Base Isolation Addendum:

Pricing Package Only - Not for Construction

4-18-2011

The drawings in this Addendum package are to be used for obtaining the additional pricing costs associated with constructing the building to incorporate details that will permit the building to also be seismically isolated and tested.

Modifications provided in this package mostly have to do with the foundation beams. (Notes: all foundation geometry/reinforcement details in S-XX drawings are superseded by BIS-XX details.) Pockets must be provided at the end of the longitudinal beams to allow for placement of the 4 isolator locations and for 4 jacks to raise and lower the building after it has been constructed. During construction and during the fixed base test, temporary blocks will be placed at the 4 isolator locations. The isolators will be provided by others. The building will initially be constructed directly on top of the shake table (on top of 3 polyurethane sheets) and will be raised by the 4 jacks approximately 1. 5" after completion. The isolators will be positioned under the building, the building will be lowered .25" to sit on the isolators, and bolted into place. This will provide a 1"-1.25" gap for testing the isolated building. To support the building, the foundation beams for this Addendum have been provided with post tensioning details. Also included in this Addendum (details pending) are provisions for bolted rod embeds that would permit tension rods to be installed between floors in the longitudinal direction for the isolation testing similar to the tensions rods that currently included in the transverse direction.

The following is the list of drawings provided in the Addendum. The pricing requested is to determine the additional cost associated with constructing these details (not including the items provided by others) above those for the fixed based option.

BIS-22 :	Plan view with section cuts and rebar layout
BIS-13R:	Elevation view of longitudinal foundation beam with new geometry/ additional reinforcement, <u>un-grouted</u> PT rods and <u>grouted</u> PT tendons
BIS-23:	Tendon layout for 6-0.6" PT tendon
BIS-08R:	Updated cross section of longitudinal foundation beam at midspan
BIS-24:	Updated cross section of longitudinal foundation beam near step including placement of hooked bars
BIS-25:	Elevation view of transverse foundation beam with new geometry/ reinforcement
BIS-26:	Cross section of longitudinal foundation beam including PT anchorage
BIS-27:	Cross section of transverse foundation beam at 5' cross section and 3'-10" cross section
BIS-28:	Elevation of N-W shear wall including cut-out for jacking
BIS-11R:	Updated cross section of elevator pit with updated 5' longitudinal foundation beam
BIS-29:	Updated cross section of elevator pit with updated 3'-10" longitudinal foundation beam
BIS-07R:	Updated plan view of foundation corner including both top and bottom steel plates
BIS-30:	Details of upper and lower steel plates and sleeves for isolator bolts

BIS-31: Plan view of seismic stops (provided by others) and PT locations for fixed base testing

BIS-32: Detail of temporary block

The following is the list of materials provided by others (do not include for pricing):

1) Seismic isolators and all labor associated with isolators
2) Seismic stops: both wood and concrete blocks.
3) All 1 ¾" PT rods (for both the longitudinal beam and fixed base testing), including all labor and equipment associated with PT rods
    a. This includes 9"x9"x2" anchorage plates, PVC sleeves, nuts for the rods, and couplers, labor for stressing rods, and de-stressing/removal of rods prior to demolition, etc.
4) All PT tendons (labor and equipment) will be provided by others.
    a. This includes all equipment/labor associated with tendons ie labor for grouting and stressing, anchorage, etc.
5) Jacks for lifting the building and labor for jacking will be provided. Additional plates for jacking will be provided if necessary.
6) All T-headed reinforcement (double and single headed bars) will be provided by others (L=12'-10" single headed bars, quantity=64; L=4'-10" double headed bars, quantity=40; L=4'-8" single headed bars, quantity=16)
7) All slump tests and material testing will be provided by others
    a. This includes concrete cylinder testing for days to be specified and rebar testing

The following is the list of forthcoming details:

1) Optional 1 ¼" ϕ rods embeds on the longitudinal frames similar to drawing S-21 from the fixed base details (this should be priced as a separate option).
2) Detail showing concrete slab at foundation level.

The following is a list of changes to note between 3-28-2011 and 4-18-2011 Base Isolation Addendum:

1) 1'x5' beam in EW direction removed (detail for this beam originally on BIS-28 also removed)
2) BIS-28 completely different detail: now shows elevator wall on foundation level (not typical for all walls) which requires a cut out for jacking.
3) Elevator walls changed: new dimensions and locations
    a. Note: the dimension and location change will be changed on all levels
    b. Wall reinforcement now shown in plan view (see BIS-22)
    c. Vertical rebar from wall shown embedded into transverse foundation beam along gridline A (see BIS-25)
4) 0.25" of hydrostone added beneath lower plates to account for isolators compressing and uneven areas on shake table
5) On BIS-31 28 PT locations for fixed base called out (not 24 as previously stated)
6) All details are shown in construction configuration instead of base-isolation testing configuration
    a. No gap between bottom of foundation and table
    b. Isolators and attached isolator plates not shown (they will be provided by others)
    c. Temporary blocks shown in place of isolators (they will be present during construction)

7) Sheet BIS-32 added-showing temporary block details
8) Steel plate and sleeve details on BIS-30 changed
    a. Hole locations changed on upper and lower plates
    b. 2’-7/8” diameter hole added to upper plate to allow concrete to fill temporary block during casting of foundation
    c. Holes for leveling screws added to lower plate
    d. Sleeve dimensions changed and thread size/length specified
9) Slope added to elevator pit for drainage (see BIS-22)
10) Reinforcement in transverse beam changed as seen on BIS-27 and BIS-25
    a. One set of stirrups removed
    b. 2#8 removed from 5’ cross section
    c. Top reinforcement in 5’ cross section changed from 4#8 to 4#6
    d. 4#8 removed in 3’-10” cross section
    e. #4 ties spaced at 12” o.c. instead of 8” o.c. (as seen on BIS-22 and BIS-25)
    f. Chamfer increased to 2 ½”
11) Reinforcement in longitudinal beam changed as seen on BIS-13R, BIS-08R, BIS-24, etc
    a. In 5’ cross section
        i. 8#8 removed from top reinforcement
        ii. Bottom reinforcement changed from 2 layers of 8#8 hooked bars to 1 layer of 8#8 hooked bars and 1 layer of 2#8 hooked bars
    b. In 3’-10” cross section
        i. 8#8 removed from top reinforcement
        ii. 8#8 removed from bottom reinforcement

BASE ISOLATION ADDENDUM PACKAGE 4-18-2011: FOR PRICING ONLY - NOT FOR CONSTRUCTION

DRAWING LIST:

Note: Only revised and new drawings are included. Drawings with no changes are not included. All foundation dimensions and reinforcement from the original set of S-XX details are superseded by BIS-XX details.

S-00 no change
S-01 no change
S-02 no change
S-02A no change
S-03 no change
S-04 no change
S-05 no change
S-06 no change
S-06A no change
S-07 revised
S-08 revised
S-09 no change
S-10 no change
S-11 revised
S-12 no change
S-13 revised
S-14 no change
S-15 no change
S-16 no change
S-16A no change
S-17 no change
S-17A no change
S-18 no change
S-19 no change
S-20 no change
S-21 no change
S-21A no change

ADDENDUM DRAWINGS: INCLUDED IN PACKAGE

BIS-22
BIS-13R
BIS-23
BIS-08R
BIS-24
BIS-25
BIS-26
BIS-27
BIS-28
BIS-11R
BIS-29
BIS-07R
BIS-30
BIS-31
BIS-32

FOUNDATION NOTES:

CONCRETE FOR FOUNDATION

1. CONCRETE STRENGTH: f'c=5000 PSI @ 28 DAYS.

PT ROD INFORMATION FOR LONGITUDINAL FOUNDATION BEAM

1. THE FOUNDATION WILL CONTAIN (24) 1 ¾" DYWIDAG THREADBARS®. (12 ON EACH SIDE)
2. EACH ROD WILL BE TENSIONED TO A FORCE OF 200K (ABOUT 50% OF CAPACITY).
3. EACH ROD WILL BE ANCHORED WITH A 9"X9"X2" ANCHOR PLATE (STD). COUPLERS WILL BE NEEDED.
4. PRIOR TO DEMOLITION, ALL PT RODS WILL BE DESTRESSED AND REMOVED FROM FOUNDATION
5. PT RODS WILL BE UN-GROUTED.
6. NOTE: ALL LABOR (INCLUDING STRESSING, DE-STRESSING, INSTALLATION, ETC.) AND EQUIPMENT (JACKS FOR STRESSING, COUPLERS, ANCHORAGE PLATES, DUCTS, NUTS, ETC.) ASSOCIATED WITH PT RODS WILL BE PROVIDED BY OTHERS AND SHOULD NOT BE INCLUDED IN FOUNDATION PRICE.

PT TENDON INFORMATION FOR LONGITUDINAL FOUNDATION BEAM (NOTE: TENDONS REFERRED TO IN THIS ADDENDUM ARE COMPRISED OF 6-0.6" STRANDS)

1. TENDON TYPE: DYWIDAG 6806. EACH TENDON: 6-0.6" STRANDS, 2 IN EACH LONGITUDINAL FOUNDATION BEAM. (4 TOTAL)
2. EACH GROUP OF TENDONS WILL BE GROUTED .
3. EACH TENDON WILL BE ANCHORED USING STD PLATE ANCHORAGE (SD) THAT WILL BE EMBEDDED INTO THE CONCRETE AT THE ENDS OF THE FOUNDATION.
4. EVERY 6-0.6" TENDON WILL BE TENSIONED TO 211K.
5. THE TENDONS WILL BE DRAPED ACCORDING TO THE TENDON LAYOUT PLAN ON BIS-23.
6. NOTE: ALL LABOR (INCLUDING STRESSING, GROUTING, INSTALLATION, ETC.) AND EQUIPMENT (JACKS FOR STRESSING, ANCHORAGE, DUCTS, GROUTING TOOLS ETC.) ASSOCIATED WITH PT TENDONS WILL BE PROVIDED BY OTHERS AND SHOULD NOT BE INCLUDED IN FOUNDATION PRICE.

CONSTRUCTION PROCEDURE

1. PRIOR TO CASTING THE CONCRETE FOR THE FOUNDATION, 1 ¾"Ø PT RODS FOR CONNECTING THE FOUNDATION TO THE TABLE DURING THE FIXED BASE TEST WILL BE PLACED WITHIN THE 2 ½" I.D. SCH40 PVC PIPES (AT THE 28 LOCATIONS INDICATED ON BIS-31) TO PREVENT MISALIGNMENT WHEN VIBRATING CONCRETE (OR EQUIVALENT PROCEDURE TO PREVENT MISALIGNMENT). SIMILARLY, STEEL PLATES AND TEMPORARY BLOCKS WILL BE PLACED IN CORRECT LOCATIONS BEFORE CONSTRUCTION BEGINS.
2. THE FOUNDATION WILL BE CAST DIRECTLY ONTO THE SHAKE TABLE ABOVE 3 POLYURETHANE SHEETS TO PREVENT CONCRETE FROM BONDING TO THE TABLE AND TO ALLOW FOR SHRINKAGE WHEN POST TENSIONING.

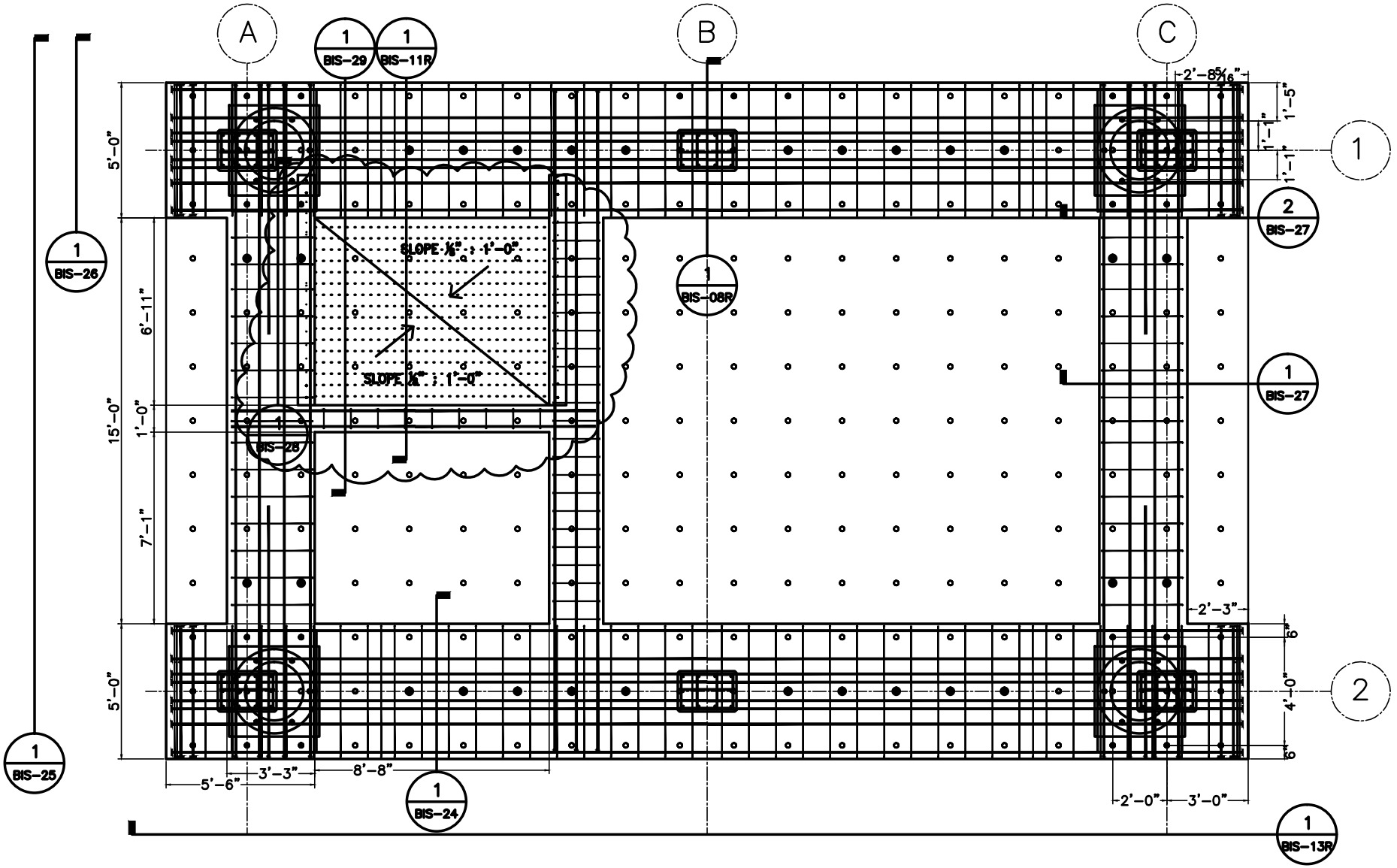
3. 7 DAYS AFTER CASTING CONCRETE (OR MIN. 2.7KSI CONCRETE STRENGTH), THE 1 ¾”Ø PT RODS WITHIN THE LONGITUDINAL FOUNDATION BEAMS WILL BE TENSIONED TO 200K EACH. (24 RODS TOTAL)
4. 3 FLOORS (VERIFY) WILL BE CONSTRUCTED.
5. THE 6-0.6" TENDONS WILL BE TENSIONED TO 211K EACH. (4 TOTAL)
6. THE REMAINING FLOORS WILL BE CONSTRUCTED.
7. THE BUILDING WILL BE LIFTED 1 ½” WITH JACKS (THIS MAY OCCUR IN SEVERAL INCREMENTS TO PREVENT CRACKING). ONE SIDE OF THE BUILDING WILL BE LIFTED AT A TIME.
8. WHEN THE BUILDING IS LIFTED, TEMPORARY BLOCKS WILL B E REMOVED AND SEISMIC ISOLATORS WILL BE PLACED ON TOP OF THE STEEL PLATES. THE BUILDING WILL BE LOWERED ¼” TO SIT ON THE ISOLATORS, THUS CREATING A 1”-1.25” CLEAR GAP FOR TESTING THE ISOLATED BUILDING (DEPENDING ON AMOUNT THAT ISOLATOR COMPRESSES). ISOLATORS WILL BE BOLTED INTO UPPER AND LOWER PLATES FOR SEISMIC ISOLATION TESTING.
9. BUILDING WILL BE REALIGNED WITH TABLE IF NECESSARY WITH HORIZONTAL JACKS.
10. AFTER TESTING THE BUILDING ON SEISMIC ISOLATORS, A SIMILAR PROCEDURE WILL BE USED TO RETURN TO THE FIXED BASE CASE.
11. ISOLATORS WILL BE UNBOLTED FROM PLATES. THE BUILDING WILL BE LIFTED ABOUT ¼”- ½” AND THE ISOLATORS WILL BE REMOVED. TEMPORARY BLOCKS USED DURING CONSTRUCTION WILL REPLACE ISOLATORS. THE BUILDING WILL BE LOWERED WITH JACKS TO SIT DIRECTLY ONTO THE PLATEN.
12. THE FOUNDATION WILL BE POST TENSIONED DOWN TO THE PLATEN FOR THE FIXED BASE TESTING. THE FOUNDATION WILL BE FASTENED TO THE PLATEN WITH (28) 1 ¾” Ø PT RODS TENSIONED TO 220K EACH.

DEMOLITION OF FOUNDATION

1. PT RODS IN LONGITUDINAL FOUNDATION BEAM WILL BE DE-STRESSED AND REMOVED.
2. SINCE THE PT TENDONS WILL BE GROUTED, IT WILL BE SAFE TO CUT THROUGH THE FOUNDATION AT ANY POINT AFTER DE-STRESSING AND REMOVING THE PT ROD ELEMENTS.

MATERIAL PROVIDED BY OTHERS (DO NOT INCLUDE IN PRICING)

1. ALL 1 ¾” PT RODS (FOR LONGITUDINAL BEAM AND FIXED BASE TESTING) INCLUDING ALL LABOR AND EQUIPMENT ASSOCIATED WITH PT RODS WILL BE PROVIDED BY OTHERS.
2. ALL PT TENDONS IN LONGITUDINAL BEAM INCLUDING ALL LABOR (GROUTING, STRESSING, ETC.) AND EQUIPMENT ASSOCIATED WITH PT TENDONS WILL BE PROVIDED BY OTHERS.
2. WOOD BLOCKS AND PT CONCRETE BLOCKS FOR SEISMIC STOPS WILL BE PROVIDED.
3. JACKS WILL BE PROVIDED. ALL LABOR AND EQUIPMENT ASSOCIATED WITH JACKING WILL BE PROVIDED
5. SEISMIC ISOLATORS AND ALL LABOR/EQUIPMENT ASSOCIATED WITH THEM WILL BE PROVIDED BY OTHERS.
6. ALL T-HEADED REINFORCEMENT (DOUBLE AND SINGLE HEADED BARS) WILL BE PROVIDED BY OTHERS (L=12’-10” SINGLE HEADED BARS, QUANTITY=64; L=4’-10” DOUBLE HEADED BARS, QUANTITY-40; L=4’-8” SINGLE HEADED BARS, QUANTITY=16)
7. ALL SLUMP TESTS AND MATERIAL TESTING (CONCRETE CYLINDER AND REBAR TESTING) WILL BEPROVIDED BY OTHERS.



3/16"=1'-0"

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FOUNDATION PLAN
BIS-22

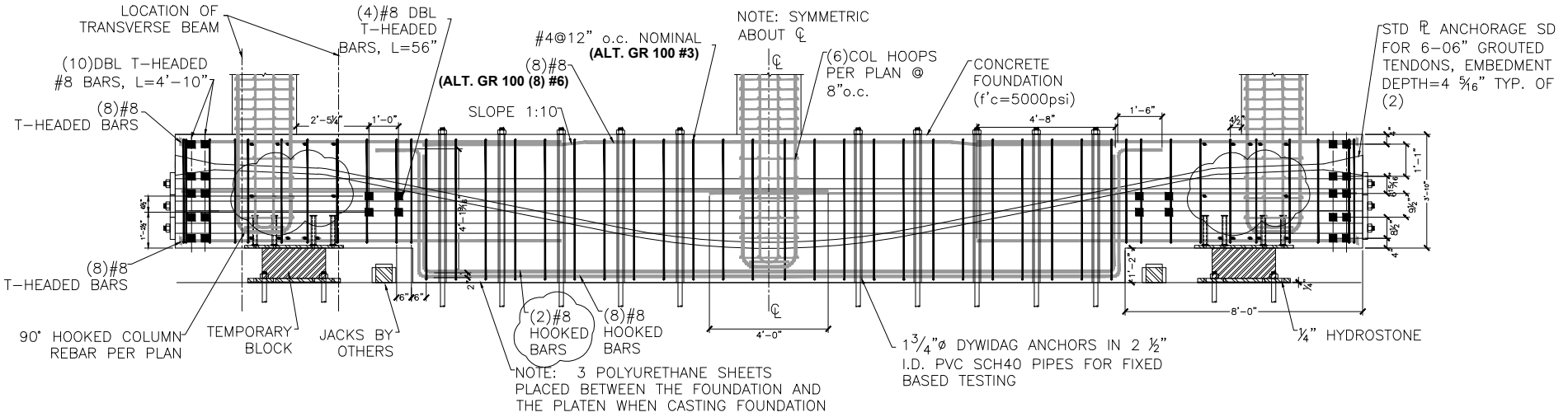
FIGURE
BIS-22

BASE ISO-OPTION 1

JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents



3/16"=1'-0"

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FOUNDATION DETAIL
BIS-13R

FIGURE
BIS-13R

BASE ISO-OPTION 1

JOB NUMBER	DATE
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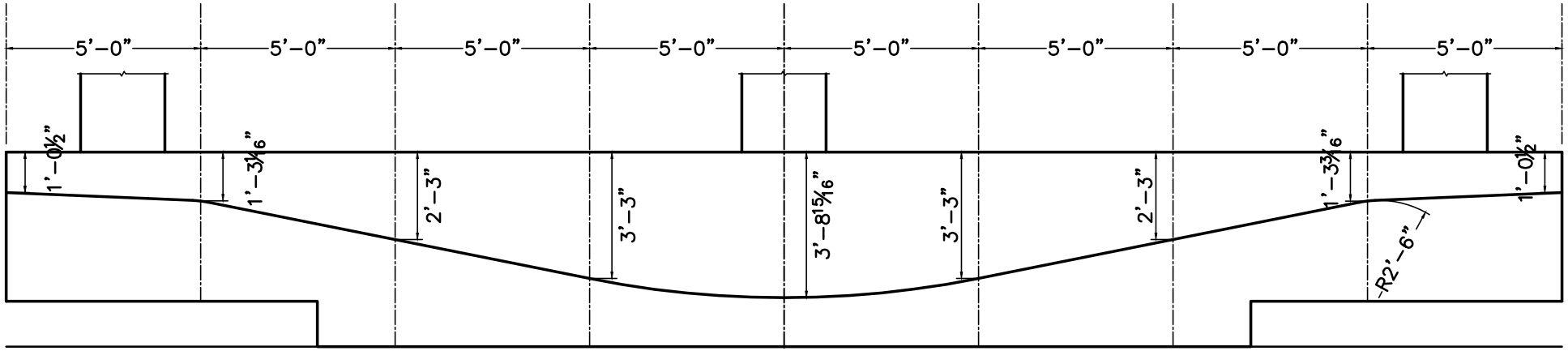
Construction Documents



1/4"=1'–0"

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TENDON LAYOUT
BIS-23

FIGURE
BIS-23

BASE ISO-OPTION 1

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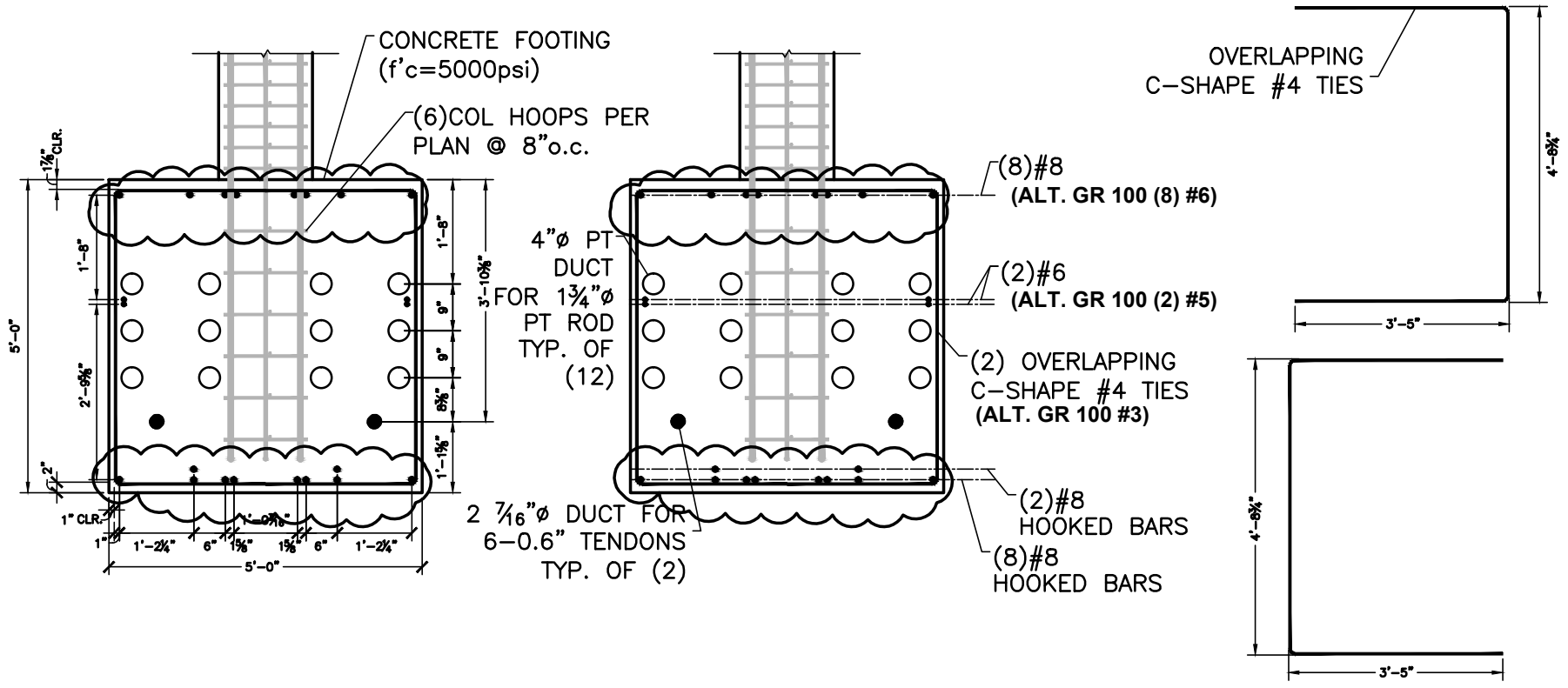
DATE
04.18.2011

Construction Documents



3/8"=1'-0"

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FOOTING DETAIL
BIS-08R

FIGURE

BIS-08R

BASE ISO-OPTION 1

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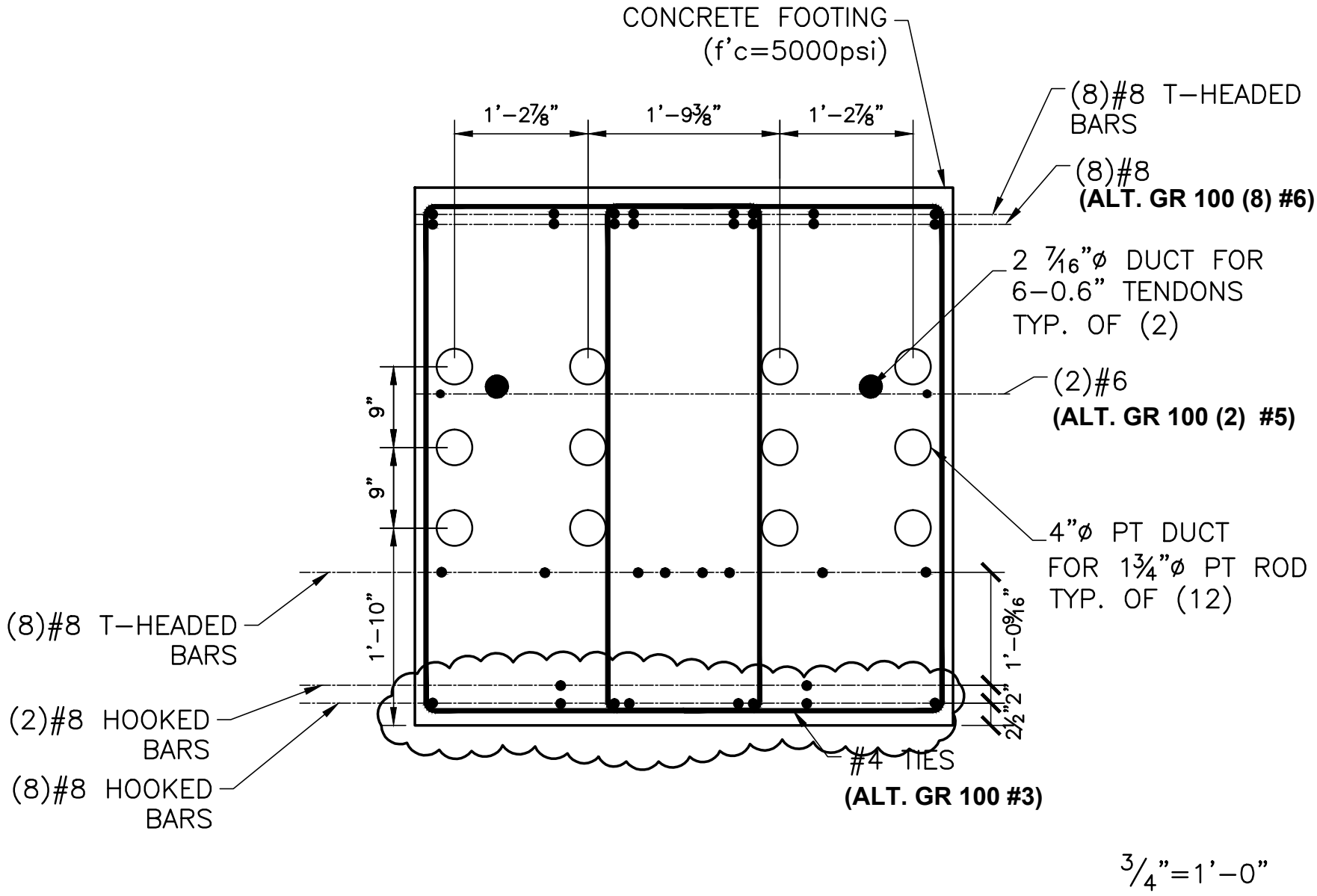
DATE
04.18.2011

Construction Documents



¾"=1'-0"

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FOOTING DETAIL
BIS-24

FIGURE
BIS-24

BASE ISO-OPTION 1

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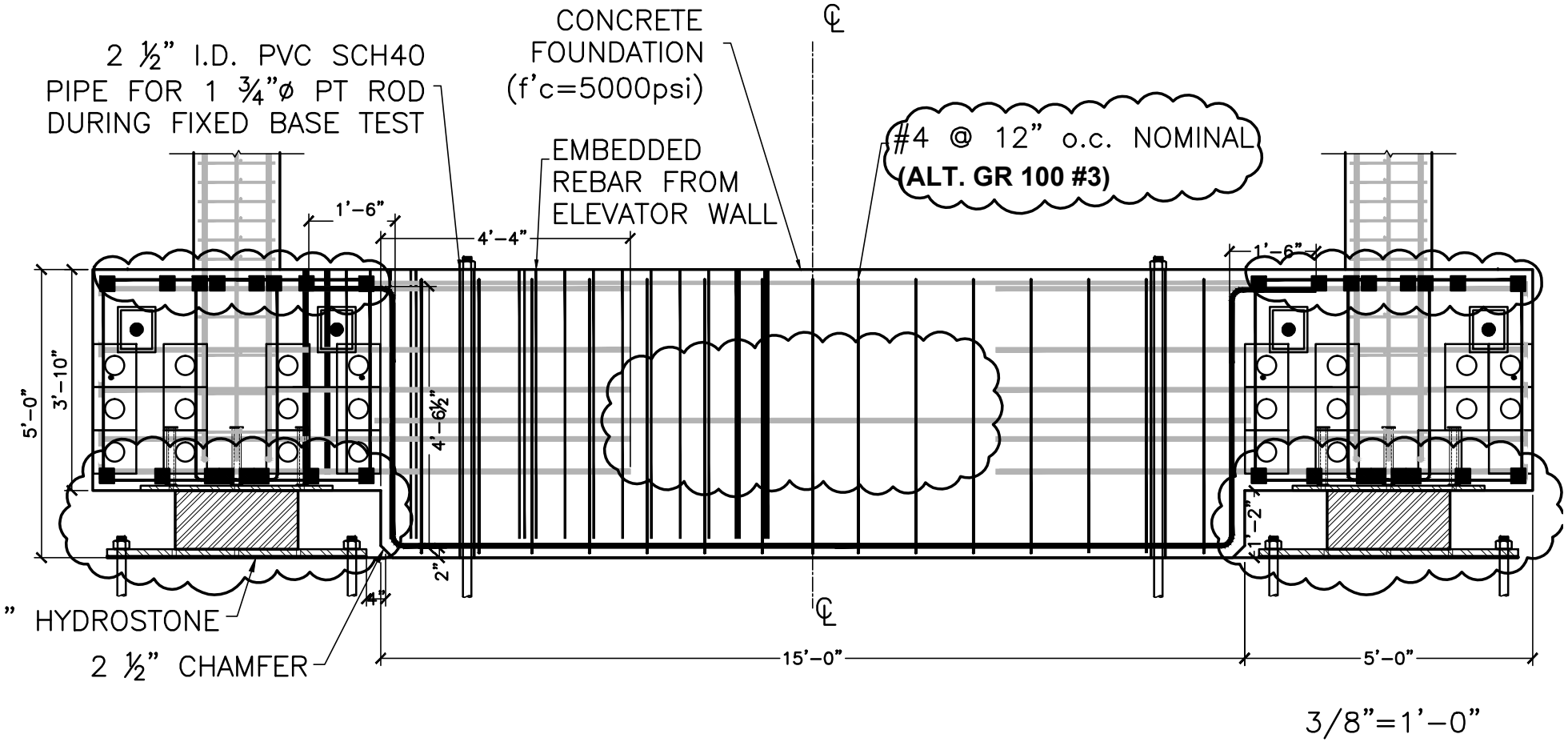
DATE
04.18.2011

Construction Documents



3/8"=1'-0"

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FOUNDATION DETAIL
BIS-25

FIGURE

BIS-25

BASE ISO-OPTION 1

JOB NUMBER
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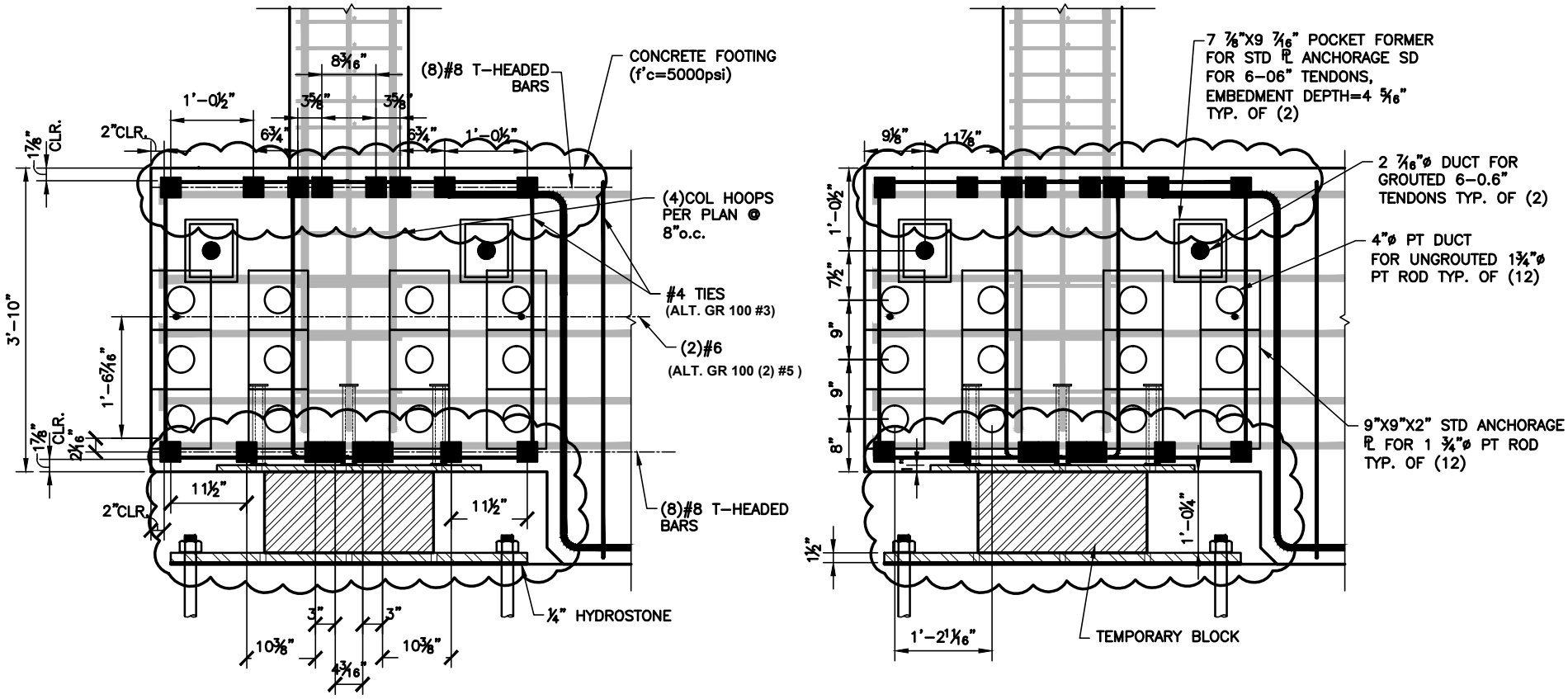
Construction Documents



1/2"=1'-0"

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FOOTING DETAIL
BIS-26

FIGURE

BIS-26

BASE ISO-OPTION 1

JOB NUMBER
604-92

DATE
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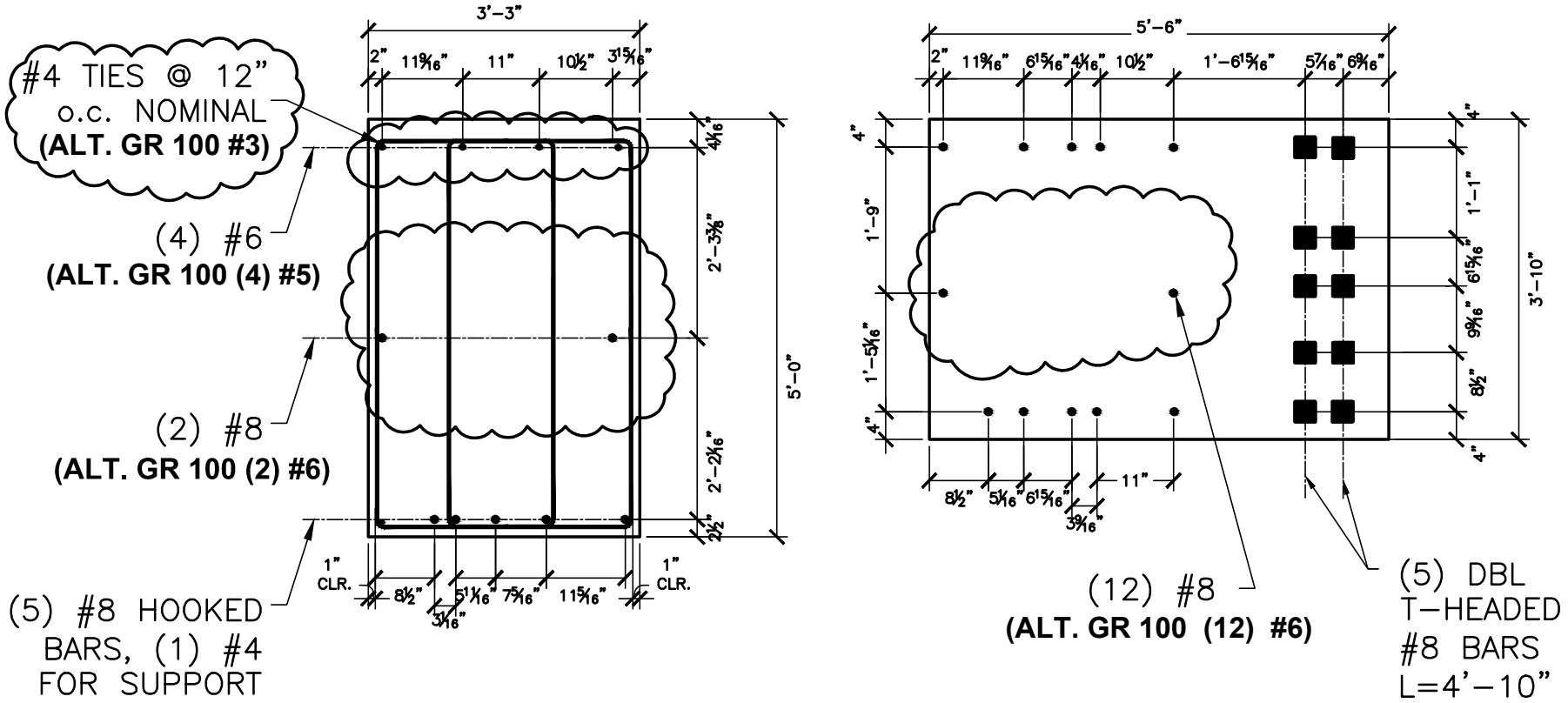
Construction Documents



1/2"=1'-0"

ISSUED FOR PRICING
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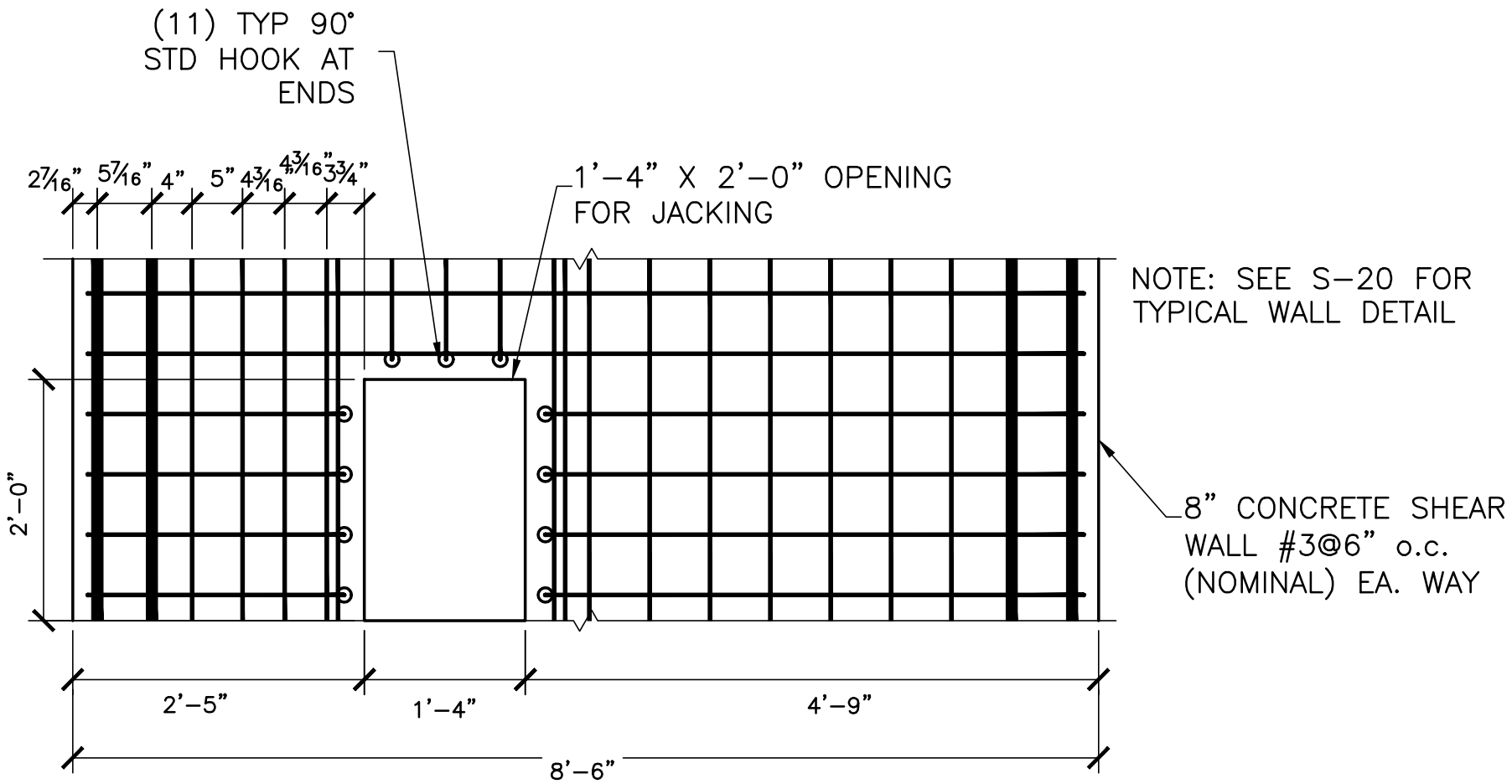
FOOTING DETAIL
BIS-27

FIGURE
BIS-27

BASE ISO-OPTION 1

JOB NUMBER	DATE
604-92	04.18.2011

Construction Documents



3/4"=1'–0"

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FOUNDATION LEVEL WALL DETAIL
BIS-28

FIGURE
BIS-28

BASE ISO-OPTION 1

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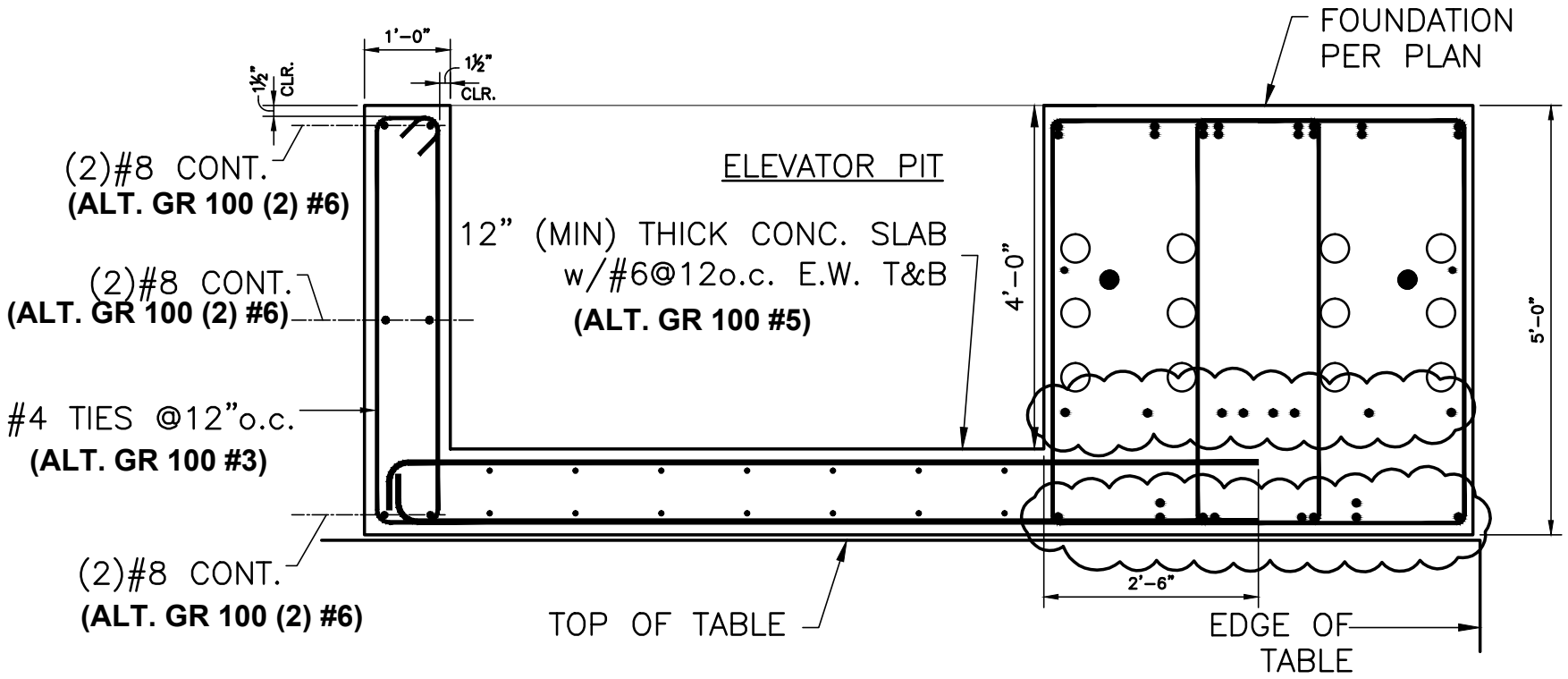
04.18.2011

Construction Documents



NOTE:

PROVIDE PL $1/2$x8x0'-8 WITH (4) $1/2$"ø NELSON STUDS (8" EMBED.) AT ELEVATOR RAILS. PLATES AND HARDWARE TO BE PROVIDED BY ELEVATOR SUBCONTRACTOR.

$1/2$"=1'-0"

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ELEVATOR PIT SECTION
BIS-11R

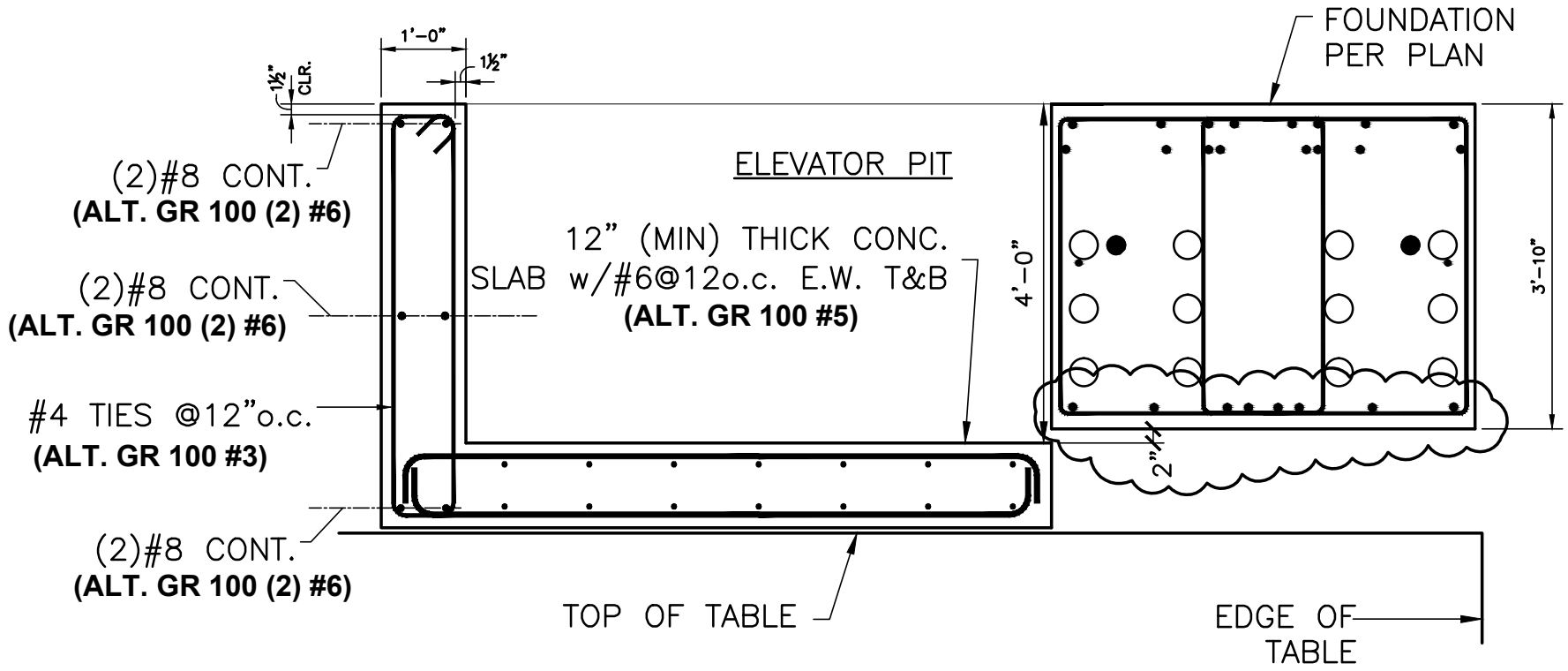
FIGURE
BIS-11R

BASE ISO-OPTION 1

JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents



NOTE:

PROVIDE PL $1/2$x8x0'-8 WITH (4) $1/2$"ø NELSON STUDS (8" EMBED.) AT ELEVATOR RAILS. PLATES AND HARDWARE TO BE PROVIDED BY ELEVATOR SUBCONTRACTOR.

$1/2$"=1'-0"

ISSUED FOR PRICING
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ELEVATOR PIT SECTION
BIS-29

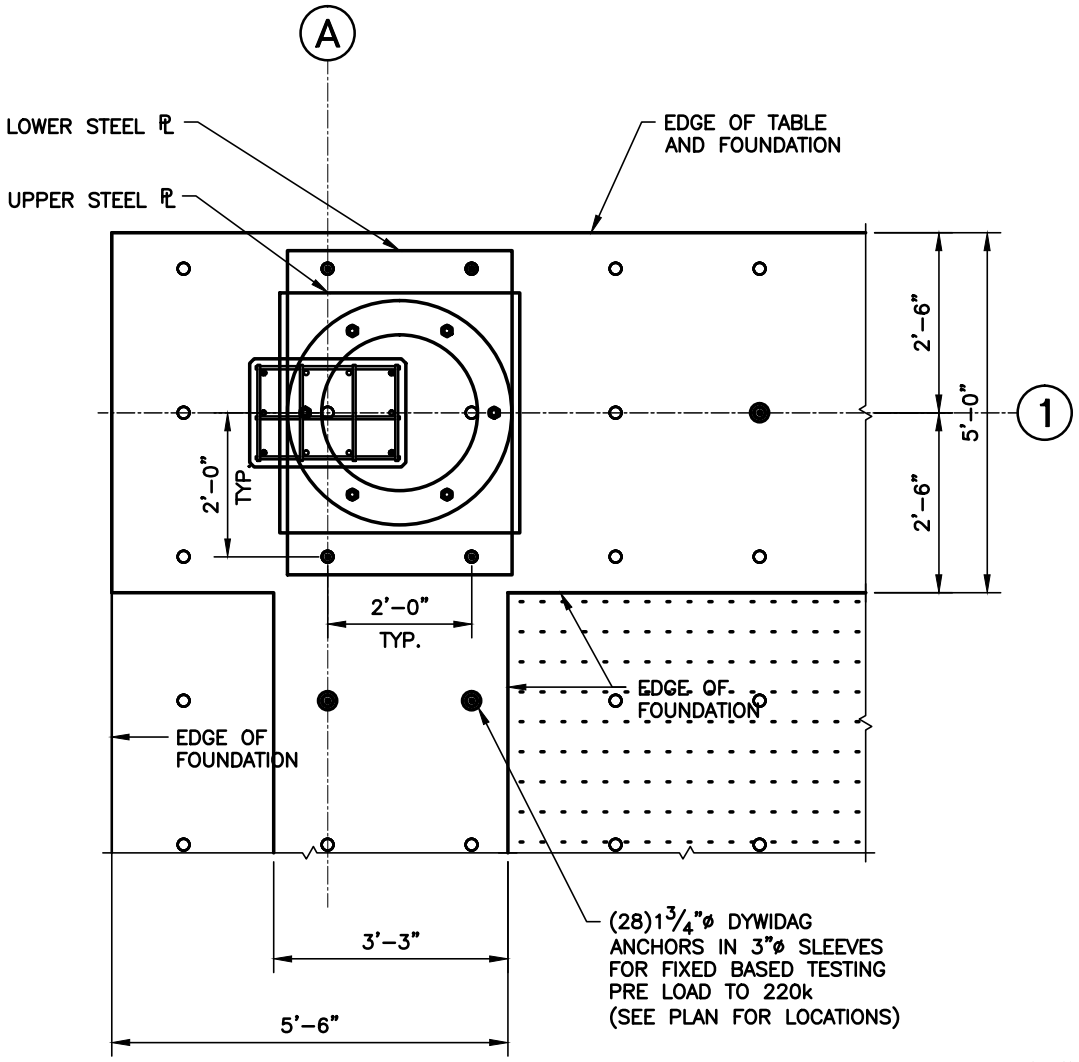
BASE ISO-OPTION 1

FIGURE
BIS-29

JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents



3/8"=1'-0"

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FOUNDATION DETAIL
BIS-07R

FIGURE

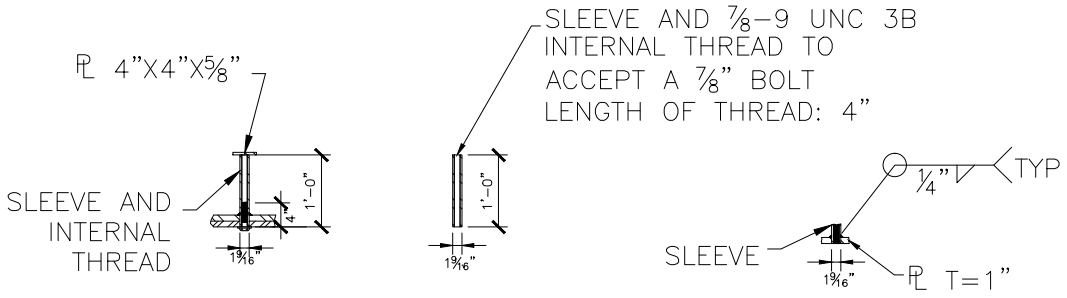
BIS-07R

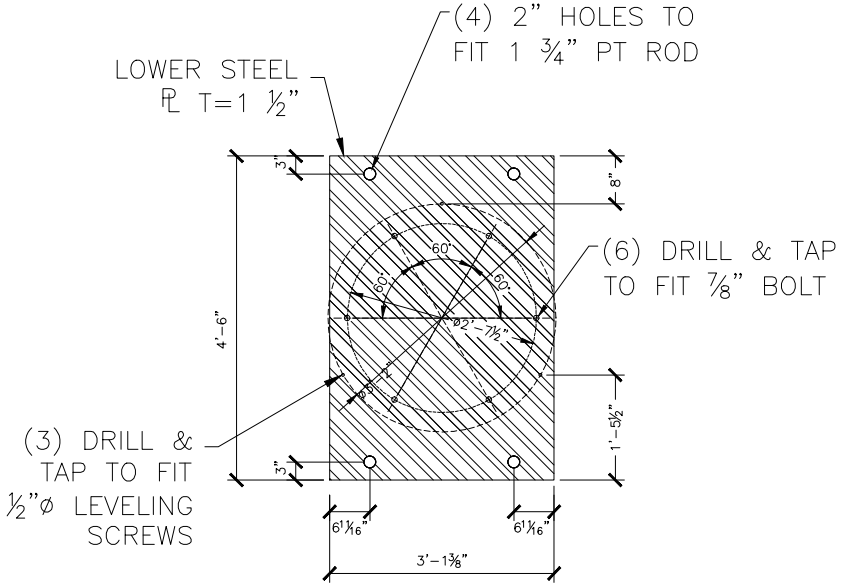
BASE ISO-OPTION 1

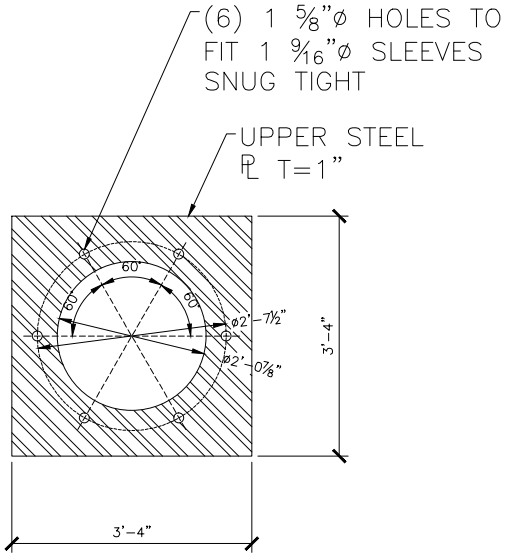
JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents







3/8"=1'-0"

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STEEL PLATES AND SLEEVE DETAILS
BIS-30

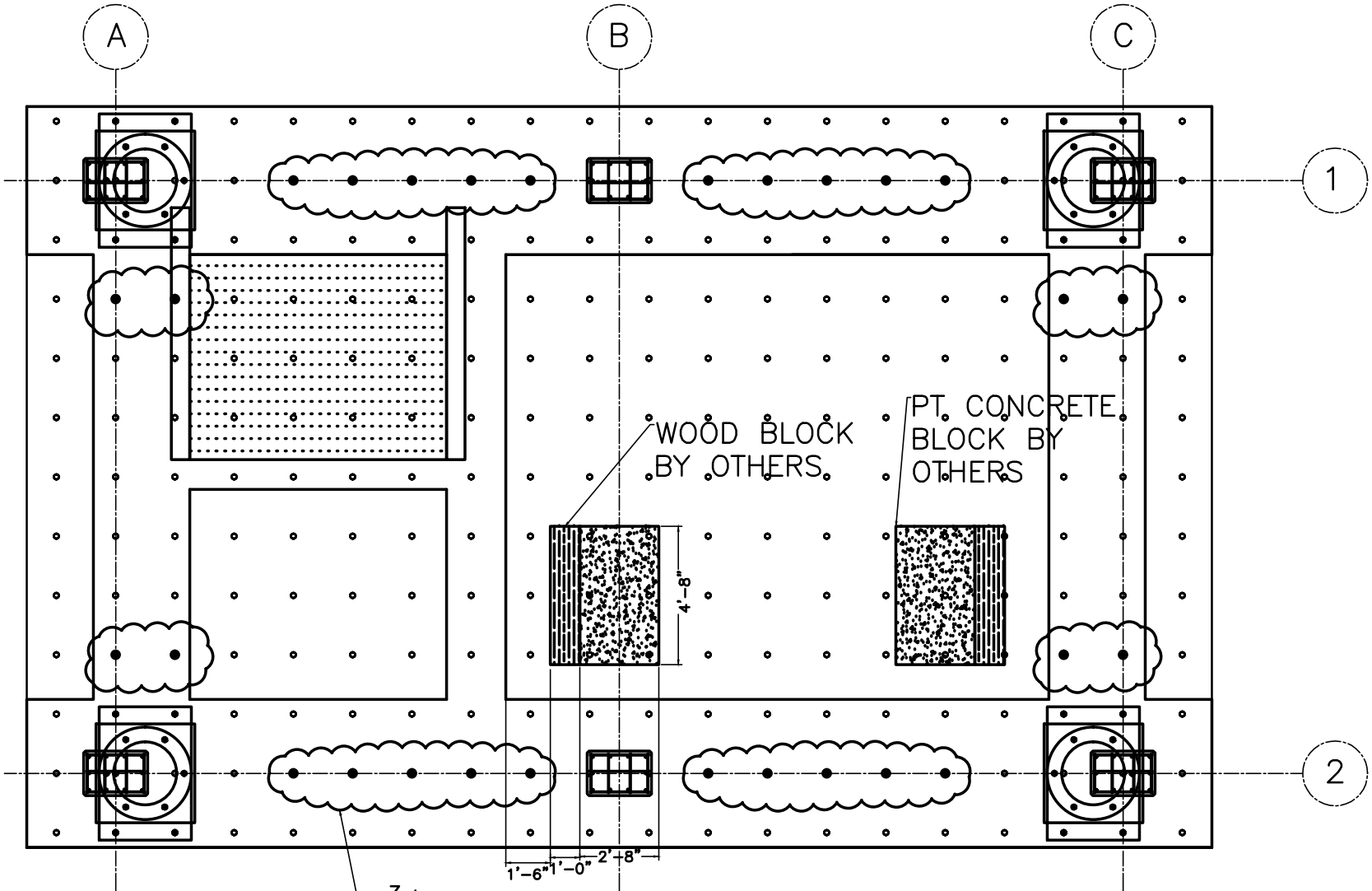
FIGURE
BIS-30

BASE ISO-OPTION 1

JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents



3/16"=1'-0"

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SEISMIC STOP DETAIL
BIS-31

FIGURE

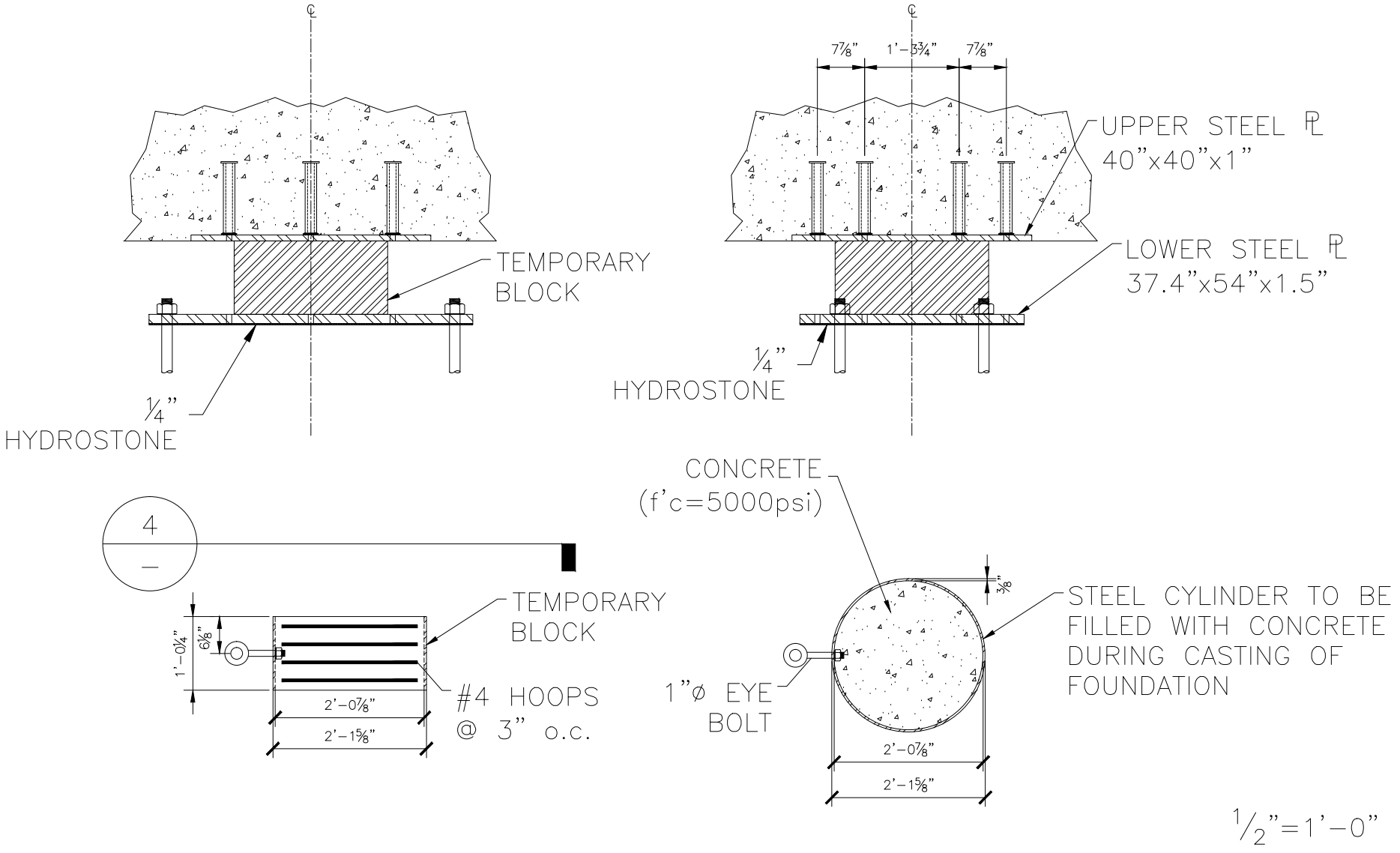
BIS-31

BASE ISO-OPTION 1

JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents



ISSUED FOR PRICING
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TEMPORARY BLOCK DETAIL
BIS-32

FIGURE
BIS-32

BASE ISO-OPTION 1

JOB NUMBER
604-92

DATE
04.18.2011

Construction Documents