

03-2016
det3390.dgn

DET3390

PRESTRESSING NOTES

CONCRETE:

All concrete in post-tensioned Bulb-I girders, is Class ____ $\frac{3}{4}$ ".
All concrete in deck is Class ____ $\frac{3}{4}$ ".
Apply prestressing force after deck concrete has attained a strength of ____ MPa, but not until a minimum of 14 days after final placement.

PRESTRESSING STEEL:

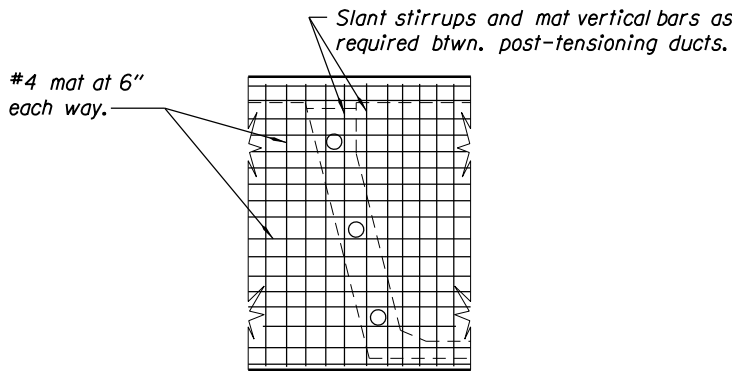
For Prestressing Force C.G.S. Diagram, see dwg. _____.
Use low relaxation seven wire strand (bright wire) (AASHTO M203 (ASTM A416), Grade 270, Supplement 1, with a minimum ultimate strength $f's = 270$ ksi.
Allowable initial stress before anchor set is $0.75 f's$
Allowable initial stress at anchorages and couplers after anchor set is $0.70 f's$.
Allowable initial stress at any other point after anchor set is $0.74 f's$.
Allowable final service load stress after losses at any point is $0.72 f's$.

DUCTS:

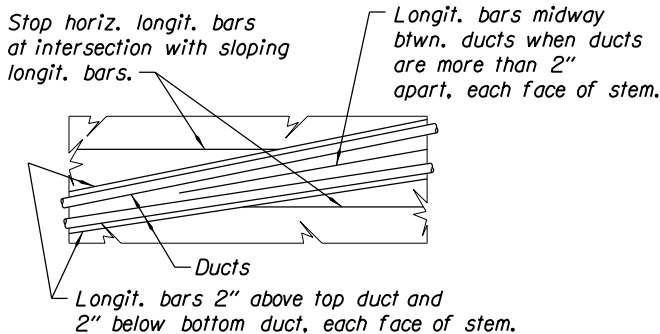
Provide ducts for prestressing steel in accordance with the specifications. Ducts may be bundled as shown. Stagger coupling locations in adjacent ducts. Securely fasten ducts to stirrups to prevent movement. The maximum permissible duct diameter is 0.4 times the minimum stem thickness. Provide a duct area at least 2.5 times the net prestressing steel contained.

GROUTING:

Pressure grout prestressing steel in accordance with the Specifications.



CONTINUOUS MAT ELEVATION BEAM "E"



LONGITUDINAL STEM REINFORCING AT DUCT
PART ELEVATION OF GIRDER STEM

STRESSING DETAILS:

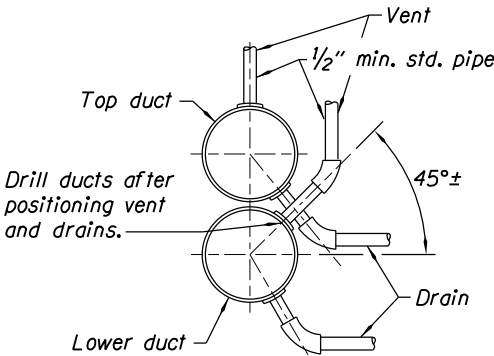
Initial force before anchor set at Bents __ & __ is _____ kips = P_j

$$A_s = \frac{P_j}{0.75f's}$$

Minimum final force at Bent- __ is ____ kips and Bent-__ is ____ kips.
Jack tendons to $(A_s)(0.75f's)$ and anchor at an equivalent anchor set of ____ ".
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 _____ kips per anchorage.

DESIGN DATA:

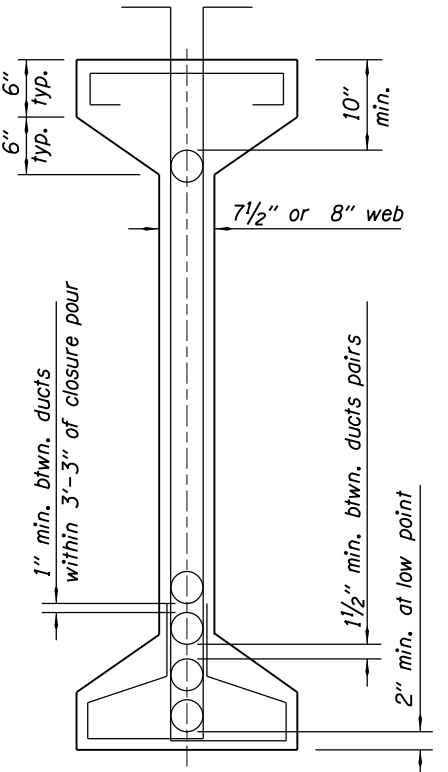
Use Friction factors of $u = 0.25$, $k = 0.0002$ to compute losses.
Assume loss of stress in post-tensioned prestressing steel to be 25 ksi due to creep and shrinkage of concrete, creep of steel, and sequence of stressing.



GROUT VENT DETAIL
FOR HIGH POINT VENTS
AND LOW POINT DRAINS

NOTE TO DESIGNER

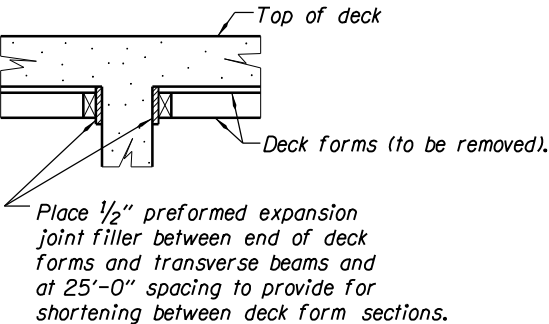
ODOT standard sections used in this design.
Details shown are applicable for alternate and/or deeper sections available from other sources.



TENDON LIMITATION DETAIL

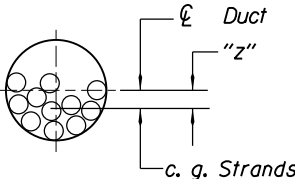
CONSTRUCTION NOTES:

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. Other exterior forms are to be free of falsework and any interior forms in cells are not to resist shortening during stressing operation. Do not remove falsework under the girder until after stressing.
Dimensions of concrete sections and the anchorage reinforcement shown on plans determine pay quantities. Changes requested by 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.
Obtain approval from the Engineer for any changes.



INTERIOR FORM DETAIL

DUCT SIZE	"Z" (in.)
3" O. D. & 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

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

GENERAL DETAILS
POST-TENSIONING
FOR BULB-I GIRDERS

DETAIL NO.
DET3390