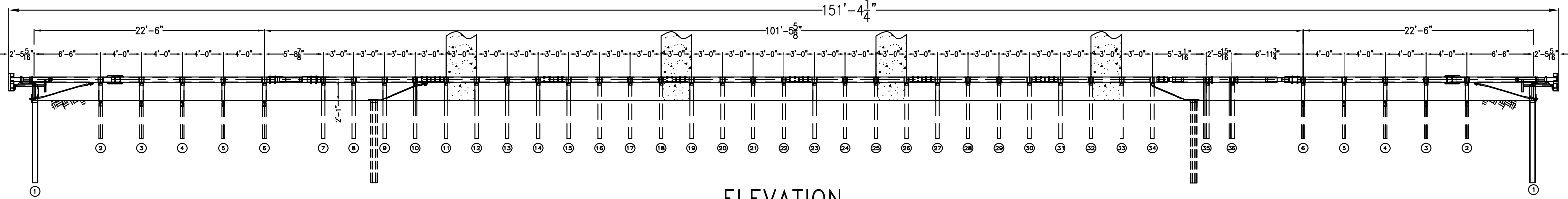
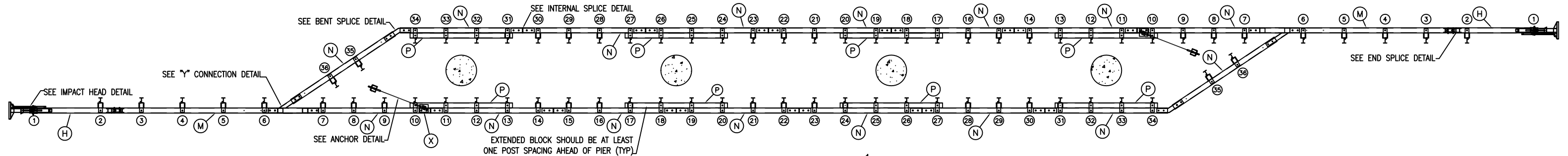
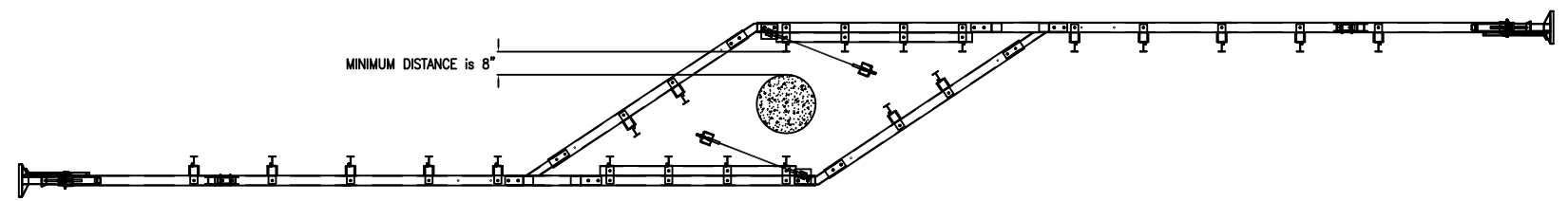


PLAN

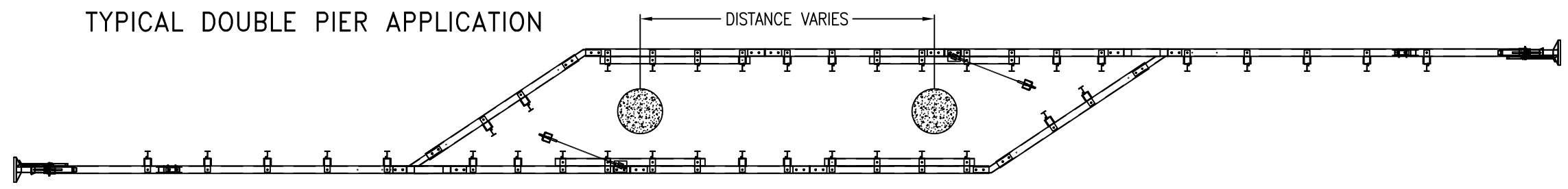


ELEVATION

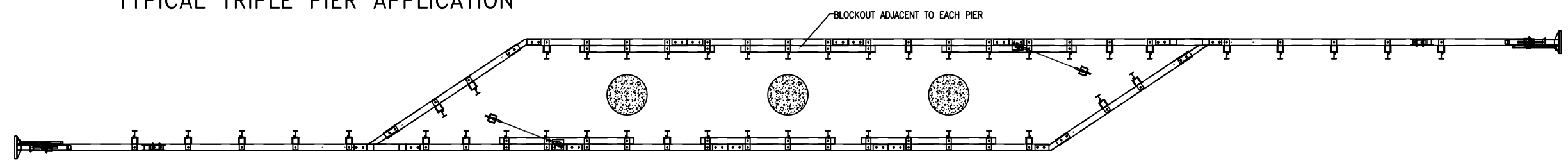
TYPICAL SINGLE PIER APPLICATION



TYPICAL DOUBLE PIER APPLICATION



TYPICAL TRIPLE PIER APPLICATION



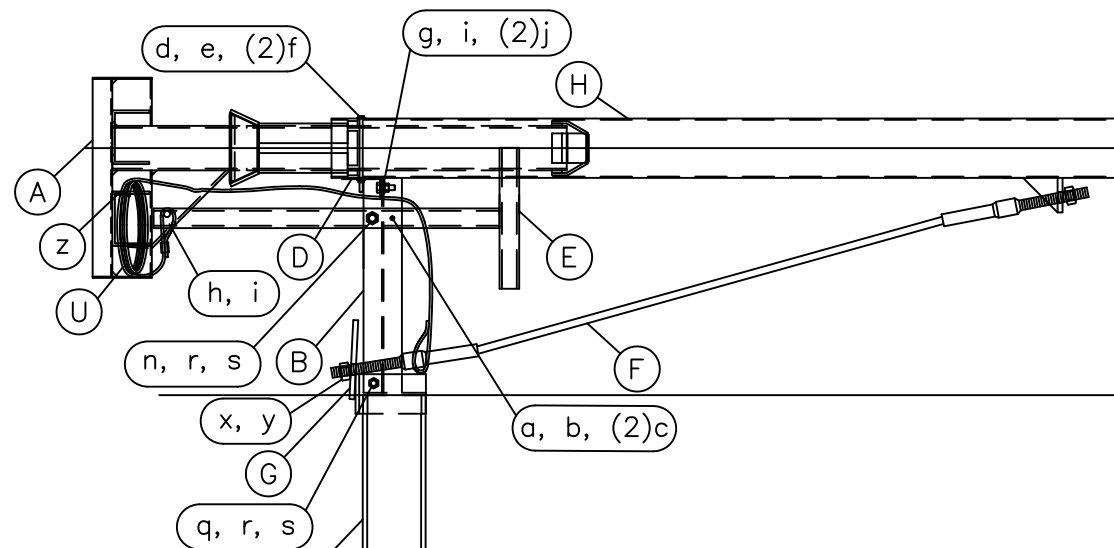
- General Notes for the BEAT-BP:
- 1.) Unless otherwise noted, all hardware, cable assemblies, tubing, posts, impact heads and other steel components shall be galvanized.
 - 2.) When site conditions permit, posts may be driven. If posts are placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
 - 3.) Contact the manufacturer for installation recommendations when rock is encountered.
 - 4.) The lower section of post #1 should not be driven with the upper post section attached.
 - 5.) The breakaway cable assembly must be taut. A locking device (vice grips or channel locks) should be used to prevent the cable from twisting when tightening nuts.
 - 6.) An object marker meeting State specifications should be installed on the front of the impact head.
 - 7.) The approach area in front of the BEAT-BP and the area within the system itself shall be free of fixed obstacles and have a fill slope or a cut slope of 10:1 or flatter.

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or Phone: 330-346-0721

BEAT BRIDGE PIER PROTECTION SYSTEM
TYPICAL SYSTEM LAYOUT FOR FOUR PIERS @ 21' PIER SPACING

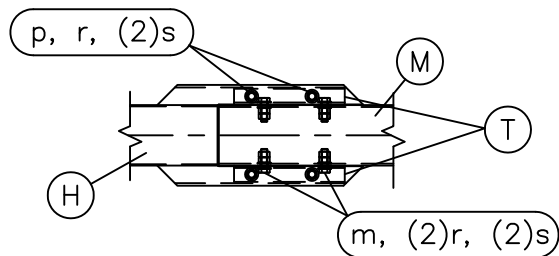
Drawing Name: BEAT-BP-4P
Scale: NONE

Sheet: **S1**
Date: 06/01/06
By: JRR
Rev:



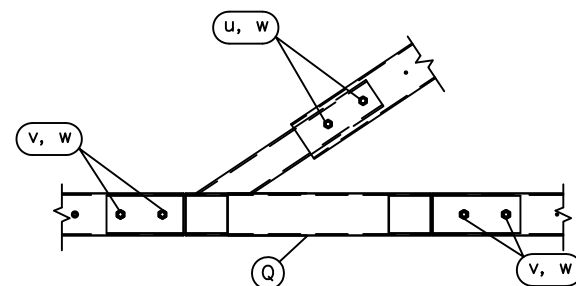
(LOOP CABLE TIES (ITEM z) THROUGH HOLES IN GUSSET)

**IMPACT HEAD
DETAIL**
(2 PLACES)

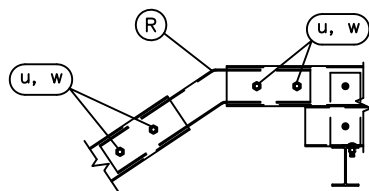


END SPLICE DETAIL
(2 PLACES)

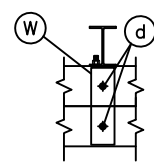
ITEM T SPLICE CHANNELS WILL SET ON THE TOP AND BOTTOM OF ITEM M SECOND RAIL. THE BENT PLATES WELDED TO THE END OF ITEM H END TUBE RAIL WILL SET ON TOP OF ITEM T SPLICE CHANNELS



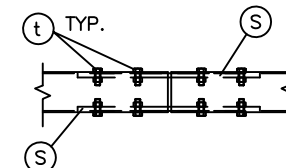
"Y" CONNECTION DETAIL
(2 PLACES)



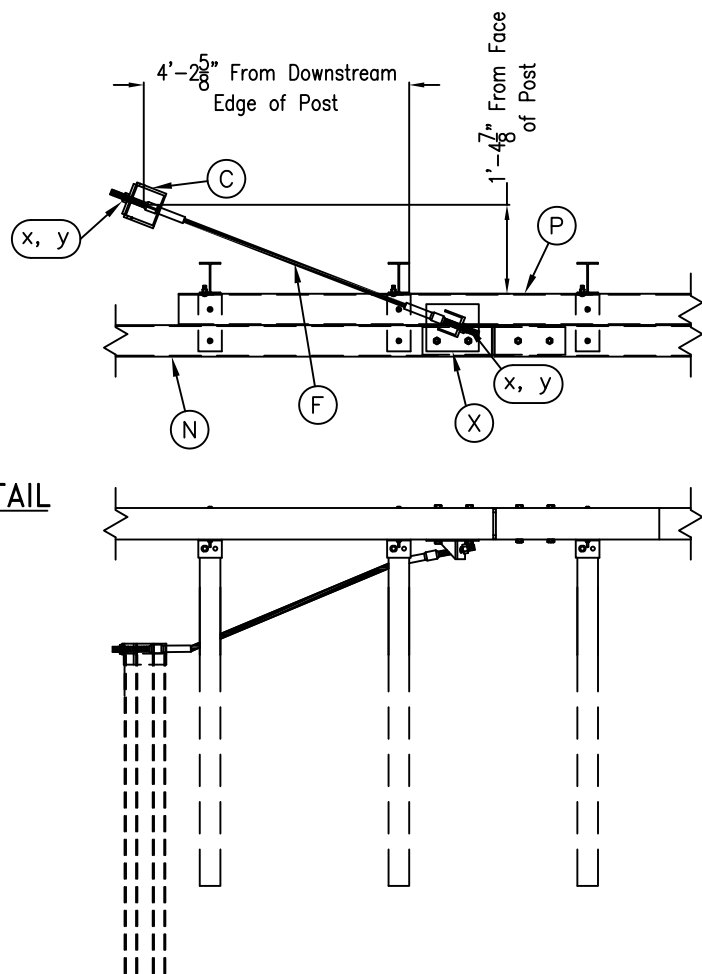
BENT SPLICE DETAIL
(2 PLACES)



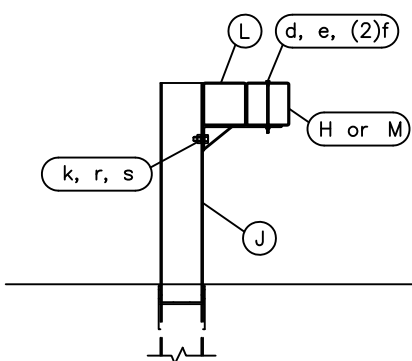
TIE PLATE DETAIL
(32 PLACES)



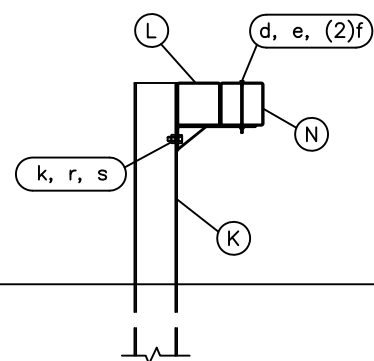
INTERNAL SPLICE DETAIL
(12 PLACES)



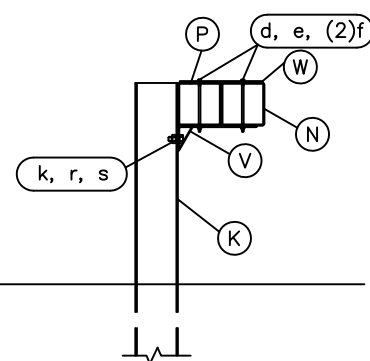
ANCHOR DETAIL
(2 PLACES)



END TERMINAL POSTS
POSTS 2 THRU 6
(10 PLACES TOTAL)



**LINE POSTS Without
Extended Block (P)**
POSTS 7-9, 14-16, 21-23, 28-30, 35-36
(28 PLACES TOTAL)



**LINE POSTS With
Extended Block (P)**
POSTS 10-13, 17-20, 24-27, 31-34
(32 PLACES TOTAL)

ITEM	QTY	DESCRIPTION
A	2	Box-Beam Impact Head
B	2	Upper End Post W6x9# x 21 1/2"
C	4	Lower End Post W6x15# x 8'-0"
D	2	Support Bracket L 4" x 2" x 4" LG.
E	2	Post Breaker Welded TS 2" x 2" x 1/4"
F	4	Cable Anchor Assembly
G	2	Cable Anchor Bearing Plate
H	2	End Tube Rail 8'-0" LG. x 1/8" THICK
J	10	Steel Breakaway Post W6x9# x 6'-0"
K	60*	Standard Steel Post W6x9# x 6'-0"
L	38*	Support Bracket TS 6" x 6" w/ Bent PL.
M	2	Second Rail 16'-2 1/2" LG.
N	16*	BP-Rail Section 11' - 11 1/2" LG.
P	8*	Extended Block 10' LG.
Q	2	"Y" Connection
R	2	Bent Splice
S	24*	Box Beam Splice Plates w/Nuts (2 per splice)
T	4	End Section Splice Channel Bent PL.
U	2	3/8" GALV. Cable 20' LG.
V	32*	Support Bracket
W	32*	Tie Plate
X	2	Anchor Plate
HARDWARE		
a	2	1/4" x 3" Hex Bolt Grade 2
b	2	1/4" Hex Nut
c	4	1/4" Washer
d	104*	5/16" x 7 1/2" Hex Bolt Grade 5
e	104*	5/16" Hex Nut
f	208*	5/16" Washer
g	2	1/2" x 2" Hex Bolt Grade 2
h	2	1/2" x 5" Hex Bolt Grade 5
i	4	1/2" Hex Nut
j	4	1/2" Washer
k	70*	5/8" x 1 1/2" Hex Bolt Grade 5
m	8	5/8" x 2 1/2" Hex Bolt Grade 5
n	2	5/8" x 3" Hex Bolt Grade 5
p	8	5/8" x 6" Hex Bolt Grade 5
q	2	5/8" x 8" Hex Bolt Grade 5
r	98*	5/8" Hex Nut
s	106*	5/8" Washer
t	96*	3/4" x 2" Hex Bolt Grade 5
u	12	3/4" x 7" Hex Bolt Grade 5
v	8	3/4" x 8" Hex Bolt Grade 5
w	20	3/4" Hex Nut
x	8	1" Hex Nut Grade 5
y	8	1" Washer Grade 5
z	4	Cable Tie

* QUANTITY VARIES DEPENDING ON PIER SPACING



BEAT BRIDGE PIER
PROTECTION SYSTEM

SYSTEM DETAILS AND
PARTS LIST

Drawing Name: BEAT-BP-4P Scale: NONE By: JRR Rev: 05/24/06

Sheet: S2