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<td>36&quot; Prestressed I-Bm. - 24&quot; &amp; 38&quot; Flanges - Detail Sheet</td>
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<tr>
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<td>PBT-4-63D</td>
<td>63 inch PPC bulb T beam details</td>
<td>2/17/2017</td>
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<tr>
<td>PI-4-36D</td>
<td>36 inch PPC I beam details</td>
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<td>PI-4-42D</td>
<td>42 inch PPC I beam details</td>
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#3 bar

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<tr>
<td>3''</td>
<td>2 ''</td>
<td>2''</td>
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<tr>
<td>11''</td>
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<td>9''</td>
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<td>2-D31 wires</td>
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Chamfer

1'' Ø threaded rods

2-W14 wires

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<tr>
<td>M3 WWR DETAIL</td>
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<td>M4 thru M6 WWR DETAIL</td>
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<tr>
<td>M2 and M3 WWR DETAIL</td>
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NOTES

Inserts for 1/2'' threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams.

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.6'' and the nominal cross-sectional area shall be 0.217 sq. in. The nominal diameter for lifting loops shall be 1'' and the nominal cross-sectional area shall be 0.153 sq. in.

The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'c, of 7000 psi. A minimum 290 lbs lifting pin shall be used to engage the lifting loops during handling.

Bend the extended strands inward on the fascia beams to maintain 1'' clearance inside the pier diaphragm.

The top and bottom plates shall be AASHTO M210 Grade 55.

The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.

The beams shall not be released from the fabricator until they have attained 45 days of age or older.

Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

**TABLE OF DIMENSIONS**

**SPAN**

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<th>WWR</th>
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<th>B</th>
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<tr>
<td>M4</td>
<td>1''</td>
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**SPAN**

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<th>A</th>
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<td>M5</td>
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**LIFTING LOOP DETAIL**

Furnishing and Erecting Precast Prestressed Concrete Beams, IL27N
- 3/8" @ 3" cts., @ 2'-0" cts., each face
- 4-0" Rad.
- 270 ksi strands
- @ 7 S p a c e s @ 2" (Recess $3\times10\times10$
- Top $3\times10\times10$
- $4\times10$
- $6\times10$

**Note:** See Sheet 70 for additional details and Bill of Material.
Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating. Silver bar epoxy coating.

Threaded rods shall be ASTM F 1554 Grade 55. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.

The top and bottom plates shall be AASHTO M270 Grade 50. The top and bottom plates shall be AASHTO M111 Grade 55.

The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. Threaded rods, nuts and washers shall be galvanized according to AASHTO M232. Threaded rods shall be ASTM F 1554 Grade 55.

Prestressed Concrete Beams, IL36N

Furnishing and Erecting Precast Prestressed Concrete Beams, IL36N

BEAM DETAIL

Notices

Inserts for 1/2" threaded dowel rods, when specified, are to be two-strut ferrule type, for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 3-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.4" and the nominal cross-sectional area shall be 0.217 sq. in. The nominal diameter for lifting loops shall be 0.325" and the nominal cross-sectional area shall be 0.033 sq. in.

The beams shall have a final concrete compressive strength, f'c, of 8700 psi and a release concrete compressive strength, f'c, of 7000 psi.

The beams shall have a final concrete age or release concrete age of 45 days of age or older. Beams shall not be released from the fabricator until they have attained 45 days of age or older.

Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.
Details and bill of material.

Note:

- Lift, typ. 60° min. angle (showing reinforcement & dimensions)

- Limits of M5 WWR (each face) = 2'-0"

- Limits of M4 WWR (each face) = 2'-6"

- Limits of M3 WWR (each face) = 3'-0"

- Limits of M2 WWR (each face) = 3'-2"

- Limits of M1 WWR (each face) = 4'-0"

ELEVATION OF BEAM

(Showing reinforcement & dimensions)

ELEVATION OF BEAM

(Showing prestressing steel)

SECTION A-A

*Only tighten sufficiently to compress lock washers*

SECTION B-B

*Fully bonded strand*

*Partially debonded strand*

Note:

See sheet of for additional details and Bill of Material.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

I-36 BEAM
STRUCTURE NO.

FILE NAME

USER NAME

PLOT SCALE

PLOT DATE

CHECKED

DRAWN

CHECKED

DESIGNED

REVISED

REVISED

REVISED

DEPARTMENT OF TRANSPORTATION
STATE OF ILLINOIS
F.A.
RTE.
SECTION
COUNTY
CONTRACT NO.
TOTAL SHEETS
SHEET NO.
SHEETS
**NOTES**

 Inserts for 3/8" threaded dowel rods, when specified, are to be two struts.

 Prestressing steel shall be uncoated high strength, low-relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.6" and the nominal cross-sectional area shall be 0.113 in. The beams shall have a minimum concrete compressive strength, f'_c, of 8500 psi and a release concrete compressive strength, f'_c, of 7000 psi.

 A minimum 2"Ø lifting pin shall be used to engage the lifting loops during handling.

 The top and bottom plates shall be ASHTO M270 Grade 50. The top plates shall be galvanized according to AASHTO M111.

 The top plates and bottom plate assemblies shall be galvanized according to AASHTO M312. The threaded rods shall be ASTM F 1554 Grade 55.

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STRUCTURE NO. IL45N BEAM

of lift, typ. 60° min. angle

(Showing reinforcement & dimensions)

11" (each face) = 2'-9"

Limits of M5 WWR (each face) = 4'-0"

Limits of M7 WWR (each face) = 6'-9"

Limits of M8 WWR (each face) = 7'-9"

Limits of M6 WWR (each face) = 5'-9"

-Jam nut

#3 bar

Tighten snugly.

Bottom plate assembly together.

Construct in 2 piece sheets and slide end-to-end beam as required.

Rotate as indicated.

1'-0" Rad. M1 WWR M2 thru M8 WWR

@ 4'-0" cts.

-Lifting Loops Spaced 4'-6" @ 2" cts.

-Thread flush with 1" Ø threaded rods at 3" cts., each face.

#8 G1(E) bars lagged with bottom flange reinforcement.

Symmetrical about ≯ except as shown

Symmetrical about ≯

ELEVATION OF BEAM

(Showing prestressing steel)

@ 2" Spacing 17 Spaces @ 2"

Fully bonded strand

Partially debonded strand

Note: See sheet   of    for additional details and Bill of Material.
**NOTES**

Inlets for %- threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing strand shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.3125 in. and the nominal cross-sectional area shall be 0.312 sq. in. The nominal diameter for lifting loops shall be 0.7 in. and the nominal cross-sectional area shall be 0.1536 sq. in.

The beams shall have a final concrete compressive strength, f'c, of 7000 psi and a minimum 2% lifting pin shall be used to engage the lifting loops during handling. Bend the extended strands inward on the fascia beams to maintain 1/4" clearance inside the pier diaphragm.

The top and bottom plates shall be AASHTO M210 Grade 50. The top and bottom plate assemblies shall be galvanized according to AASHTO M111. The top and bottom plates shall be AASHTO M270 Grade 50.

The top and bottom plates shall be AASHTO M270 Grade 50.

Beans shall not be released from the fabricator until they have attained 45 days of age or older.

Prestressed concrete Beam Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

**TABLE OF DIMENSIONS**

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<td>2-031 wires at 1'-0&quot; ctrs.</td>
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<td>A-031 wires at 6&quot; ctrs.</td>
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<td>M5</td>
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<tr>
<td>M6</td>
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<td>A-031 wires at 6&quot; ctrs.</td>
<td>2-031 wires at 1'-0&quot; ctrs.</td>
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**BILL OF MATERIAL**

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Notes:
- See sheet of for additional details and Bill of Material.
- Only tighten sufficiently to compress lock washers.

ELEVATION OF BEAM (Showing reinforcement & dimensions)
- Symmetrical about E

Limits of M1 WWR (each face) = 2'-0" Rad.
Limits of M2 WWR (each face) = 4'-0"

Partial debonded strand
- Fully bonded strand
- Partially debonded strand

Bottom plate assembly
- Root plate assembly

SECTION A-A
- Jam nut, typ.
- #3 bar

Limits of M5 WWR (each face) = 3'-9"
Limits of M6 WWR (each face) = 3'-2"
Limits of M7 WWR (each face) = 3'-2"
Limits of M8 WWR (each face) = 3'-2"

SECTION B-B
- Only tighten sufficiently to compress lock washers.

SECTION C-C
- End-to-end beam

VIEW D-D
- End-to-end beam
- Symmetrical about E

ELEVATION OF BEAM (Showing prestressing steel)
- Limits of strand debonding

Note:
- See sheet of for additional details and Bill of Material.
- Only tighten sufficiently to compress lock washers.
IL45-3838D 2-17-2017

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NOTES

Inserts for 1/8" threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.8" and the nominal cross-sectional area shall be 0.153 sq. in. The nominal diameter for lifting loops shall be 0.8" and the nominal cross-sectional area shall be 0.084 sq. in. The beams shall have a final concrete compressive strength, f', of 8500 psi and a steel yield strength of 65,000 psi. A minimum 2B"Ø lifting pin shall be used to engage the lifting loops during handling. Bend the extended strands inward on the fascia beams to maintain 1/2" clearance inside the pier diaphragm.

The top and bottom plates shall be AASHTO M270 Grade 50. The top and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. Beams shall not be released from the fabricator until they have attained 45 days of age or older. Galvanized Wire Reinforcement (WWR) shall conform to ASTM A894 with a Class A, Type I epoxy coating.

IL45 WWR DETAIL

When multiple sheets of M3 WWR are required along the beam length, #5E) bars (5'-0" long) shall be used to splice the longitudinal D31 wires together (Min. Lap 2'-2").

TABLE OF DIMENSIONS

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<th>M1</th>
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<th>M3</th>
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BAR G1(E)

1 1/8" Ø holes for 1/8" Ø threaded rods.

PLAN - TOP PLATE

2 2-W14 wires at B centers

ELEVATION - BOTTOM

PLATE ASSEMBLY

2 2-W14 wires at B centers

SECTION E-E

3 Spaces at 2'-12" = 6'

24-W14 wires

2 2-W14 wires

M1 THRU M8 WWR DETAIL

(See Table of Dimensions)

M5 THRU M8 WWR DETAIL

(See Table of Dimensions)

M2 THRU M4 WWR DETAIL

(See Table of Dimensions)

BILL OF MATERIAL

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<th>Total</th>
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CONTRACT NO.

STATEMNT NO.

DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE BEAMS, IL45

Furnishing and Erecting Precast

Approved bond breaker

Preparation and Special Provisions.
end-to-end beam

Limits of M5 WWR
(each face) = 2'-0"

Limits of M6 WWR
(each face) = 5'-6"

Limits of M7 WWR
(each face) = 2'-0"

Limits of M8 WWR
(each face) = 5'-6"

Lifting loops Spaced:

@ 6'-0" cts.

Limits of M9 WWR
(each face) = 2'-0"

Limits of M10 WWR
(each face) = 5'-6"

3 1/2" Ø threaded rods
@ 3'-0" cts., each face

- #3 G1(E) bars lapped with

Bottom flange reinforcement

Rotate as required

3'-6"

(Showing prestressing steel)

Symmetrical about ¥

except as shown

#3 bar

Tighten snug

Jam nut, typ.

Bottom plate assembly

Construct in 2 piece sheets and slide

end-to-end beam

M1 WWR placed in top flange full length.

Limits of M6 WWR
(each face) = 7'-0"

Limits of M7 WWR
(each face) = 7'-0"

Limits of M8 WWR
(each face) = 7'-0"

Limits of M9 WWR
(each face) = 7'-0"

Limits of M10 WWR
(each face) = 7'-0"

Elevation of Beam

(Showing reinforcement & dimensions)

Elevation of Beam

(Showing prestressing steel)

Symmetrical about ¥

Hold down points

Draped Strands

Exceed and bend 10 strands length of beam, typ.

Symmetrical at pier only.

D

SECTION C-C

(©-6# © 270 ksi strands)

SECTION A-A

VIEW D-D

@ 2"

17 Spaces @ 2"

Fully bonded strand

Partially debonded strand

Note:

See sheet __ for additional details and Bill of Material.
**IL54-2438D**  2-17-2017

**FURNISHING AND ERECTING PRECAST Prestressed Concrete Beams, IL54N**

**NOTES**
- Inserts for 1/8" threaded dowel rods, when specified, are to be two strut.
- Ferrule type for interior beams and simple ferrule, flared loop type for exterior beams.
- Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.65" and the nominal cross-sectional area shall be 0.217 sq. in. The nominal diameter for lifting loops shall be 0.78" and the nominal cross-sectional area shall be 0.154 sq. in.
- The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'c', of 7000 psi.
- A minimum 2/0 Ø lifting pin shall be used to engage the lifting loops during handling.
- Bend the extended strands inward on the fascia beams to maintain 25° clearance inside the pier diaphragm.
- The top and bottom plates shall be ASTM A570 Grade 50.
- The top and bottom plate assemblies shall be galvanized according to AASHTO M111.
- The top and bottom plates shall be AASHTO M270 Grade 50.
- The top plates and bottom plate assemblies shall be galvanized according to AASHTO M232.
- The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.
- The top plates and bottom plate assemblies shall be galvanized according to AASHTO M232.
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**STATE OF ILLINOIS**

**DEPARTMENT OF TRANSPORTATION**

**STRUCTURE NO.**

**ILSON BEAM DETAILS**

**CONTRACT NO.**

**SHEETS**

**SHEET NO.**

**RTE.**

**COUNTY**

**SHEETS**

**TOTAL**

**PAGE NO.**

**FILE NAME**

**USER NAME**

**FILE NAME**

**IL54-2438D**  2-17-2017

**DEPARTMENT OF TRANSPORTATION**

**STATE OF ILLINOIS**

**STRUCTURE NO.**

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**IL54-2438D**  2-17-2017

**DEPARTMENT OF TRANSPORTATION**

**STATE OF ILLINOIS**

**STRUCTURE NO.**
end-to-end beam

ELEVATION OF BEAM
(Showing reinforcement & dimensions)

Symmetrical about $\xi$

ELEVATION OF BEAM
(Showing prestressing steel)

Limit of strand debonding

LIMITS OF M1 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M2 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M3 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M4 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M5 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M6 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M7 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M8 WWR
d = 3'-0"
(each face) = 3'-0"

3-1/2" Ø threaded rods
3-3/8" dia., each face

3-3/8" Ø 270 ksi strands

$\xi$-10 strands

Draped

Limits of lift, typ.
$60^\circ$ min. angle

Lifting loop spaced

$\#2$ Ø 3/4" cts.

Hold down points

SECTION A-A

SECTION B-B

Only tighten sufficiently to compress lock washers

ELEVATION OF BEAM

Thread flush with

LIMITS OF M9 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M10 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M11 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M12 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M13 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M14 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M15 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M16 WWR
d = 3'-0"
(each face) = 3'-0"

LIMITS OF M17 WWR
d = 3'-0"
(each face) = 3'-0"

SECTION C-C

VIEW D-D

Fully bonded strand

Partially debonded strand

Note:
See sheet of for additional details and Bill of Material.
IL54 THRU M8 WWR DETAIL
(See Table of Dimensions)
ELEVATION OF BEAM
(Showing reinforcement & dimensions)

SECTION A-A

SECTION B-B

SECTION C-C

VIEW D-D

Note:
See sheet  of for additional details and Bill of Material.
NOTES

Inserts for 1/4" threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Pre stressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.6" and the nominal cross-sectional area shall be 0.217 sq. in. The nominal diameter for lifting loops shall be 1" and the nominal cross-sectional area shall be 0.153 sq. in.

The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'cr, of 7000 psi.

A minimum 2" Ø lifting pin shall be used to engage the lifting loops during handling. Bend the extended strands inward on the fascia beams to maintain 1/2" clearance inside the pier diaphragm. The top and bottom plates shall be AASHTO M270 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. The top and bottom plates shall be AASHTO M270 Grade 50. The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'cr, of 7000 psi.

The beams shall not be released from the fabricator until they have attained 45 days of age or older.

Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

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**LIFTING LOOP DETAIL**

- 1/2" Ø Conduit
- Top of Beam
- 11/2" Ø lifting pin
- 1/2" Ø lifting pin
- 2-D31 wires at 6" cts.

**PLAN - TOP PLATE**

- 1 1/2" Ø holes for 1/4" threaded rods
- 8 10" x 10" x 10"

**ELEVATION - BOTTOM PLATE ASSEMBLY**

- 3 Spaces at 2 1/2" = 6"
- 2 Spaces at 3" = 6"
- 1 1/2" Ø holes for 1/4" threaded rods

**SECTION E-E**

- 3 Spaces at 2 1/2" = 6"

**BAR G1(E)**

- 11/2" Ø Conduit
- 2-D31 wires at 6" cts.
Inserts for 1/8" Ø threaded dowel rods, when specified, are to be two strands, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand. Grade 270. The nominal diameter for beam strands shall be 0.8" and the nominal cross-sectional area shall be 0.217 sq. in. The nominal diameter for lifting loops shall be 3/4" and the nominal cross sectional area shall be 0.153 sq. in.

The beams shall have a final concrete compressive strength, f'c, of 7000 psi and a release concrete compressive strength, f'c', of 7500 psi.

A minimum 1/2" Ø lifting pin shall be used to engage the lifting loops during handling. Bend the extended strands inward on the fascia beams to maintain 1/8" clearance inside the pier diaphragm. The top and bottom plates shall be ASTM A572 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. Threaded rods shall be ASTM F 1554 Grade 55.

Beams shall not be released from the fabricator until they have attained 45 days of age or older. Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

Threaded rods shall be ASTM F 1554 Grade 55. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. The top and bottom plates shall be AASHTO M270 Grade 50.

The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'c', of 7000 psi.

The beams shall be fabricated with the longitudinal D31 wires at 1'-6" cts. and inserted into the pier diaphragm. Bend the extended strands inward on the fascia beams to maintain 1/8" clearance inside the pier diaphragm. The top and bottom plates shall be ASTM A572 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. Threaded rods shall be ASTM F 1554 Grade 55.

Beams shall not be released from the fabricator until they have attained 45 days of age or older. Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'c', of 7000 psi.

The beams shall be fabricated with the longitudinal D31 wires at 1'-6" cts. and inserted into the pier diaphragm. Bend the extended strands inward on the fascia beams to maintain 1/8" clearance inside the pier diaphragm. The top and bottom plates shall be ASTM A572 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. Threaded rods shall be ASTM F 1554 Grade 55.

Beams shall not be released from the fabricator until they have attained 45 days of age or older. Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'c', of 7000 psi.

The beams shall be fabricated with the longitudinal D31 wires at 1'-6" cts. and inserted into the pier diaphragm. Bend the extended strands inward on the fascia beams to maintain 1/8" clearance inside the pier diaphragm. The top and bottom plates shall be ASTM A572 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. Threaded rods shall be ASTM F 1554 Grade 55.

Beams shall not be released from the fabricator until they have attained 45 days of age or older. Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, f'c', of 7000 psi.
IL72-2438D 2-17-2017

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL72N BEAM DETAILS

Furnishing and Erecting Precast Prestressed Concrete Beams, IL72N

M1 WWR DETAIL
When multiple sheets of M1 WWR are required along the beam length, #4/E bar (5'-0" long) shall be used to splice the longitudinal D31 wires together (Min. Lap 2'-2').

M2 THRU M4 WWR DETAIL
(See Table of Dimensions)

M3 WWR DETAIL
(See Table of Dimensions)

M4 WWR DETAIL
(See Table of Dimensions)

M5 THRU M8 WWR DETAIL
(See Table of Dimensions)

TABLE OF DIMENSIONS

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NOTES

Inserts for 5/8" threaded dowel rods, when specified, are to be two strut.

Ferrule type for interior beams and single ferrule, flared loop type for exterior beams.

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter for beam strands shall be 0.042" and the nominal cross-sectional area shall be 0.217 sq. in.. The nominal diameter for lifting loops shall be 0.432" and the nominal cross-sectional area shall be 0.153 sq. in.

The beams shall have a final concrete compressive strength, f'_c, of 8500 psi and a release concrete compressive strength, f'_c, of 7000 psi.

A minimum 2" Ø lifting pin shall be used to engage the lifting loops during handling. Bend the extended strands inward on the fascia beams to maintain 11" clearance inside the pier diaphragm.

The top and bottom plates shall be AASHTO M270 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M33. The top plates and bottom plates shall be AASHTO M270 Grade 50.

Prestressed Concrete Beams, IL72N

Threaded rods shall be ASTM F 1554 Grade 55.

The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.

The top and bottom plates shall be AASHTO M270 Grade 50.

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The top and bottom plates shall be AASHTO M270 Grade 50.
ELEVATION OF BEAM  (showing reinforcement & dimensions)

Symmetrical about E except as shown

Lifting loops spaced @ 6'-0" cts.

Symmetrical about G

Note:
See sheet of for additional details and Bill of Material.
IL72 BEAM DETAILS

**NOTES**

Inserts for 1\(\frac{1}{4}\) Ø threaded dowel rods, when specified, are to be two struts.

- **Ferrule type**: For interior beams and single ferrule, flared loop type for exterior beams.
- **Prestressing steel**: Shall be uncoated high strength, low relaxation 7-wire strand, Grade 770. The nominal diameter for beam strands shall be 0.6" and the nominal cross-sectional area shall be 0.237 sq. in. The nominal diameter for lifting loops shall be 0.5" and the nominal cross-sectional area shall be 0.153 sq. in.
- The beams shall have a final concrete compressive strength, f'c, of 8500 psi and a release concrete compressive strength, fcy, of 7000 psi.

A minimum 2\(\frac{3}{4}\) Ø lifting pin shall be used to engage the lifting loops during handling. Bend the extended strands inward on the fascia beams to maintain 1\(\frac{1}{2}\)" clearance inside the pier diaphragm.

The top and bottom plates shall be AASHTO M270 Grade 50. The top plates and bottom plate assemblies shall be galvanized according to AASHTO M111. The threaded rods, nuts, and washers shall be galvanized according to AASHTO M232.

Threaded rods shall be ASTM F 1554 Grade 55.

Beams shall not be released from the fabricator until they have attained 45 days of age or older.

Welded Wire Reinforcement (WWR) shall conform to ASTM A884 with a Class A, Type 1 epoxy coating.

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**SECTION THRU TOP FLANGE**

1\(\frac{1}{2}\) Ø Conduit

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ELEVATION OF BEAM (Showing reinforcement & dimensions)

SECTION A-A
**Only tighten sufficiently to compress lock washers

SECTION B-B

BAR LIST
ONE BEAM ONLY
(For information only)

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<td>1/2&quot;</td>
<td>270 ksi</td>
<td>2'-2&quot;</td>
</tr>
<tr>
<td>G1(E)</td>
<td>#1</td>
<td>1/2&quot;</td>
<td>270 ksi</td>
<td>1'-1&quot;</td>
</tr>
</tbody>
</table>

Notes:
See sheet of for additional details and Bill of Material.

ELEVATION OF BEAM (Showing prestressing steel)

SECTION C-C
(- 8 @ 216 ksi strands)

SECTION THRU TOP FLANGE
(Showing limits of bond breaker)

Approved bond breaker supplied by contractor.
See Special Provisions.

Exterior face of fascia beam only.
NOTES

1. Inserts for 1/4" threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

2. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

3. A minimum 2'-0" lifting pin shall be used to engage the lifting loops during handling. Tilt G6(E) bars when necessary to maintain 1½" clearance.

4. The top and bottom plates shall be galvanized according to AASHTO M270 Grade 50. The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M32.

5. The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hook bar.

6. Threaded rods shall be ASTM F 1554 Grade 55.

7. The top and bottom plates shall be AASHTO M270 Grade 50.

8. The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M32.

9. The beams shall not be released from the fabricator until they have attained 45 days of age or older.

10. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

11. The beams shall be 0.153 sq. in.

12. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

13. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

14. The beams shall be 0.153 sq. in.

15. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

16. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

17. The beams shall be 0.153 sq. in.

18. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

19. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

20. The beams shall be 0.153 sq. in.

21. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

22. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

23. The beams shall be 0.153 sq. in.

24. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

25. The beams shall have a final concrete compressive strength, f'_c, of 6000 psi and a release concrete compressive strength, f'_r, of 4500 psi.

26. The beams shall be 0.153 sq. in.
The beams shall have a final concrete compressive strength, f', of 5000 psi and a release concrete compressive strength, PUL, of 4500 psi. A minimum 30° Ø lifting pin shall be used to engage the lifting loops during handling.

Threaded rods shall be ASTM F 1554 Grade 55.

The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.

The top and bottom plates shall be AASHTO M270 Grade 50.

Threaded one end #8-bar. Threaded rod assembly shall allow completion of the splice without turning of the hook bar. The hook bar of a grade 60 reinforcement bar times the nominal cross-sectional area shall be 0.153 sq. in.

Inserts for 3/8  Ø threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 0.75" and the nominal cross-sectional area shall be 0.153 sq. in.

The beams shall have a final concrete compressive strength, f', of 5000 psi and a release concrete compressive strength, PUL, of 4500 psi. A minimum 30°  Ø lifting pin shall be used to engage the lifting loops during handling.

Threaded rods shall be ASTM F 1554 Grade 55.

The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.

Threaded rods shall be ASTM F 1554 Grade 55.

The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.
**ELEVATION OF BEAM**

(Showing reinforcement & dimensions)

**ELEVATION OF BEAM**

(Showing prestressing stem)

**BAR LIST**

(For information only)

<table>
<thead>
<tr>
<th>Bar Size</th>
<th>Length</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>#4</td>
<td>7'-7&quot;</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>6'-6&quot;</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td>6'-0&quot;</td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>6'-0&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

See sheet of for additional details and bill of material.
NOTES

Inserts for 1/4" Ø threaded dowel rods, when specified, are to be two strut.
Ferrule type for interior beams and single ferrule, flared loop type for exterior beams.
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/4" and the nominal cross-sectional area shall be 0.153 sq. in.

The beams shall have a final concrete compressive strength, f′c, and a release concrete compressive strength, f′cu, of 8,000 psi.
A minimum 23/4" Ø lifting pin shall be used to engage the lifting loops during handling.

Tilt G6(E) bars when necessary to maintain 1/4" clearance.
The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.
Threaded rods shall be ASTM F 1554 Grade 55.
The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hole bar.

Beams shall not be released from the fabricator until they have attained 45 days of age or older.

The top and bottom plates shall be AASHTO M270 Grade 50.
The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.

Threaded rods shall be ASTM F 1554 Grade 55.
The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hole bar.

Beams shall not be released from the fabricator until they have attained 45 days of age or older.

The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.
Threaded rods shall be ASTM F 1554 Grade 55.
The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hole bar.

Beams shall not be released from the fabricator until they have attained 45 days of age or older.

The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232.
Threaded rods shall be ASTM F 1554 Grade 55.
The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hole bar.

Beams shall not be released from the fabricator until they have attained 45 days of age or older.
End-to-end beam

- 6 spaces at 6'-7 1/2" spacing G1(E) bars
- 5'-7" spacing G2(E) bars

Spacing #6 G(E) bars full length of beam
Min. lap 3'-7" (lengths)

7'-5" spacing G2(E) bars

Spacing #4 G(E) bars

Spaces at 9" = 3'

4 spaces at 3" = 9'

Symm. about ξ

* Hold down points

ELEVATION OF BEAM
(Showing reinforcement & dimensions)

ELEVATION OF BEAM
(Showing prestressing steel)

BAR LIST
ONE BEAM ONLY

(For information only)

Notes:
See sheet of for additional details and bill of material.

PI-4-42
2-17-2017
The beams shall have a final concrete compressive strength, $f'_c$, of -- psi and a release concrete compressive strength, $f'_r$, of -- psi. A minimum 20G Ø lifting pin shall be used to engage the lifting loops during handling.

Tilt G6(E) bars when necessary to maintain 1 1/2" clearance. A minimum 2 4 1/4" Ø lifting pin shall be used to engage the lifting loops during handling.

Threaded rods shall be ASTM F 1554 Grade 55.

The top and bottom plates shall be galvanized according to AASHTO M232. The top and bottom plates shall be AASHTO M270 Grade 50. The threaded rods shall be ASTM F 1554 Grade 53. The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hook bar. The beams shall not be released from the fabricator until they have attained 45 days of age or older.

The beams shall have a final concrete compressive strength, $f'_c$, of -- psi and a release concrete compressive strength, $f'_r$, of -- psi. A minimum 20G Ø lifting pin shall be used to engage the lifting loops during handling.

Tilt G6(E) bars when necessary to maintain 1 1/2" clearance. A minimum 2 4 1/4" Ø lifting pin shall be used to engage the lifting loops during handling.

Threaded rods shall be ASTM F 1554 Grade 55.

The top and bottom plates shall be galvanized according to AASHTO M232. The top and bottom plates shall be AASHTO M270 Grade 50. The threaded rods shall be ASTM F 1554 Grade 53. The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #8 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hook bar. The beams shall not be released from the fabricator until they have attained 45 days of age or older.
NOTES
Inserts for 3/8" threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams.

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 3/8" and the nominal cross-sectional area shall be 0.153 sq. in. The beams shall have a final concrete compressive strength, f'c, of 4 ksi and a release concrete compressive strength, f'c, of 4 ksi. A minimum 2½" Ø lifting pin shall be used to engage the lifting loops during handling.

Threaded rods shall be ASTM F 1554 Grade 55.

The top and bottom plates shall be AASHTO M270 Grade 50. The top and bottom plates shall be galvanized according to AASHTO M111. The threaded rods, nuts and washers shall be galvanized according to AASHTO M232. Threaded rods shall be ASTM F 1354 Grade 55.

The G6(E) bar assembly shall develop, in tension, at least 125 percent of the yield strength of a grade 60 reinforcement bar times the nominal cross-sectional area of a #6 bar. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hook bar. Beams shall not be released from the fabricator until they have attained 45 days of age or older.

See bearing details for paint hole locations when required.

Beam End of

BAR G1(E)
BAR G2(E)
BAR G4(E)
BAR G5(E)
G6(E) BAR ASSEMBLY
BAR GS(E)
Furnished and Erecting Precast
Prestressed Concrete
4-Bar, 46
3" Radius
Top of Beam
270 ksi strands

Item | Unit | Total
--- | --- | ---
Ft.
1'-3" | 10" |
1'-6" | 2'-1 1/4" |
4'-0" | 4'-1 1/2" |
4'-8" | 2'-1 1/2" |

" Ø Conduit

4'-0" |

8" |

3" |

3" = 9" spa. @ 3" |

3" = 9" |

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