**BLASTING:**

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| (2-16-16) | 220 | SP2 R88A |

Revise the *2012* *Standard Specifications* as follows:

**Page 2-8, Article 220-1 DESCRIPTION**, line 22, replace “cushion” with “pre-split”.

**Page 2-8, Article 220-1 DESCRIPTION**, line 23, add the following after the third sentence:

Unless required otherwise in the contract, design blasts for the vibration and air overpressure limits in this section. Pre-split rock cuts at locations shown on the plans and as directed.

**Page 2-9, Subarticle 220-3(A) Vibration and Air Overpressure Limits**, line 18, add the following to the end of Subarticle 220-3(A):

Unless required otherwise in the contract or directed, design production, pre-split and trench blasts in accordance with the following:

1. Production Blasting
2. For rock cut slopes steeper than 1.5:1 (H:V) without pre-splitting, do not use production blast holes more than 4" in diameter within 10 ft of finished slope faces or neat lines
3. Do not drill production holes below bottom of adjacent pre-split blast holes
4. Use delay blasting to detonate production blast holes towards a free face
5. Pre-splitting
6. Do not use pre-split blast holes more than 3" in diameter
7. Space pre-split holes no more than 10 hole diameters apart (wider pre-split blast hole spacing may be approved by the Engineer if test blast results are satisfactory)
8. Limit subdrilling to the offset width between lifts
9. Do not subdrill more than 2 ft below finished grade
10. Pre-split rock at least 30 ft beyond production blasting lifts or to the end of rock cuts
11. Provide benches or lifts with a maximum height of 25 ft
12. Do not use ammonium nitrate fuel oil (ANFO) or other bulk loaded products
13. Use cartridge explosives or other explosive types designed for pre-splitting
14. Use charges with a maximum diameter of half the pre-split blast hole diameter except for charges in bottom 2 ft of holes
15. If pre-split and production blast holes are fired in the same blast, fire pre-split holes at least 25 milliseconds before production holes
16. Trench Blasting
17. Do not use trench blast holes more than 3" in diameter
18. Do not use ANFO or other bulk loaded products
19. Use cartridge explosives or other explosive types designed for trench blasting
20. Use charges with a diameter of 1/2" to 3/4" less than the trench blast hole diameter

**Page 2-10, Subarticle 220-3(D) Blasting Requirements**, line 25, add the following after the third paragraph:

Pre-split rock cuts as required so irregularities between pre-split blast holes are less than 1 ft from finished slope faces. Alignment is crucial for pre-split holes. Maintain pre-split hole alignment within 6" of rock cut slopes and parallel to adjacent pre-split blast holes. Monitor and accurately measure pre-split hole alignment during drilling with a method acceptable to the Engineer. When rock cut heights require multiple benches or lifts, offset pre-split blast holes horizontally for each lift no more than the clearance necessary for drilling equipment.

**Page 2-11, Article 220-4 MEASUREMENT AND PAYMENT**, lines 29-30, replace the first paragraph with the following:

*Pre-splitting of Rock* will be measured and paid in square yards. Pre-splitting will be measured along the slope faces of pre-split rock cuts as the square yards of exposed pre-split rock. No payment will be made for unsatisfactory pre-splitting as determined by the Engineer.

No direct payment will be made for all other blasting including blasting plans, blast monitoring, post-blast reports, scaling and stabilizing rock cuts.

**Page 2-11, Article 220-4 MEASUREMENT AND PAYMENT**, line 38, add the following to the end of Article 220-4:

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| **Pay Item** |  | **Pay Unit** |
| Pre-splitting of Rock | Square Yard |