202E11401 PORTIONS OF STRUCTURE REMOVED, AS PER PLAN (MAIN MEMBERS)

Beam 1
V1 = WT 30 x 99 = 0.101 sq ft (CADD Measured) x 23.865 ft = 2.41 cu ft
W1 = V x Unit Weight of Steel = 2.41 cu ft x 490 lbs / cu ft = 1180.9 lbs

Beams 2-4, 6
V2 = Flange W30 x 99 = 0.1872 sq ft (CADD Measured) x 0.056 ft (thickness) = 0.01 cu ft
W2 = V x Unit Weight of Steel = 0.01 cu ft x 490 lbs / cu ft * 4 each = 19.6 lbs

Beam 5
V3 = WT 30 x 99 = 0.101 sq ft (CADD Measured) x 2.333 ft = 0.236 cu ft
W3 = V x Unit Weight of Steel = 0.236 cu ft x 490 lbs / cu ft = 115.64 lbs

Total= W1 + W2 +W3
Total= 1180.9 lbs + 19.6 lbs + 115.64 lbs = 1316.14

Use 1316 lbs

202E11501 PORTIONS OF STRUCTURE REMOVED, AS PER PLAN (SECONDARY MEMBERS)

No of Cross Frames = 6 each

Use 6 each

513E10201 STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN

V1 = Stiffeners = 0.922 sq ft (CADD Measured) x 0.375 in x (1 / 12) x 36 stiffeners = 1.037 cu ft
W1 = V1 x Unit Weight of Steel = 1.037 cu ft x 490 lbs / cu ft = 508.13 lbs

V2 = Cross Frames = 0.012 sq ft (CADD Meas.) x 24.59 ft (length, CADD Meas.) x (6 Assemblies) = 1.77 cu ft
W2 = V2 x Unit Weight of Steel = 1.77 cu ft x 490 lbs / cu ft = 867.3 lbs

V3 = Beam 1 WT Section = 0.1013 sq ft (CADD Meas.) x 23.865 ft (Length) = 2.42 cu ft
V4 = Beams 2-4, 6 Flange Sections = 0.1872 sq ft (CADD Meas.) x 0.056 ft (Thickness) x 4 Each = 0.04 cu ft
V5 = Beam 5 WT Section = 0.1013 sq ft (CADD Meas.) x 2.333 ft (Length) = 0.24 cu ft
W3 = (V3 + V4 + V5) x Unit Weight of Steel = (2.42 cu ft + 0.04 cu ft + 0.24 cu ft) x 490 lbs / cu ft = 1323 lbs
W = W1 + W2 + W3 = 508.13 + 867.3 + 1323 = 2698.43 lbs

Use 2698 lbs

513E95000 STRUCTURAL STEEL, MISC.: REPAIR OF DAMAGED SECONDARY MEMBERS (FILLET WELDING)

X-Frame L = (Horz Member L + X-Member (Low Side) L + X-Member (High Side) L) x Number of Assemblies

Horz Member L = (6 inches per vert. leg + 3 inches per horz. Leg) x 2 sides x (1 ft/12in) = 1.5 ft
X-Member (Low Side) L = (6 inches per vert. leg + 3 inches per horz. Leg) x 2 sides x (1 ft/12in) = 1.5 ft
X-Member (High Side) L = (6 inches per vert. leg + 6 inches per horz. Leg) x 2 sides x (1 ft/12in) = 2 ft

X-Frame L = (1.5 ft + 1.5 ft + 2 ft) x 6 Assemblies = 30 ft
Stiffener L1 = (3.75 + 23.25 + 3.75) in x (1 / 12) x 1 face = 2.56 ft per stiffener x 32 each = 81.9 ft
Stiffener L2 = (3.75 + 23.25 + 0) in x (1 / 12) x 1 face = 2.25 ft per stiffener x 4 each = 9 ft

Total L = X-Frame L + Stiffener L1 + Stiffener L2
Total L = 30 ft + 81.9 ft + 9 ft = 120.9 ft

Use 121 ft

513E95000 STRUCTURAL STEEL, MISC.: REPAIR OF DAMAGED MAIN MEMBERS (COMPLETE PENETRATION WELDING)

Beam 1 L1 = 0.871 ft (flange) + 1.174 ft (vert.) + 23.865 ft (horiz.) + 1.174 ft (vert.) + 0.871 ft (flange) = 27.955 ft
Beam 5 L2 = 0.871 ft (flange) + 1.174 ft (vert.) + 2.333 ft (horiz.) + 1.174 ft (vert.) + 0.871 ft (flange) = 6.423 ft
2-4, 6 L3 = (1.349 ft (Length, CADD Measured) x 4 (Quantity) = 5.396 ft

Total = L1 + L2 + L3
Total = 27.955 ft + 6.423 ft + 5.396 ft = 39.774 ft

Use 40 ft

514E20001 FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN (THREE COAT)

Beam 1 (Flange) 25.865 ft x 0.871 ft x 2 sides = 45.06 sq ft
Beam 1 (Web) 25.865 ft x 2.17 ft x 2 sides = 112.25 sq ft
Beam 1 (Edge) 25.865 ft x 0.056 ft x 2 sides = 2.9 sq ft
Beam 2 (Flange) 3.25 ft x 0.871 ft x 2 sides = 5.66 sq ft
Beam 2 (Edge) 3.25 ft x 0.056 ft x 1 sides = 0.18 sq ft
Beam 3 (Flange) 3.25 ft x 0.871 ft x 2 sides = 5.66 sq ft
Beam 3 (Edge) 3.25 ft x 0.056 ft x 1 sides = 0.18 sq ft
Beam 4 (Flange) 3.25 ft x 0.871 ft x 2 sides = 5.66 sq ft
Beam 4 (Edge) 3.25 ft x 0.056 ft x 1 sides = 0.18 sq ft
Beam 5 (Flange) 4.333 ft x 0.871 ft x 2 sides = 7.55 sq ft
Beam 5 (Web) 4.333 ft x 2.17 ft x 2 sides = 18.81 sq ft
Beam 5 (Edge) 4.333 ft x 0.056 ft x 2 sides = 0.49 sq ft
Beam 6 (Flange) 3.25 ft x 0.871 ft x 2 sides = 5.66 sq ft
Beam 6 (Edge) 3.25 ft x 0.056 ft x 1 sides = 0.18 sq ft

A Beams = 210.42 sq ft

Stiffener Faces: 0.922 sq ft (CADD Measured) x 2 sides x 36 each = 66.38 sq ft
Stiffener Edges: 2.359 ft (height) x 0.03125 (thickness) x 36 each = 2.65 sq ft

A Stiffeners = 69.03 sq ft

A Cross Frames: 0.98 ft (Perimeter, CADD Meas.) x 24.59 ft (Length, CADD Meas.) x 6 Assemblies = 144.59 sq ft

A Cross Frames = 144.59 sq ft

Total = A beams + A Stiffeners + A Cross Frames = 210.42 sq ft + 69.03 sq ft + 144.59 sq ft = 424.04 sq ft

Use 424 sq ft

516E47001 JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN

LUMP

849E10000 DAMAGE ASSESSMENT

LUMP

849E10500 SURFACE PREPARATION

LUMP

849E10600 REPAIRING DAMAGED MEMBERS BY GRINDING

Total = Contingency = 10 hr

Use 10 hours

849E10700 STRAIGHTENING DAMAGED MEMBERS

LUMP