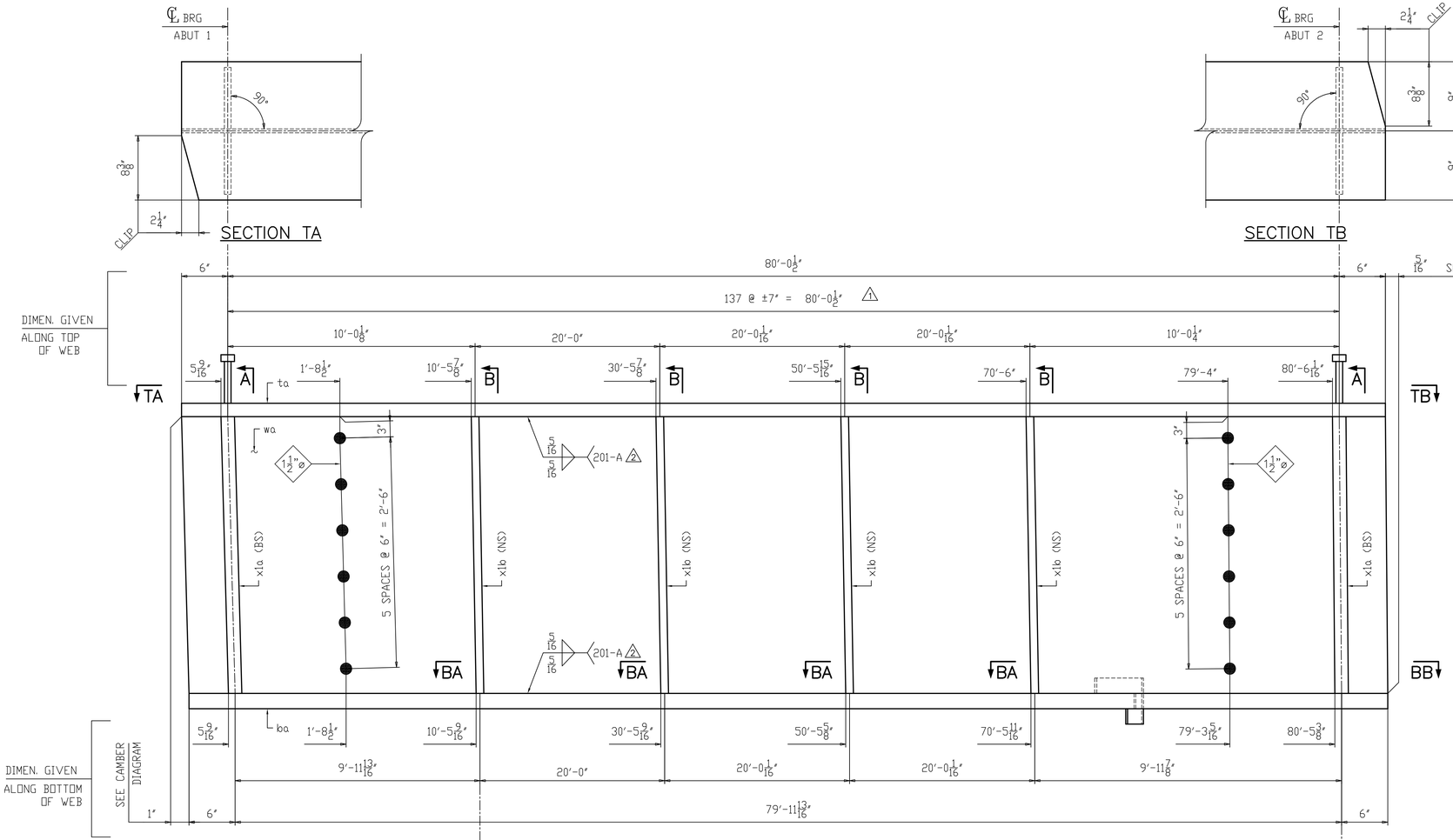
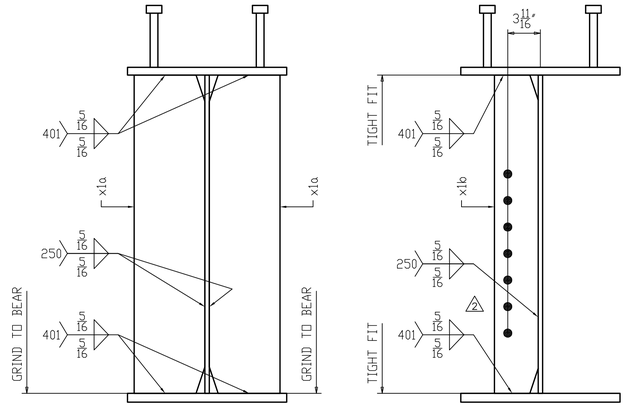
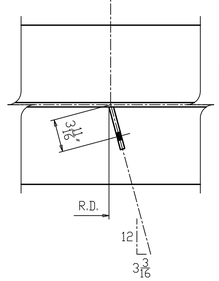
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 1 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 1G1A | 1 | | GIRDER | | | | 14660 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | K | | 1 | x1f | PL 1/4 x 3 | 1 | 0 1/4 | | 3 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |

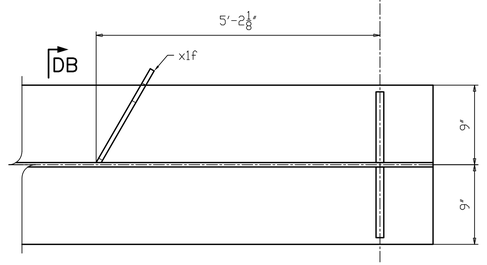


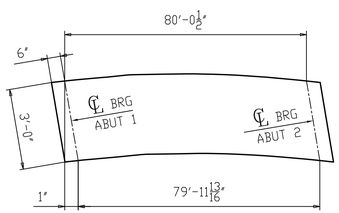



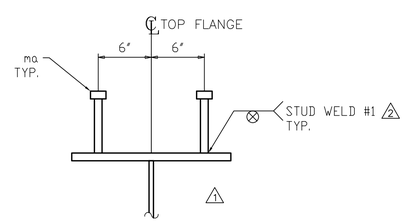

## ONE ~ GIRDER ~ 1G1A

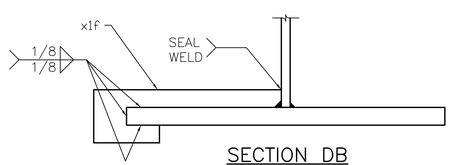
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

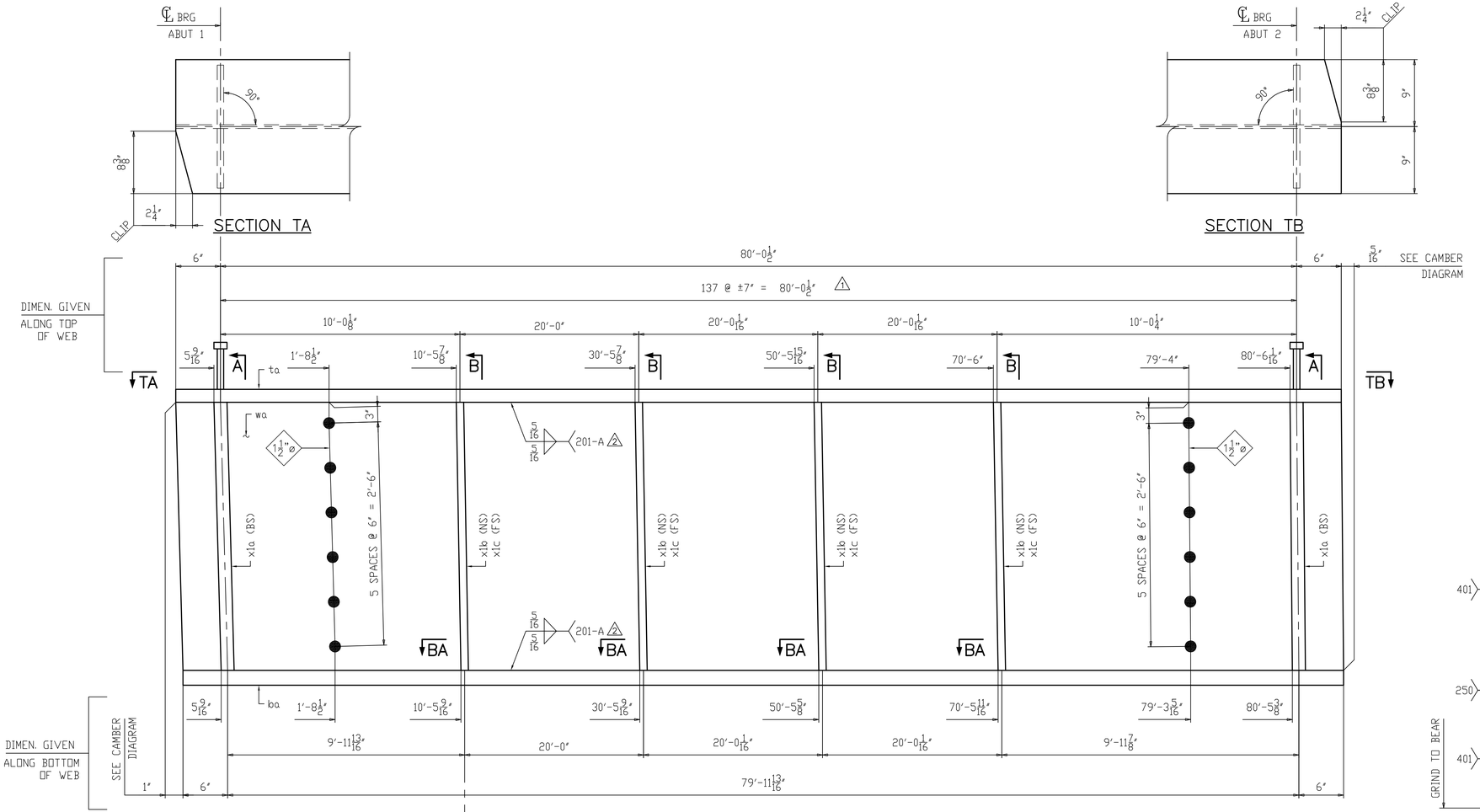
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

DESCRIPTION: GIRDER DETAIL - 1G1A

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

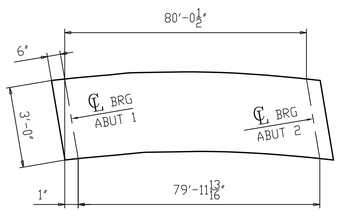
| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 2 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 2G2A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |

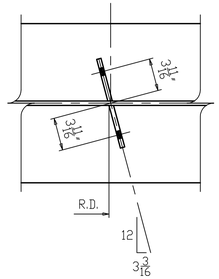



## ONE ~ GIRDER ~ 2G2A

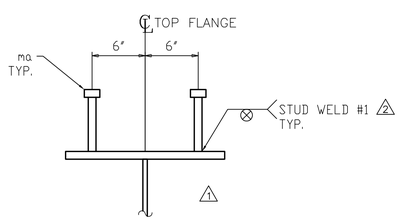
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END



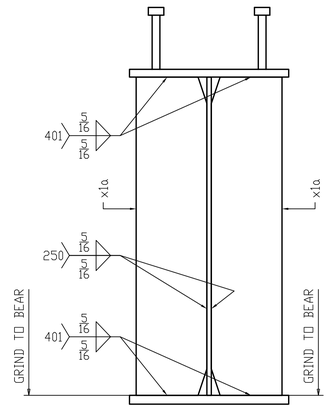

ORIENTATION DIAGRAM



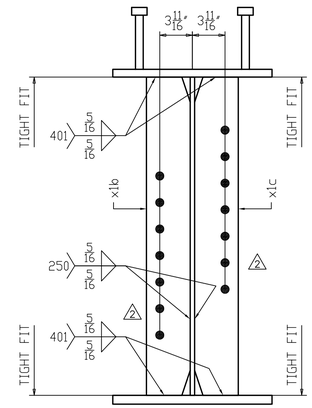

SECTION BA




TYPICAL SECTION FOR SHEAR STUD LOCATION




SECTION A




SECTION B

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

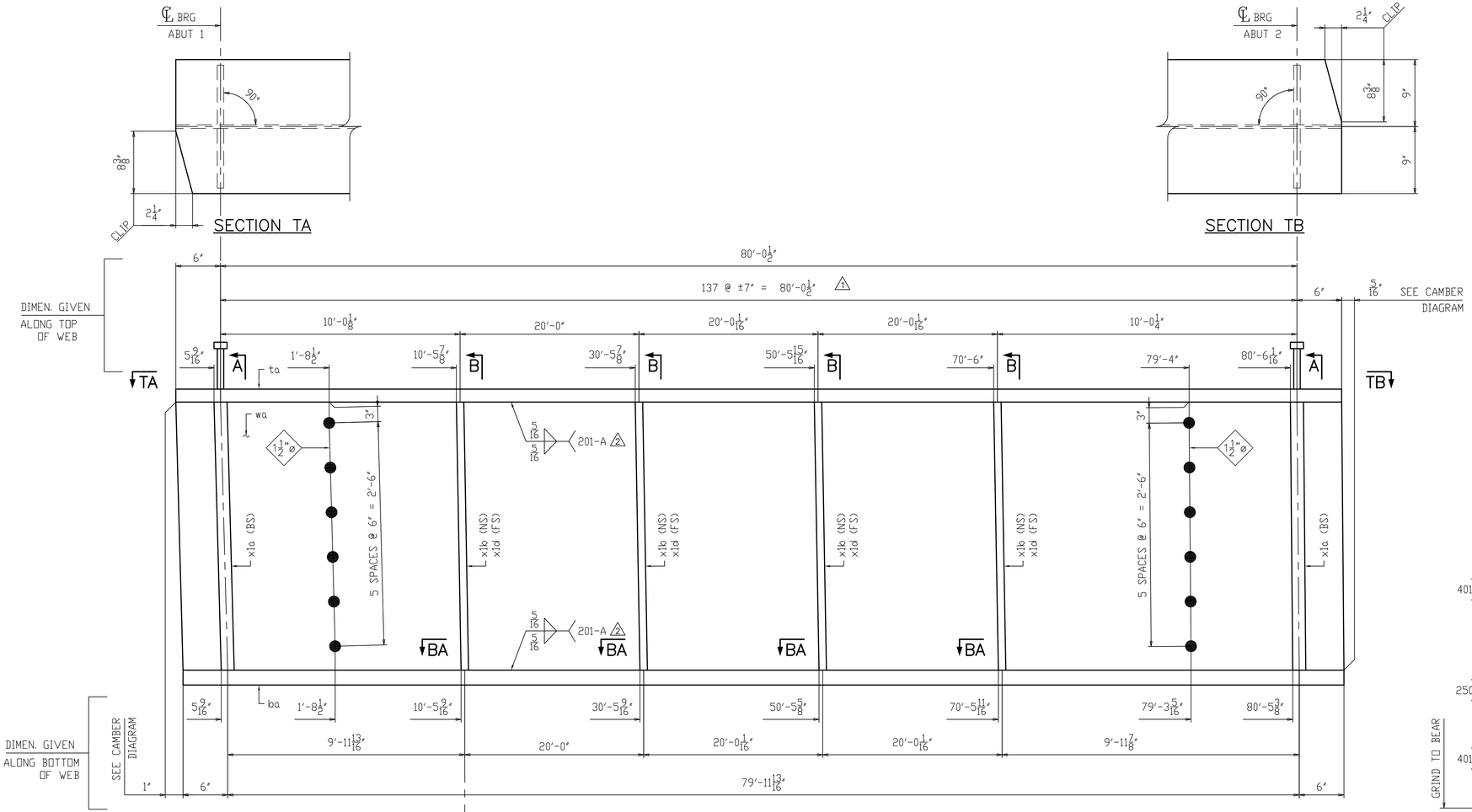
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

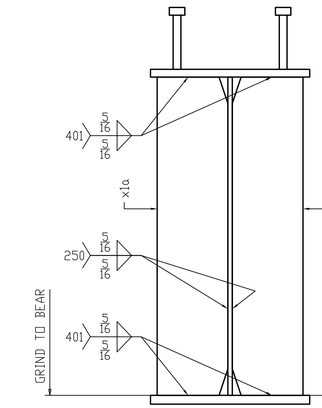
DESCRIPTION: GIRDER DETAIL - 2G2A


CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 2 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

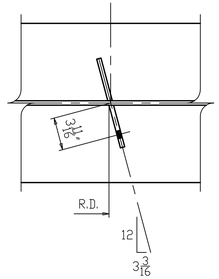
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 3 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 3G3A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1d | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |



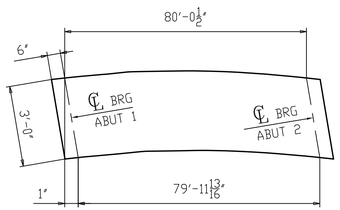




## ONE ~ GIRDER ~ 3G3A

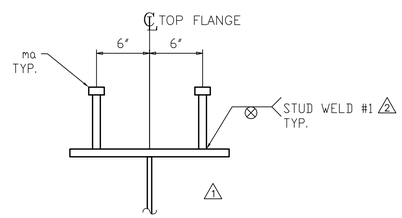
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BA




ORIENTATION DIAGRAM




TYPICAL SECTION
FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

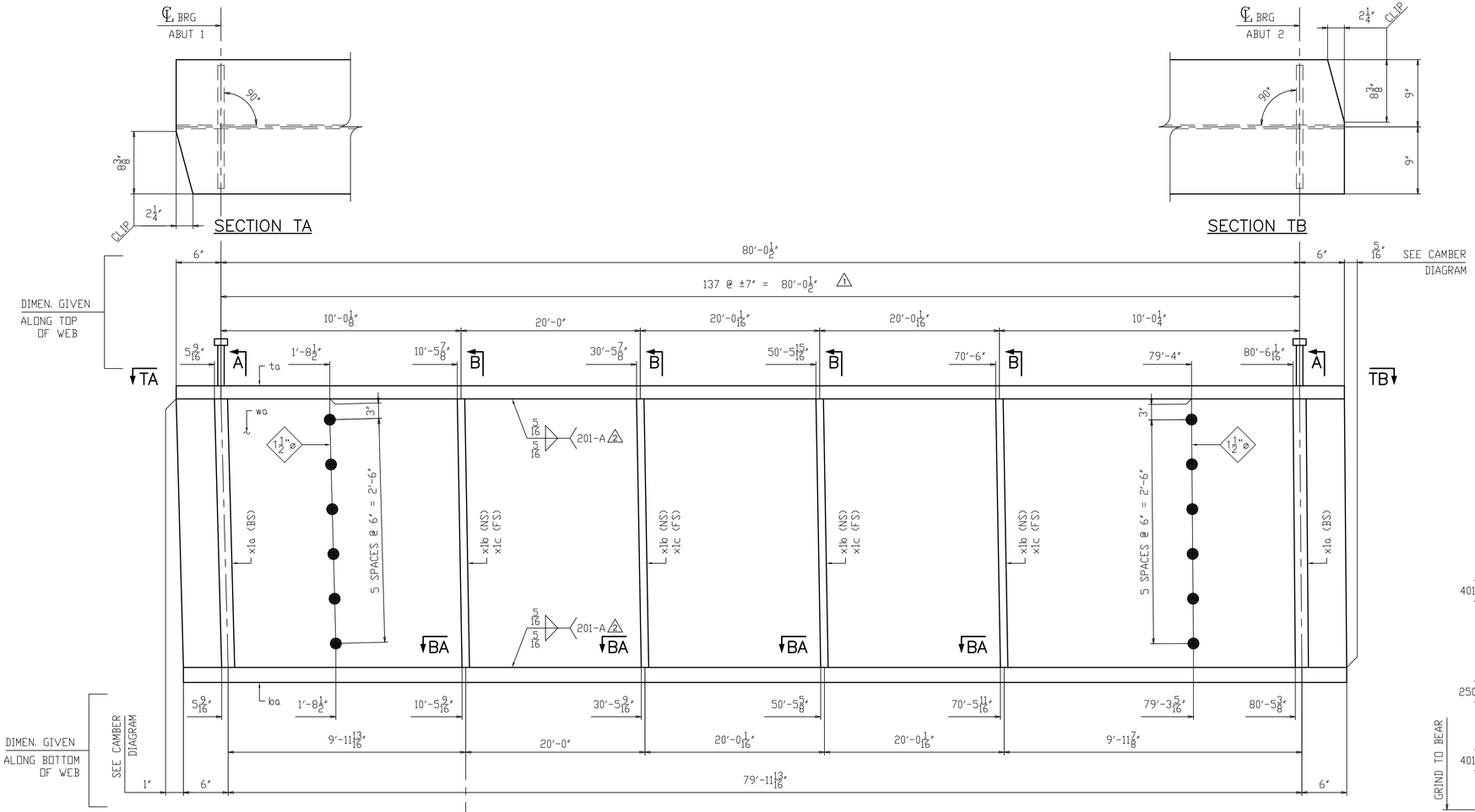
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

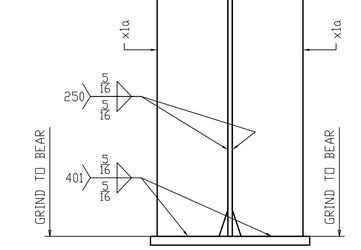
DESCRIPTION: GIRDER DETAIL - 3G3A

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379

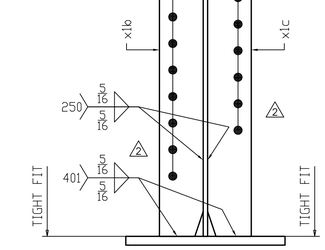
| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 3 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 4 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 4G4A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |



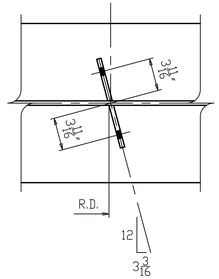

SECTION A



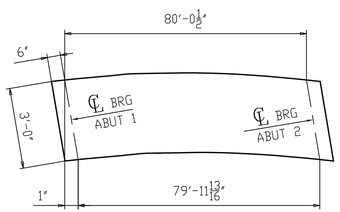

SECTION B

## ONE ~ GIRDER ~ 4G4A

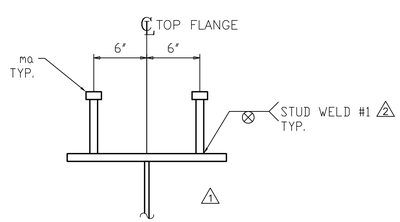
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BA




ORIENTATION DIAGRAM




TYPICAL SECTION FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

DESCRIPTION: GIRDER DETAIL - 4G4A

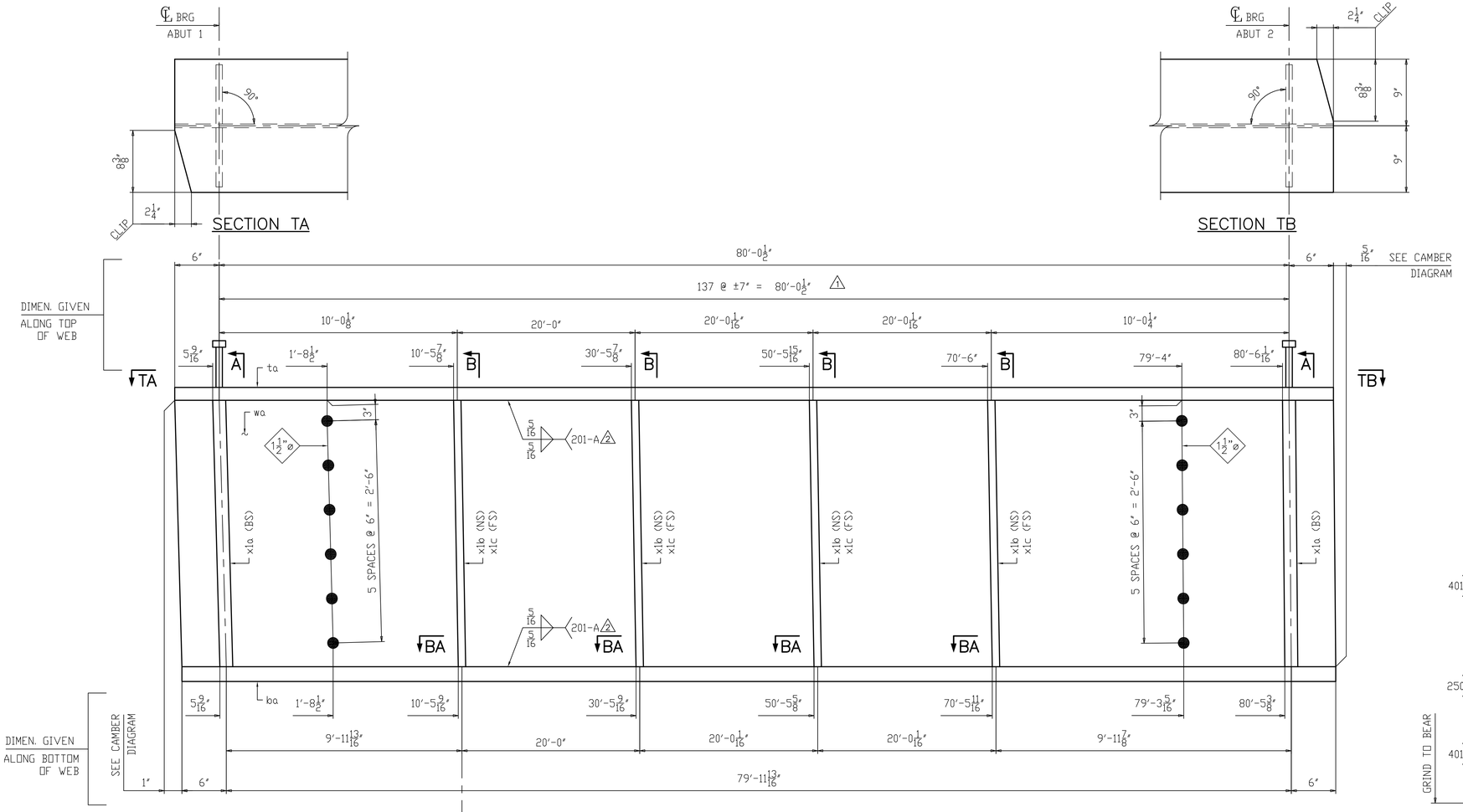
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

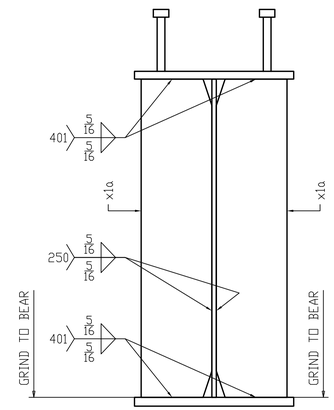
STRUCTURE: PRINCIPAL ARTERIAL OVER WHETSTONE BROOK
STATE ROUTE VT9, BRIDGE NO. 48
TOWN OF MARLBORO/COUNTY OF WINDHAM
STATE OF VERMONT AGENCY OF TRANSPORTATION

| DRAWN: | DATE: |
|---|---|
| SL | 04/17 |
| CHKD: | DATE: |
| RA | 04/23 |

| LOCATION: | MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
|---|---|---|---|
| PROJ NO. | BRF 010-1(43) | 570-2 | 4 |
| CUSTOMER: | RENAUD BROS., INC. | | REV. 2 |

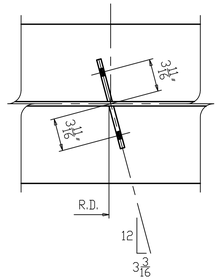
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 5 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 5G5A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |



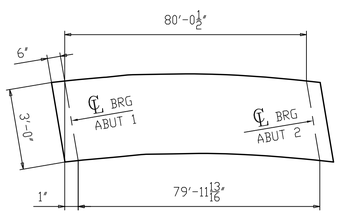




## ONE ~ GIRDER ~ 5G5A

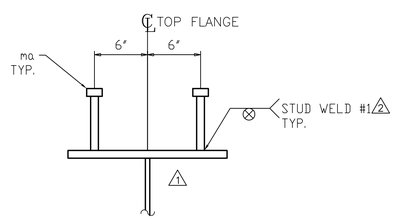
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BA




ORIENTATION DIAGRAM




TYPICAL SECTION FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

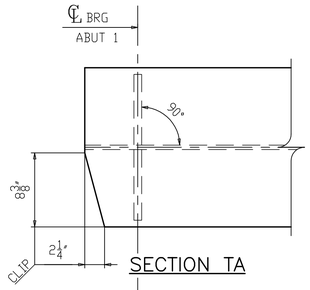
| | | | |
|---|---|---|---|
| MATERIAL: A709-50W U.N. | SURFACE PREP. & PAINT: SEE DWG. GN1 | HOLES: 15/16"ø UN | SHOP BOLTS: NONE |

DESCRIPTION: GIRDER DETAIL - 5G5A

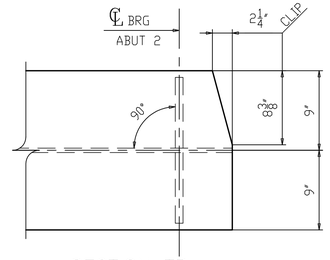

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379


| | | | |
|---|---|---|---|
| STRUCTURE: PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | DRAWN: SL | DATE: 04/17 | |
| | CHKD: RA | DATE: 04/23 | |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. 570-2 | DWG NO. 5 | |
| PROJ NO. BRF 010-1(43) | | | |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 | |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 570-2 | 6 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES | |
| | | 6G6A | 1 | | GIRDER | | | | 14660 | | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | | |
| 1 | K | | 1 | x1g | PL 1/4 x 3 | 1 | 0 1/4 | | 3 | | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | | |




SECTION TA

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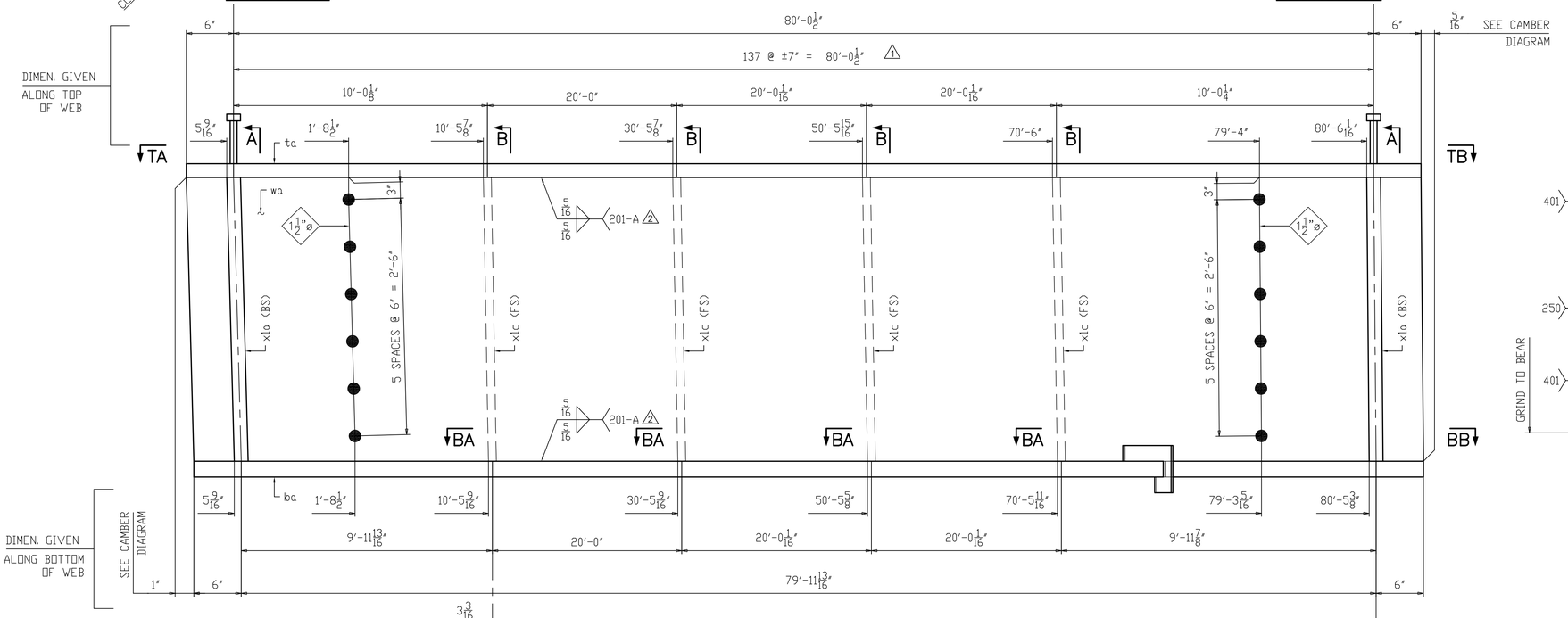
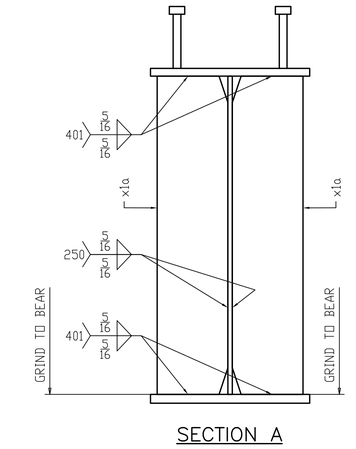
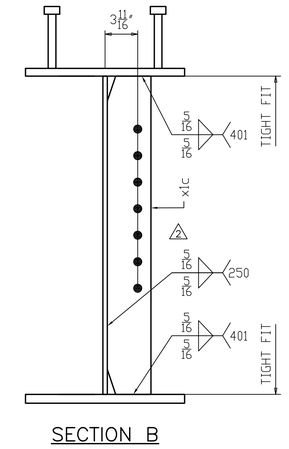
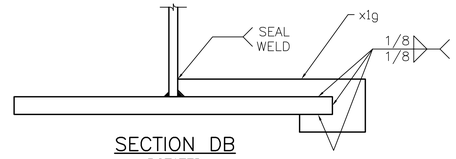


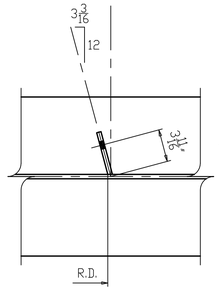

SECTION A




SECTION B



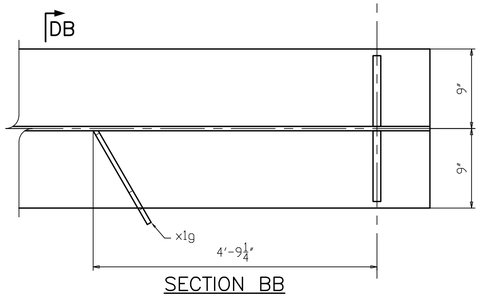

SECTION DB
ROTATED



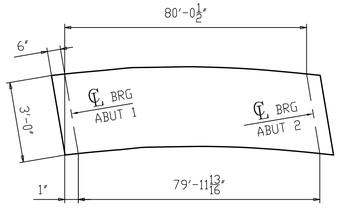

SECTION BA

## ONE ~ GIRDER ~ 6G6A

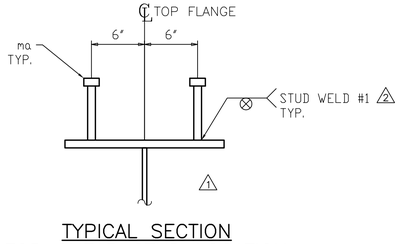
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BB




ORIENTATION DIAGRAM




TYPICAL SECTION
FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

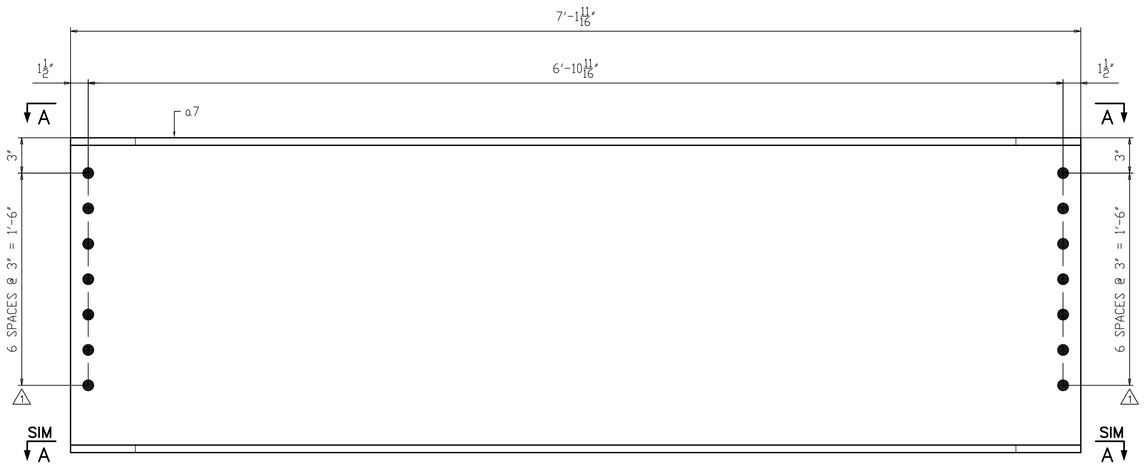
DESCRIPTION: GIRDER DETAIL - 6G6A

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 6 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 7 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 7D1 | 1 | | DIAPHRAGM | | | | 11996 | |
| 1 | N | | 20 | a7 | W 27 x 84 | 7 | 1 11/16 | | 11996 | |
| | | | | | | | | | | |

SECTION A–A




20 ~ DIAPHRAGM ~ 7D1
INTERMEDIATE

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.

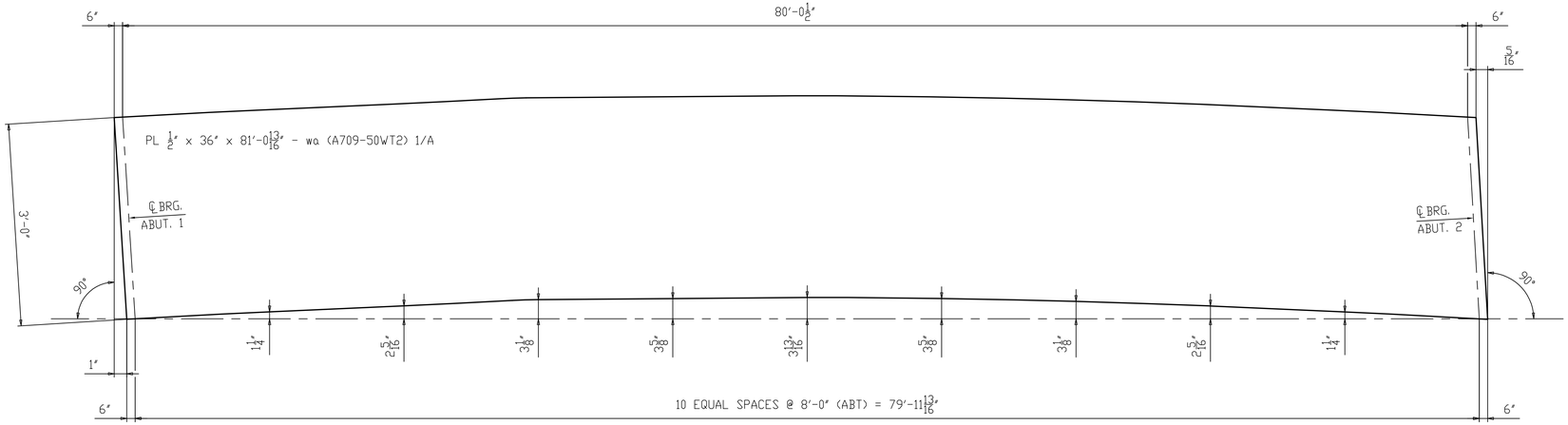
| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

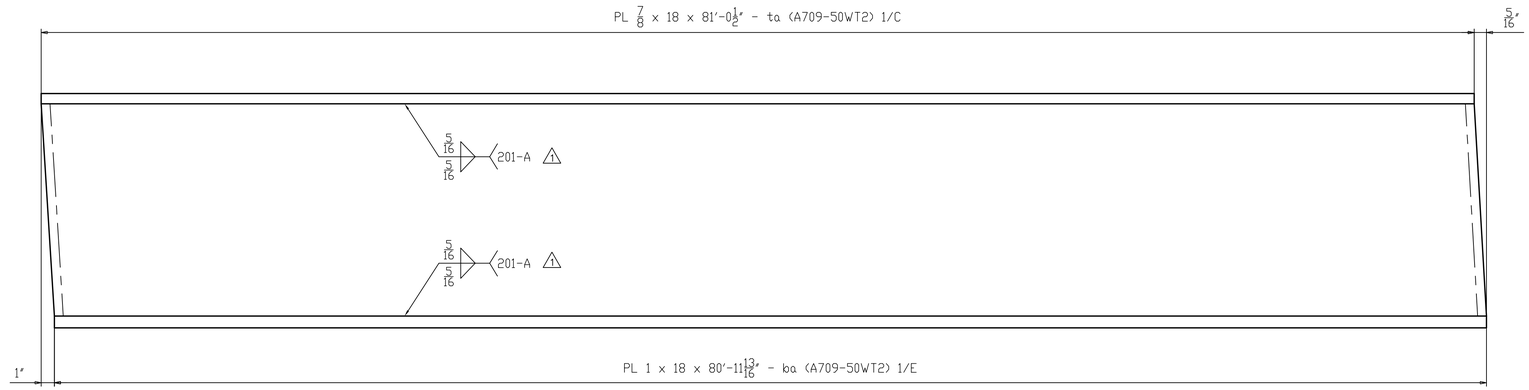
DESCRIPTION: DIAPHRAGMS


CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 7 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |




CAMBER DIAGRAM FOR 1G1A, 2G2A, 3G3A, 4G4A, 5G5A, 6G6A




FLANGE DIAGRAM FOR 1G1A, 2G2A, 3G3A, 4G4A, 5G5A, 6G6A

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.
2. T2 - DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST FOR ZONE 2

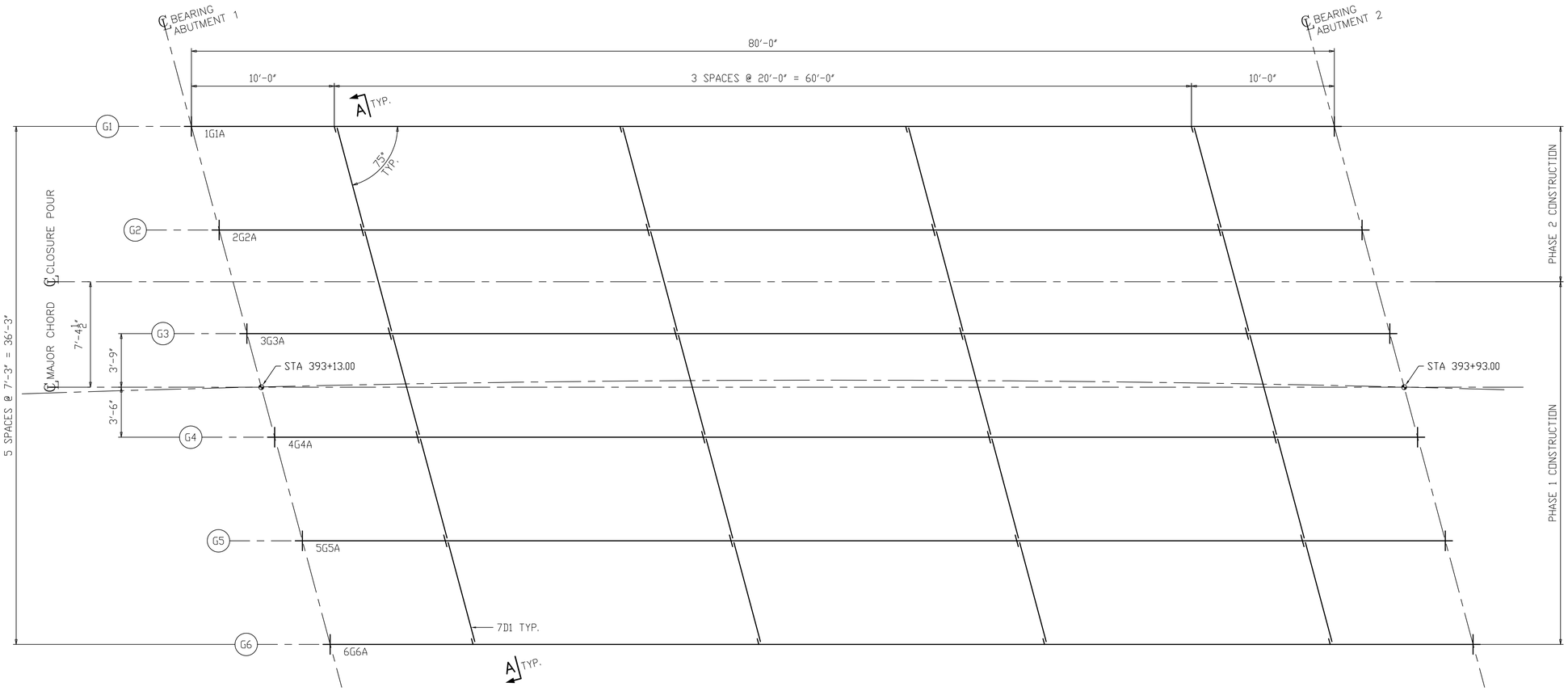
| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| XXXX | | AS NOTED | AS NOTED |

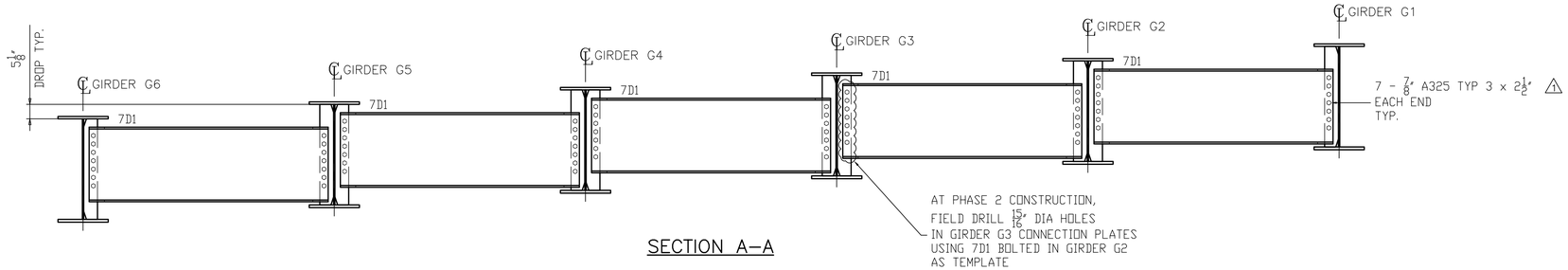
DESCRIPTION: CAMBER & FLANGE DIAGRAMS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379

| | | | |
|---|---|---|---|
| STRUCTURE: PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | DRAWN: SL | DATE: 04/17 | |
| | CHKD: RA | DATE: 04/22 | |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. 570-2 | DWG NO. C1 | |
| PROJ NO. BRF 010-1(43) | | | |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 | |




FRAMING PLAN




SECTION A–A

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| | | AS NOTED | AS NOTED |

DESCRIPTION: FRAMING PLAN

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379

| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/16 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | E1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | FB1 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | | 280 | | A325 TYP 3 7/8ø | | 2 1/2 | 1FL DTIS WASHER | | |
| | | | | | | | | + 1 FL WASHER | | |

| FIELD BOLT LIST | | | | | | A325 TYPE 3 BOLTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | NO REQ'D | BOLT DIAM. | BOLT LEN. | BOLTS /CONN. | NO OF /CONN. | GRIP* | THICK. OF PCS. CONNECTED | | | | | | WASH CODE | PIECES CONNECTED AND REMARKS |
| 1 | 280 | 7/8"ø | 2 1/2" | 7 | 40 | 15/16" | 7/16 | 1/2 | | | | | 3 | DIAPHRAGM TO GIRDER CONNECTION PLATE |
| | | | | | | | | | | | | | | |

* GRIP LENGTHS EXCLUDE WASHER THICKNESS

1: 1 HARD DTI'S/LOAD INDICATOR FLAT WASHER
2: 2 HARD DTI'S/LOAD INDICATOR FLAT WASHERS
3: 1 HARD DTI'S/LOAD INDICATOR FLAT WASHER AND 1 HARDENED WASHER.

WORK THIS DRAWING WITH E1

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: AS NOTED | SHOP BOLTS: AS NOTED |
|---|---|---|---|

DESCRIPTION: FIELD BOLTS LIST

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | FB1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |

# GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1). ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (A.A.S.H.T.O.) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SIXTEENTH EDITION, AND ITS LATEST REVISIONS.

MATERIEL SPECIFICATIONS

1). UNLESS NOTED, ALL NEW STRUCTURAL STEEL CONFORM TO AASHTO M270 GRADE 50W (ASTM A709-50W).

⚠1 2). MATERIAL NOTED 'T2' ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS (SUBSECTION 714.01).

3). HIGH STRENGTH BOLTS: AASHTO M164 (ASTM A325) TYPE 3, 7/8" DIA. IN 15/16" DIAMETER HOLES.

FABRICATION

1). BOLT HOLES SHALL BE FABRICATED TO THE REQUIREMENTS OF THE 2012 AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 11.4.8, EXCEPT THAT HOLES SHALL NOT BE PUNCHED FULL SIZE.

⚠1 2). IDENTIFICATION MARKS ON UNPAINTED STEEL SHALL BE IMPRESSED INTO THE MEMBER (WITH A LOW-STRESS STAMP) IN A NON-STRESSED OR LOW STRESSED AREA OF THE MEMBER.

3). TIGHT FIT (WELDED ENDS ONLY). 50% OF THE PROJECTED BEARING AREA SHALL BE IN CONTACT WITHIN 0.5mm (0.02") WITH A PERMISSIBLE VARIATION OF 1.6mm (1/16") FOR THE REMAINING 50% OF THE PROJECTED AREA.

4). GRIND TO BEAR. 75% OF THE PROJECTED AREA SHALL BE IN CONTACT WITHIN 0.25mm (0.01") WITH A PERMISSIBLE VARIATION OF 0.8mm (1/32") FOR THE PROJECTED AREA.

5). MILL TO BEAR. 100% OF THE PROJECTED AREA SHALL BE IN FULL CONTACT.

WELDING

1). THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-02 BRIDGE WELDING CODE AND WITH SPECIFICATIONS SHOWN BESIDE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2). WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGE ARC & SHIELDED METAL ARC PROCESS. ALL WELDS ARE CONTINUOUS U.N.

3). NON-DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATIONS.

FIELD CONNECTIONS

1). ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS AASHTO M164 (ASTM A325) TYPE 3, IN 15/16" DIAMETER HOLES UNLESS OTHERWISE NOTED. INSTALLED PER 506.19(c) AND SPECIAL PROVISIONS.

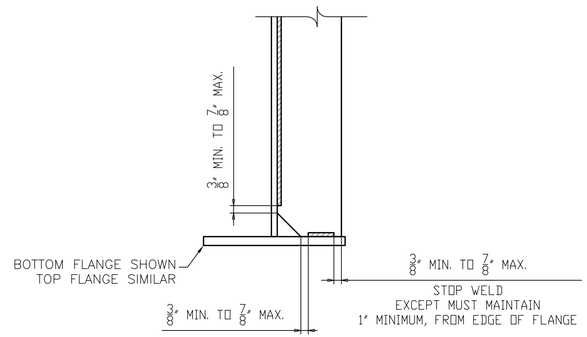
⚠1 2). BOLTS SHALL HAVE HEAVY HEX. NUT, HEX. HEAD AND ONE DTI'S/LOAD INDICATOR FLAT WASHER AND 1 HARDENED WASHER EACH (HARDENED WASHER TO BE PLACED UNDER TURNED ELEMENT (NUT), DTI TO BE PLACED UNDER THE HEAD OF THE BOLT WITH THE PROTRUSIONS FACING THE HEAD OF THE BOLT).

3). PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWING.

4). BOLTS INSTALLED WITH THE STEM VERTICAL SHALL HAVE HEADS UP. BOLTS INSTALLED WITH THE STEM HORIZONTAL SHALL HAVE HEADS TOWARDS THE WEATHER UNLESS CLEARANCE RESTRICTIONS DICTATE OTHERWISE.

CLEANING:

1). ALL STEEL THAT WILL REMAIN UNPAINTED SHALL BE BLAST CLEANED AS PER SSPC SP-10 PER SPEC. 506.14(a).




DETAIL "WS1"
STIFF. WELD TERMINATION

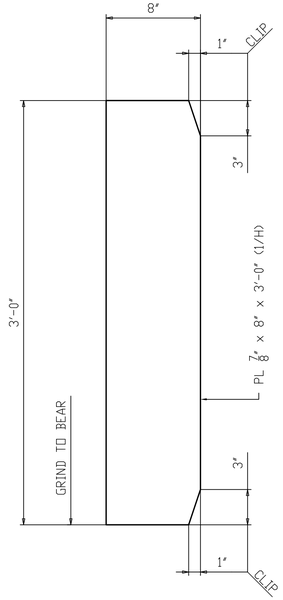
| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: AS NOTED | SHOP BOLTS: AS NOTED |
|---|---|---|---|

DESCRIPTION: GENERAL NOTES

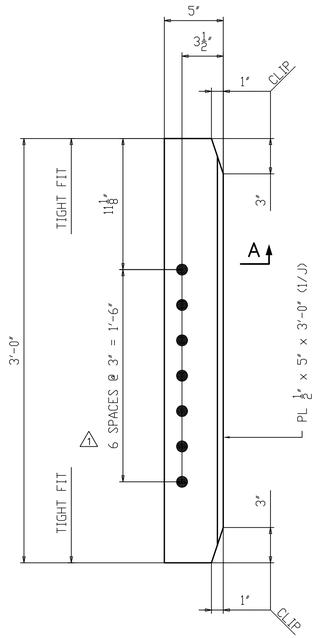

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/16 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | GN1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. ⚠1 |



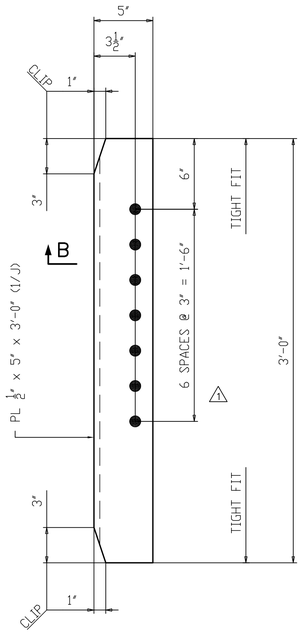

24 ~ BEARING STIFFENER ~ x1a

ABUTMENTS 1 & 2



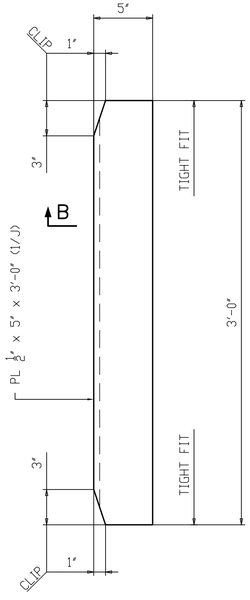

20 ~ INTERMEDIATE STIFFENER ~ x1b

INTERMEDIATE



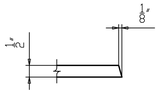

16 ~ INTERMEDIATE STIFFENER ~ x1c

INTERMEDIATE

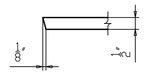



4 ~ INTERMEDIATE STIFFENER ~ x1d

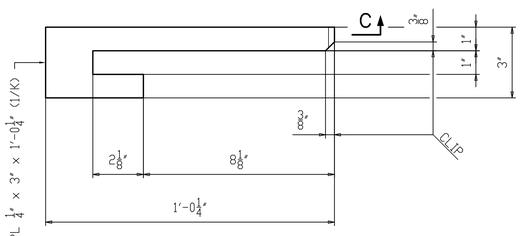
INTERMEDIATE




SECT A

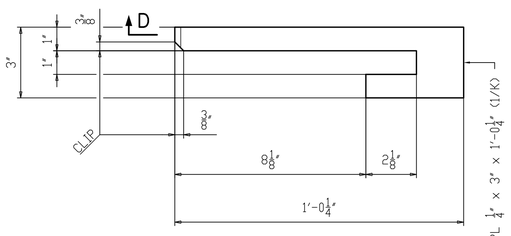



SECT B



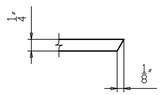

1 ~ DRIP BAR ~ x1f

GIRDER 1G1A @ ABUTMENT 2

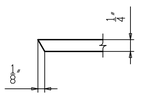



1 ~ DRIP BAR ~ x1g

GIRDER 6G6A @ ABUTMENT 2




SECT C




SECT D

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

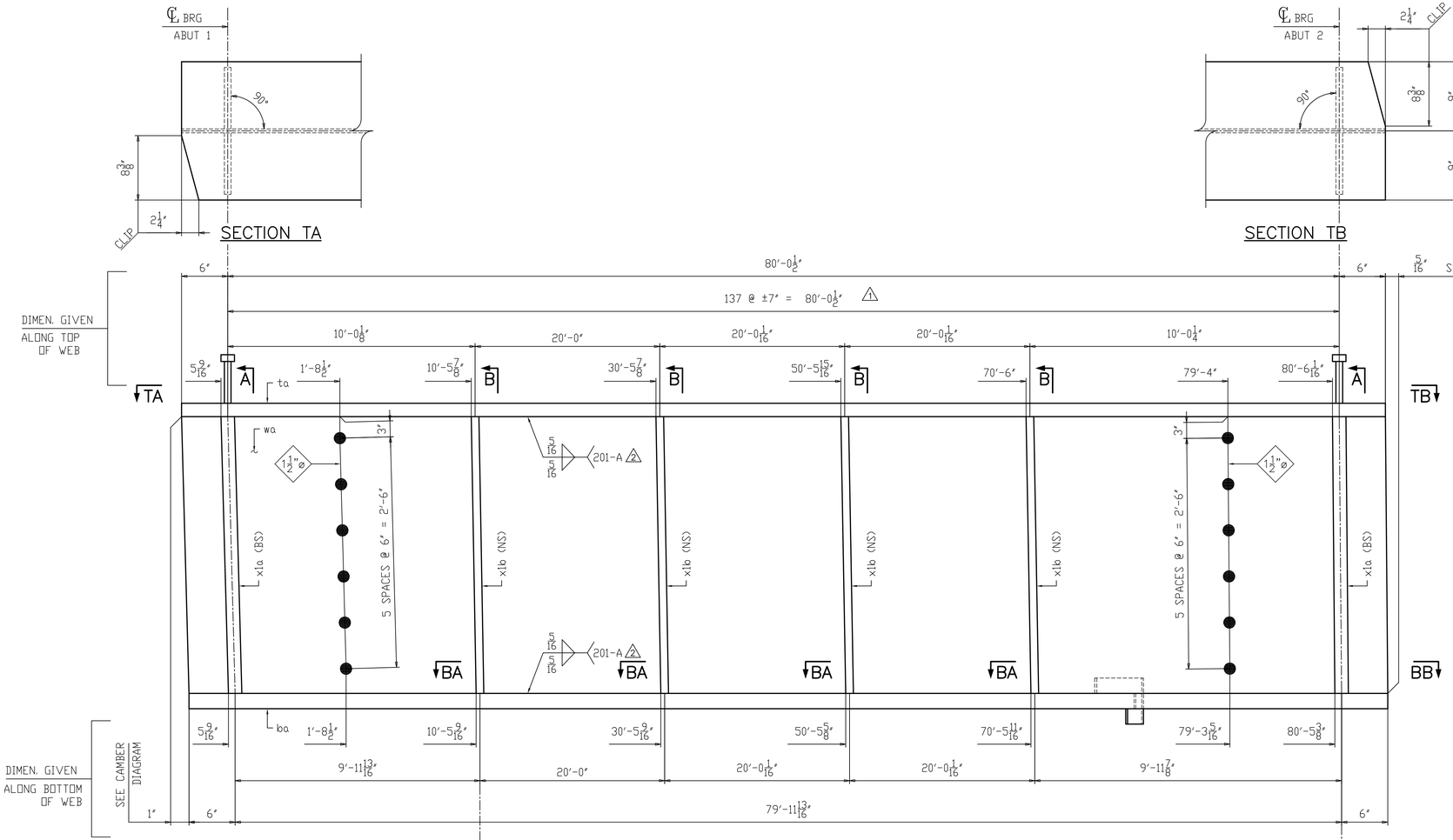
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16″ø U.N. | NONE |

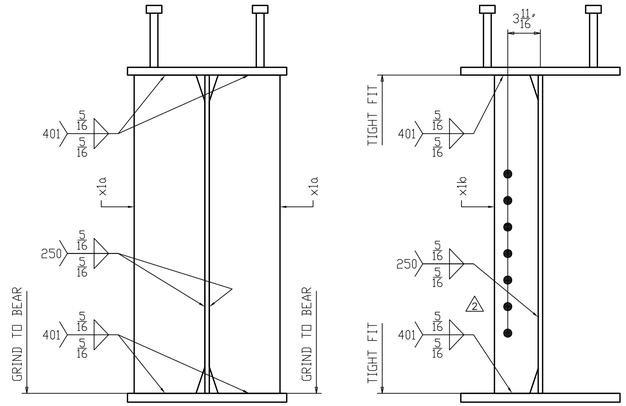
DESCRIPTION: GIRDER STANDARD DETAILS


CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | X1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |

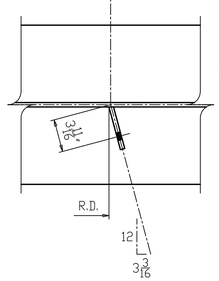
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 1 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 1G1A | 1 | | GIRDER | | | | 14660 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | K | | 1 | x1f | PL 1/4 x 3 | 1 | 0 1/4 | | 3 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |

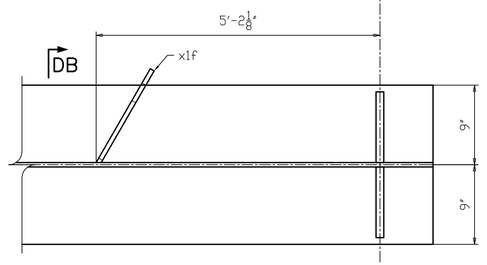


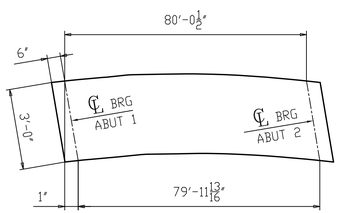



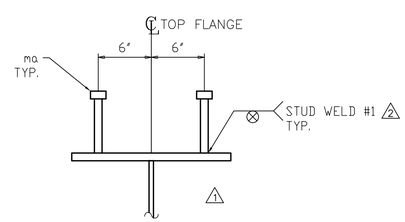

## ONE ~ GIRDER ~ 1G1A

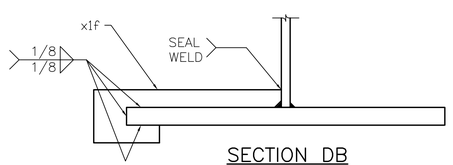
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

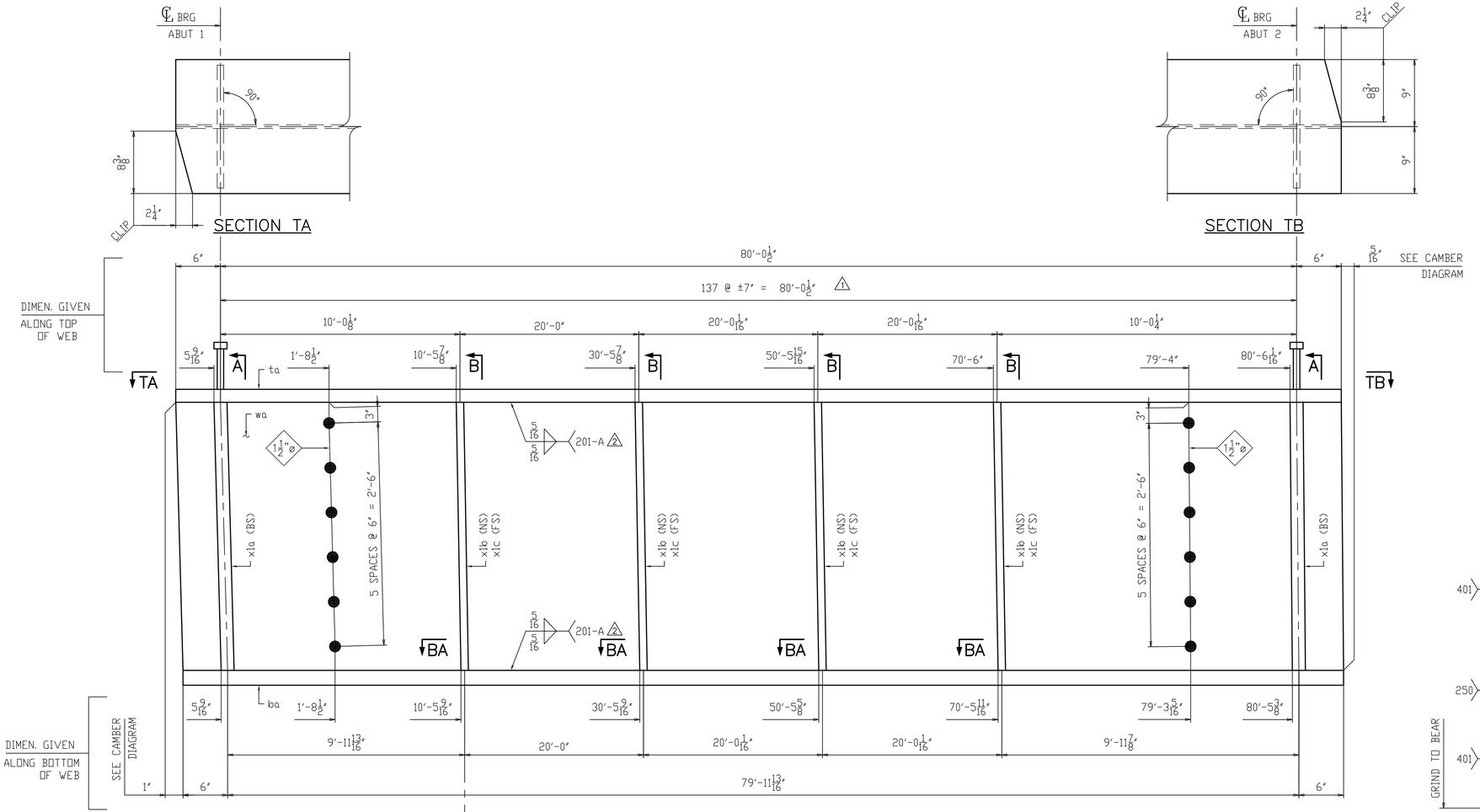
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

DESCRIPTION: GIRDER DETAIL - 1G1A

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

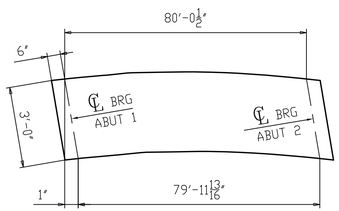
| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 2 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 2G2A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |

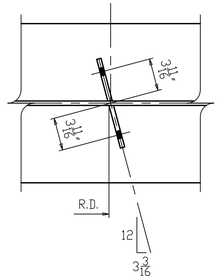



## ONE ~ GIRDER ~ 2G2A

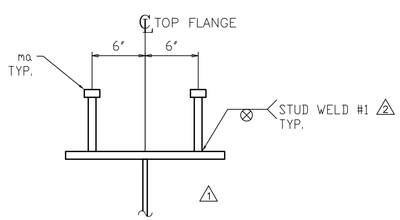
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END



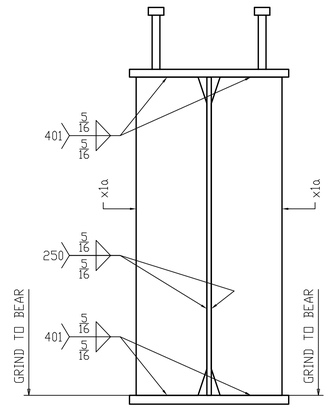

ORIENTATION DIAGRAM



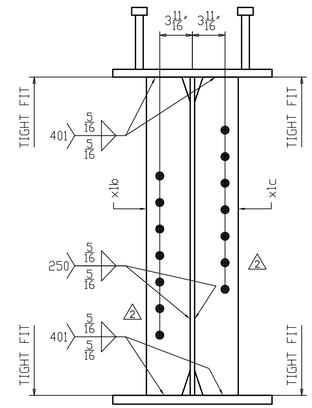

SECTION BA




TYPICAL SECTION FOR SHEAR STUD LOCATION




SECTION A




SECTION B

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

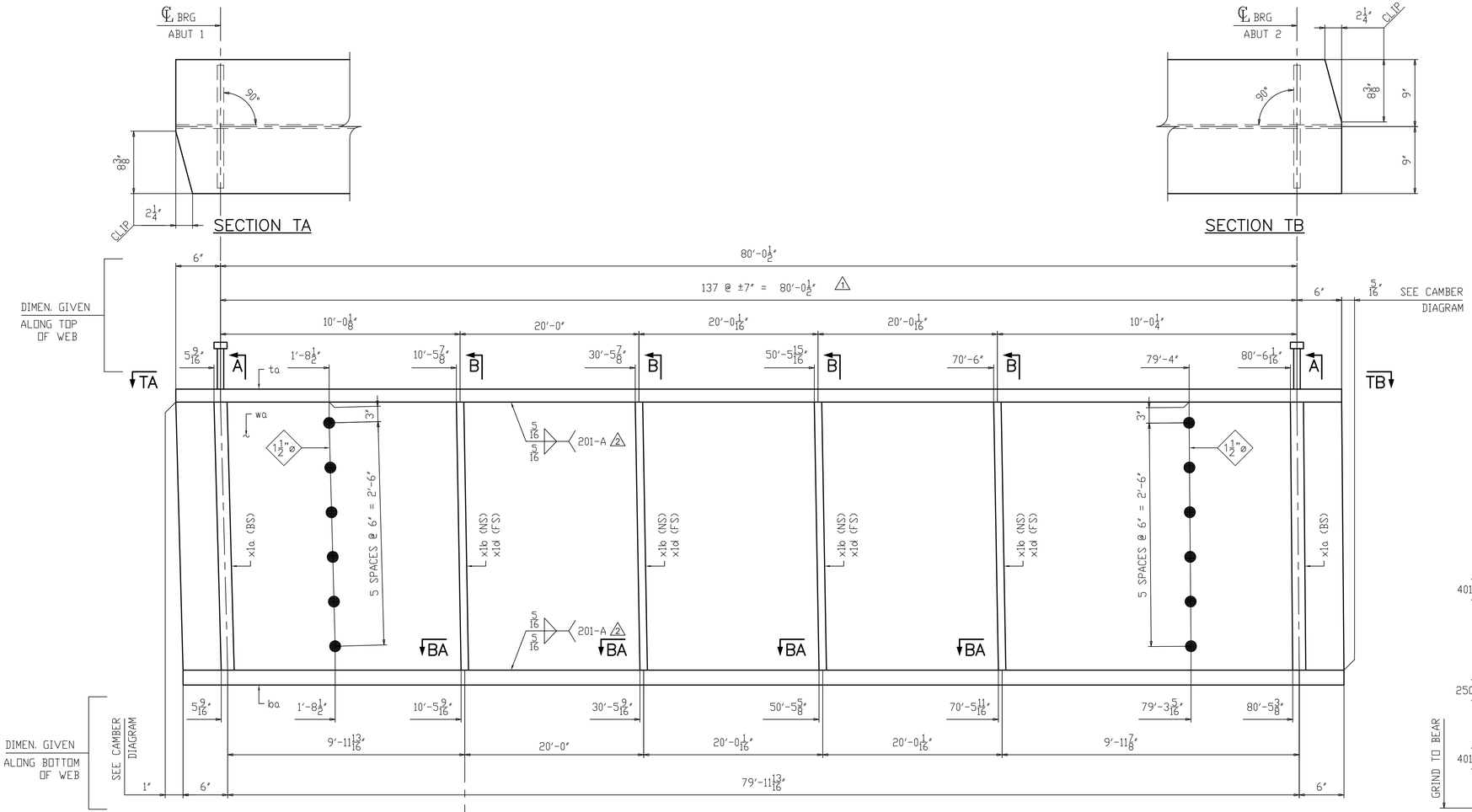
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

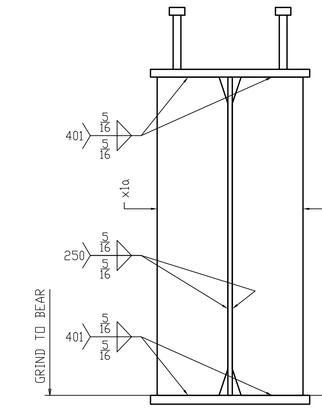
DESCRIPTION: GIRDER DETAIL - 2G2A


CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 2 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

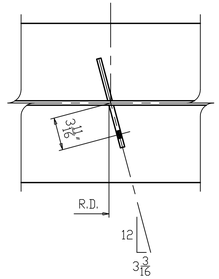
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 3 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 3G3A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1d | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |



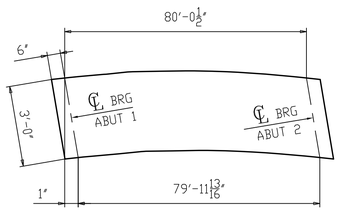




## ONE ~ GIRDER ~ 3G3A

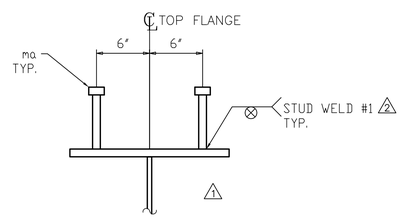
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BA




ORIENTATION DIAGRAM




TYPICAL SECTION
FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

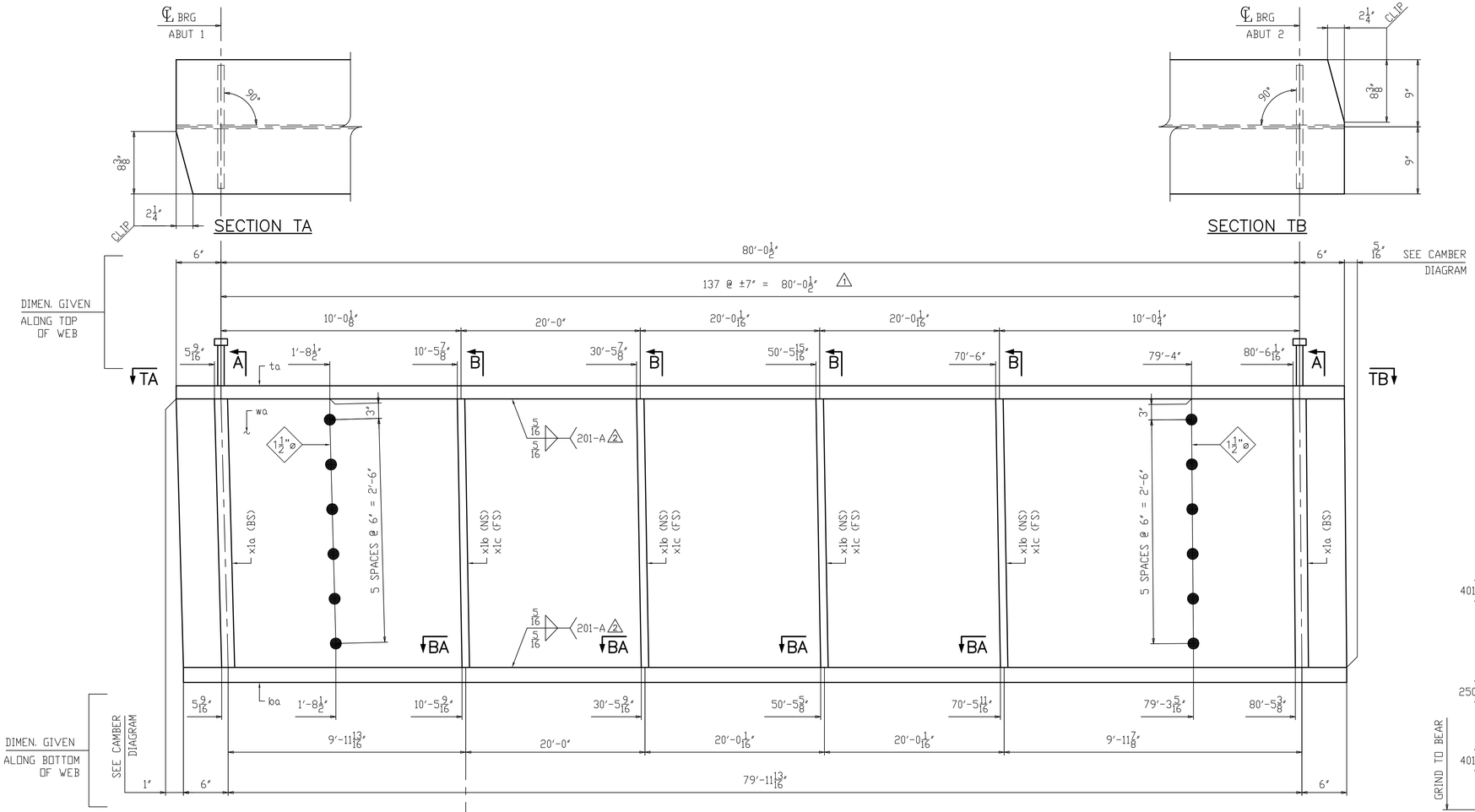
| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

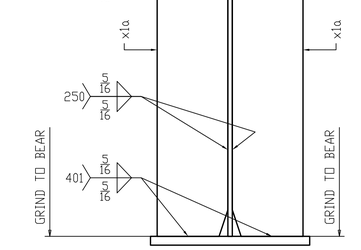
DESCRIPTION: GIRDER DETAIL - 3G3A

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379

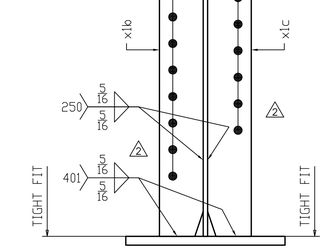
| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 3 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 4 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 4G4A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |



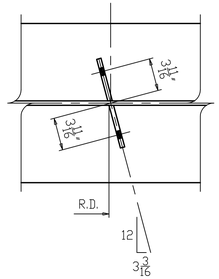

SECTION A



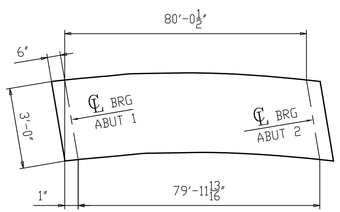

SECTION B

## ONE ~ GIRDER ~ 4G4A

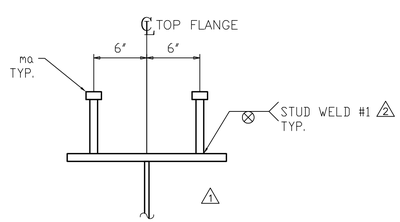
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BA




ORIENTATION DIAGRAM




TYPICAL SECTION FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

DESCRIPTION: GIRDER DETAIL - 4G4A

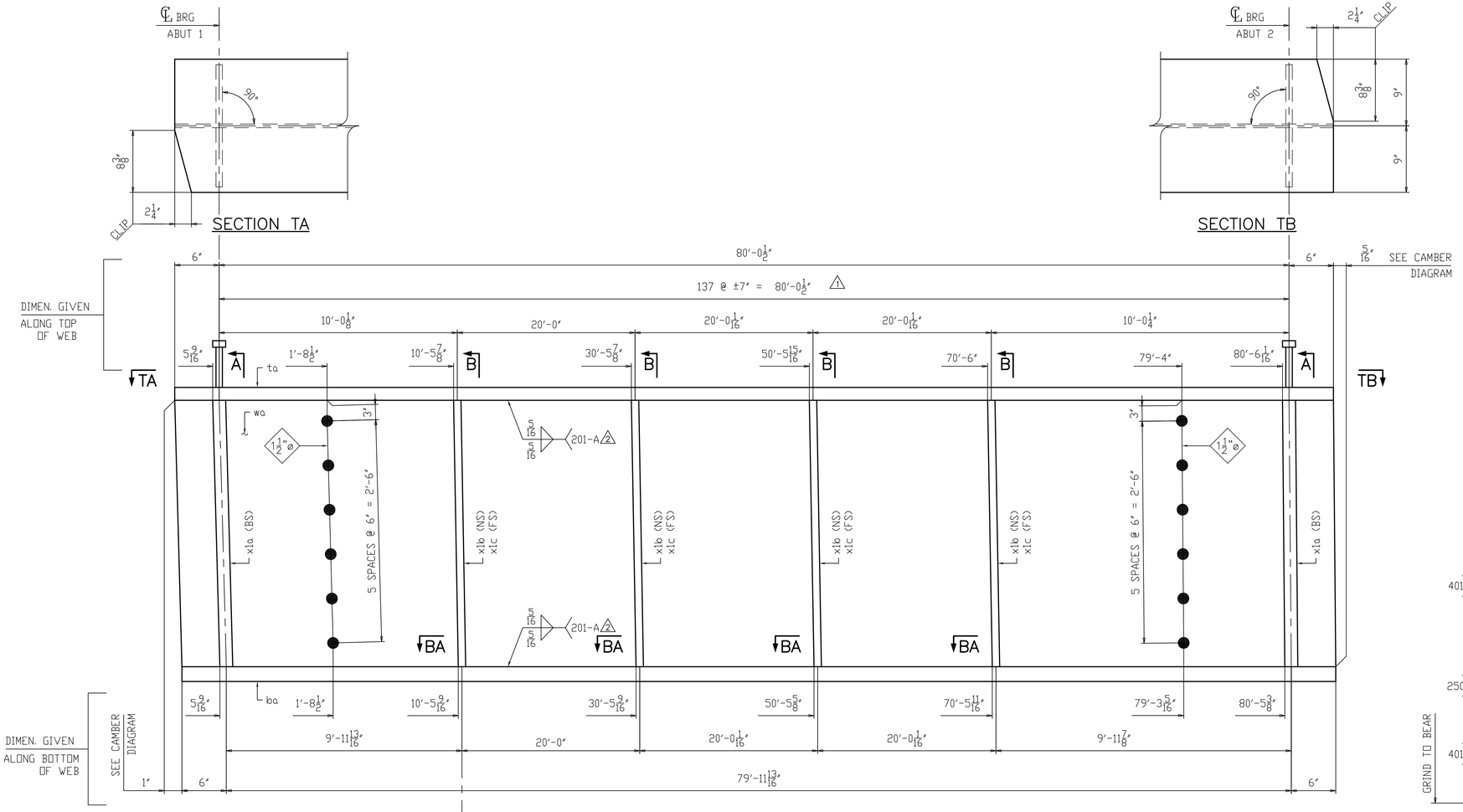
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

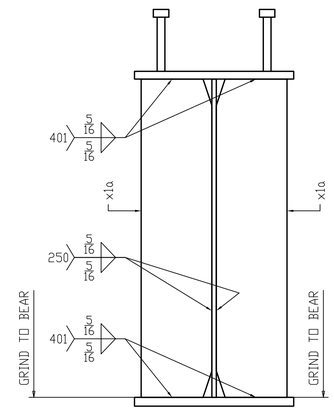
STRUCTURE: PRINCIPAL ARTERIAL OVER WHETSTONE BROOK
STATE ROUTE VT9, BRIDGE NO. 48
TOWN OF MARLBORO/COUNTY OF WINDHAM
STATE OF VERMONT AGENCY OF TRANSPORTATION

| DRAWN: | DATE: |
|---|---|
| SL | 04/17 |
| CHKD: | DATE: |
| RA | 04/23 |

| LOCATION: | MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
|---|---|---|---|
| PROJ NO. | BRF 010-1(43) | 570-2 | 4 |
| CUSTOMER: | RENAUD BROS., INC. | | REV. 2 |

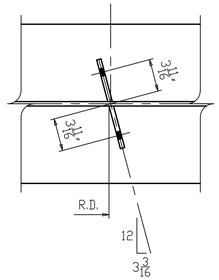
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 5 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 5G5A | 1 | | GIRDER | | | | 14759 | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | |
| 1 | J | | 4 | x1b | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | |



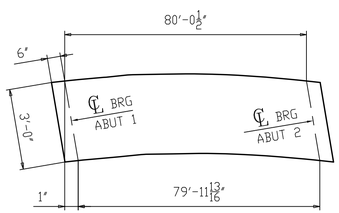




## ONE ~ GIRDER ~ 5G5A

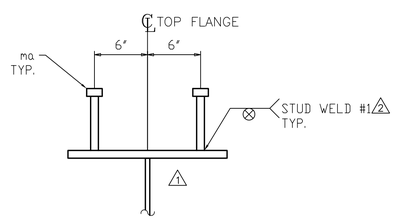
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BA




ORIENTATION DIAGRAM




TYPICAL SECTION FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

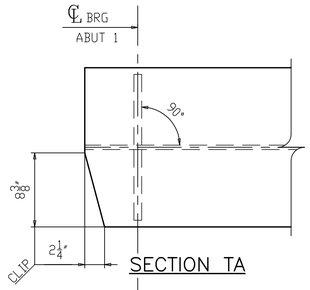
| | | | |
|---|---|---|---|
| MATERIAL: A709-50W U.N. | SURFACE PREP. & PAINT: SEE DWG. GN1 | HOLES: 15/16"ø UN | SHOP BOLTS: NONE |

DESCRIPTION: GIRDER DETAIL - 5G5A

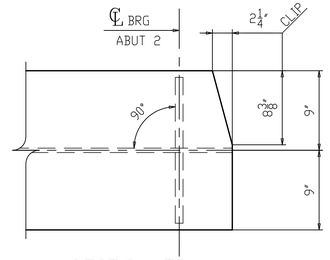

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379


| | | | |
|---|---|---|---|
| STRUCTURE: PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | DRAWN: SL | DATE: 04/17 | |
| | CHKD: RA | DATE: 04/23 | |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. 570-2 | DWG NO. 5 | |
| PROJ NO. BRF 010-1(43) | | | |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 | |

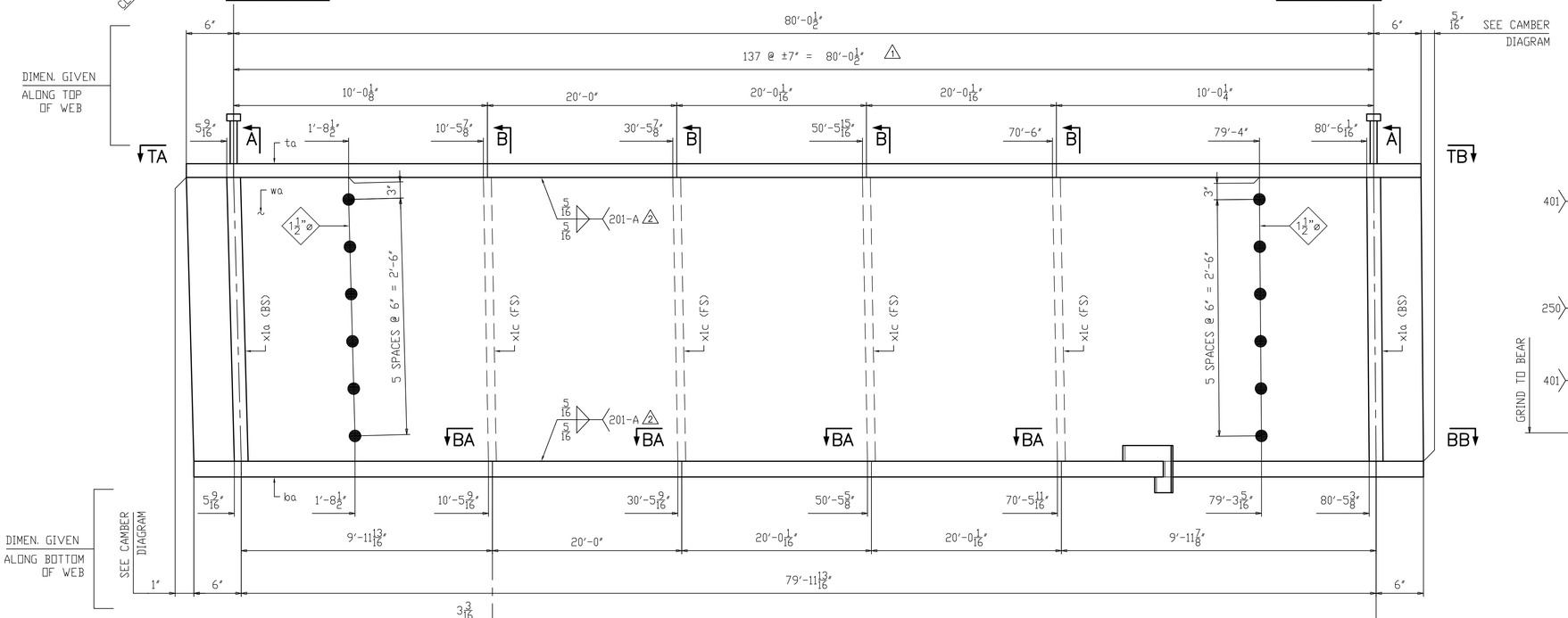
| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 570-2 | 6 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES | |
| | | 6G6A | 1 | | GIRDER | | | | 14660 | | |
| 1 | A | | 1 | wa | PL 1/2 x 36 | 81 | 0 13/16 | A709-50WT2 | 4965 | | |
| 1 | C | | 1 | ta | PL 7/8 x 18 | 81 | 0 1/2 | A709-50WT2 | 4343 | | |
| 1 | E | | 1 | ba | PL 1 x 18 | 80 | 11 13/16 | A709-50WT2 | 4961 | | |
| 1 | H | | 4 | x1a | PL 7/8 x 8 | 3 | 0 | M1E | 286 | | |
| 1 | J | | 4 | x1c | PL 1/2 x 5 | 3 | 0 | | 102 | | |
| 1 | K | | 1 | x1g | PL 1/4 x 3 | 1 | 0 1/4 | | 3 | | |
| 1 | | | 276 | ma | SHEAR STUD 7/8ø | | 7 | A108 | | | |

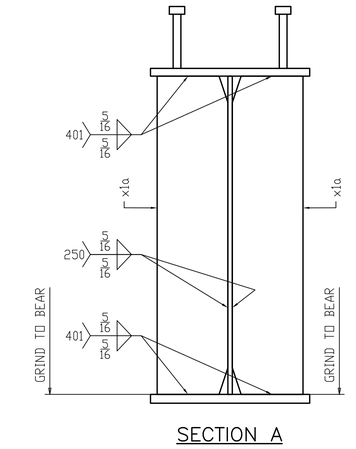



SECTION TA

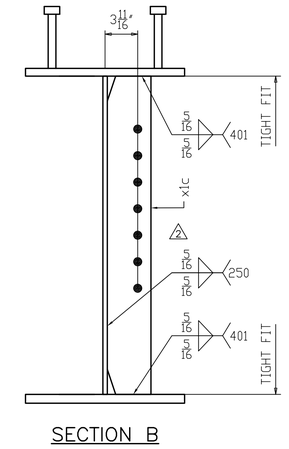



SECTION TB

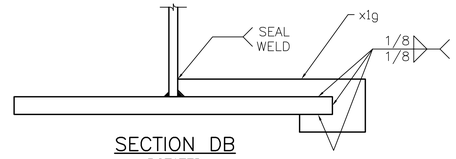


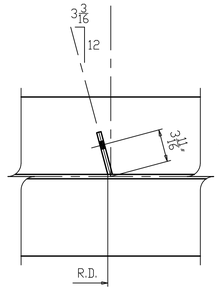

SECTION A




SECTION B



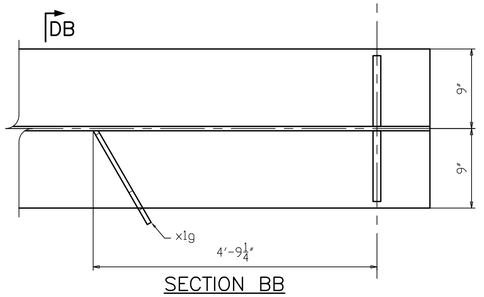

SECTION DB
ROTATED



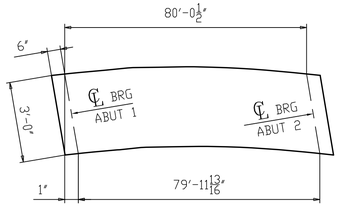

SECTION BA

## ONE ~ GIRDER ~ 6G6A

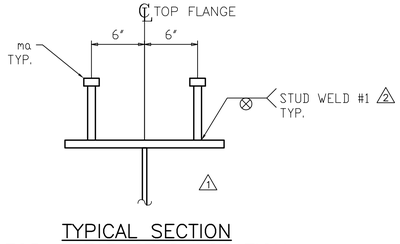
FOR STANDARD DETAILS SEE SHEET X1
FOR CAMBER DIAGRAM SEE SHEET C1
FOR FLANGE DIAGRAM SEE SHEET C1
FOR GENERAL NOTES SEE SHEET GN1
"T2" DENOTES MATERIAL TO BE CHARPY V-NOTCH TESTED (ZONE 2)
2 M1E DENOTES MILL ONE END




SECTION BB




ORIENTATION DIAGRAM




TYPICAL SECTION
FOR SHEAR STUD LOCATION

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 2 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 1 | 05/06 | SHEAR STUD ADDED | SC | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

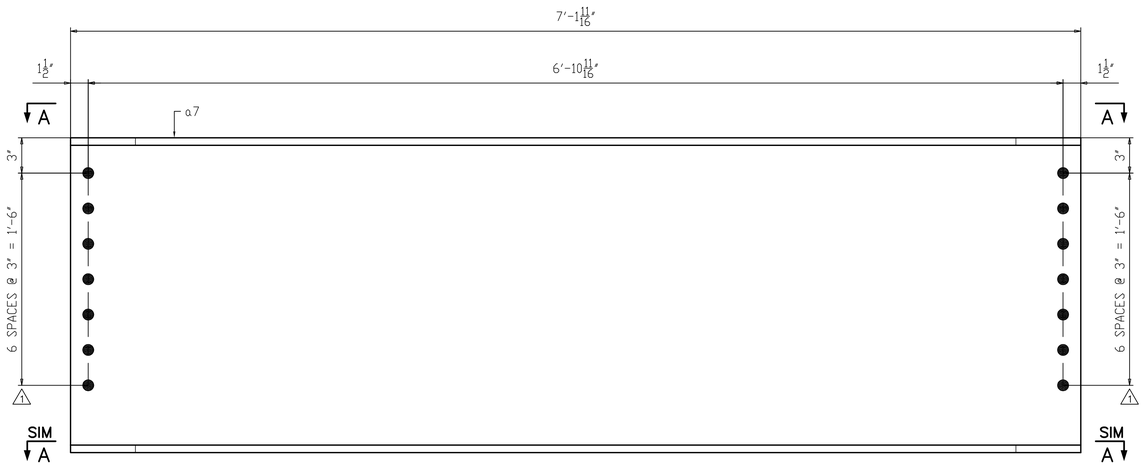
DESCRIPTION: GIRDER DETAIL - 6G6A

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 6 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 2 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | 7 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | 7D1 | 1 | | DIAPHRAGM | | | | 11996 | |
| 1 | N | | 20 | a7 | W 27 x 84 | 7 | 1 11/16 | | 11996 | |
| | | | | | | | | | | |

SECTION A–A




20 ~ DIAPHRAGM ~ 7D1
INTERMEDIATE

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.

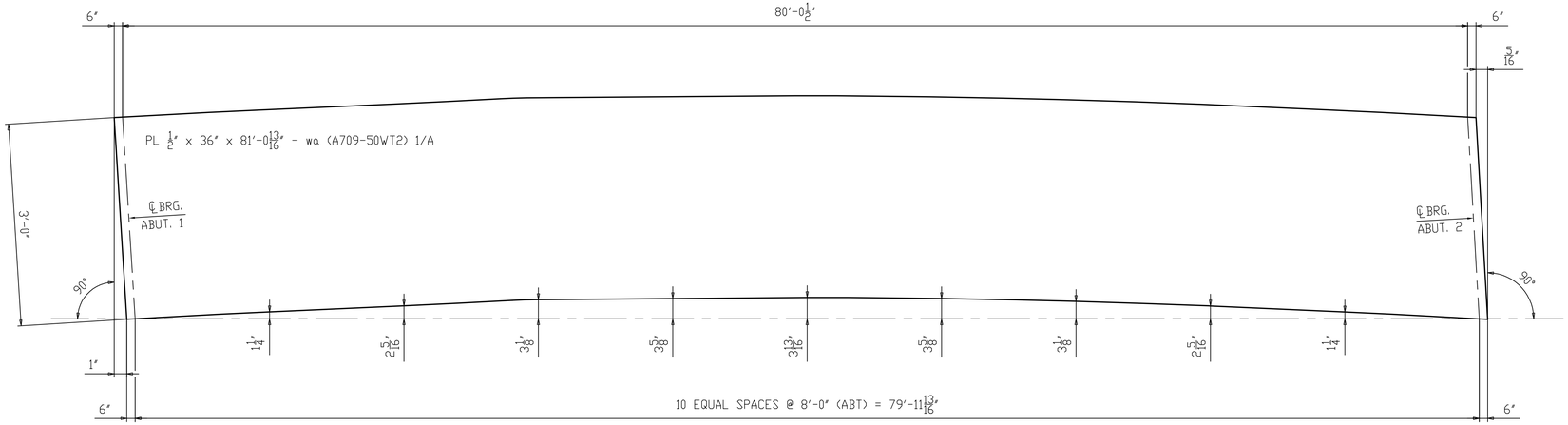
| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16"ø UN | NONE |

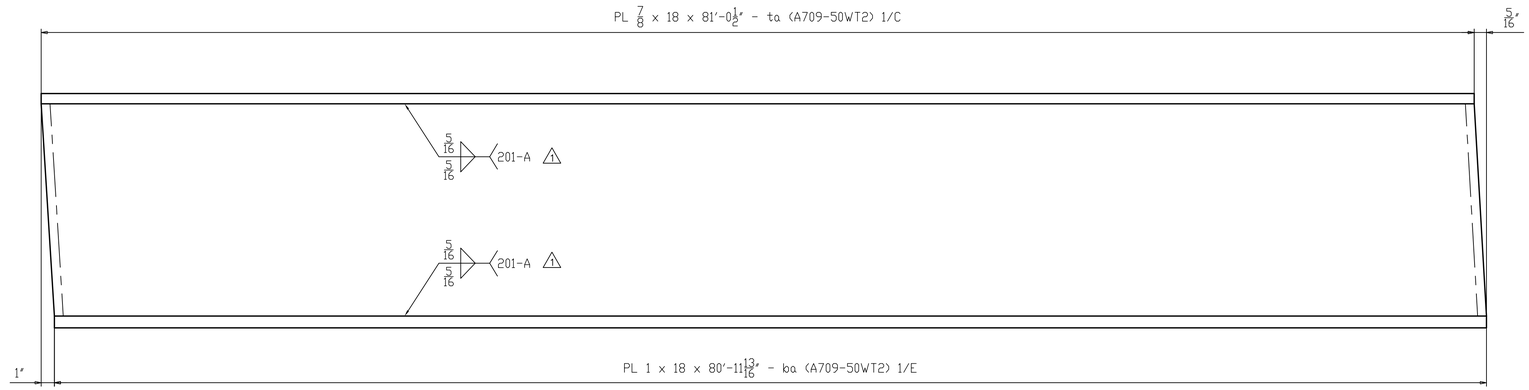
DESCRIPTION: DIAPHRAGMS


CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | 7 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |




CAMBER DIAGRAM FOR 1G1A, 2G2A, 3G3A, 4G4A, 5G5A, 6G6A




FLANGE DIAGRAM FOR 1G1A, 2G2A, 3G3A, 4G4A, 5G5A, 6G6A

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.
2. T2 - DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST FOR ZONE 2

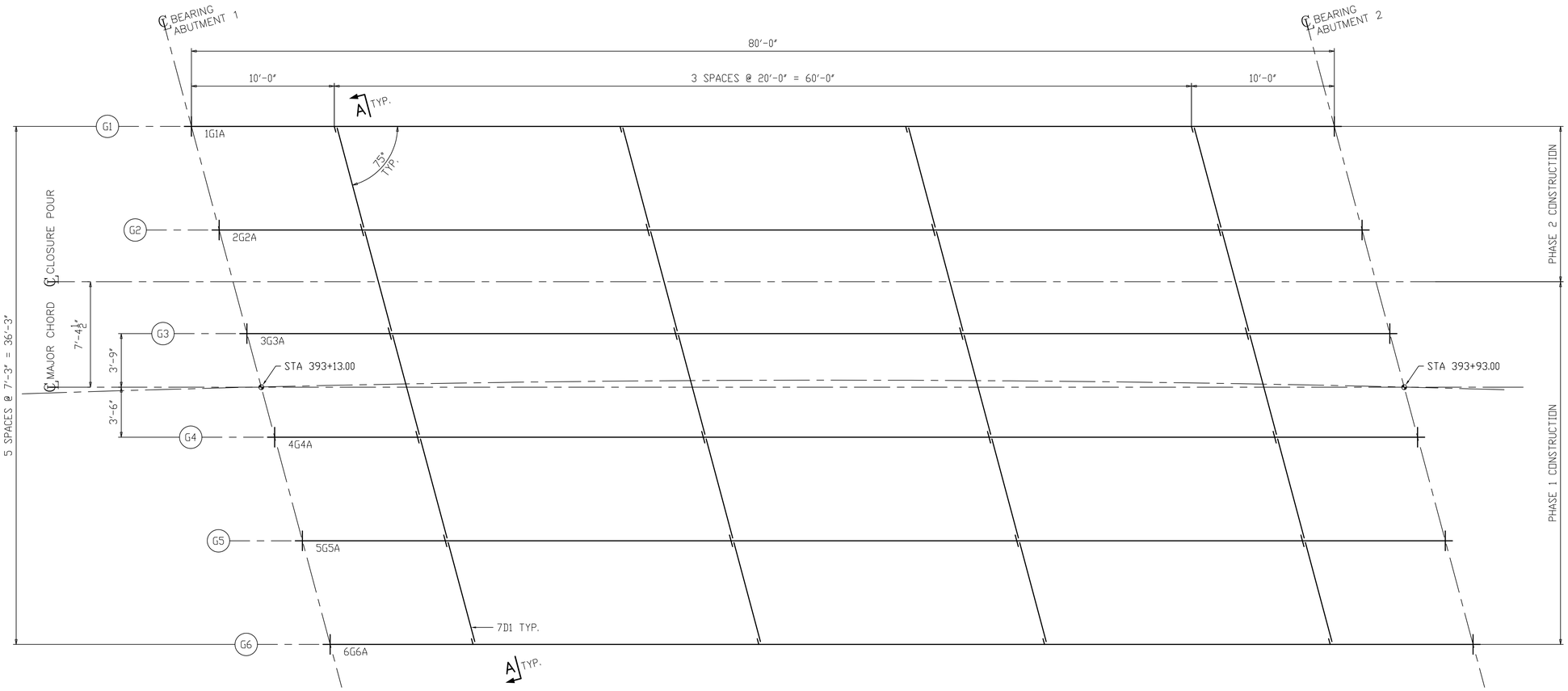
| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| XXXX | | AS NOTED | AS NOTED |

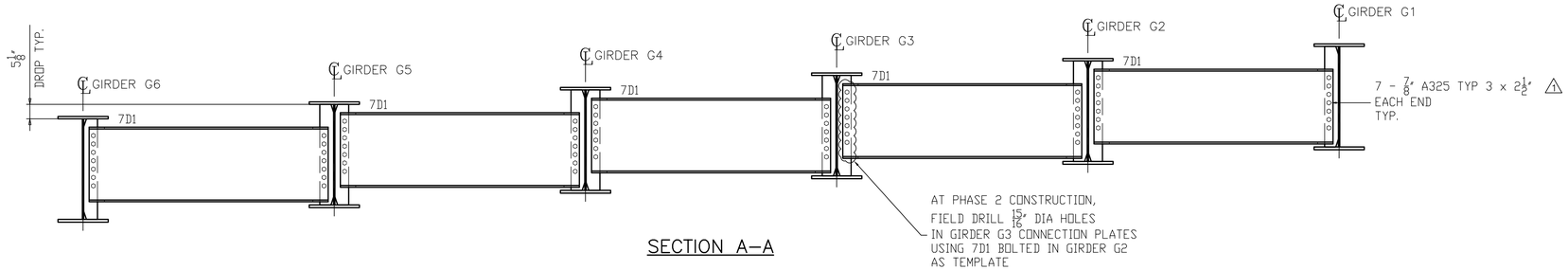
DESCRIPTION: CAMBER & FLANGE DIAGRAMS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379

| | | | |
|---|---|---|---|
| STRUCTURE: PRINCIPAL ARTERIAL OVER WHETSTONE BROOK STATE ROUTE VT9, BRIDGE NO. 48 TOWN OF MARLBORO/COUNTY OF WINDHAM STATE OF VERMONT AGENCY OF TRANSPORTATION | DRAWN: SL | DATE: 04/17 | |
| | CHKD: RA | DATE: 04/22 | |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. 570-2 | DWG NO. C1 | |
| PROJ NO. BRF 010-1(43) | | | |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 | |




FRAMING PLAN




SECTION A–A

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| | | AS NOTED | AS NOTED |

DESCRIPTION: FRAMING PLAN

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379

| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/16 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | E1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |

| ABM INFO | | SHIP | BILL OF MATERIAL | | | | | JOB NO. | DRAWING NO. | REV. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 570-2 | FB1 | |
| PAGE | LINE | MARK | QTY | MARK | MATERIAL | LENGTH FT | LENGTH INCHES | REMARKS | WT | PROCUREMENT NOTES |
| | | | 280 | | A325 TYP 3 7/8ø | | 2 1/2 | 1FL DTIS WASHER | | |
| | | | | | | | | + 1 FL WASHER | | |

| FIELD BOLT LIST | | | | | | A325 TYPE 3 BOLTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE | NO REQ'D | BOLT DIAM. | BOLT LEN. | BOLTS /CONN. | NO OF /CONN. | GRIP* | THICK. OF PCS. CONNECTED | | | | | | WASH CODE | PIECES CONNECTED AND REMARKS |
| 1 | 280 | 7/8"ø | 2 1/2" | 7 | 40 | 15/16" | 7/16 | 1/2 | | | | | 3 | DIAPHRAGM TO GIRDER CONNECTION PLATE |
| | | | | | | | | | | | | | | |

* GRIP LENGTHS EXCLUDE WASHER THICKNESS

1: 1 HARD DTI'S/LOAD INDICATOR FLAT WASHER
2: 2 HARD DTI'S/LOAD INDICATOR FLAT WASHERS
3: 1 HARD DTI'S/LOAD INDICATOR FLAT WASHER AND 1 HARDENED WASHER.

WORK THIS DRAWING WITH E1

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: AS NOTED | SHOP BOLTS: AS NOTED |
|---|---|---|---|

DESCRIPTION: FIELD BOLTS LIST

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379

| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | FB1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |

# GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1). ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (A.A.S.H.T.O.) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SIXTEENTH EDITION, AND ITS LATEST REVISIONS.

MATERIEL SPECIFICATIONS

1). UNLESS NOTED, ALL NEW STRUCTURAL STEEL CONFORM TO AASHTO M270 GRADE 50W (ASTM A709-50W).

⚠1 2). MATERIAL NOTED 'T2' ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS (SUBSECTION 714.01).

3). HIGH STRENGTH BOLTS: AASHTO M164 (ASTM A325) TYPE 3, 7/8" DIA. IN 15/16" DIAMETER HOLES.

FABRICATION

1). BOLT HOLES SHALL BE FABRICATED TO THE REQUIREMENTS OF THE 2012 AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 11.4.8, EXCEPT THAT HOLES SHALL NOT BE PUNCHED FULL SIZE.

⚠1 2). IDENTIFICATION MARKS ON UNPAINTED STEEL SHALL BE IMPRESSED INTO THE MEMBER (WITH A LOW-STRESS STAMP) IN A NON-STRESSED OR LOW STRESSED AREA OF THE MEMBER.

3). TIGHT FIT (WELDED ENDS ONLY). 50% OF THE PROJECTED BEARING AREA SHALL BE IN CONTACT WITHIN 0.5mm (0.02") WITH A PERMISSIBLE VARIATION OF 1.6mm (1/16") FOR THE REMAINING 50% OF THE PROJECTED AREA.

4). GRIND TO BEAR. 75% OF THE PROJECTED AREA SHALL BE IN CONTACT WITHIN 0.25mm (0.01") WITH A PERMISSIBLE VARIATION OF 0.8mm (1/32") FOR THE PROJECTED AREA.

5). MILL TO BEAR. 100% OF THE PROJECTED AREA SHALL BE IN FULL CONTACT.

WELDING

1). THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-02 BRIDGE WELDING CODE AND WITH SPECIFICATIONS SHOWN BESIDE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2). WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGE ARC & SHIELDED METAL ARC PROCESS. ALL WELDS ARE CONTINUOUS U.N.

3). NON-DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATIONS.

FIELD CONNECTIONS

1). ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS AASHTO M164 (ASTM A325) TYPE 3, IN 15/16" DIAMETER HOLES UNLESS OTHERWISE NOTED. INSTALLED PER 506.19(c) AND SPECIAL PROVISIONS.

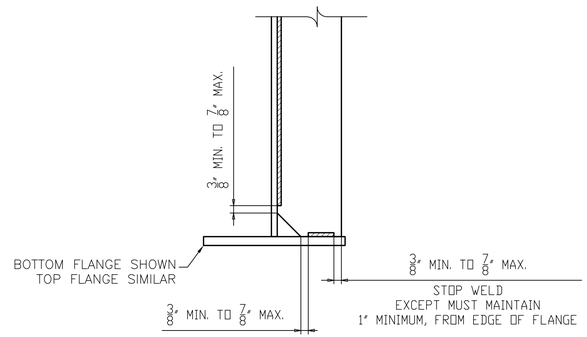
⚠1 2). BOLTS SHALL HAVE HEAVY HEX. NUT, HEX. HEAD AND ONE DTI'S/LOAD INDICATOR FLAT WASHER AND 1 HARDENED WASHER EACH (HARDENED WASHER TO BE PLACED UNDER TURNED ELEMENT (NUT), DTI TO BE PLACED UNDER THE HEAD OF THE BOLT WITH THE PROTRUSIONS FACING THE HEAD OF THE BOLT).

3). PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWING.

4). BOLTS INSTALLED WITH THE STEM VERTICAL SHALL HAVE HEADS UP. BOLTS INSTALLED WITH THE STEM HORIZONTAL SHALL HAVE HEADS TOWARDS THE WEATHER UNLESS CLEARANCE RESTRICTIONS DICTATE OTHERWISE.

CLEANING:

1). ALL STEEL THAT WILL REMAIN UNPAINTED SHALL BE BLAST CLEANED AS PER SSPC SP-10 PER SPEC. 506.14(a).




DETAIL "WS1"
STIFF. WELD TERMINATION

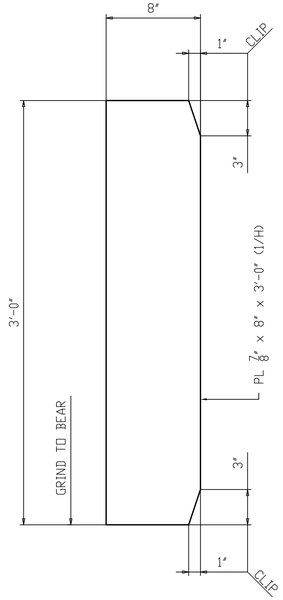
| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: AS NOTED | SHOP BOLTS: AS NOTED |
|---|---|---|---|

DESCRIPTION: GENERAL NOTES

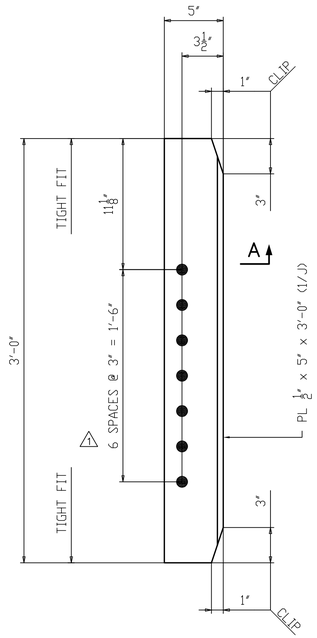

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/16 |
| | CHKD: RA | DATE: 04/22 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | GN1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. ⚠1 |



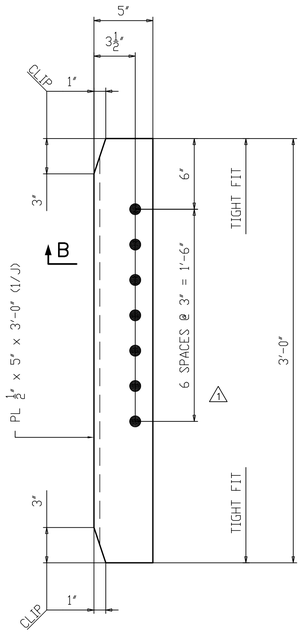

24 ~ BEARING STIFFENER ~ x1a

ABUTMENTS 1 & 2



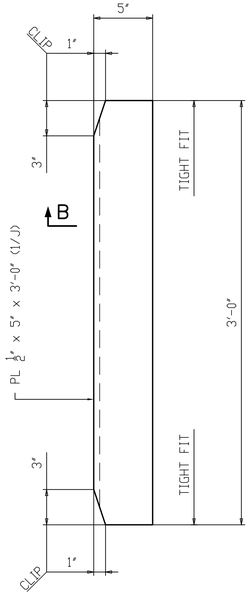

20 ~ INTERMEDIATE STIFFENER ~ x1b

INTERMEDIATE



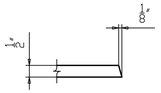

16 ~ INTERMEDIATE STIFFENER ~ x1c

INTERMEDIATE

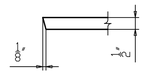



4 ~ INTERMEDIATE STIFFENER ~ x1d

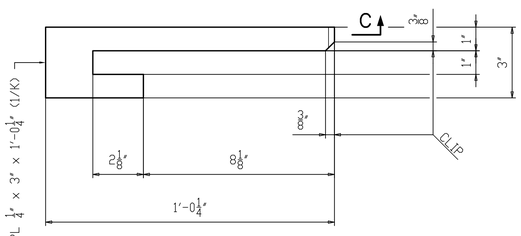
INTERMEDIATE




SECT A

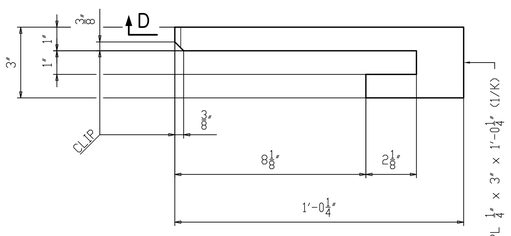



SECT B



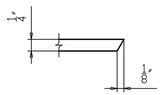

1 ~ DRIP BAR ~ x1f

GIRDER 1G1A @ ABUTMENT 2

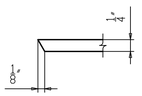



1 ~ DRIP BAR ~ x1g

GIRDER 6G6A @ ABUTMENT 2




SECT C




SECT D

NOTES:

1. FOR GENERAL NOTES SEE SHEET GN1.

| REV. | DATE | REMARKS | DWN | CHK | APVL | SHOP |
|---|---|---|---|---|---|---|
| 1 | 06/02 | AS PER APPROVAL COMMENTS | CG | RA | | |
| 0 | | | | | | |

| MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS: |
|---|---|---|---|
| A709-50W U.N. | SEE DWG. GN1 | 15/16″ø U.N. | NONE |

DESCRIPTION: GIRDER STANDARD DETAILS


CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6726
TENCA 1379


| STRUCTURE: | DRAWN: | DATE: |
|---|---|---|
| PRINCIPAL ARTERIAL OVER WHETSTONE BROOK<br>STATE ROUTE VT9, BRIDGE NO. 48<br>TOWN OF MARLBORO/COUNTY OF WINDHAM<br>STATE OF VERMONT AGENCY OF TRANSPORTATION | SL | 04/17 |
| | CHKD: RA | DATE: 04/23 |
| LOCATION: MARLBORO / WINDHAM, VT | JOB NO. | DWG NO. |
| PROJ NO. BRF 010-1(43) | 570-2 | X1 |
| CUSTOMER: RENAUD BROS., INC. | | REV. 1 |

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

Material specification ASTM-709, Gr 50-50W-HPS 70-NOTE #1
Welding process Submerged Arc welding
Manual or machine Machine
Position of welding Flat or Horizontal
Filler metal specification AWS-A5-23
Filler metal classification F8A2-EN1K-Ni1-H8
Flux Lincoln 960-Elec. LA 75
Shielding gas NA Flow rate NA
Single or multiple pass Single or Multiple
Single or multiple arc Single
Welding current DC
Polarity DC EP
Welding progression See Detail
Root treatment Blast Clean-Wire Brush-Free of loose Scale-Slage-Moisture
Preheat and interpass temperature See Table
Postheat temperature NA
Heat Input Min 51.3 KJ/in Max 73.4KJ/in PQR-1-64.1 KJ/in

**Minimum Preheat and Interpass Temperature, °C [°F]**

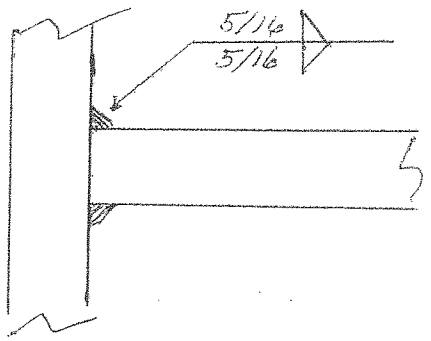
| Welding Process (Base Metal) | Thickness of Thickest Part at Point of Welding, mm [in] To 20 mm [3/4 in] Incl. | Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl. | Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl. | Over 65 mm [2-1/2 in] |
|---|---|---|---|---|
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W]) | 10 [50] | 20 [70] | 65 [150] | 110 [225] |
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])[a] | 10 [50] | 50 [125] | 80 [175] | 110 [225] |

Vermont-ACT
STATE RT. NO VT9
BR NO. 48-Proj NO-BRF 016-1(12)
CBSS NO 5-70
Marlboro/Windham VT

### WELDING PROCEDURE

| Pass no. | Electrode size | Welding current: Amperes | Welding current: Volts | Travel speed |
|---|---|---|---|---|
| | | 620 | 31 | 18 in-PM |
| | 5/32 | 570 TO 650 | 29 TO 33 | 15 TO 20 |

AWS-5-13
AWS D1-5
Joint detail Fillet




NOTE 1 - welding Gr 50 or 50W TO Gr HPS 70

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 201-A
Revision no.

Contractor Casco Bay Steel
Authorized By Paul E. Woodlock
Date 9-15-12

# Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

## WELDING PROCEDURE SPECIFICATION

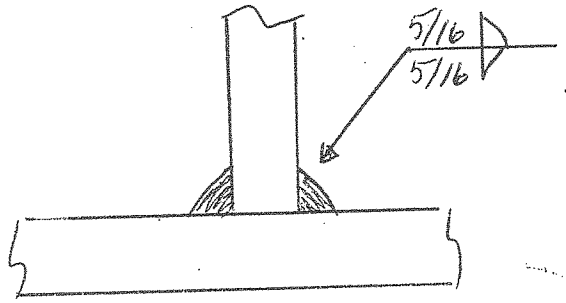
Material specification ASTM-709-Gr36-50-50W/A709M Gr 250-345-345W (FCAW)
Welding process Flux Cored Arc welding
Manual or machine Semi AUTO
Position of welding Flat - Horizonal
Filler metal specification AWS A5-29
Filler metal classification E81T1-Ni1-H4 ESAB
Flux ~A
Shielding gas 75% AR - 25% $CO^2$ Flow rate 35 CFH +8 -4
Single or multiple pass single / multiple Elec Ex 5/8 ± 1/4
Single or multiple arc single
Welding current DC
Polarity DCEP
Welding progression See detail
Root treatment wire brush - area to be free of loose scale, slag, rust & moisture
Preheat and interpass temperature To 20mm (3/4) 10(50), 20+ (3/4+) To 40 (1½) 20(70), 40+ (1½) To 60 (2½) 65 (150) over 60 (2½) 110 (225)
Postheat temperature ~A
Heat Input Min 27.7 KJ/in Max 43.6 KJ/in PQR FCM #8 39.6 KJ/in

Vermont - AOT
STATE RT. No. VT9
BR. No. 48 - Proj No - BRF010-
CBSS No 570
Marlboro/Windham V

## WELDING PROCEDURE

AWS 5-13
AWS D1-5 Joint det

| Pass no. | Electrode size | Welding current Amperes | Welding current Volts | Travel speed |
|---|---|---|---|---|
| | | 287 | 29 | 13 |
| | 1/16 | 258 TO 315 | 26.8 TO 31 | 11.4 TO 14 |




AWS QC 1 PAUL E. GOODALE 88100201 CWI

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 101-B ST OF VT
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E. Goodale
Date 12-6-06

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

Material specification AST M - Gr 50 - 50W NOTE - 1
Welding process Submerged ARC welding
Manual or machine Machine
Position of welding Flat - Horizontal
Filler metal specification AWS A5-23
Filler metal classification F8A2-EN1K-Ni1-H8
Flux Lincoln 960 -, Elec - LA 75
Shielding gas NA Flow rate NA
Single or multiple pass Single & Multiple
Single or multiple arc Single
Welding current DC
Polarity DCEN
Welding progression See Detail
Root treatment Grind - wire Brush - Area Free of Slag - RUST Moisture
Preheat and interpass temperature See Table
Postheat temperature NA
Heat Input Min 409 KJ/in Max 642 KJ/in P.Q.R # 2 - 58.4 KJ/in

Minimum Preheat and Interpass Temperature, °C [°F]

| Welding Process (Base Metal) | To 20 mm [3/4 in] Incl. | Thickness of Thickest Part at Point of Welding, mm [in]: Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl. | Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl. | Over 65 mm [2-1/2 in] |
|---|---|---|---|---|
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W]) | 10 [50] | 20 [70] | 65 [150] | 110 [225] |
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])* | 10 [50] | 50 [125] | 80 [175] | 110 [225] |

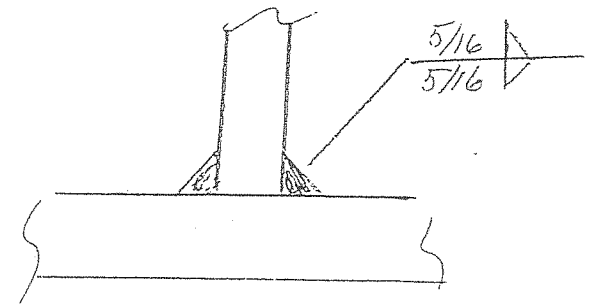
Vermont - AOT
STATE RT NO VT9
BR NO. 48 - Proj NO - BRF 010-1(6)
CBSS NO 5-70
Marlboro / Windham VT

WELDING PROCEDURE

Max. Inter-pass - 450°

| Pass no. | Electrode size | Welding current: Amperes | Welding current: Volts | Travel speed |
|---|---|---|---|---|
| | | 365 | 32 | 12 IPM |
| | 3/32 | 320 TO 350 | 30 TO 33 | 11 TO 14 |

Sec 5-13
AWS D1-5 Joint detail Fillet




NOTE - 1
use For welding Gr 5-50W To (HPS)

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no 2-50 ST of VT
Revision no

Contractor Casco Bay Steel
Authorized By Paul L. Fowler
Date April 13 - 2012

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

Material specification: ASTM Gr 50 - 50W
Welding process: Shielded Metal ARC
Manual or machine: Manual
Position of welding: Flat, Horizontal
Filler metal specification: ANSI/AWS A5.1 - A5-5
Filler metal classification: E 7018 - E 8018 C1/C3
Flux: NA
Shielding gas: NA Flow rate: NA
Single or multiple pass: Single & Multiple
Single or multiple arc: Single
Welding current: AC / DC
Polarity: STraight & Reverse
Welding progression: See Detail
Root treatment: Grind - Wirebrush - Area Free of Slag - RUST - MoiSTure
Preheat and interpass temperature:
Posfheat temperature: NA
Heat Input Min: NA Max: NA

**Minimum Preheat and Interpass Temperature, °C [°F]**

| Welding Process (Base Metal) | Thickness of Thickest Part at Point of Welding, mm [in]: To 20 mm [3/4 in] Incl. | Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl. | Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl. | Over 65 mm [2-1/2 in] |
|---|---|---|---|---|
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W]) | 10 [50] | 20 [70] | 65 [150] | 110 [225] |

Vermont - ACT
STATE RT. NO. VT9
BR. NO. 48 - Proj NO - BRF 010-1(13)
CBSS NO 570
Marlboro / Windham VT

**WELDING PROCEDURE**

| Pass no. | Electrode size | Welding current: Amperes | Welding current: Volts | Travel speed |
|---|---|---|---|---|
| | 7018 | | | |
| AS | 1/8 | 70 To 170 | 22-26 | |
| | 5/32 | 120 To 225 | 22-26 | AS |
| ReQ | 3/16 | 170 To 300 | 24-27 | |
| | 8018 | | | ReQ |
| | 1/8 | 90 To 160 | 22-26 | |
| | 5/32 | 120 To 225 | 22-26 | |
| | 3/16 | 180 To 290 | 24-27 | |

AWS D1-5 Joint detail: Fillet

2F

3/16 To 5/16

1F

3/16 To 3/8

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no.: 401
Revision no.:

Contractor: Casco Bay Steel
Authorized By: Dale E. Beal
Date: April 13 - 2012

# Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification ASTM A709 - Gr50-Gr50W
Welding process Stud welder (SW)
Manual or machine Machine
Position of welding Flat
Filler metal specification NA
Filler metal classification NA
Flux NA
Shielding gas NA Flow rate NA
Single or multiple pass Single
Single or multiple arc Single
Welding current DC
Polarity DCEN
Welding progression See Detail
Root treatment Area Free of Loose Scale, Rust or Moisture
Preheat and interpass temperature See Table
Posfheat temperature NA
Heat Input Min NA Max NA

**Minimum Preheat and Interpass Temperature, °C [°F]**

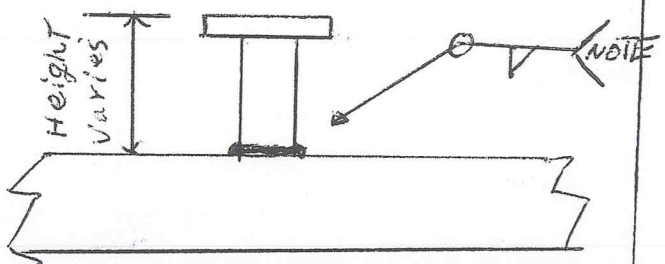
| Welding Process (Base Metal) | Thickness of Thickest Part at Point of Welding, mm [in] To 20 mm [3/4 in] Incl. | Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl. | Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl. | Over 65 mm [2-1/2 in] |
|---|---|---|---|---|
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W]) | 10 [50] | 20 [70] | 65 [150] | 110 [225] |
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])* | 10 [50] | 50 [125] | 80 [175] | 110 [225] |

VT AOT
STATE RT. NO. VT9
BR. NO. 48 - PROJ. #BRF-0104 (4
CBSS JOB #570
MARLBORO/WINDHAM, VT

WELDING PROCEDURE

| Pass no. | Electrode size | Welding current: Amperes | Welding current: Volts | Travel speed |
|---|---|---|---|---|
| | Stud size | | weld Time | |
| NA | 1/2 | 750 950 | .50-.55 | NA |
| | 5/8 | 1100 1400 | .65-.70 | |
| | 3/4 | 1450 1750 | .85-.90 | |
| | 7/8 | 1700 1950 | 1.00-1.20 | |

AWS D1-5 Joint detail STUD Weld




1. ferrules shall be kept dry
visually examined
2. Shall have 360° Flash

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. STUD Weld #1
Revision no. 1 4/4/14

Contractor Casco Bay Steel
Authorized By Paul E Goodale
Date April 4 2014