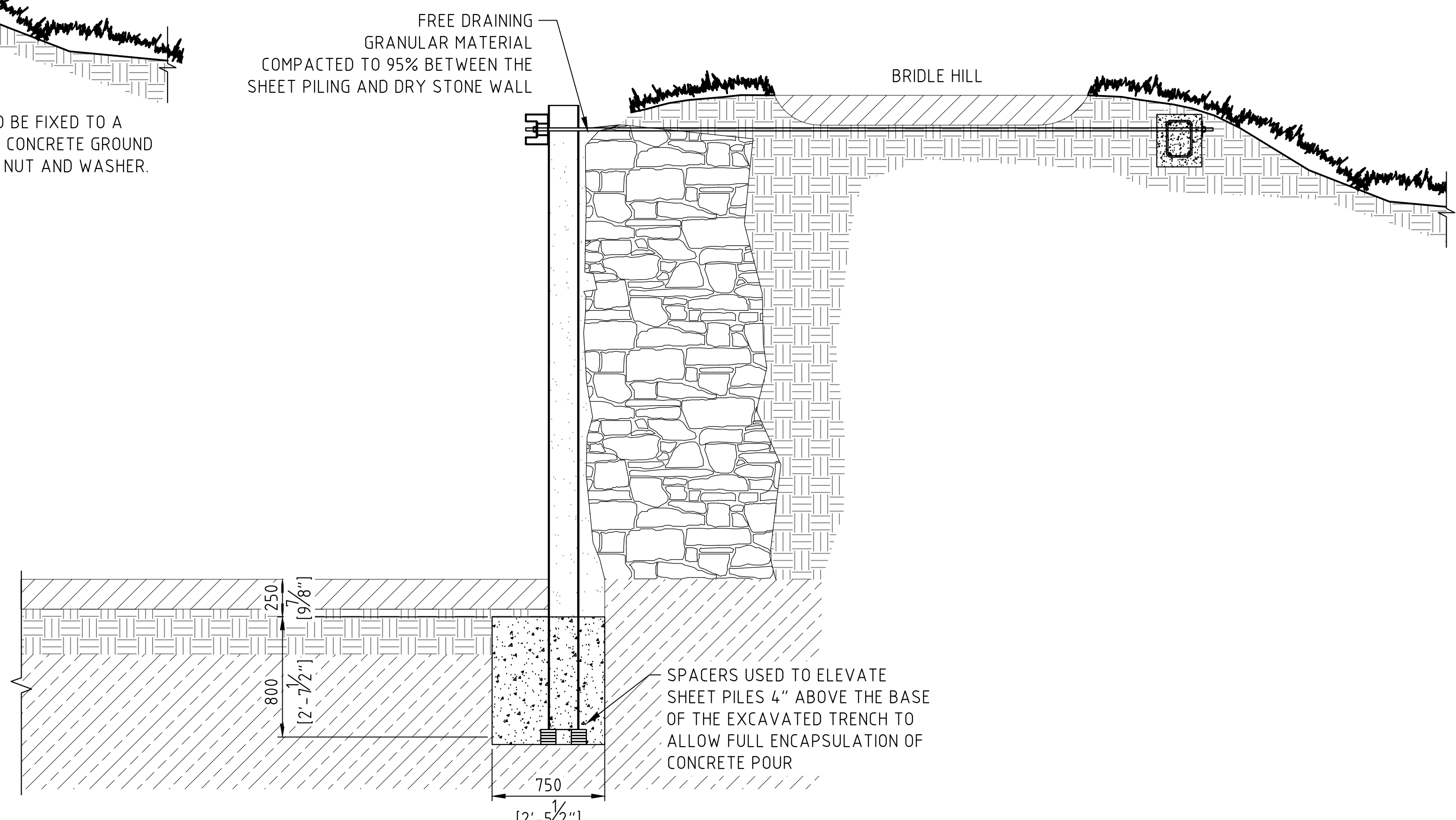
MIDDLE ROAD
SMITHS

SHEET TITLE:
**NEW RC WALL
SECTION VIEWS**

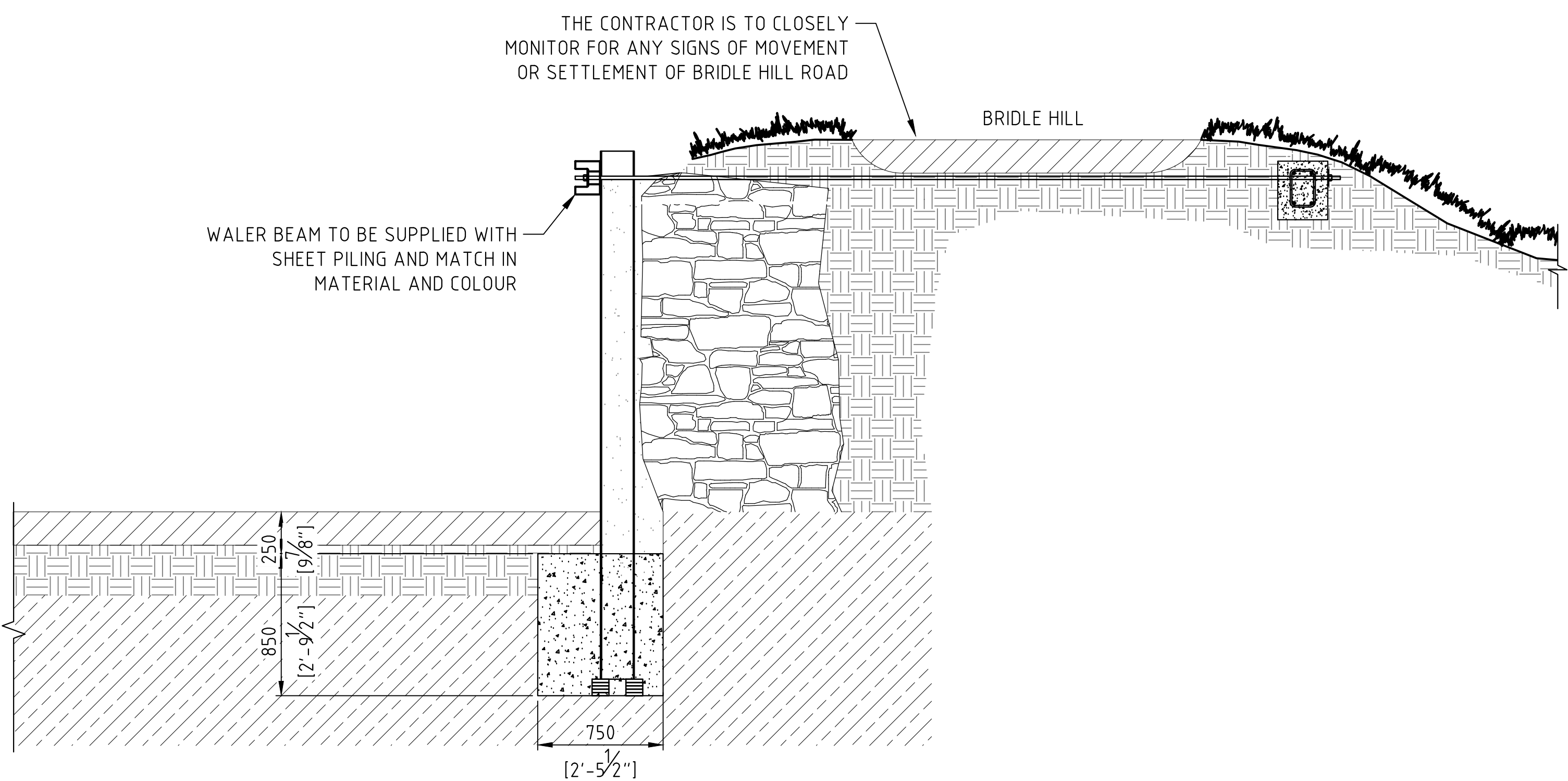
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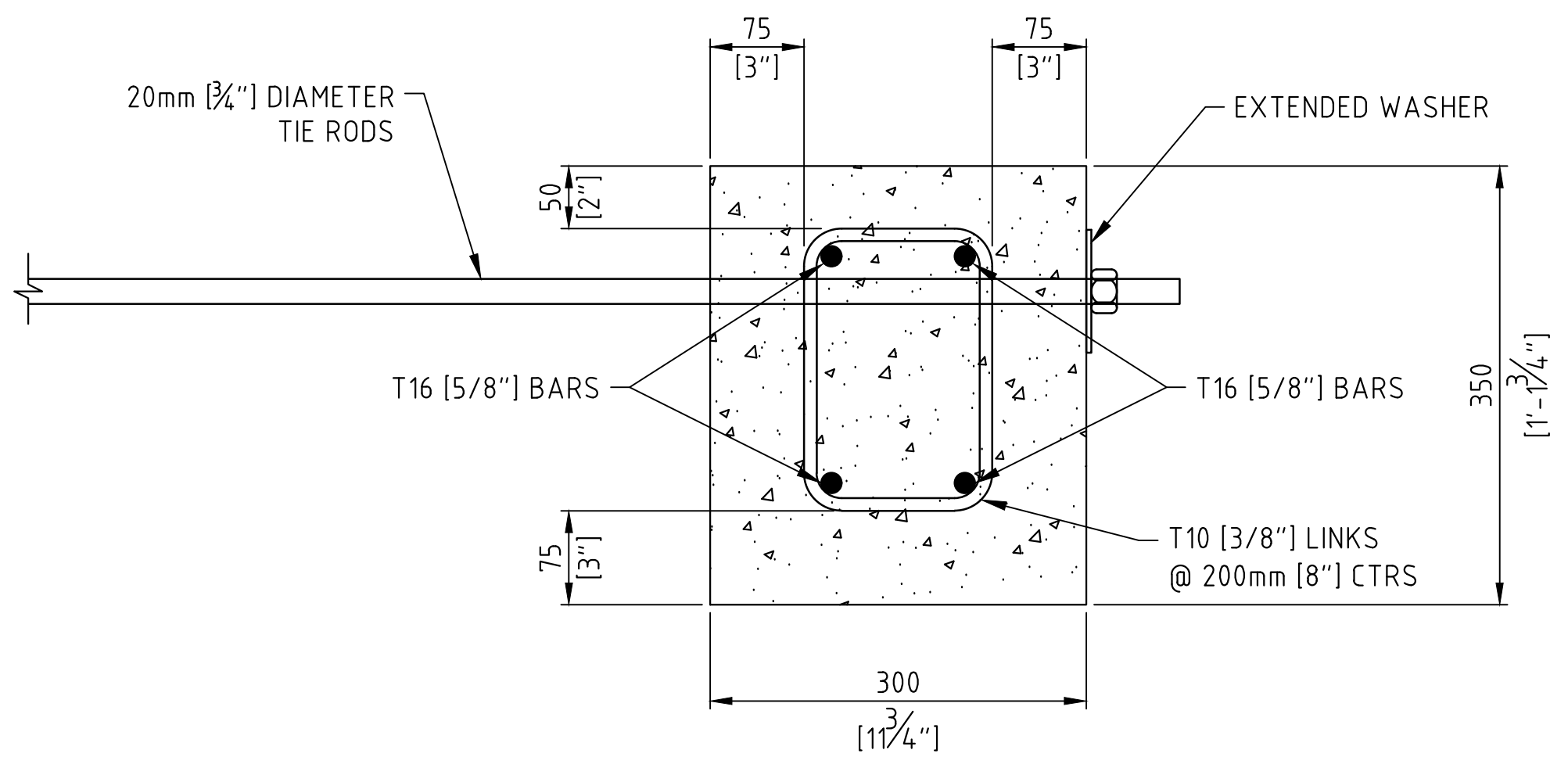
SECTION 1-1
SHEET PILED RETAINING WALL @ 4m HEIGHT
1:25



SECTION 2-2
SHEET PILED RETAINING WALL @ 3m HEIGHT
1:25



SECTION 3-3
SHEET PILED RETAINING WALL @ 2m HEIGHT
1:25



CONCRETE ANCHOR DETAIL
1:5

