Joint Duct Bank Accommodation Program

Guide to include Joint Duct Bank in ROW

Utility Portfolio, ROW Division

Texas Department of Transportation

Abstract

The Joint Duct Bank accommodation program is designed to support the broadband movement and to accommodate broadband facilities within TxDOT ROW. The program is meant to provide better ROW management while supporting future broadband and utility installations. This guide provides a broad framework for the use of the Joint Duct Bank for Districts. Standards and specification were developed for the Joint Duct Bank Accommodation Program based on input from TxDOT and the Telecom industry.

Contents

Purpose

The guidelines listed below represent a broad framework for the use of the Joint Duct Bank Standard for Districts on future TxDOT projects. Fully engineered PS&E plans for joint duct bank installation will need to be prepared on an individual project basis to accommodate existing and proposed features.

Definitions

a. Conduit: PVC or H.D.P.E. piping material that will be used to house telephone cables. The words "conduit," "duct", "inner duct" and "piping" may be used interchangeably in this guide.
b. Joint Duct Bank: Groups of conduits arranged in tiers and encased as specified on the plans.
c. Access Point: Manholes or Handholes
d. Encasement: Steel or H.D.P.E. piping material that will be used to house a joint duct bank. The words "Encasement" and "Casing Pipe" may be used interchangeably in this guide.

Initial Coordination

a. Coordination efforts for the Joint Duct Bank need to begin early in project planning.
b. The TxDOT Project Manager (PM) needs to meet with the ROW PM to determine funding.
c. TxDOT/Consultant Utility Coordinator (UC) to meet with utility owners to collate information/interest for Joint Duct Bank.
d. UC to determine the number of ducts, any betterments, etc.,
e. TxDOT PM needs to meet with TxDOT UC to finalize the number of ducts.
f. If the need for a joint duct bank is substantiated – ROW CSJ is requested for funding.

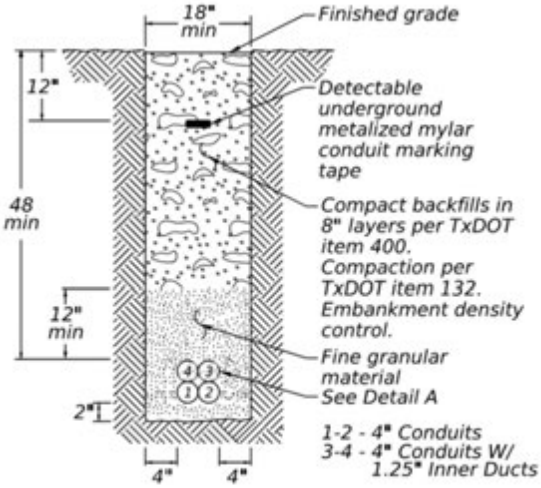
Standard Configurations

Trench Configurations

a. Standard provides for 4” conduits, of which some are left empty for legacy copper facilities; inner ducts are included inside some of the 4” ducts to provide multiple pathways for existing/new fiber facilities.

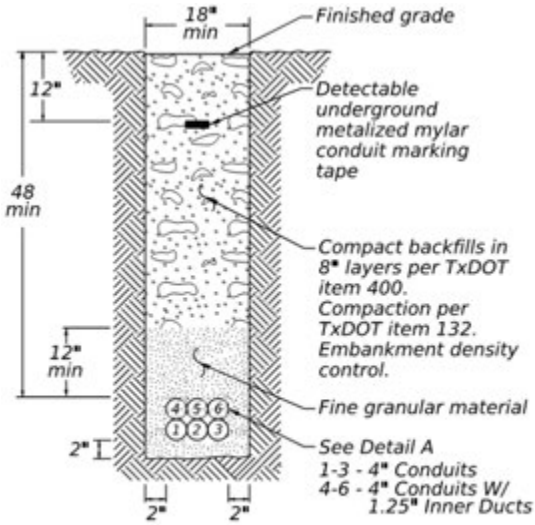
b. Standard provides nominal size options for 1.25” and 1.5” inner ducts. 1.5” inner ducts are meant to accommodate larger count fiber cables i.e. 864ct, 1278ct, and 3456ct fiber.

c. Four Duct standard provides four 4” conduits, of which two are empty and two have three 1.25” inner ducts.



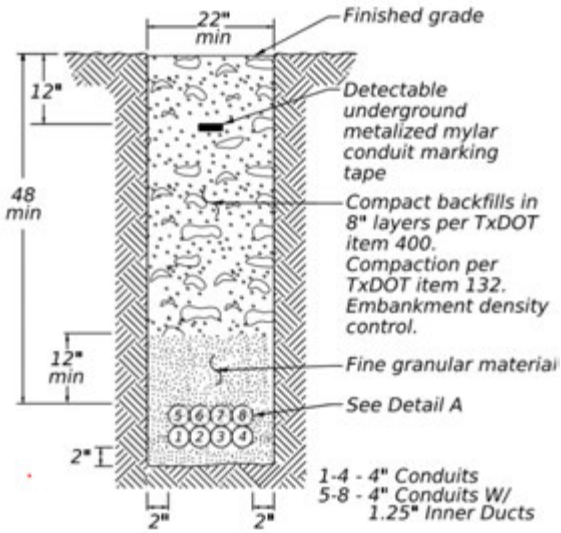
FOUR DUCT TRENCH DETAILS
JOINT TRENCH (OPEN CUT)

d. Six Duct standard provides six 4” conduits of which three are empty and three have three 1.25” inner ducts.



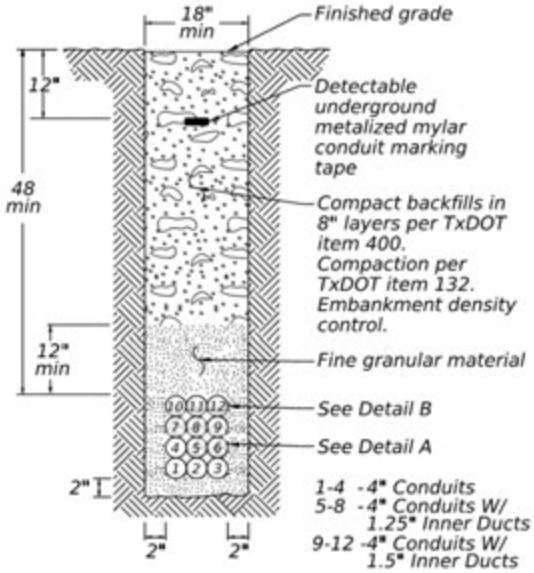
SIX DUCT TRENCH DETAILS
JOINT TRENCH (OPEN CUT)

e. Eight Duct standard provides six 4” conduits of which four are empty and four have three 1.25” inner ducts.



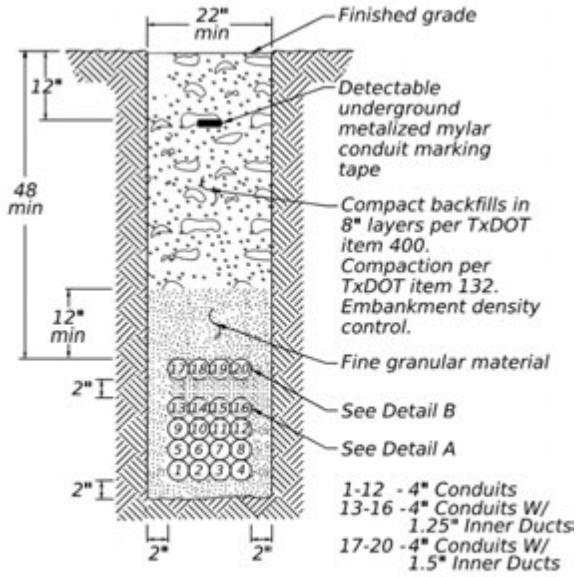
EIGHT DUCT TRENCH DETAILS
JOINT TRENCH (OPEN CUT)

f. Twelve Duct standard provides twelve 4” conduits of which four are empty, four have three 1.25” inner ducts and four have two 1.5” inner ducts.



TWELVE DUCT TRENCH DETAILS
JOINT TRENCH (OPEN CUT)

g. Twenty Duct standard provides twenty 4” conduits of which twelve are empty, four have three 1.25” inner ducts and four have two 1.5” inner ducts.

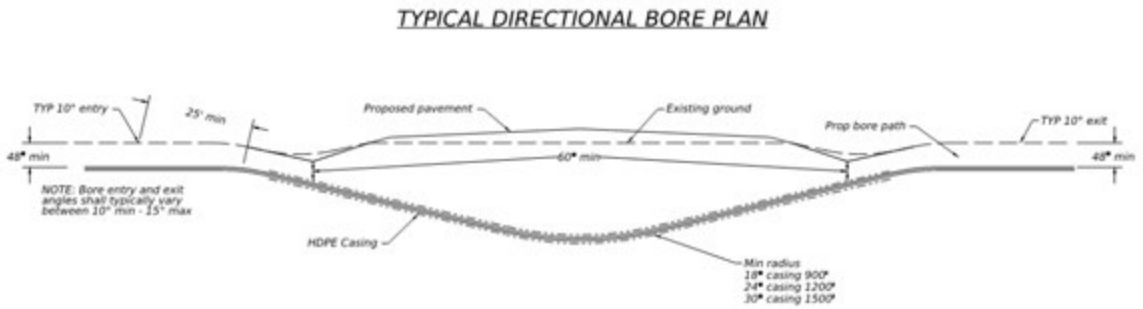


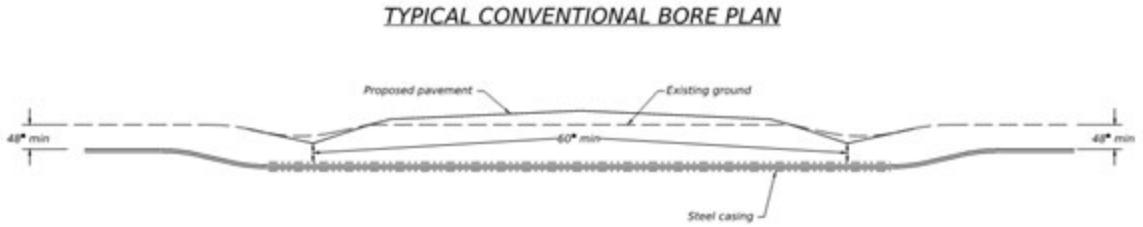
TWENTY DUCT TRENCH DETAILS
JOINT TRENCH (OPEN CUT)

h. Twelve and Twenty Duct standards are currently the ones with 1.5” inner ducts, based on the assumption that larger-count fibers are anticipated in more urban/metro settings.
i. The number of ducts and inner ducts included in the joint duct bank can be adjusted, based on individual projects.
j. The width of typical duct configurations does not exceed more than four ducts horizontally.
k. Height of duct configurations can be stacked up to four rows vertically on top of each other, with a 2” sand layer set before starting the next four rows.
l. The standard includes an option to accommodate two conduits for ITS facilities, two conduits for business connectivity, and two conduits for TxDOT electrical use in the same trench.

Bore Configurations

a. Standard provides options for both conventional and directional bores. Conventional bore uses steel casing and directional bore uses HDPE casing.



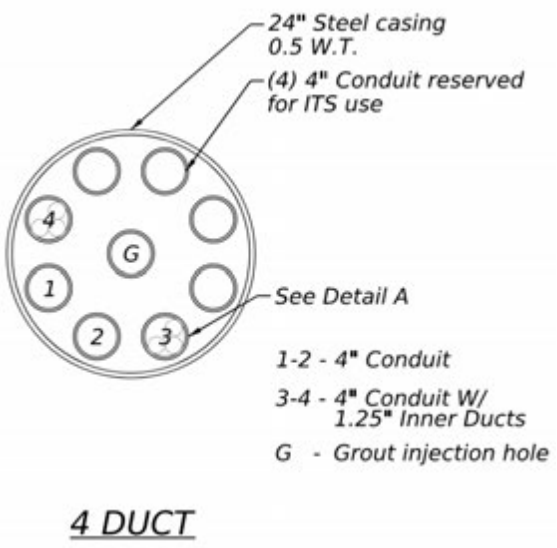


b. All configurations are named based on the number of telecom conduits in the bore.

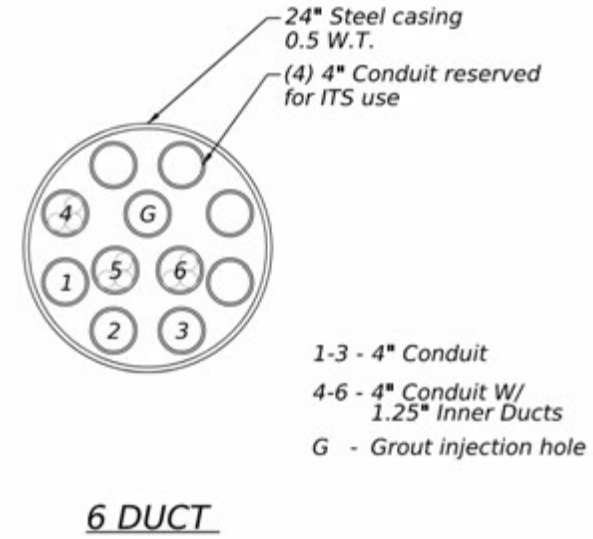
c. All configurations provide two conduits for ITS facilities and two conduits for business connectivity in addition to the telecom conduits in the trench. Conduits for electrical use will not be included in the bore to avoid interference issues.

d. Conventional Casing configurations, including bore spacers are:

   i. Four Duct standard provides four 4” conduits for telecom utilities in a 24” steel casing, of which two are empty and two have three 1.25” inner ducts.

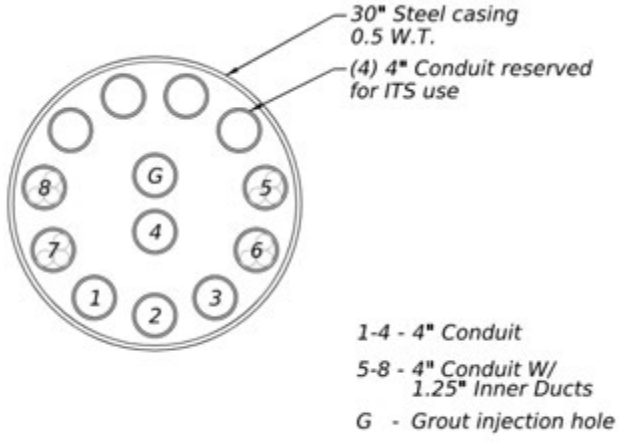


ii. Six Duct standard provides six 4” conduits for telecom utilities in a 24” steel casing, of which three are empty and three have three 1.25” inner ducts.



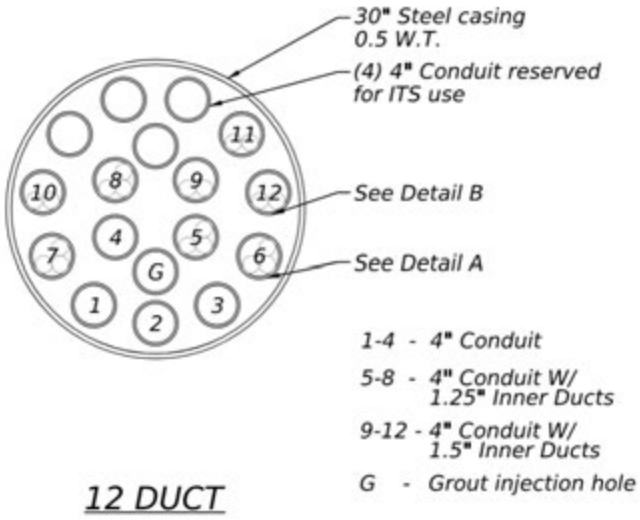
6 DUCT

iii. Eight Duct standard provides eight 4” conduits for telecom utilities in a 30” steel casing of which four are empty and four have three 1.25” inner ducts.

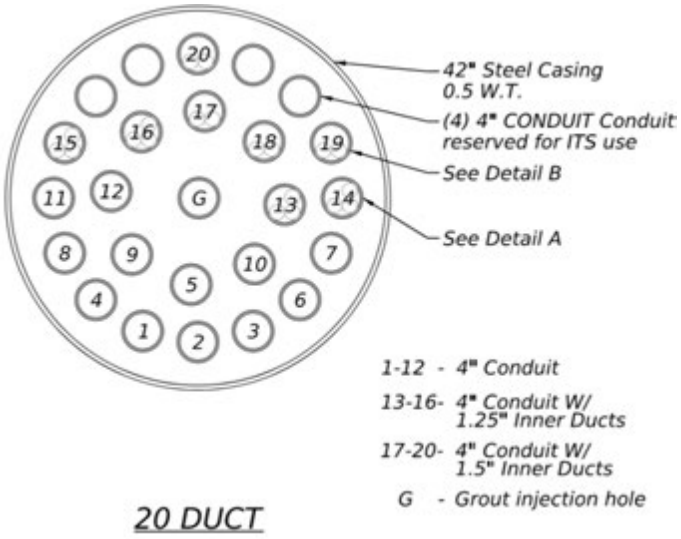


8 DUCT

iv. Twelve Duct standard provides twelve 4” conduits for telecom utilities in a 30” steel casing of which four are empty, four have three 1.25” inner ducts and four have two 1.5” inner ducts.

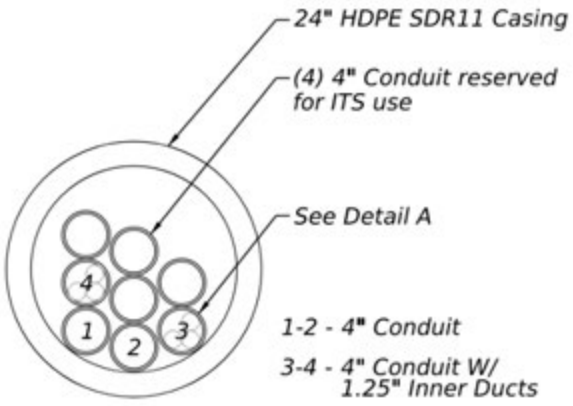


v. Twenty Duct standard provides twenty 4” conduits for telecom utilities in a 42” steel casing of which twelve are empty, four have three 1.25” inner ducts and four have two 1.5” inner ducts.



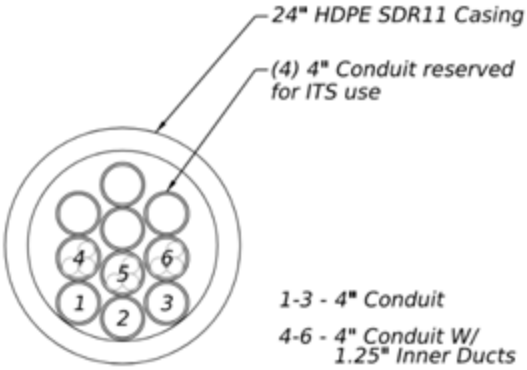
e. Directional Casing configurations are:

i. Four Duct standard provides four 4” conduits for telecom utilities in a 24” HDPE casing, of which two are empty and two have three 1.25” inner ducts.



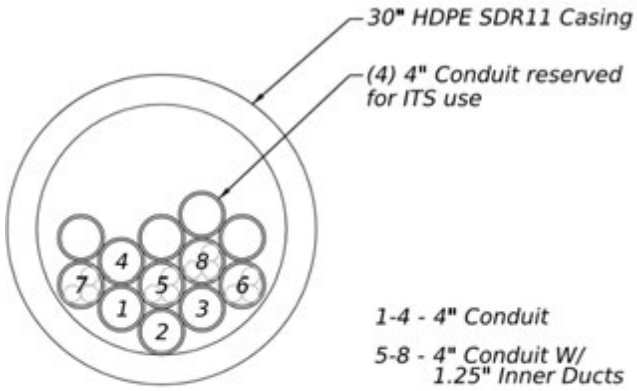
4 DUCT

ii. Six Duct standard provides six 4” conduits for telecom utilities in a 24” HDPE casing, of which three are empty and three have three 1.25” inner ducts.



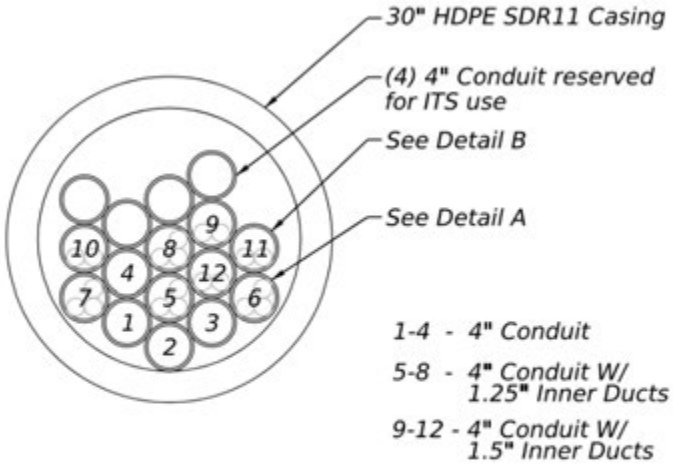
6 DUCT

iii. Eight Duct standard provides eight 4” conduits for telecom utilities in a 30” HDPE casing of which four are empty and four have three 1.25” inner ducts.



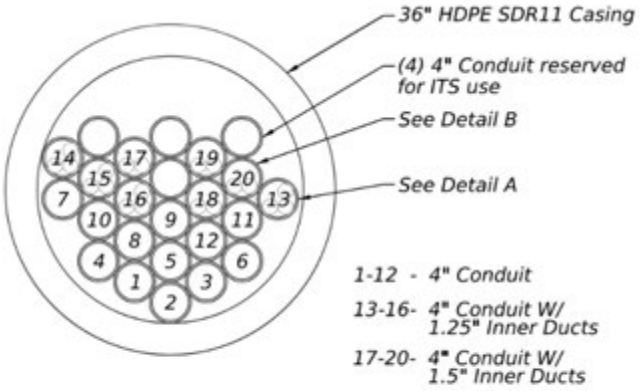
8 DUCT

iv. Twelve Duct standard provides twelve 4” conduits for telecom utilities in a 30” HDPE casing of which four are empty, four have three 1.25” inner ducts and four have two 1.5” inner ducts.



12 DUCT

v. Twenty Duct standard provides twenty 4” conduits for telecom utilities in a 36” HDPE casing of which twelve are empty, four have three 1.25” inner ducts and four have two 1.5” inner ducts.

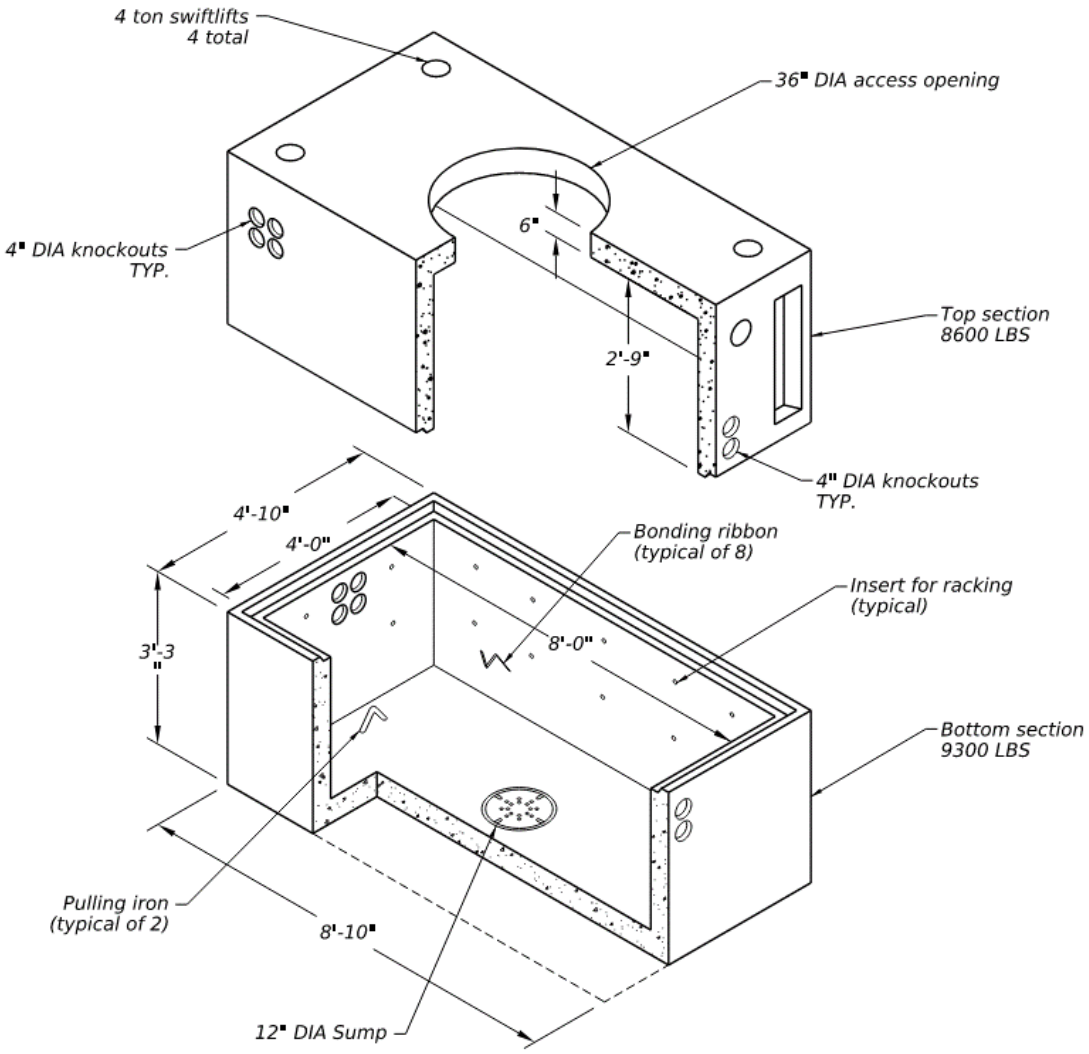


20 DUCT

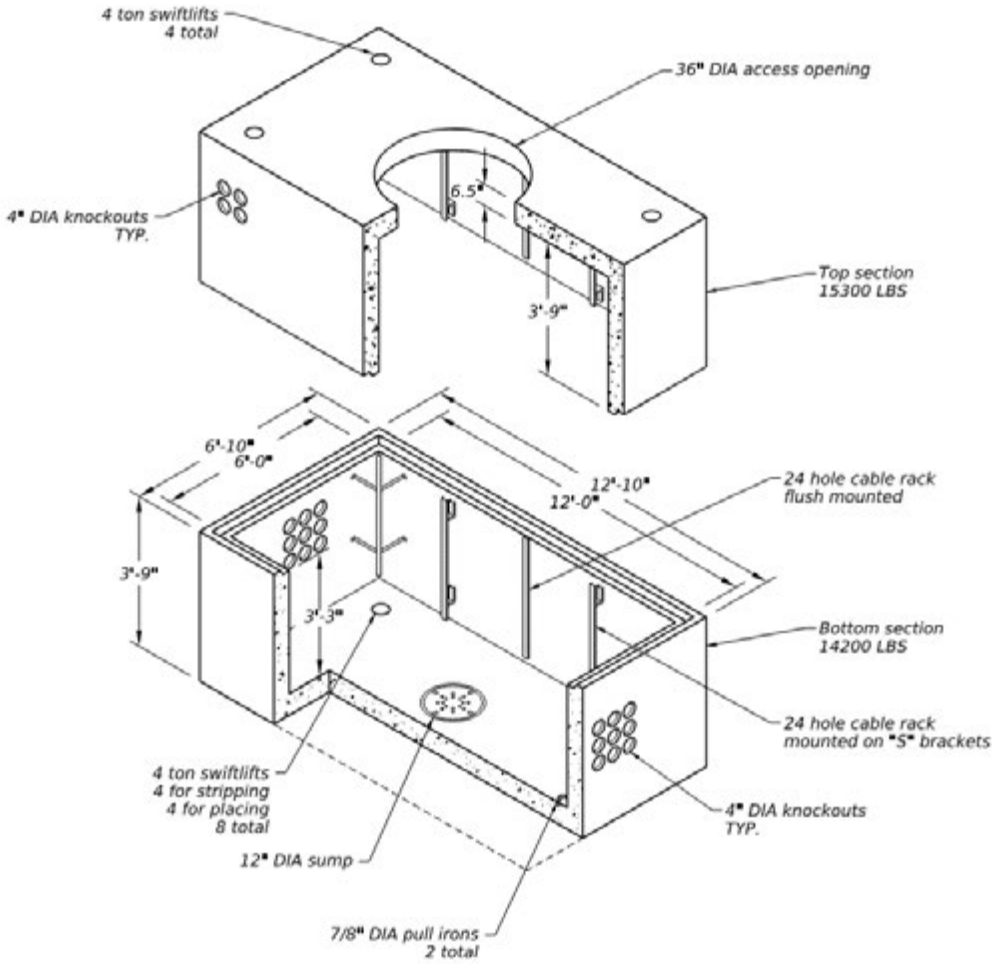
Access Points

Manholes

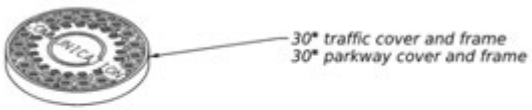
a. Standard provides options for two types of manholes. Type 1 is a 4’x8’x6’ and Type 2 is a 12’x6’x7’. Both manholes will have a 60” neck to abide by TAC rules.
b. Type 1 manhole provides for four 4” knockouts on each of the end walls and four 4” knockouts on each of the side walls. Type 2 manhole provides for nine 4” knockouts on each of the end walls and four 4” knockouts on each of the side walls.
c. Manholes will need to be selected based on the number of conduits needed to enter a manhole at a specific location. Multiple telecoms can enter the same manhole (if needed) and the conduits will be tagged inside the manholes to allow for better tracking and maintenance after installation.
d. Both manholes allow the cable to enter/exit from the end walls and side walls.



MANHOLE TYPE 1
4'X8'X6'



MANHOLE TYPE 2
12'X6'X7'



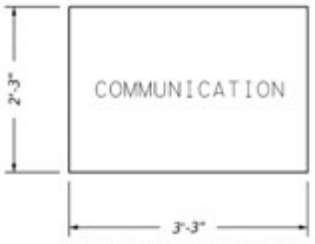
MANHOLE COVER

MANHOLE REDUCER RING

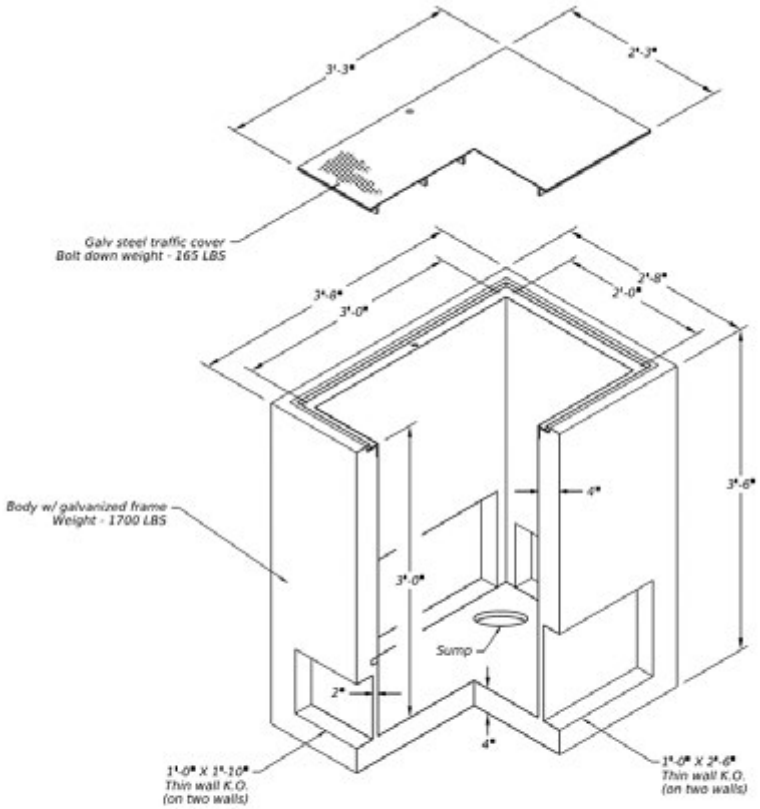
MANHOLE RISER

Handholes

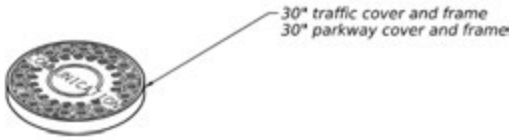
a. Standard provides options for two types of handholes. Type 1 is a 2'x3'x3' and Type 2 is a 48" diameter round handhole.
b. Type 1 handhole provides two thin wall knockouts to allow for conduits to enter/exit the handhole.
c. Type 2 handhole provides 4 5.25" knockouts to allow for conduits to enter/exit the handhole.
d. Handholes are assigned to a particular utility.



HANDHOLE COVER
TYPE 1

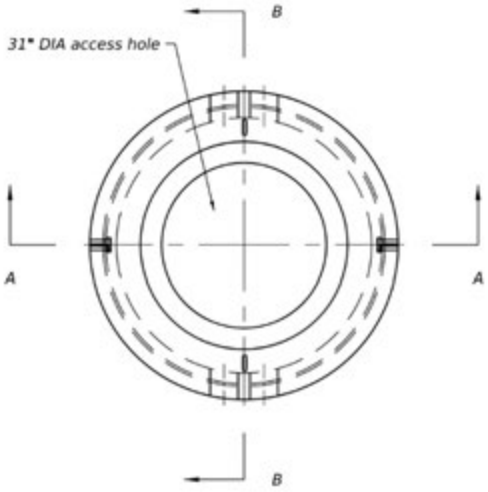


HANDHOLE TYPE 1
2'X3'X3'

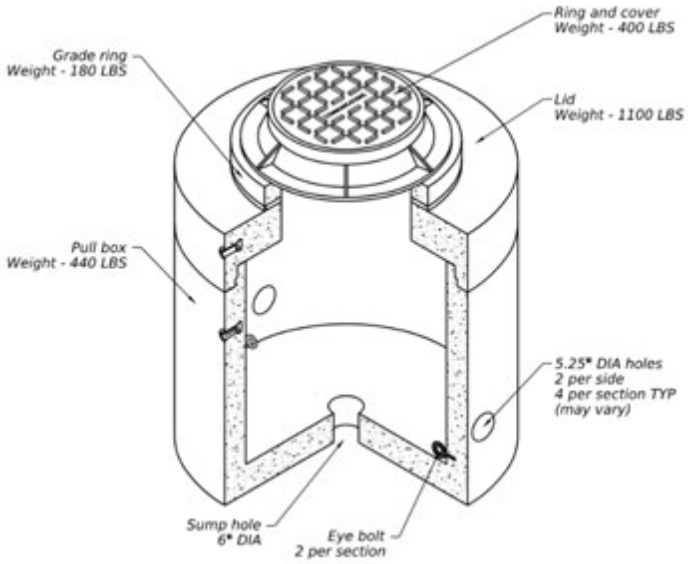


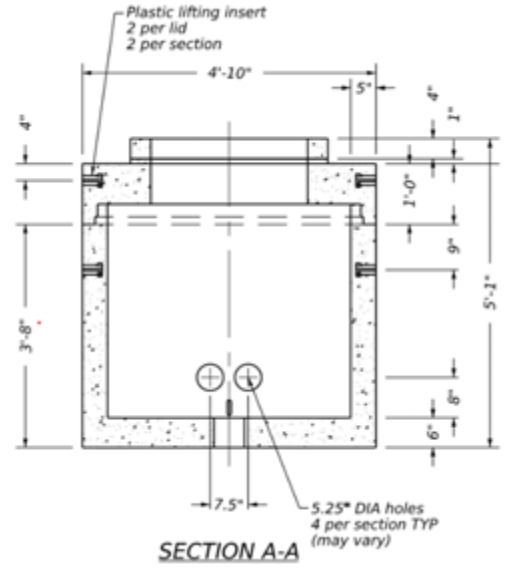
HANDHOLE COVER TYPE 2

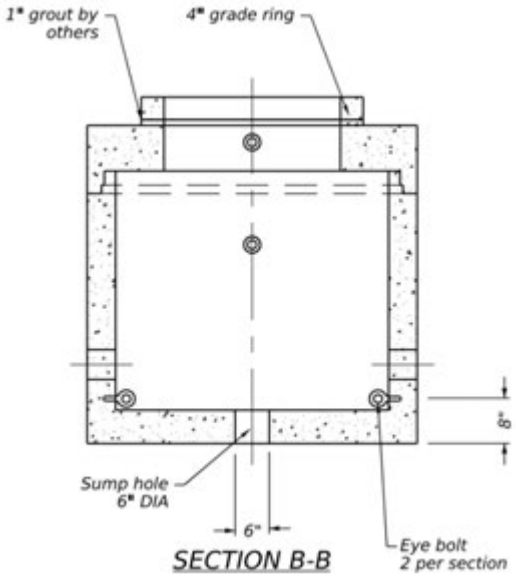
HANDHOLE TYPE 2 48" ROUND



PLAN VIEW







I. On relocation projects, telecom companies can provide manholes and handholes which are to be installed on the job.

II. Covers for all access points will need to have "COMMUNICATIONS" stamped on it unless provided by the utility.

III. Access point covers will need to be rated for appropriate loading based on the location of installation i.e. if being placed on pavement, the covers will need to be traffic-rated.

IV. The spacing of access points is based on industry-standard spacing for copper and fiber underground installations. Refer to Joint Duct Bank standards for recommended access point spacing.

Installations

Evaluation of Conduit Needs

a. Items to consider before choosing the duct trench size and configuration on typical relocation projects:
    i. The number of existing telecoms on the project, including proposed telecom installations that are planned within the project timeline.
    ii. Number and size of existing conduits/inner ducts for each telecom
    iii. Any direct buried cable that will need to be incorporated into the Joint Duct Bank
    iv. Any anticipated betterments (in terms of additional conduits or inner ducts)
    v. Allow for spare conduits for existing telecoms as mandated by TAC rule §21.40.
    vi. Allow for empty conduits to account for future growth/telecom installations in the area.
b. On new/greenfield projects, choose the duct trench size and configuration based on the expected number of telecoms in the area.

Typical Relocation on Highway Projects

a. The District will choose the relevant standard-based guidelines listed above and will install the Joint Duct Bank to provide pathways for underground telecom.
b. Joint Duct Bank Installation includes access points for joint bid telecoms.
c. Items to consider for access point installation:
    i. Check with existing telecoms for their existing access/slice point locations.
    ii. Check with telecoms what the minimum standard spacing needs are between each access point.
    iii. Check with telecoms if they are acceptable to using the standard access points or if they will provide their own
    iv. Determine if relocating telecoms will have their access points in line with the duct bank or offset from it (dependent on space available within the ROW).
    v. Check with telecoms for any service tie-in locations along the route where additional access points would be needed.
d. The district will inform telecom companies once the joint duct bank installation work is completed and assign pathways to allow for cable/fiber installation.
e. Any empty conduits placed for future use will be placed in the top right corner of the duct bank.

New Installation for Future Use

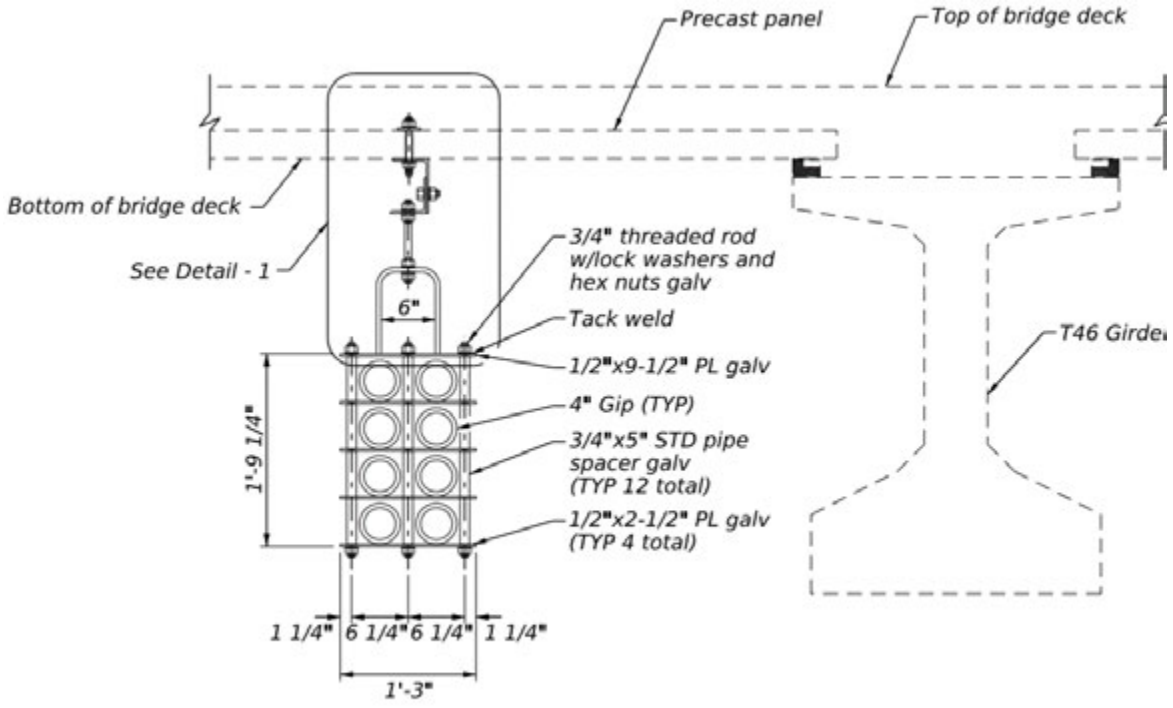
a. The department will construct the joint duct bank by choosing the standard based on the expected number of telecoms in the area.
b. The district will be responsible for installing access points at the typical spacing shown on the standard.
c. Future service access points would be the responsibility of telecoms.

Boring

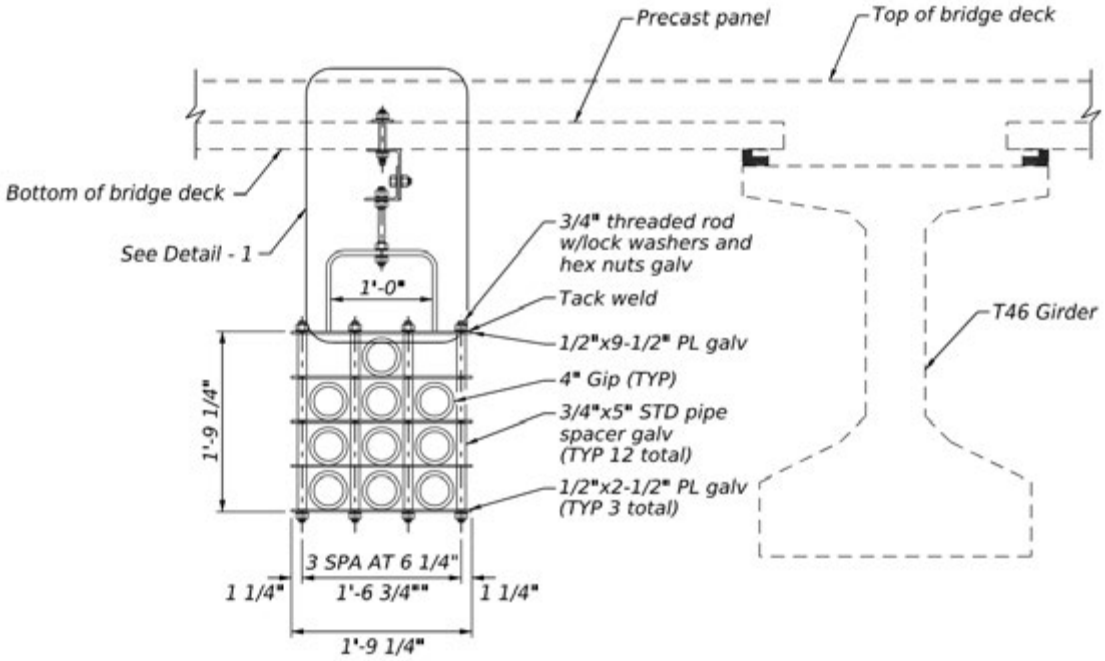
The type and configuration of bore to be utilized on the project are to be determined in the fully engineered PS&E plans for joint duct bank installation.

Bridge Attachment

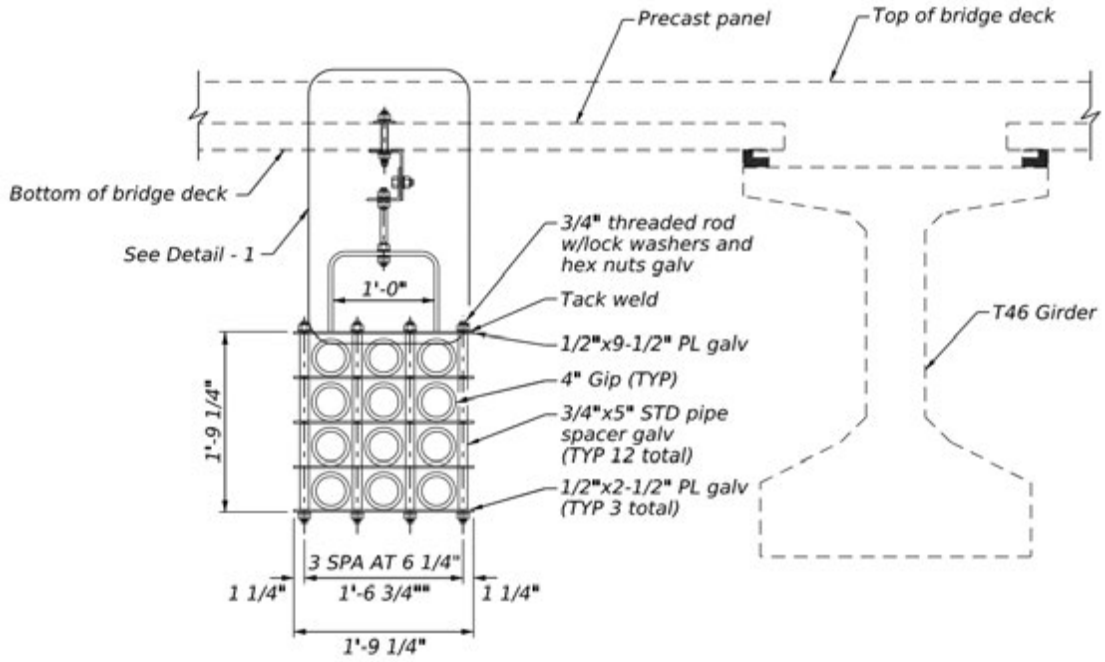
a. Bridge Attachment is meant to be used as a last-ditch option.
b. Before the detailed design, the Bridge Attachment request needs to be approved through the bridge division.
c. Once the Bridge attachment is approved, go-bys can be used while attaching telecom conduits to the bridge.



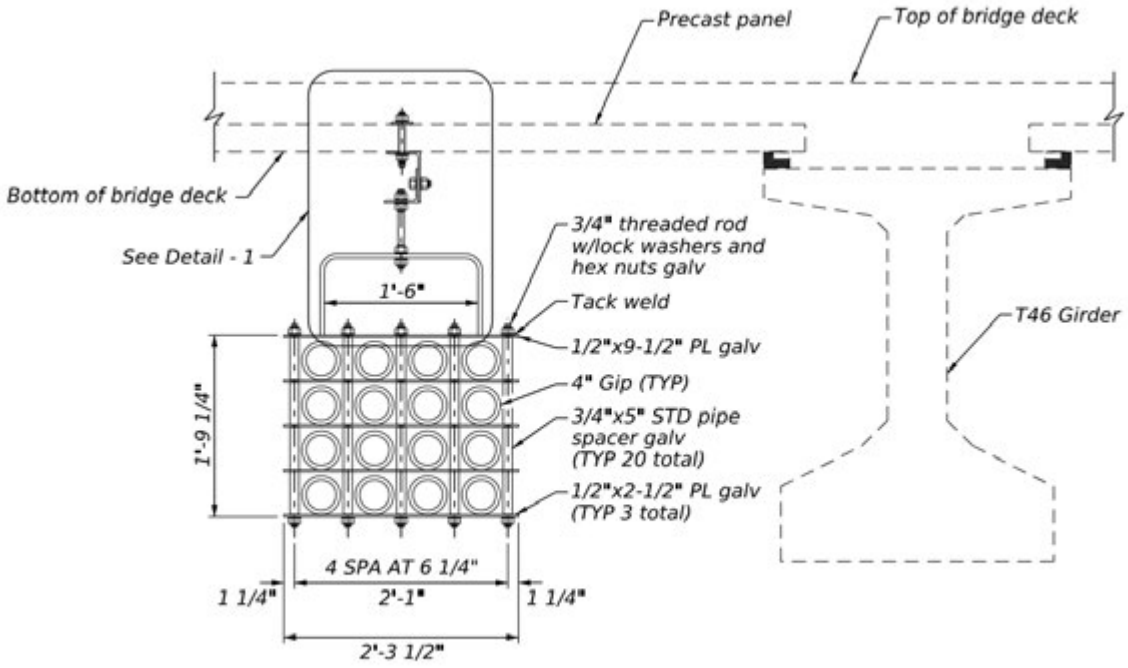
4 DUCT (W/ITS) CONDUIT HANGER DETAIL



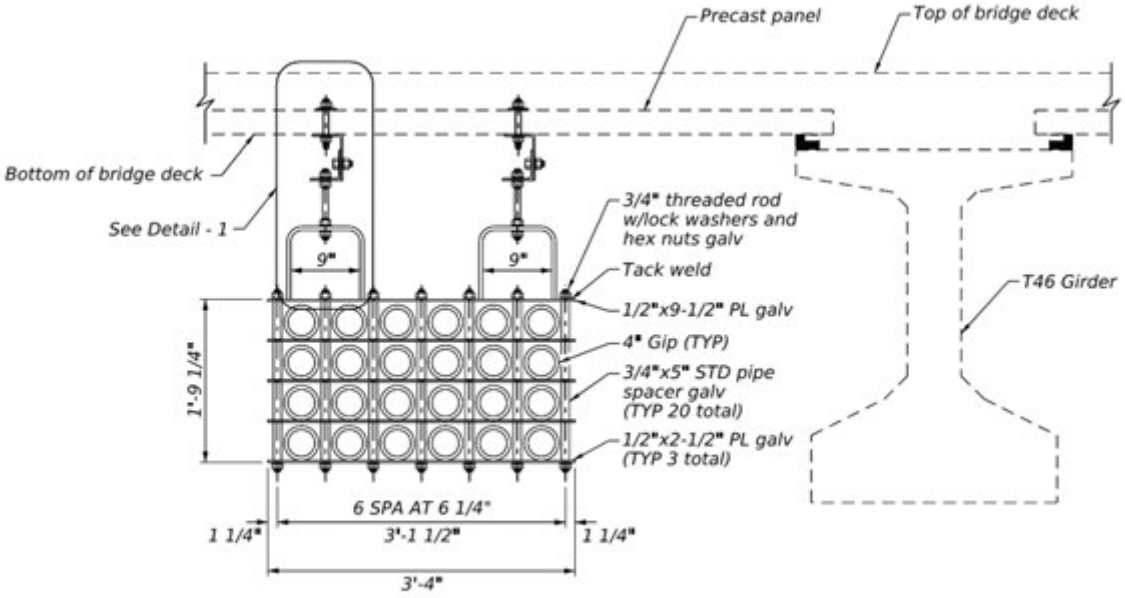
6 DUCT (W/ITS) CONDUIT HANGER DETAIL



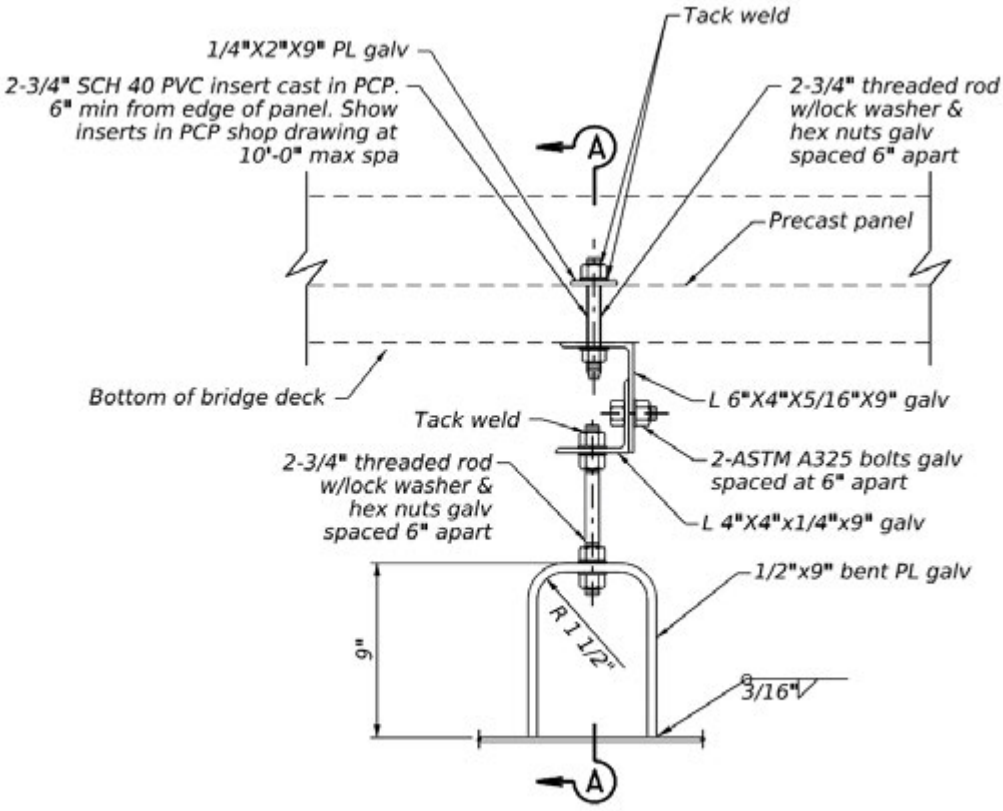
8 DUCT (W/ITS) CONDUIT HANGER DETAIL



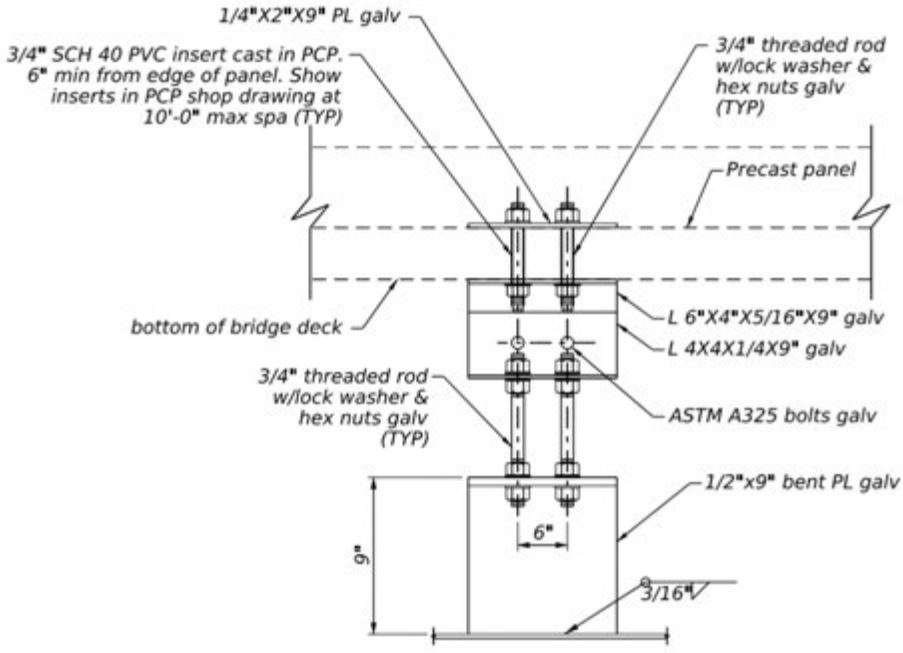
12 DUCT (W/ITS) CONDUIT HANGER DETAIL



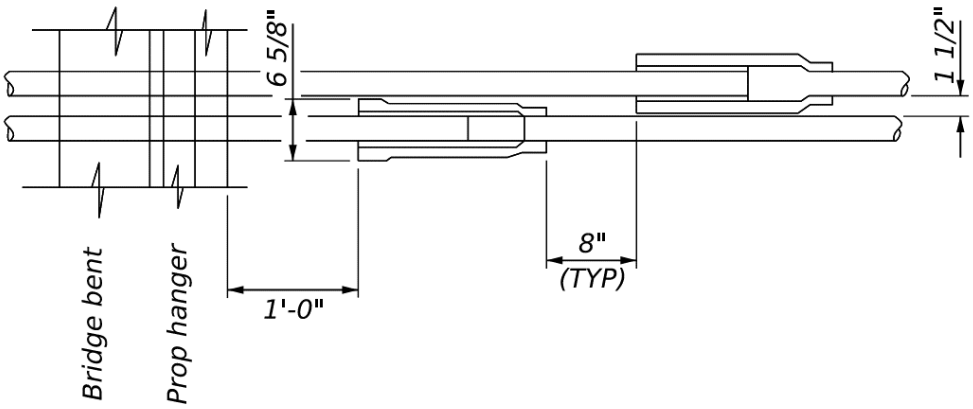
20 DUCT (W/ITS) CONDUIT HANGER DETAIL



DETAIL - 1



SECTION A-A



EXPANSION COUPLING DETAIL

d. Each utility will need to seek an exception to the policy request to be part of the bridge attachment package.

Asset Tracking

Conduit Path Tracking (Permitting)

For tracking during permitting, the conduits are numbered starting from the bottom left one, and the inner ducts are identified with alphabets starting from the bottom left. Inner Duct pathways are identified by using the alphanumeric combination. Example: 4A represents the bottom left 1.25" inner duct within conduit 4.

Conduit Path Tracking (Onsite)

For onsite tracking, utility owners will tag assigned ducts and inner ducts at all access points.

Manhole Tracking (Permitting)

For tracking during permitting, the manholes are numbered in series based on the district of installation using the District Abbreviation, MH, and 5 digits. Example: 1st Manhole installed in Dallas District is tracked as DALLMH00001. The 23rd manhole installed in Austin District is tracked as AUSMH00023.

Relocation Project

All utilities installing their facilities through a joint duct bank will need to submit for a permit through the RUILS system with their assigned conduit path.

Future Installation

For any proposed UG telecom installation request through RULIS, the department will direct the Utility Owner to use the joint duct bank and provide an assignment for the utility's use.

Maintenance

a. The area office will maintain the joint duct bank and access points until it is occupied by a utility company, at which point maintenance would transfer over to the utility company for specific duct(s) and handholes occupied.
b. The area office will maintain the manholes and empty conduits
c. In terms of damage, the department (Area Office) will be notified first and then will contact the major occupancy owner to lead the restoration/repair of the joint duct bank.
d. Repair or relocation of joint duct bank will be led by the majority occupancy owner, with each respective owner participating in their cost share, if applicable.

References

https://texas-sos.appianportalsgov.com/rules-and-meetings?$locale=en_US&interface=VIEW_TAC_SUMMARY&queryAsDate=07%2F14%2F2025&recordId=210476

Standard Detail

https://www.txdot.gov/content/dam/docs/division/row/utl/joint-duct-bank-design-standard.pdf

Specification

https://ftp.dot.state.tx.us/pub/txdot-info/cmd/cserve/specs/2014/spec/ss6526.pdf

FAQs

a. *Is joint duct bank to be used only on fully reimbursable projects?*
A: No. The joint duct bank can be used on all TxDOT projects including fully reimbursable relocation projects, partial/non-reimbursable relocation projects, and greenfield projects.

b. *Who pays for the construction of the joint duct bank?*
A: For all projects where the utility is fully reimbursable and on new installation projects, the department will pay for both materials and installation through the construction funds less any betterments.

c. *Can TxDOT pay for the costs to construct the duct bank on non-reimbursable projects?*
A: Yes. It will be considered a construction cost.

d. *Who pays for the maintenance of the joint duct bank?*
A: The area office will maintain the joint duct bank and access points until it is occupied by a utility company, at which point maintenance would transfer over to the utility company for specific duct(s) and handholes occupied. The area office will maintain the manholes and empty conduits.

e. *Can a joint duct bank be built using a ROW contract similar to the demolition contracts?*
A: No. The joint duct bank will need to be included/phased with the construction project.

f. *How will utilities reserve space in the duct for future expansion? Is there a utility hierarchy or preference?*
A: There is no ability to reserve a space duct for future expansion.

For relocation projects, Based on conflict hierarchy. Existing utilities in the corridor would have first preference. If they were to choose to reserve ducts - it would be a betterment.

g. *How will a service pedestal placement be in relation to the duct?*
A: The detail sheet addresses where the handholes/pedestals need to be placed.

h. *If not in a duct, will the utility be allowed to place in ROW in the future outside of the duct?*
A: If there is space in the duct bank, the utility is expected to go inside the duct bank. If a utility needs to go outside - an exception needs to be sought.

i. *Who controls alignments, crossing, etc. (i.e. preference in getting into duct)?*
A: TxDOT controls the alignments and crossing. Alignment would be dictated by project needs i.e. drainage/environmental etc., If a utility is forced to cross the highway due to Joint Duct Bank needing to be on one side of the roadway – it could potentially be treated as forced Betterment.

j. *Will TXDOT be leasing conduit?*
A: Not at this time - TxDOT has no plans to lease. (Subject to change)