Realistic Scenario Mixtures

Scenario 1 NDOT Class 47B Reference:
https://dot.nebraska.gov/media/jjwpyezr/pavdesignmanual.pdf (page 63 table)

Parameter	Value
project_no	101
concrete_class	"47B"
cement_A	580 lb
fly_ash_B	80 lb
silica_fume_C	0 lb
other_SCM_D	0 lb
water_cement_ratio_E	0.44
air_content_F	7
percent_fine_G	45
percent_coarse_H	50
percent_other_I	5
sg_cement_J	3.15
sg_fly_ash_K	2.30
sg_silica_fume_L	2.20
sg_other_SCM_M	2.60
sg_fine_N	2.65
sg_coarse_O	2.70
sg_other_P	2.60

Parameter **Value**

NDOT Concrete Mix Design – Weight Summary

(1 Cubic Yard of Concrete)

Project Number: 101

Class of Concrete: 47B

Cement (A): 580.0 lb

Fly Ash (B): 80.0 lb

Silica Fume (C): 0.0 lb

Other SCM (D): 0.0 lb

Fine Aggregate (Y): 1207 lb

Coarse Aggregate (Z): 1366 lb

Other Aggregate (AA): 132 lb

Water (Q): 290 lb

End of Mix Design Summary

Scenario 2: 4000 PSI Structural Concrete (Typical ACI Mix) Reference: https://static1.squarespace.com/static/59c91fb8f7e0ab097112fbc4/t/5b5b22a81ae6cf14d8dcd716/1532699305261/Mix+Designs-COMBINED+072718.pdf

Parameter	Value
project_no	102
concrete_class	"4000psi Standard"
cement_A	650 lb
fly_ash_B	50 lb
silica_fume_C	0 lb
other_SCM_D	50 lb
water_cement_ratio_E	0.42
air_content_F	6
percent_fine_G	46
percent_coarse_H	49
percent_other_I	5
sg_cement_J	3.15
sg_fly_ash_K	2.30
sg_silica_fume_L	2.20
sg_other_SCM_M	2.60
sg_fine_N	2.65
sg_coarse_O	2.70
sg_other_P	2.60

NDOT Concrete Mix Design – Weight Summary

(1 Cubic Yard of Concrete)

Project Number: 101

Class of Concrete: 47B

Cement (A): 650.0 lb

Fly Ash (B): 50.0 lb

Silica Fume (C): 0.0 lb

Other SCM (D): 0.0 lb

Fine Aggregate (Y): 1219 lb

Coarse Aggregate (Z): 1324 lb

Other Aggregate (AA): 130 lb

Water (Q): 315 lb

End of Mix Design Summary

Scenario 3: 47BD Concrete Mix
https://dot.nebraska.gov/media/jjwpyezr/pavdesignmanual.pdf (page 63 table)
project_no = 103
concrete_class = "47BD"
cement_A = 658
fly_ash_B = 0
silica_fume_C = 0
other_SCM_D = 0
water_cement_ratio_E = 0.45
air_content_F = 7
percent_fine_G = 45
percent_coarse_H = 50
percent_other_I = 5

sg_cement_J = 3.15
sg_fly_ash_K = 2.30
sg_silica_fume_L = 2.20
sg_other_SCM_M = 2.60
sg_fine_N = 2.65
sg_coarse_O = 2.70
sg_other_P = 2.60

NDOT Concrete Mix Design – Weight Summary

(1 Cubic Yard of Concrete)

Project Number: 101

Class of Concrete: 47BD

Cement (A): 658.0 lb

Fly Ash (B): 0.0 lb

Silica Fume (C): 0.0 lb

Other SCM (D): 0.0 lb

Fine Aggregate (Y): 1219 lb

Coarse Aggregate (Z): 1380 lb

Other Aggregate (AA): 133 lb

Water (Q): 296 lb

End of Mix Design Summary

Scenario 4: 10000 PSI Concrete Mix

https://static1.squarespace.com/static/59c91fb8f7e0ab097112fbc4/t/5b5b22a81ae6cf14d8dcd716/1532699305261/Mix+Designs-COMBINED+072718.pdf

project_no = 104

concrete_class = "NDOT Structural – Special Provision"

cement_A = 893

fly_ash_B = 0

silica_fume_C = 63

other_SCM_D = 50

water_cement_ratio_E = 0.27

air_content_F = 6.5

percent_fine_G = 45

percent_coarse_H = 50

percent_other_I = 5

sg_cement_J = 3.15

sg_fly_ash_K = 2.30

sg_silica_fume_L = 2.20

sg_other_SCM_M = 2.60

sg_fine_N = 2.65

sg_coarse_O = 2.70

sg_other_P = 2.60

NDOT Concrete Mix Design – Weight Summary

(1 Cubic Yard of Concrete)

Project Number: 101

Class of Concrete: NDOT Structural

Cement (A): 893.0 lb

Fly Ash (B): 0.0 lb

Silica Fume (C): 63.0 lb

Other SCM (D): 0.0 lb

Fine Aggregate (Y): 1083 lb

Coarse Aggregate (Z): 1226 lb

Other Aggregate (AA): 118 lb

Water (Q): 272 lb

End of Mix Design Summary