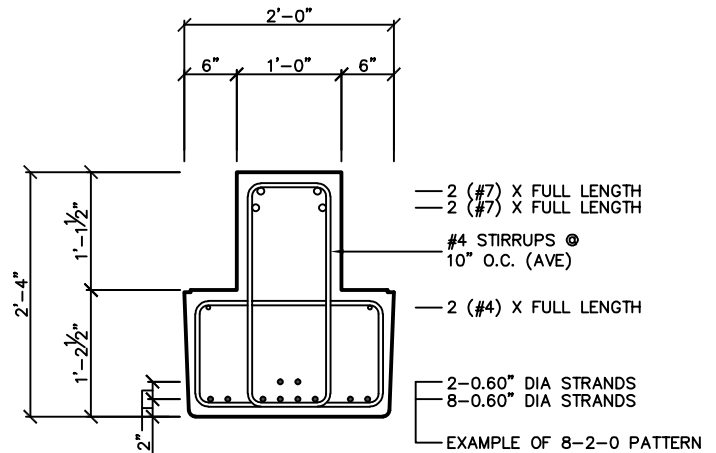# Prestressed Concrete
## Inverted Tee Beam 24IT28

### PHYSICAL PROPERTIES

$A = 510$ in.$^2$         $S_b = 2{,}584$ in.$^3$
$I = 30{,}223$ in.$^4$      $S_t = 1{,}854$ in.$^3$
$Y_b = 11.70$ in.       Wt.= 531 PLF
$Y_t = 16.30$ in.



2'-0"
6"   1'-0"   6"
1'-1½"
2'-4"
1'-2½"
2"

— 2 (#7) X FULL LENGTH
— 2 (#7) X FULL LENGTH
— #4 STIRRUPS @ 10" O.C. (AVE)
— 2 (#4) X FULL LENGTH
— 2-0.60" DIA STRANDS
— 8-0.60" DIA STRANDS
— EXAMPLE OF 8-2-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c} = 930$ PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 10 strands.
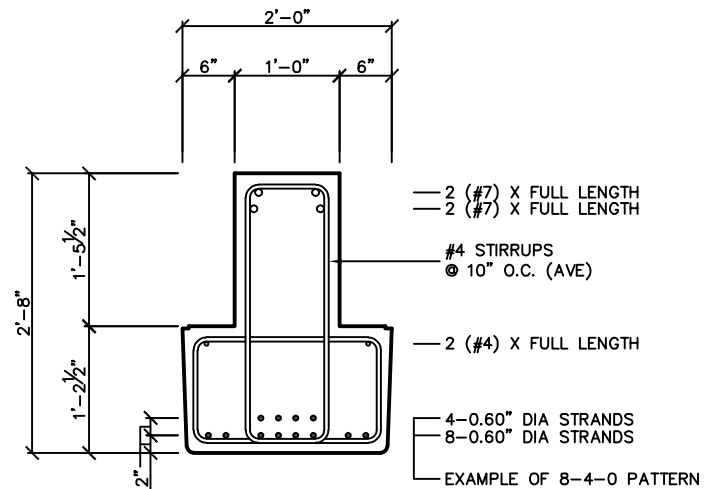
## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16' | 18' | 20' | 22' | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' |
| 8 - 0 - 0 | 4 - #7 | 9,553 "k | 12.6 | 10.2 | 8.6 | 7.8 | 6.5 | 5.4 | 4.6 | 4.0 | 3.4 | 3.0 | 2.6 | 2.3 | 2.0 | 1.8 |
| 8 - 2 - 0 | 4 - #7 | 11,243 "k | 14.9 | 12.1 | 10.2 | 9.0 | 7.6 | 6.5 | 5.5 | 4.8 | 4.1 | 3.6 | 3.2 | 2.8 | 2.5 | 2.2 |
| 8 - 4 - 0 | 6 - #8 | 13,019 "k | 17.4 | 14.1 | 11.9 | 10.5 | 8.9 | 7.6 | 6.5 | 5.6 | 4.8 | 4.2 | 3.7 | 3.3 | 2.9 | 2.6 |

11/2020

24IT28

# Prestressed Concrete
# Inverted Tee Beam 24IT32

## PHYSICAL PROPERTIES

$A = 558$ in.$^2$   $S_b = 3,390$ in.$^3$
$I = 44,984$ in.$^4$   $S_t = 2,402$ in.$^3$
$Y_b = 13.27$ in.   Wt.= 581 PLF
$Y_t = 18.73$ in.



— 2 (#7) X FULL LENGTH
— 2 (#7) X FULL LENGTH
— #4 STIRRUPS @ 10" O.C. (AVE)
— 2 (#4) X FULL LENGTH
— 4–0.60" DIA STRANDS
— 8–0.60" DIA STRANDS
— EXAMPLE OF 8–4–0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c} = 930$ PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 12 strands.
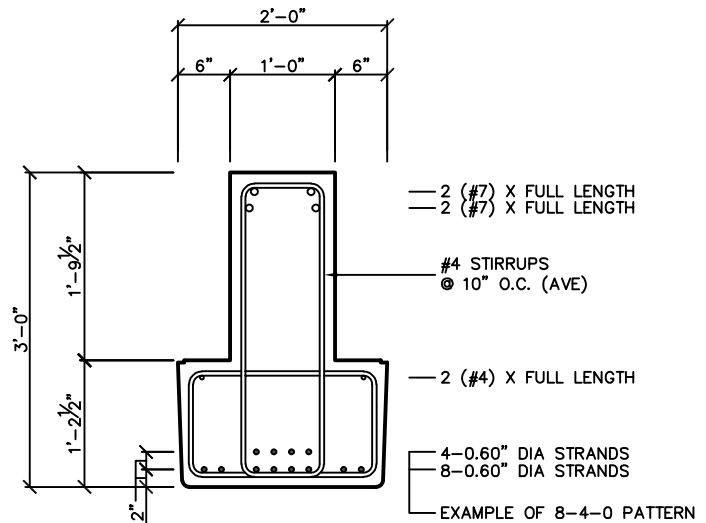
### ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16' | 18' | 20' | 22' | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' |
| 8 - 0 - 0 | 4 - #7 | 11,319 "k | 14.8 | 12.0 | 10.1 | 8.9 | 7.5 | 6.4 | 5.5 | 4.7 | 4.1 | 3.6 | 3.1 | 2.8 | 2.4 | 2.2 |
| 8 - 4 - 0 | 4 - #8 | 15,495 "k | 20.7 | 16.8 | 14.2 | 12.5 | 10.6 | 9.1 | 7.7 | 6.7 | 5.8 | 5.1 | 4.5 | 4.0 | 3.5 | 3.2 |
| 8 - 6 - 0 | 6 - #9 | 17,761 "k | 23.8 | 19.3 | 16.3 | 14.4 | 12.2 | 10.5 | 9.0 | 7.7 | 6.7 | 5.9 | 5.2 | 4.6 | 4.1 | 3.7 |

11/2020

24IT32

# Prestressed Concrete
## Inverted Tee Beam 24IT36

### PHYSICAL PROPERTIES

$A$ = 606 in.$^2$        $S_b$ = 4,294 in.$^3$
$I$ = 64,039 in.$^4$       $S_t$ = 3,037 in.$^3$
$Y_b$ = 14.91 in.        Wt.= 631 PLF
$Y_t$ = 21.09 in.



— 2 (#7) X FULL LENGTH
— 2 (#7) X FULL LENGTH

#4 STIRRUPS
@ 10" O.C. (AVE)

— 2 (#4) X FULL LENGTH

— 4—0.60" DIA STRANDS
— 8—0.60" DIA STRANDS

EXAMPLE OF 8-4-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis. To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
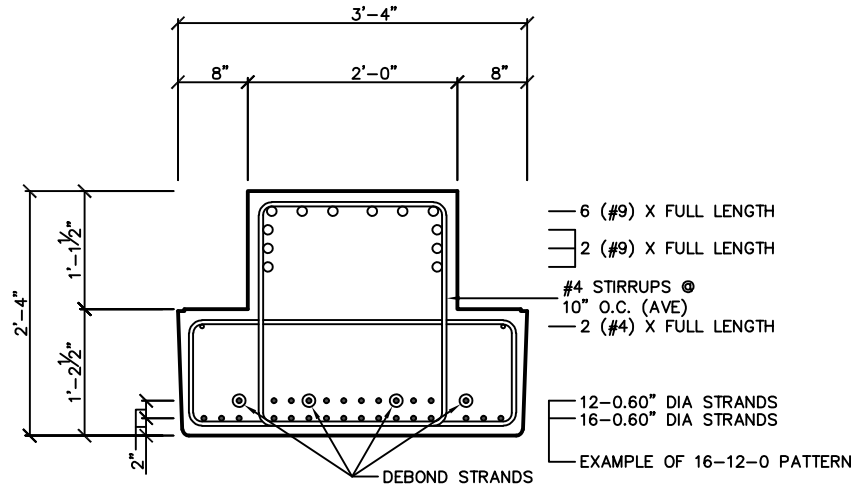12. The concrete strength at release of prestress force increases to 4,500 psi for more than 14 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16' | 18' | 20' | 22' | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' |
| 8 - 0 - 0 | 4 - #7 | 12,942"k | 17.1 | 13.8 | 11.7 | 10.3 | 8.7 | 7.5 | 6.4 | 5.5 | 4.7 | 4.1 | 3.6 | 3.2 | 2.8 | 2.5 |
| 8 - 6 - 0 | 4 - #9 | 20,528 "k | 27.5 | 22.3 | 18.9 | 16.7 | 14.2 | 12.1 | 10.4 | 9.0 | 7.8 | 6.9 | 6.1 | 5.4 | 4.8 | 4.3 |
| 8 - 8 - 0 | 6 - #9 | 22,963 "k | 30.8 | 25.0 | 21.2 | 18.7 | 15.9 | 13.6 | 11.7 | 10.1 | 8.8 | 7.8 | 6.9 | 6.1 | 5.5 | 4.9 |

11/2020

24IT36

# Prestressed Concrete
# Inverted Tee Beam 40IT28-A (Special)

## PHYSICAL PROPERTIES

$A = 904$ in.$^2$  $S_b = 4,551$ in.$^3$
$I = 55,827$ in.$^4$  $S_t = 3,549$ in.$^3$
$Y_b = 12.27$ in.  Wt.= 942 PLF
$Y_t = 15.73$ in.

3'–4"
8"  2'–0"  8"

2'–4"
1'–1½"
1'–2½"

2"

— 6 (#9) X FULL LENGTH
— 2 (#9) X FULL LENGTH
— #4 STIRRUPS @ 10" O.C. (AVE)
— 2 (#4) X FULL LENGTH
— 12-0.60" DIA STRANDS
— 16-0.60" DIA STRANDS
— EXAMPLE OF 16–12–0 PATTERN
— DEBOND STRANDS

## DESIGN DATA

1. Precast Strength @ 28 days = 7,500 PSI
2. Precast Strength @ release = 5,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c} = 1,039$ PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis. To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
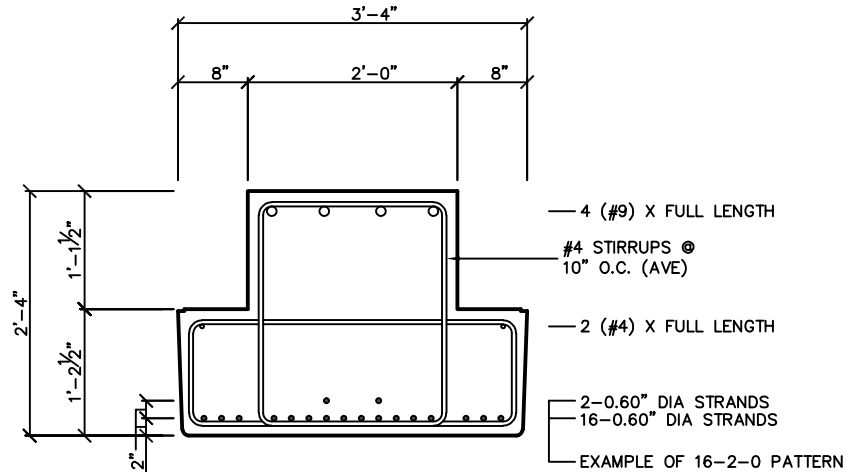
## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Bottom Bars | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' | 52' | 54' | 56' | 58' | 60' |
| 16 - 12 - 0 | None | 12 - #9 | 30,233 "k | 9.8 | 8.7 | 7.9 | 7.0 | 6.4 | 5.7 | 5.2 | 4.7 | 4.3 | 3.9 | 3.6 | 3.3 | 3.0 | 2.7 |
| Strands Debonded At Each End For Length Of→ | | | | 4 @ 6.0' | | 4 @ 4.0' | | 4 @ 1.5' | | | | | | | | | |

# Prestressed Concrete
# Inverted Tee Beam 40IT28-A

## PHYSICAL PROPERTIES

A = 904 in.$^2$        $S_b$ = 4,551 in.$^3$
I = 55,827 in.$^4$     $S_t$ = 3,549 in.$^3$
$Y_b$ = 12.27 in.      Wt.= 942 PLF
$Y_t$ = 15.73 in.



4 (#9) X FULL LENGTH
#4 STIRRUPS @ 10" O.C. (AVE)
2 (#4) X FULL LENGTH
2-0.60" DIA STRANDS
16-0.60" DIA STRANDS
EXAMPLE OF 16-2-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 18 strands.
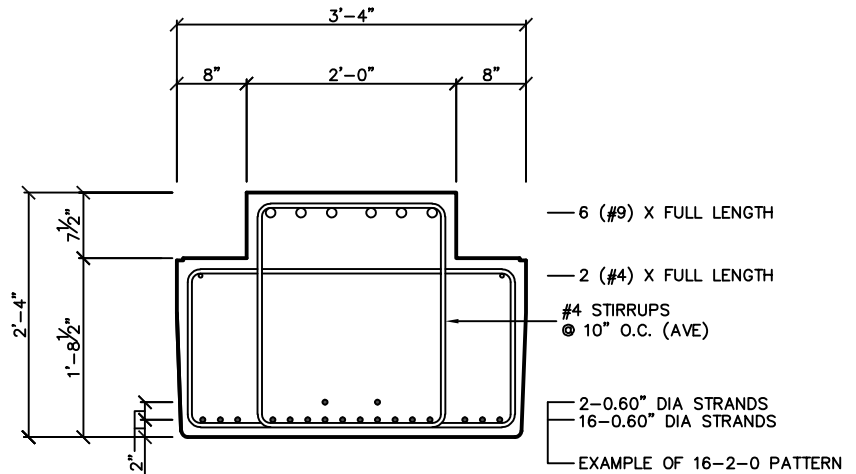
## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16' | 18' | 20' | 22' | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' |
| 8 - 0 - 0 | 2 - #9 | 10,180 "k | 13.1 | 10.5 | 8.9 | 7.7 | 6.5 | 5.5 | 4.7 | 4.0 | 3.4 | 2.9 | 2.5 | 2.2 | 1.9 | 1.6 |
| 16 - 0 - 0 | 4 - #9 | 19,237 "k | 25.5 | 20.6 | 17.4 | 15.3 | 13.0 | 11.1 | 9.5 | 8.2 | 7.1 | 6.2 | 5.4 | 4.8 | 4.3 | 3.8 |
| 16 - 2 - 0 | 4 - #9 | 20,952 "k | 27.8 | 22.5 | 19.1 | 16.8 | 14.2 | 12.2 | 10.4 | 8.9 | 7.8 | 6.8 | 6.0 | 5.3 | 4.7 | 4.2 |
| 16 - 6 - 0 | 6 - #9 | 24,735 "k | 33.0 | 26.8 | 22.7 | 20.0 | 16.9 | 14.5 | 12.4 | 10.7 | 9.4 | 8.2 | 7.2 | 6.4 | 5.7 | 5.1 |

11/2020

# Prestressed Concrete
# Inverted Tee Beam 40IT28-B



## PHYSICAL PROPERTIES

A = 1,000 in.$^2$      $S_b$ = 4,580 in.$^3$
I = 58,490 in.$^4$      $S_t$ = 3,840 in.$^3$
$Y_b$ = 12.77 in.      Wt.= 1,042 PLF
$Y_t$ = 15.23 in.

Dimensions: 3'-4" overall, 8" / 2'-0" / 8", 7½", 2'-4", 1'-8½", 2"

6 (#9) X FULL LENGTH
2 (#4) X FULL LENGTH
#4 STIRRUPS @ 10" O.C. (AVE)
2-0.60" DIA STRANDS
16-0.60" DIA STRANDS
EXAMPLE OF 16-2-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
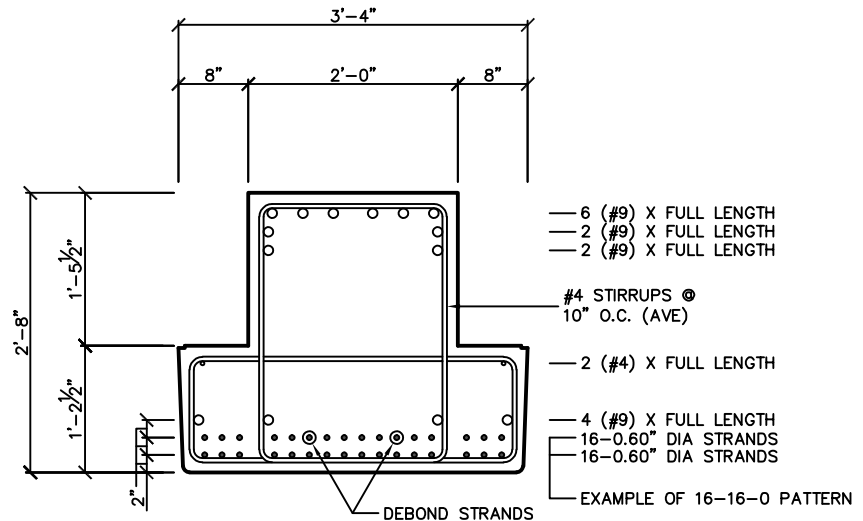12. The concrete strength at release of prestress force increases to 4,500 psi for more than 18 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16' | 18' | 20' | 22' | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' |
| 8 - 0 - 0 | 2 - #9 | 10,180 "k | 13.0 | 10.5 | 8.8 | 7.7 | 6.4 | 5.4 | 4.6 | 3.9 | 3.3 | 2.8 | 2.4 | 2.1 | 1.8 | 1.6 |
| 16 - 0 - 0 | 4 - #9 | 19,237 "k | 25.4 | 20.5 | 17.3 | 15.2 | 12.9 | 11.0 | 9.4 | 8.1 | 7.0 | 6.1 | 5.4 | 4.7 | 4.2 | 3.7 |
| 16 - 2 - 0 | 6 - #9 | 21,479 "k | 28.1 | 23.0 | 19.4 | 16.1 | 14.5 | 12.4 | 10.6 | 9.1 | 7.9 | 6.9 | 6.1 | 5.4 | 4.8 | 4.2 |
| 16 - 6 - 0 | 6 - #9 | 24,735 "k | 33.0 | 26.7 | 22.6 | 19.9 | 16.9 | 14.4 | 12.3 | 10.6 | 9.2 | 8.1 | 7.1 | 6.3 | 5.6 | 5.0 |

11/2020

40IT28-B

# Prestressed Concrete
# Inverted Tee Beam 40IT32-A (Special)

## PHYSICAL PROPERTIES

$A = 1,000$ in.$^2$         $S_b = 5,959$ in.$^3$
$I = 83,242$ in.$^4$        $S_t = 4,617$ in.$^3$
$Y_b = 13.97$ in.           Wt.$= 1,042$ PLF
$Y_t = 18.03$ in.



- 6 (#9) X FULL LENGTH
- 2 (#9) X FULL LENGTH
- 2 (#9) X FULL LENGTH
- #4 STIRRUPS @ 10" O.C. (AVE)
- 2 (#4) X FULL LENGTH
- 4 (#9) X FULL LENGTH
- 16-0.60" DIA STRANDS
- 16-0.60" DIA STRANDS
- EXAMPLE OF 16-16-0 PATTERN
- DEBOND STRANDS

## DESIGN DATA

1. Precast Strength @ 28 days = 7,500 PSI
2. Precast Strength @ release = 5,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c} = 1,039$ PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$
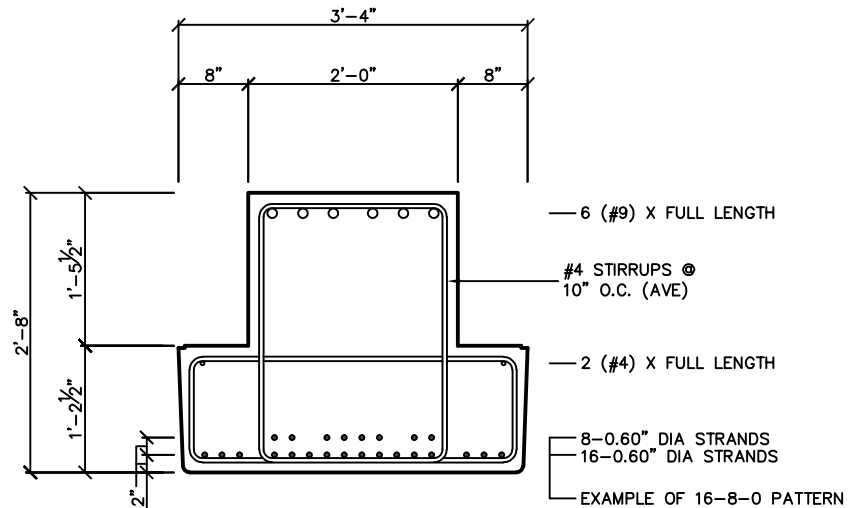
11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Bottom Bars | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' | 52' | 54' | 56' | 58' | 60' |
| 16 - 16 - 0 | 4 - #9 | 10 - #9 | 37,741 "k | 12.6 | 11.3 | 10.1 | 9.0 | 8.1 | 7.3 | 6.6 | 6.0 | 5.4 | 5.0 | 4.6 | 4.2 | 3.8 | 3.5 |
| Strands Debonded At Each End For Length Of→ | | | | 4 @ 3.5' | | 2 @ 2.5' | | | | | | | | | | | |

This load table is for general information only for preliminary design.   It is not intended for final design without competent professional examination and verification of its accuracy, suitability, and applicability by a licensed professional engineer, designer, or architect.   It is for simple spans and uniform loads.   Design data for any of these span-load conditions is available on request.   Individual designs may be furnished to satisfy unusual conditions of heavy loads, concentrated loads, cantilevers, flange or stem openings and narrow widths.

11/2020

# 40IT32-A (SPECIAL)

# Prestressed Concrete
# Inverted Tee Beam 40IT32-A

## PHYSICAL PROPERTIES

$A$ = 1,000 in.$^2$     $S_b$ = 5,959 in.$^3$
$I$ = 83,242 in.$^4$     $S_t$ = 4,617 in.$^3$
$Y_b$ = 13.97 in.     Wt.= 1,042 PLF
$Y_t$ = 18.03 in.



— 6 (#9) X FULL LENGTH

#4 STIRRUPS @ 10" O.C. (AVE)

— 2 (#4) X FULL LENGTH

8—0.60" DIA STRANDS
16—0.60" DIA STRANDS
EXAMPLE OF 16−8−0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
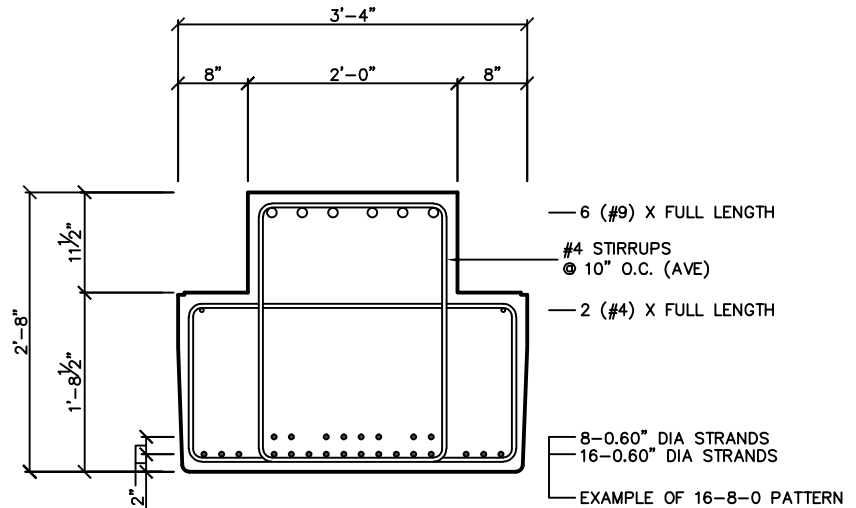12. The concrete strength at release of prestress force increases to 4,500 psi for more than 22 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' |
| 8 - 0 - 0 | 2 - #9 | 11,915 "k | 7.7 | 6.5 | 5.5 | 4.7 | 4.0 | 3.5 | 3.0 | 2.6 | 2.3 | 2.0 | 1.7 | 1.5 | 1.3 | 1.2 |
| 16 - 6 - 0 | 6 - #9 | 29,451 "k | 20.2 | 17.3 | 14.8 | 12.8 | 11.2 | 9.8 | 8.6 | 7.7 | 6.8 | 6.1 | 5.5 | 5.0 | 4.5 | 4.1 |
| 16 - 8 - 0 | 6 - #9 | 31,294 "k | 21.6 | 18.5 | 15.8 | 13.7 | 11.9 | 10.5 | 9.2 | 8.2 | 7.3 | 6.6 | 5.9 | 5.3 | 4.8 | 4.4 |

11/2020

40IT32-A

# Prestressed Concrete
# Inverted Tee Beam 40IT32-B

## PHYSICAL PROPERTIES

$A = 1,096$ in.$^2$     $S_b = 5,926$ in.$^3$
$I = 84,622$ in.$^4$     $S_t = 4,775$ in.$^3$
$Y_b = 14.28$ in.     Wt.$= 1,142$ PLF
$Y_t = 17.72$ in.



- 6 (#9) X FULL LENGTH
- #4 STIRRUPS @ 10" O.C. (AVE)
- 2 (#4) X FULL LENGTH
- 8-0.60" DIA STRANDS
- 16-0.60" DIA STRANDS
- EXAMPLE OF 16-8-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c} = 930$ PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 22 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' |
| 8 - 0 - 0 | 2 - #9 | 11,915 "k | 7.6 | 6.4 | 5.4 | 4.6 | 3.9 | 3.4 | 2.9 | 2.5 | 2.2 | 1.9 | 1.7 | 1.4 | 1.2 | 1.1 |
| 16 - 6 - 0 | 6 - #9 | 29,451 "k | 20.1 | 17.2 | 14.7 | 12.7 | 11.1 | 9.7 | 8.6 | 7.6 | 6.8 | 6.0 | 5.4 | 4.9 | 4.4 | 4.0 |
| 16 - 8 - 0 | 6 - #9 | 31,294 "k | 21.5 | 18.4 | 15.7 | 13.6 | 11.8 | 10.4 | 9.2 | 8.1 | 7.2 | 6.5 | 5.8 | 5.3 | 4.8 | 4.3 |

11/2020

40IT32-B

# Prestressed Concrete
# Inverted Tee Beam 40IT36-A (Special)

## PHYSICAL PROPERTIES

$A$ = 1,096 in.$^2$     $S_b$ = 7,537 in.$^3$
$I$ = 118,512 in.$^4$     $S_t$ = 5,845 in.$^3$
$Y_b$ = 15.72 in.     Wt.= 1,142 PLF
$Y_t$ = 20.28 in.



- 6 (#9) X FULL LENGTH
- 2 (#9) X FULL LENGTH
- 2 (#9) X FULL LENGTH
- #4 STIRRUPS @ 10" O.C. (AVE)
- 2 (#4) X FULL LENGTH
- 2−0.60" DIA STRANDS & 4 (#9)
- 16−0.60" DIA STRANDS
- 16−0.60" DIA STRANDS
- DEBOND STRANDS
- EXAMPLE OF 16−16−2 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 7,500 PSI
2. Precast Strength @ release = 5,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 1,039 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis. To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
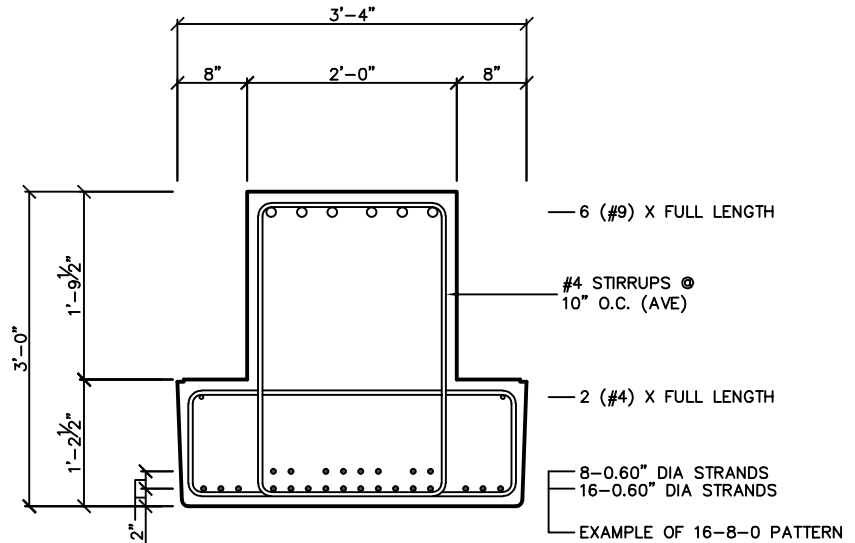
## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Bottom Bars | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' | 52' | 54' | 56' | 58' | 60' |
| 16 - 16 - 2 | 4 - #9 | 10 - #9 | 48,232 "k | 16.5 | 14.6 | 12.7 | 11.3 | 10.3 | 9.3 | 8.5 | 7.7 | 7.0 | 6.4 | 5.9 | 5.4 | 5.0 | 4.6 |
| Strands Debonded At Each End For Length Of → | | | | 2 @ 0.5' | | | | | | | | | | | | | |

**NITTERHOUSE CONCRETE PRODUCTS**
CHAMBERSBURG, PA 717-267-4505
WWW.NITTERHOUSECONCRETE.COM

11/2020

## 40IT36-A (SPECIAL)

# Prestressed Concrete
# Inverted Tee Beam 40IT36-A

## PHYSICAL PROPERTIES

A = 1,096 in.$^2$          $S_b$ = 7,537 in.$^3$
I = 118,512 in.$^4$       $S_t$ = 5,845 in.$^3$
$Y_b$ = 15.72 in.          Wt.= 1,142 PLF
$Y_t$ = 20.28 in.



— 6 (#9) X FULL LENGTH

#4 STIRRUPS @ 10" O.C. (AVE)

— 2 (#4) X FULL LENGTH

8-0.60" DIA STRANDS
16-0.60" DIA STRANDS

EXAMPLE OF 16-8-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$
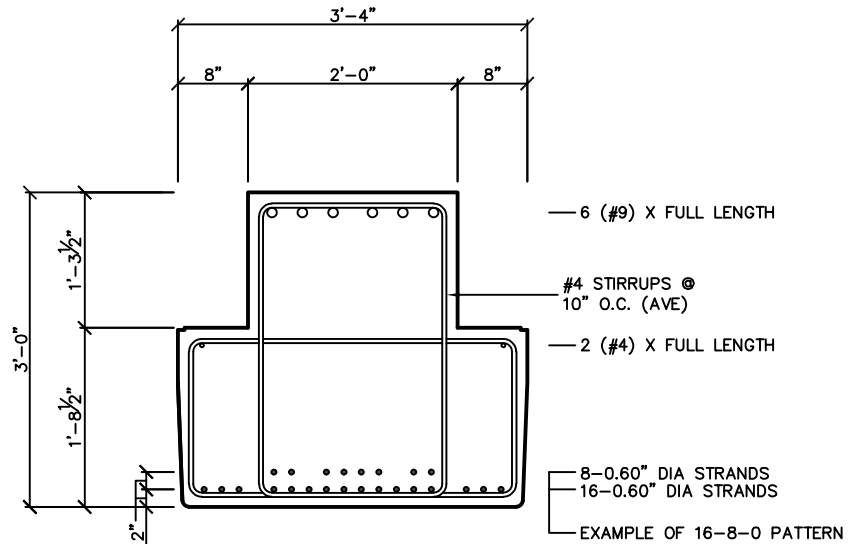
11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 24 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' |
| 8 - 0 - 0 | 2 - #9 | 13,620 "k | 8.8 | 7.5 | 6.3 | 5.4 | 4.6 | 4.0 | 3.5 | 3.0 | 2.6 | 2.3 | 2.0 | 1.8 | 1.6 | 1.4 |
| 16 - 2 - 0 | 6 - #9 | 29,110 "k | 19.8 | 17.0 | 14.6 | 12.6 | 10.9 | 9.6 | 8.5 | 7.5 | 6.7 | 6.0 | 5.4 | 4.8 | 4.4 | 3.9 |
| 16 - 8 - 0 | 6 - #9 | 36,430 "k | 25.1 | 21.5 | 18.5 | 16.0 | 13.9 | 12.2 | 10.8 | 9.6 | 8.6 | 7.7 | 6.9 | 6.3 | 5.7 | 5.2 |
| 16 - 10 - 0 | 6 - #9 | 38,579 "k | 26.7 | 22.9 | 19.6 | 17.0 | 14.8 | 13.0 | 11.5 | 10.2 | 9.1 | 8.2 | 7.4 | 6.7 | 6.1 | 5.5 |

This load table is for general information only for preliminary design.   It is not intended for final design without competent professional examination and verification of its accuracy, suitability, and applicability by a licensed professional engineer, designer, or architect.   It is for simple spans and uniform loads.   Design data for any of these span-load conditions is available on request.   Individual designs may be furnished to satisfy unusual conditions of heavy loads, concentrated loads, cantilevers, flange or stem openings and narrow widths.

11/2020

40IT36-A

# Prestressed Concrete
# Inverted Tee Beam 40IT36-B

### PHYSICAL PROPERTIES

A = 1,192 in.$^2$     $S_b$ = 7,505 in.$^3$
I = 119,078 in.$^4$    $S_t$ = 5,915 in.$^3$
$Y_b$ = 15.87 in.      Wt.= 1,242 PLF
$Y_t$ = 20.13 in.

*Diagram labels:*
3'-4"
8"   2'-0"   8"
1'-3½"
3'-0"
1'-8½"
2"
— 6 (#9) X FULL LENGTH
#4 STIRRUPS @ 10" O.C. (AVE)
— 2 (#4) X FULL LENGTH
8-0.60" DIA STRANDS
16-0.60" DIA STRANDS
EXAMPLE OF 16-8-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis. To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$
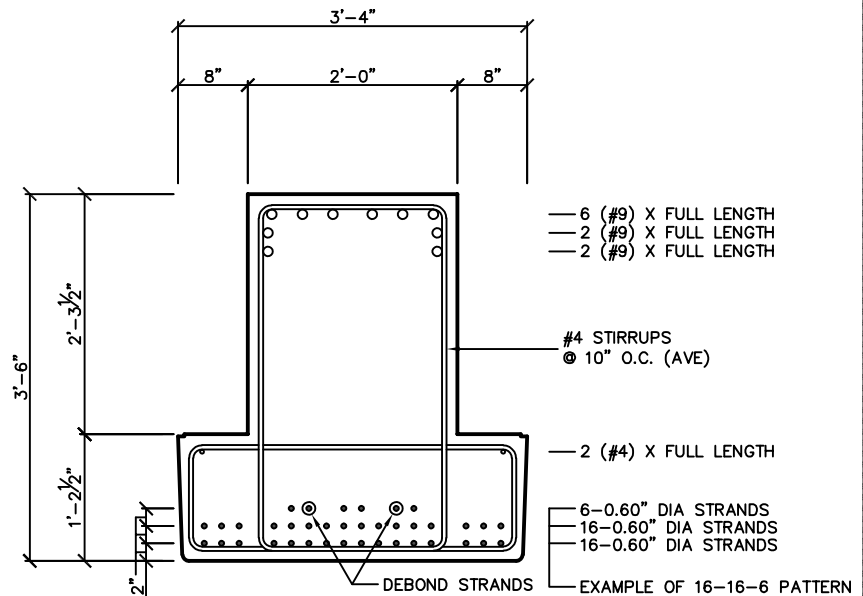
11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 24 strands.

| ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
| | | | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' |
| 8 - 0 - 0 | 2 - #9 | 13,620 "k | 8.7 | 7.4 | 6.3 | 5.3 | 4.6 | 3.9 | 3.4 | 2.9 | 2.6 | 2.2 | 1.9 | 1.7 | 1.5 | 1.3 |
| 16 - 2 - 0 | 6 - #9 | 29,110 "k | 19.8 | 17.0 | 14.5 | 12.5 | 10.9 | 9.5 | 8.4 | 7.4 | 6.6 | 5.9 | 5.3 | 4.8 | 4.3 | 3.9 |
| 16 - 8 - 0 | 6 - #9 | 36,430 "k | 25.1 | 21.5 | 18.4 | 15.9 | 13.8 | 12.1 | 10.7 | 9.5 | 8.5 | 7.6 | 6.9 | 6.2 | 5.6 | 5.1 |
| 16 - 10 - 0 | 6 - #9 | 38,579 "k | 26.6 | 22.8 | 19.5 | 16.9 | 14.7 | 12.9 | 11.4 | 10.2 | 9.1 | 8.1 | 7.3 | 6.6 | 6.0 | 5.4 |

11/2020

40IT36-B

# Prestressed Concrete
## Inverted Tee Beam 40IT42-A (Special)

### PHYSICAL PROPERTIES

$A = 1{,}240$ in.$^2$  $S_b = 10{,}197$ in.$^3$
$I = 187{,}897$ in.$^4$  $S_t = 7{,}971$ in.$^3$
$Y_b = 18.43$ in.  Wt.$= 1{,}292$ PLF
$Y_t = 23.57$ in.



Cross-section dimensions:
- 3'-4" overall top width
- 8" | 2'-0" | 8"
- 2'-3½", 3'-6", 1'-2½", 2"

- 6 (#9) X FULL LENGTH
- 2 (#9) X FULL LENGTH
- 2 (#9) X FULL LENGTH
- #4 STIRRUPS @ 10" O.C. (AVE)
- 2 (#4) X FULL LENGTH
- 6-0.60" DIA STRANDS
- 16-0.60" DIA STRANDS
- 16-0.60" DIA STRANDS
- EXAMPLE OF 16-16-6 PATTERN
- DEBOND STRANDS

### DESIGN DATA

1. Precast Strength @ 28 days = 7,500 PSI
2. Precast Strength @ release = 5,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c} = 1{,}039$ PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.  To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$
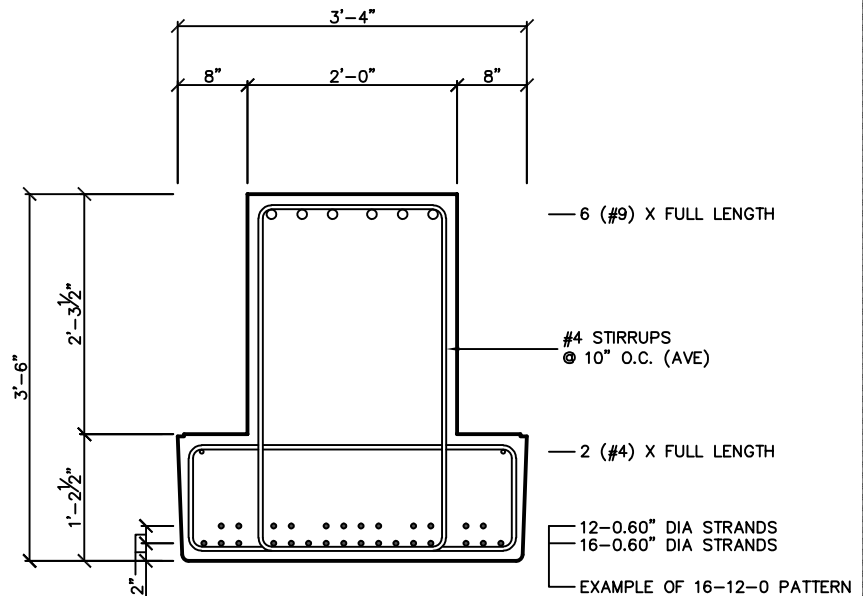
11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.

### ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Bottom Bars | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' | 52' | 54' | 56' | 58' | 60' |
| 16 - 16 - 6 | None | 10 - #9 | 64,800 "k | 22.1 | 19.6 | 17.7 | 15.9 | 14.3 | 12.9 | 11.7 | 10.7 | 9.8 | 9.0 | 8.2 | 7.6 | 7.0 | 6.5 |
| Strands Debonded At Each End For Length Of → | | | | 2 @ 4.0' | | | | | | 2 @ 2.0' | | | | | | | |

11/2020

40IT42-A (SPECIAL)

# Prestressed Concrete
# Inverted Tee Beam 40IT42-A

## PHYSICAL PROPERTIES

$A$ = 1,240 in.$^2$    $S_b$ = 10,197 in.$^3$
$I$ = 187,897 in.$^4$    $S_t$ = 7,971 in.$^3$
$Y_b$ = 18.43 in.    Wt.= 1,292 PLF
$Y_t$ = 23.57 in.



— 6 (#9) X FULL LENGTH

#4 STIRRUPS
@ 10" O.C. (AVE)

— 2 (#4) X FULL LENGTH

12-0.60" DIA STRANDS
16-0.60" DIA STRANDS
EXAMPLE OF 16-12-0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
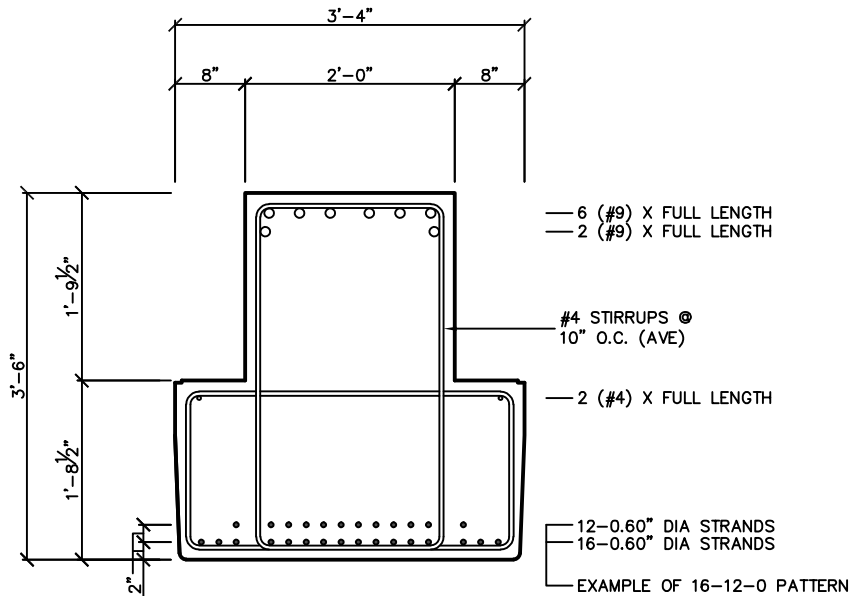12. The concrete strength at release of prestress force increases to 4,500 psi for more than 28 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' |
| 8 - 0 - 0 | 2 - #9 | 16,161 "k | 10.5 | 8.9 | 7.6 | 6.5 | 5.6 | 4.8 | 4.2 | 3.6 | 3.2 | 2.8 | 2.5 | 2.2 | 1.9 | 1.6 |
| 16 - 4 - 0 | 6 - #9 | 38,047 "k | 26.1 | 22.4 | 19.2 | 16.6 | 14.5 | 12.7 | 11.2 | 10.0 | 8.9 | 8.0 | 7.2 | 6.5 | 5.9 | 5.3 |
| 16 - 12 - 0 | 6 - #9 | 49,574 "k | 34.4 | 29.5 | 25.3 | 21.9 | 19.2 | 16.9 | 14.9 | 13.3 | 11.9 | 10.7 | 9.7 | 8.7 | 7.9 | 7.2 |
| 16 - 14 - 0 | 8 - #9 | 53,000 "k | 36.8 | 31.7 | 27.2 | 23.5 | 20.6 | 18.1 | 16.0 | 14.3 | 12.8 | 11.5 | 10.4 | 9.4 | 8.6 | 7.8 |
| 16 - 16 - 0 | 8 - #9 | 55,533 "k | 38.7 | 33.2 | 28.5 | 24.7 | 21.6 | 19.0 | 16.8 | 15.0 | 13.4 | 12.1 | 10.9 | 9.9 | 9.0 | 8.2 |

11/2020

40IT42-A

# Prestressed Concrete
# Inverted Tee Beam 40IT42-B

### PHYSICAL PROPERTIES

$A$ = 1,336 in.$^2$       $S_b$ = 10,253 in.$^3$
$I$ = 188,261 in.$^4$    $S_t$ = 7,964 in.$^3$
$Y_b$ = 18.36 in.         Wt.= 1,392 PLF
$Y_t$ = 23.64 in.



3'-4"
8"   2'-0"   8"

1'-9½"
3'-6"
1'-8½"
2"

— 6 (#9) X FULL LENGTH
— 2 (#9) X FULL LENGTH
#4 STIRRUPS @ 10" O.C. (AVE)
— 2 (#4) X FULL LENGTH
12–0.60" DIA STRANDS
16–0.60" DIA STRANDS
EXAMPLE OF 16–12–0 PATTERN

## DESIGN DATA

1. Precast Strength @ 28 days = 6,000 PSI
2. Precast Strength @ release = 4,000 PSI.
3. Precast Density = 150 PCF
4. Strand = 0.60"Ø 270K Lo-Relaxation.
5. Ultimate moment capacity shown below is for full strand development & tension controlled section.
6. Maximum bottom tensile stress is $12\sqrt{f'c}$ = 930 PSI
7. Flexural strength capacity is based on stress/strain strand relationships and is slightly variable.
8. Deflection limits were not considered when determining allowable loads in this table.
9. All superimposed live loads listed are controlled by ultimate flexural strength, not allowable stresses.
10. All superimposed load is treated as live load in the flexural strength analysis.   To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...

$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

11. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
12. The concrete strength at release of prestress force increases to 4,500 psi for more than 28 strands.

## ALLOWABLE SUPERIMPOSED LIVE LOADS (KLF)

| Strand Pattern | Top Bars | Moment Capacity | SPAN | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24' | 26' | 28' | 30' | 32' | 34' | 36' | 38' | 40' | 42' | 44' | 46' | 48' | 50' |
| 8 - 0 - 0 | 2 - #9 | 16,161 "k | 10.4 | 8.9 | 7.5 | 6.4 | 5.5 | 4.7 | 4.1 | 3.6 | 3.1 | 2.7 | 2.4 | 2.1 | 1.8 | 1.6 |
| 16 - 4 - 0 | 6 - #9 | 38,047 "k | 26.0 | 22.4 | 19.1 | 16.5 | 14.4 | 12.6 | 11.1 | 9.9 | 8.8 | 7.9 | 7.1 | 6.4 | 5.8 | 5.2 |
| 16 - 12 - 0 | 8 - #9 | 50,611 "k | 35.0 | 30.1 | 25.8 | 22.3 | 19.5 | 17.1 | 15.2 | 13.5 | 12.1 | 10.9 | 9.8 | 8.9 | 8.1 | 7.3 |
| 16 - 14 - 0 | 8 - #9 | 53,000 "k | 36.8 | 31.6 | 27.1 | 23.5 | 20.5 | 18.0 | 16.0 | 14.2 | 12.7 | 11.4 | 10.3 | 9.3 | 8.5 | 7.7 |
| 16 - 16 - 0 | 8 - #9 | 55,533 "k | 38.6 | 33.1 | 28.4 | 24.6 | 21.5 | 18.9 | 16.8 | 14.9 | 13.4 | 12.0 | 10.9 | 9.8 | 9.0 | 8.2 |

11/2020

40IT42-B