

NOTES

GENERAL

1. THIS DESIGN DRAWING IS INTENDED FOR USE UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. THE AS-BUILT DRAWING MUST BE SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO.
2. COMPETENCY OF THE ROCK AT THE SUPPORTS SHALL BE EXAMINED AND APPROVED BY A QUALIFIED PROFESSIONAL ENGINEER PRIOR TO CONSTRUCTION.
3. ALL LOOSE ROCK SHALL BE REMOVED FROM THE ROCK ANCHORAGES TO COMPETENT ROCK.
4. PERFORM ALL CONCRETE WORK SO AS TO MEET OR EXCEED THE MINIMUM STANDARDS SET OUT IN THE CAN/CSA-A23.1-M90.
5. FORMWORK FOR CONCRETE, SHORING AND TEMPORARY SUPPORT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO.
6. THOROUGHLY COMPACT ALL CONCRETE USING VIBRATORS OR OTHER SUITABLE TOOLS DURING THE PLACING OPERATION. THOROUGHLY WORK THE CONCRETE INTO THE CORNERS OF THE FORMS AND ROCK SURFACES AND AROUND THE REINFORCEMENT.
7. ALL FORMS SHALL REMAIN IN PLACE FOR A MINIMUM OF 7 DAYS. DURING THIS PERIOD MAINTAIN A TEMPERATURE RANGE OF 10 TO 30 DEGREES CELSIUS. PROTECT CONCRETE AS PER CAN/CSA-A23.1-M90.
8. SHAFT CAP SHALL NOT BE LOADED UNTIL THE 28-DAY CONCRETE STRENGTH HAS BEEN VERIFIED BY CYLINDER TESTS IN ACCORDANCE WITH CAN/CSA-A23.2-M90.
9. EPOXY-COATED REINFORCING BARS AND SULPHATE RESISTANT CEMENT SHOULD BE CONSIDERED IN AREAS WHERE CORROSIVE CONDITIONS MAY EXIST.

DESIGN SPECIFICATIONS

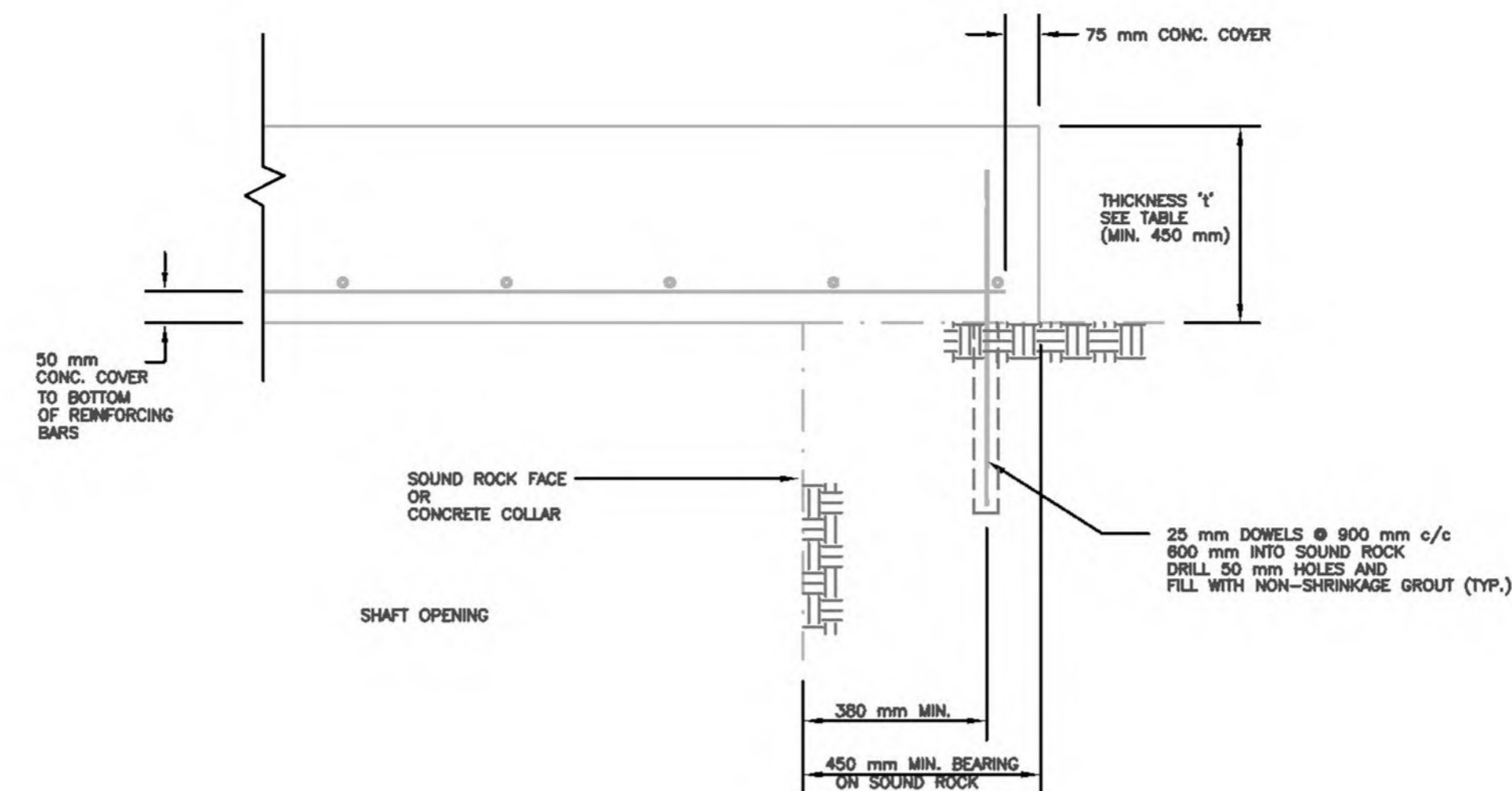
1. DESIGN LOADS: LIVE LOAD = 1.4 METERS OF SATURATED SOIL COVER AT 19 kN/cul.m. + THE GREATER EFFECT OF AN 18 kPa UNIFORMLY DISTRIBUTED LOAD, OR 81 kN CONCENTRATED LOAD OVER AN AREA 0.3 m by 0.3 m, ANYWHERE ON THE SLAB.
DEAD LOAD = WEIGHT OF CAP
2. 28-DAY CONCRETE STRENGTH (f'_c) = 30 MPa (MINIMUM)
3. REINFORCING BARS YIELD STRENGTH (f_y) = 400 MPa (MINIMUM)
4. ALL SUPPORTS TO BE FOUNDED ON SOUND ROCK. THE DESIGN IS BASED ON A MINIMUM BEARING VALUE OF GOOD QUALITY SEDIMENTARY ROCK (e.g., SHALE) = 600 kPa.
5. CONCRETE CAP DESIGN AS PER CAN3-A23.3-M84.

CONCRETE AND REINF. STEEL

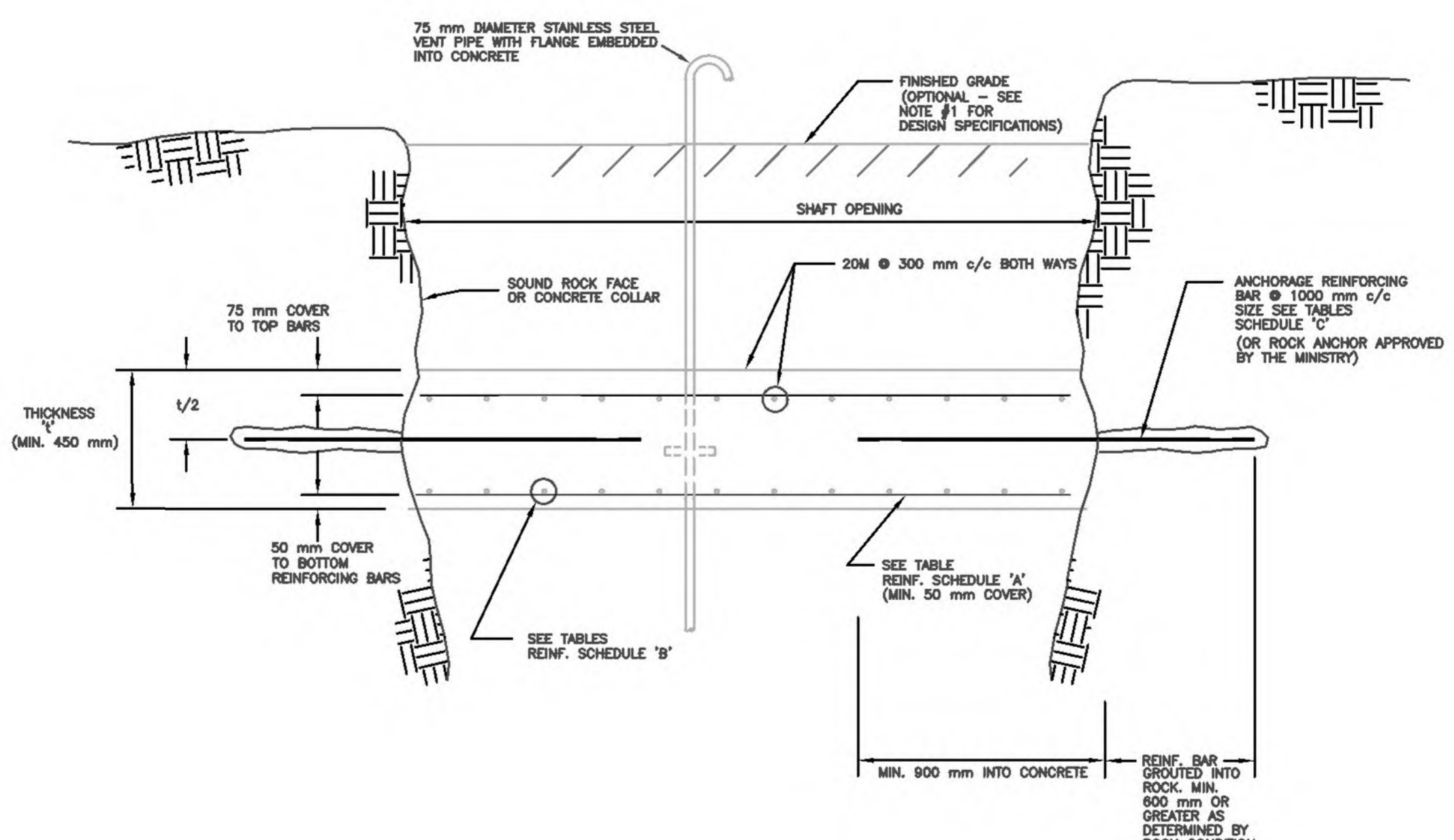
1. THE CONCRETE MUST MEET THE FOLLOWING SPECIFICATIONS:
MIN. 28-DAY STRENGTH 30 MPa
MAX. SLUMP 75 mm +/- 25 mm
MAX. AGGREGATE SIZE 20 mm
AIR ENTRAINMENT 6% +/- 1%
MAX. WATER/CEMENT RATIO 0.50
2. AGGREGATES USED IN THE CONCRETE MIX SHOULD BE NON-ALKALI-SILICA REACTIVE TYPE.
3. CONCRETE COVER TO BE FOLLOWING:
TOP REINFORCING BARS 75 mm
BOTTOM BARS 50 mm
4. ALLOW A MINIMUM OF 150 mm GAP BETWEEN BOTTOM OF CONCRETE CAP AND SOIL.
5. REINFORCING STEEL TO BE DEFORMED BILLET STEEL BARS OF GRADE 400 STEEL CONFORMING TO CSA G30.12-M1977.
6. REINFORCEMENT SHALL BE SECURELY PLACED BY MEANS OF CONCRETE OR STEEL CHAIRS. THE REINFORCING BARS TOGETHER USING 18 GAUGE WIRE.
7. CARRY OUT ALL CONCRETE CURING AS PER CSA-A23.1-M90. CURING COMPOUND SHALL BE CLEAR LIQUID TO CONFORM TO CGSB 90-SP-1a, TYPE 1, AND APPLIED AS DIRECTED BY THE MANUFACTURER.

INSPECTION AND TESTING

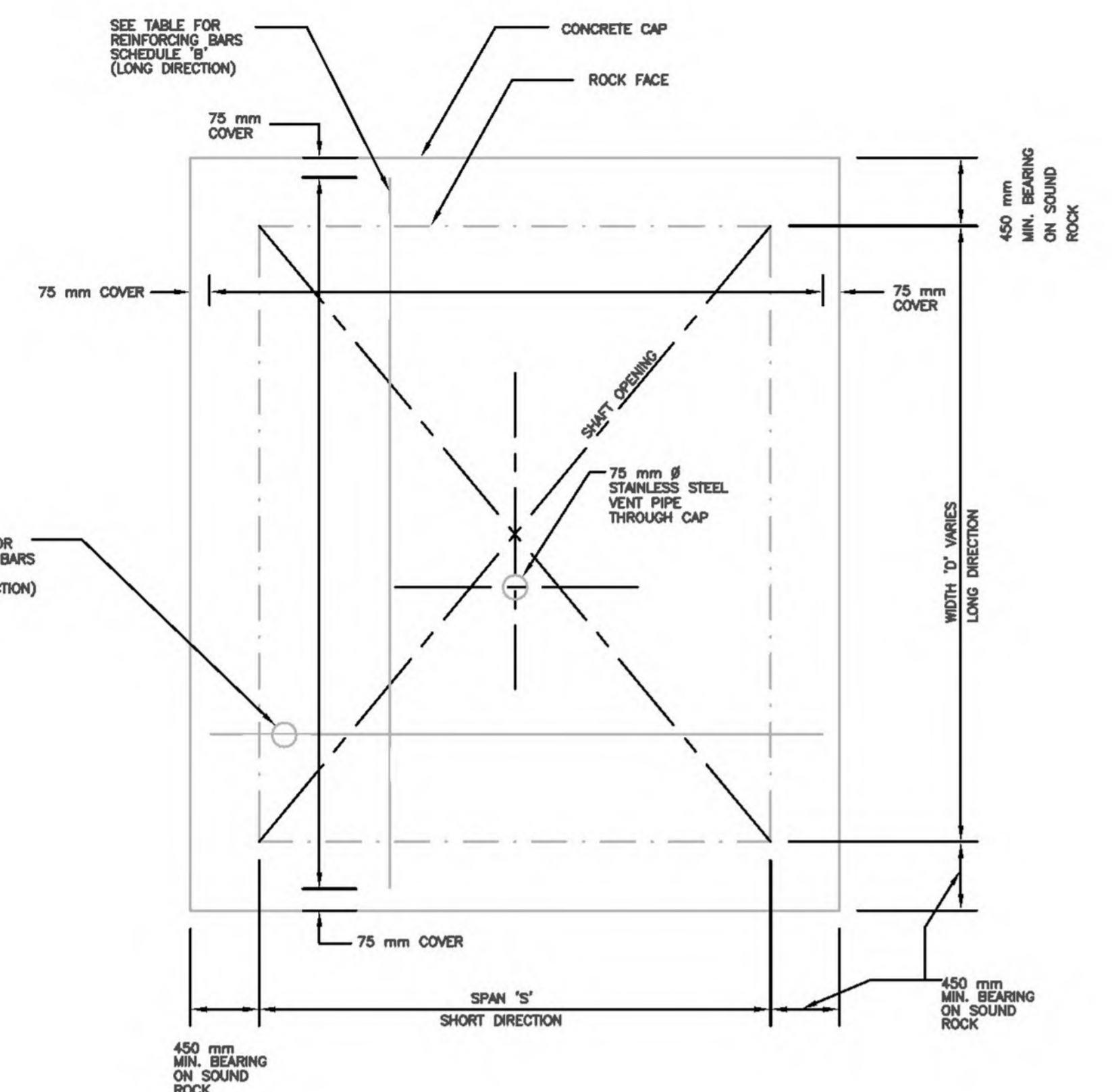
1. RECEIVE APPROVAL OF REINFORCING STEEL ARRANGEMENT FROM A QUALIFIED ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
2. TEST CONCRETE FOR AIR AND SLUMP IN THE FIELD. CAST A MINIMUM OF ONE SET OF FOUR CYLINDERS TO BE TESTED FOR COMPRESSIVE STRENGTH. THE FOURTH CYLINDER SHOULD BE CURED UNDER THE SAME FIELD CONDITIONS AS THE SHAFT CAP AND SEAT SUPPORT. DO TESTING WORK IN ACCORDANCE WITH CAN/CSA - A23.2 - M90.
3. ALL TEST RESULTS ARE TO BE SUBMITTED TO THE MINISTRY PRIOR TO BACKFILLING AND NO LATER THAN 30 DAYS AFTER TESTING.



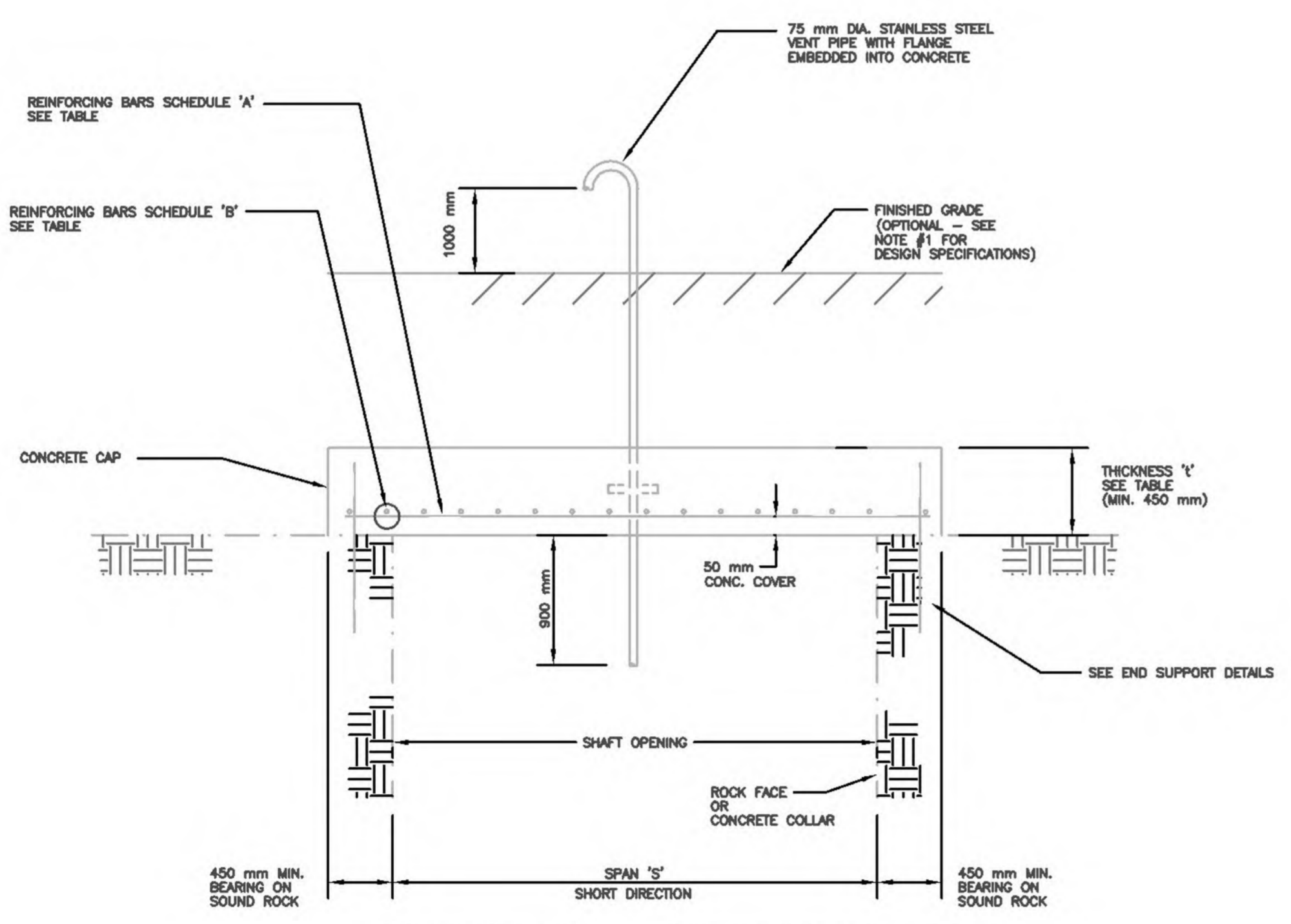
TYPICAL END SUPPORT
N.T.S.



INTERIOR INSTALLATION
N.T.S.



PLAN - MONOLITHIC CAP
N.T.S.



ELEVATION - MONOLITHIC CAP
N.T.S.

NOTES:
- ALL DIMENSIONS IN MILLIMETERS (S.I. UNITS) UNLESS OTHERWISE SPECIFIED
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWING NO. 94103-M2

CONVERSIONS
1 in. = 25.4 mm
1 ft. = 0.3048 m
1 lb. = 4.448 N
1 psi. = 6.895 kPa

No	Date	Revision	By

FOR CONSTRUCTION:		FOR DESIGN:	
Project No. F-94103-A/G		Project MINE CLOSURE STANDARD SHAFT CAP DESIGN	
Date: MAR. 25, 1994		Title MONOLITHIC CONCRETE CAP TYPICAL PLAN AND SECTION	
Drawn By: Chik'd By:		Drawing No. 94103-M1	
Scale: AS SHOWN		Trow Consulting Engineers Ltd.	