## ND.2 Form A – Schedule for the specification requirements of designed mixes

*Examples of three 'typical' designed mix specifications are shown in Form A format below.*

*Note that Mix 2 & Mix 3 are examples containing common 'errors', with inherent contradictions. Can you identify these ?*

| | | | View correct mix | View correct mix |
|---|---|---|---|---|
| **1. Mix reference**<br>NOTES: The specified values for strength class, minimum cement content and maximum water/cement ratio must be consistent with the recommended limiting values of the most onerous exposure class specified, as given in Tables NA.5, NA.6 & NA.7 of the National Annex to I.S. EN 206. Any combination of cement plus addition (e.g. GGBS), if specified, must comply with requirements set out in these Tables for the combination or 'equivalent' cement type. | | Example Mix 1 ✓ | Example Mix 2<br>Can you identify errors below? | Example Mix 3 (footpath mix)<br>Can you identify errors below? |
| **2. Strength class** | | C28/35 | C30/37 | C25/30 |
| **3. Nominal maximum size of aggregate, in mm (D)** | | 20 mm | 20 mm | 10 mm |
| **4. Types of aggregate** Coarse<br>Other (specify requirements)<br>Fine<br>Other (specify requirements) | I.S. EN 12620<br><br>I.S. EN 12620 | Aggregates to comply with I.S. EN 12620 | Aggregates to comply with I.S. EN 12620 | Aggregates to comply with I.S. EN 12620 |
| **5. Cement type(s) complying with:**<br>(Select from Tables NA.2 and NA.3. For key to abbreviations see Table ND.1) | CEM I N<br>CEM I R<br>CEM I/SR<br>CEM II/A-L (or A-LL)<br>CEM II/A-V<br>CEM II/B-V<br>CEM II/A-S<br>CEM II/B-S<br>CEM II /A-M (S-V)<br>CEM II /A-M (V-L)<br>CEM II /B-M (S-L)<br>CEM II /B-M (S-V)<br>CEM III/A<br>CEM III/B | CEM II/ A-L or CEM I | CEM II/ A-L or CEM I | CEM II/ A-L or CEM I |
| **6. Additions complying with**<br>(Refer to NA.2.7. See Table ND.2 for key to abbreviations) | pfa ; ggbs | None | 50% GGBS | None |
| **7. Sulfate class, if applicable** | XA 1 / 200 - 600 $SO_4^{2-}$<br>XA 2 / 600 - 1400 $SO_4^{2-}$<br>XA 2 / 1400 - 3000 $SO_4^{2-}$<br>XA 3 / 3000 - 6000 $SO_4^{2-}$ | N/A | XA 2 | N/A |
| **8. Exposure Class** (as in I.S. EN 206) (or combinations) | X0<br>XC1, XC2, XC3, XC4 XS1, XS2, XS3 XD1, XD2, XD3<br>XF1, XF2, XF3, XF4<br>XA1, XA2, XA3 | XC1, XC2 | XC2, XA2 | XF4 |

| | | | | |
|---|---|---|---|---|
| **9. Chloride Class** | Cl 1.0<br>Cl 0.40<br>Cl 0.20<br>Cl 0.10 | *0.40* | *0.40* | *0.40* |
| **10. Minimum cement content, kg/m$^3$** | | *290* | *320* | *300* |
| **11. Maximum free water / cement ratio** | | *0.6* | *0.55* | *0.6* |
| **12. Quality assurance requirements** | | *N/A* | *N/A* | *N/A* |
| **13. Rate of sampling intended by the purchaser for for strength testing (for information)** | | *N/A* | *N/A* | *N/A* |
| **14. Other requirements** (alkali, etc. as appropriate) | | *N/A* | *N/A* | *N/A* |
| In the case of fresh concrete the following should be completed by the purchaser. | | | | |
| **15. Consistence** (Choose one method)<br>Slump Class<br>Compaction Class Flow Class | S1, S2, S3,<br>S4, S5 C0, C1,<br>C2, C3<br>F1, F2, F3, F4, F5, F6 | *S2 (range 50 - 90 mm)* | *S3 (range 100 - 150 mm)* | *S2 (range 50 - 90 mm)* |
| **16. Method of placing** (for information) | | *N/A* | *Pump* | *N/A* |
| **17. Other requirements** by the purchaser of fresh concrete (only if appropriate) | | *N/A* | *N/A* | *N/A* |