

det3130 05-2016

DET3130

PRESTRESSING NOTES:

CONCRETE:
Provide Class ---- $\frac{3}{4}$ " concrete in post-tensioned box girder, bottom slab and stems.
Provide Class ---- $\frac{3}{4}$ " concrete in deck.
Apply prestressing force after concrete has attained a strength of ---- psi but not until a minimum of 14 days after final placement.

PRESTRESSING STEEL:

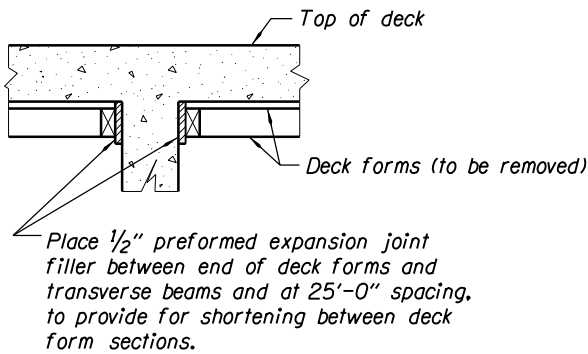
For Prestressing Force C.G.S. Diagram, see dwg. ----
Provide low relaxation seven wire strand (bright wire) (AASHTO M203 (ASTM A416), Grade 270, Supplement 1 with a minimum ultimate strength f_{pu} = 270 ksi.
Allowable initial stress before anchor set is $0.75 f_{pu}$.
Allowable initial stress at anchorages and couplers after anchor set is $0.70 f_{pu}$.
Allowable initial stress at any other point after anchor set is $0.74 f_{pu}$.
Allowable final service load stress after losses at any point is $0.80 f_{py}$.

DUCTS:

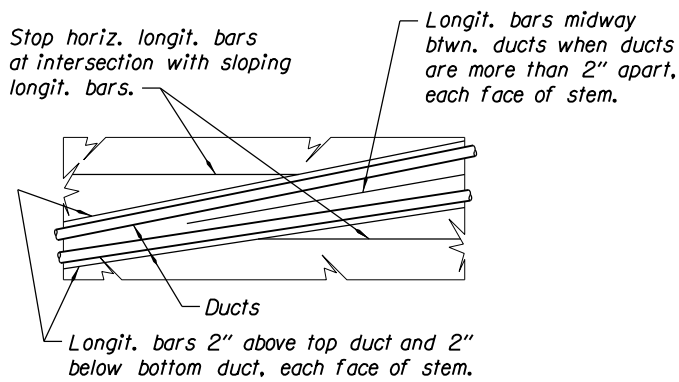
Provide ducts for prestressing steel in accordance with the specifications. Ducts may be bundled as shown. Stagger coupling locations in adjacent ducts. Securely fasten ducts to stirrups to prevent movement. Provide a duct area at least 2.5 times the net prestressing steel contained in the duct.
The maximum permissible duct diameter is:
 $0.6 \times (W-6")$ when ducts are bundled
 $0.4 \times W$ when ducts are not bundled.

GROUTING:

Pressure grout prestressing steel in accordance with the Specifications.



INTERIOR FORM DETAIL



LONGITUDINAL STEM REINFORCING AT DUCT PART ELEVATION OF GIRDER STEM

STRESSING DETAILS:

Initial force before anchor set at Bents -- & -- is ----- lbs. = P_j

$$A_s = \frac{P_j}{0.75 f_{pu}}$$

Minimum final force at Bent- -- is ---- lbs. and Bent- -- is ---- lbs.
Jack tendons to $(A_s)(0.75 f_{pu})$ and anchor at an equivalent anchor set of ---- inch.
The prestress force is designed to be distributed equally to all girders unless shown otherwise. The prestress force per girder may vary by 5% from the design value provided that the total force is symmetrical about center line of structure.

Stress each tendon from -- end -- of structure.

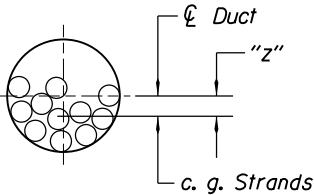
Stress no more than ---- % of strands in one box unit before an equal number are stressed in the other boxes. No more than ---- % of total prestressing force is to be eccentric about center line of structure at any one time. Begin stressing at or near center line of section.

The jacking force may not exceed ----- lbs. per anchorage.

DESIGN DATA:

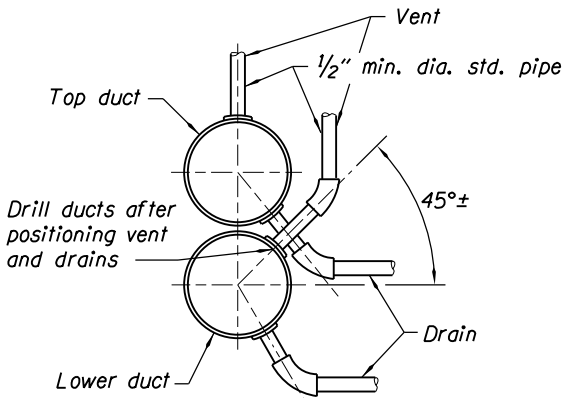
Use friction factors of $u = 0.25$, $k = 0.0002$ to compute losses.
Assume loss of stress in post-tensioned prestressing steel to be 25 ksi due to creep and shrinkage of concrete, creep of steel, and sequence of stressing.

DUCT SIZE (in.)	"Z" (in.)
3" O. D. and less	$\frac{1}{2}"$
Over 3" O. D. to 4"	$\frac{3}{4}"$
Over 4" O. D.	1"

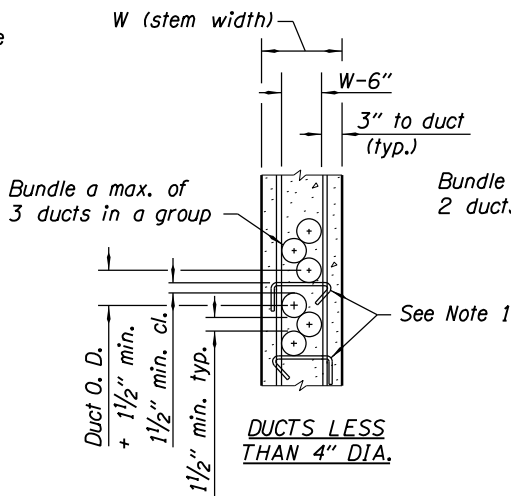


Consider the amount of tendon offset ("Z") within the duct as shown for the purpose of calculating the center of gravity of prestressing steel.

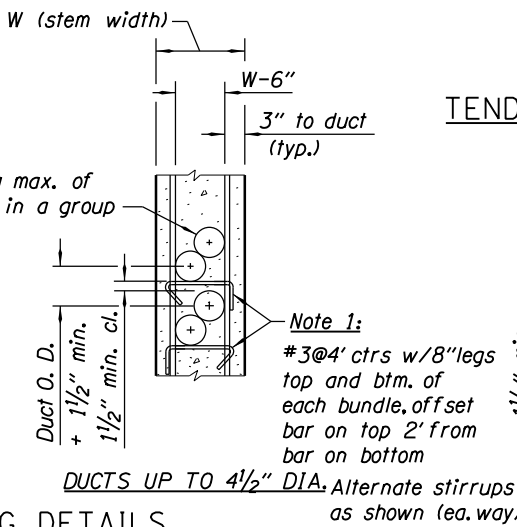
TENDON OFFSET DETAIL



GROUT VENT DETAIL FOR HIGH POINT VENTS AND LOW POINT DRAINS

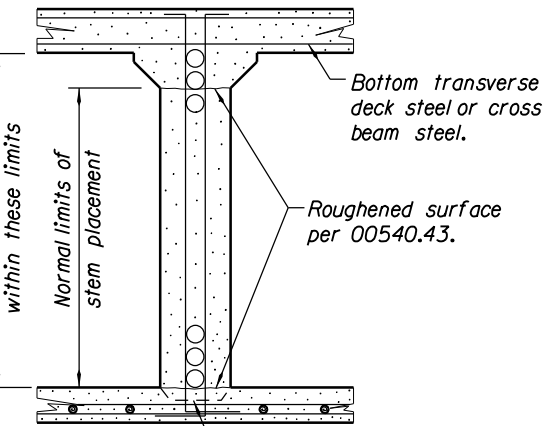


DUCT BUNDLING DETAILS

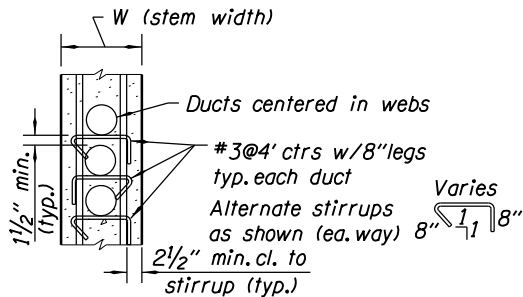


Note 1:
#3@4' ctrs w/8" legs top and btm. of each bundle, offset bar on top 2' from bar on bottom

Alternate stirrups as shown (ea. way)



TENDON LIMITATION DETAILS



NON-BUNDLED DUCT DETAILS

CONSTRUCTION NOTES:

Allow for total long term structure shortening (due to effects of prestressing, elastic shortening, creep and shrinkage).

The anticipated total shortening is -- at Bent- -- and -- at Bent- --.

Construct falsework to permit the superstructure to lift off the falsework and shorten during stressing operations. Ensure other exterior forms are free of falsework and any interior forms in cells do not resist shortening during stressing operation. Do not remove falsework under the bottom slab of the box girder until after stressing.

Dimensions of concrete sections and anchorage reinforcement shown on plans determine pay quantities. Changes requested by the contractor to accommodate a given post-tensioning system are not reason for extra payment.

Place concrete for curbs and rails after stressing and grouting operations.

The selection and use of this detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON DEPARTMENT OF TRANSPORTATION
TECHNICAL SERVICES
DETAILS

POST-TENSIONING DETAILS
FOR
CONVENTIONAL BOX GIRDER

DETAIL NO.
DET3130