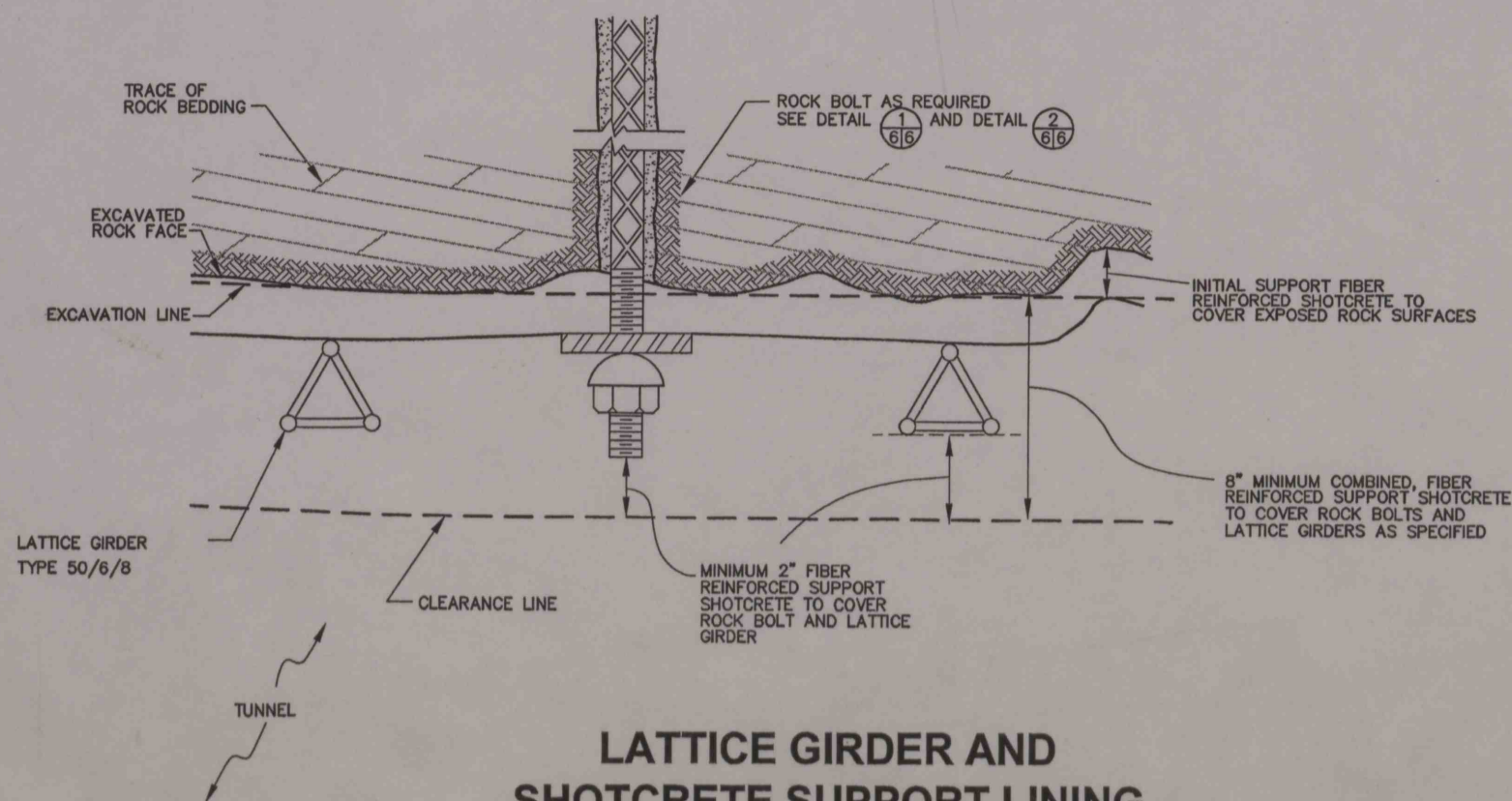


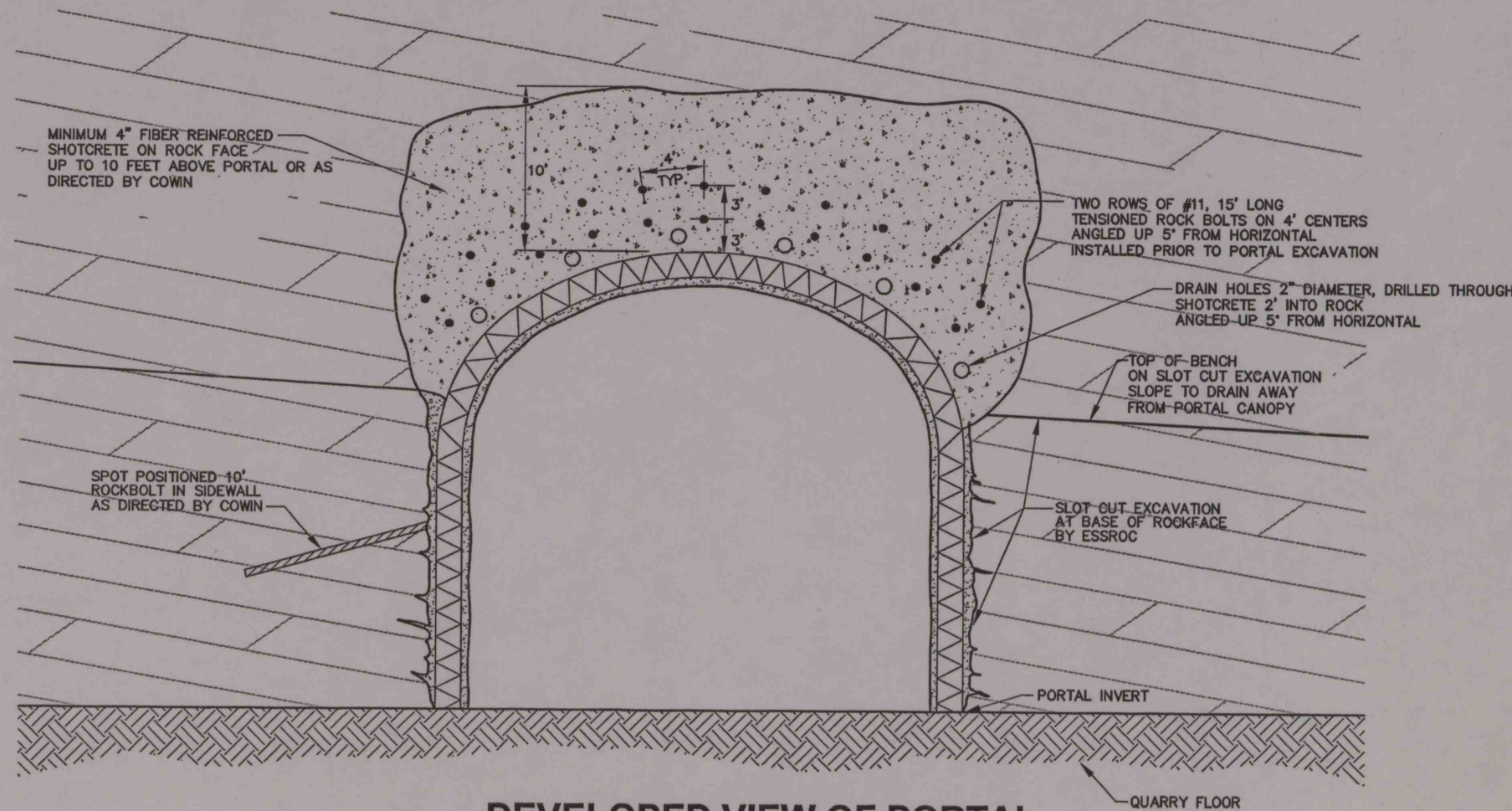
### GROUND CATEGORY 2 ROCK SUPPORT

N.T.S.



### LATTICE GIRDER AND SHOTCRETE SUPPORT LINING GROUND CATEGORY 2

N.T.S.



### DEVELOPED VIEW OF PORTAL FACE SUPPORT

N.T.S.

#### TYPICAL GROUND CATEGORY 2 DESCRIPTION

- GENERALLY WITHIN 20 FEET TO 30 FEET OF ROCK FACE AT PORTALS. UNDER LOW ROCK COVER.
- INCLUDES CALCITE-FILLED SHEAR ZONES WHICH WILL BE PRONE TO UNRAVELING.
- INCLUDES ANY GROUND OF UNEXPECTED POOR QUALITY ROCK WHERE ROCK BOLT ANCHORAGE MAY NOT BE ACHIEVED SUCH AS CLAY-FILLED SOLUTION FEATURES.
- STRATEGICALLY PLACED ROCK BOLTING MAY BE REQUIRED TO SUPPORT PARTICULAR WEDGES, BLOCKS OR WEAK ZONES.
- TYPICAL ROUND LENGTH = 4 FEET.

#### NOTES:

1. EXISTING HIGHWALL AND SLOT CUT EXCAVATION PREPARED BY ESSROC PRIOR TO TUNNEL EXCAVATION AND PORTAL CONSTRUCTION.
2. PORTAL LOCATION AND INVERT ELEVATION TO BE AS SHOWN OR AS DIRECTED BY ESSROC.
3. ALL ROCK BOLTS TO BE EPOXY COATED OR GALVANIZED PER THE SPECIFICATIONS.
4. ROCK BOLTS TO BE RESIN GROUTED OR OTHER METHODS MAY BE USED AS APPROVED BY OWNER.
5. MINIMUM TWO INCH COVER OF FIBER REINFORCED SHOTCRETE SHALL BE PLACED OVER ALL ROCK BOLTS HEADS.

THIS DESIGN IS BASED ON THE SUBSURFACE CONDITIONS DESCRIBED IN GOLDER ASSOCIATES' REPORT TITLED "GEOTECHNICAL FEASIBILITY REPORT", DATED AUGUST 1998. IF ACTUAL SUBSURFACE CONDITIONS ENCOUNTERED DURING CONSTRUCTION ARE DIFFERENT THAN THOSE DESCRIBED IN THE "GEOTECHNICAL FEASIBILITY REPORT" OR SHOWN ON THE CONSTRUCTION DRAWINGS, GOLDER ASSOCIATES SHALL BE NOTIFIED AND GIVEN THE OPPORTUNITY TO REVIEW, AND IF APPROPRIATE, MODIFY THE DESIGN. LIKEWISE, IF QUESTIONS ARISE WITH RESPECT TO THE INTERPRETATION OF THE DESIGN BY ANY PARTY, GOLDER ASSOCIATES SHALL BE NOTIFIED AND GIVEN THE OPPORTUNITY TO PROVIDE CLARIFICATION.



1/8/02

REV	DATE	DESCRIPTION	CAD BY	CHK BY	RVW BY
PROJECT: ESSROC ITALCIMENTI GROUP CONNECTOR TUNNEL NAZARETH, PENNSYLVANIA					
SHEET TITLE: PORTAL STRUCTURES AND GROUND CATEGORY 2 ROCK SUPPORT					
PROJECT No. 013-3236		FILE No.: PA19-137			
CLIENT PROJ. No.		DRAFTING SUBTITLE: 03			
DES BY RV	01/01/99	SCALE: AS SHOWN			
CAD BY BEC	03/29/99				
CHK BY GW	01/08/02				
RVW BY	1/8/02				



SHEET 7