Form 000021wd
4-96

IOWA DEPARTMENT OF TRANSPORTATION

To Office Bridges and Structures **Date** September 30, 2003

Attention All Employees **Ref No**. 521.1

From Gary Novey

Office Bridges and Structures

Subject MM No. 15 (Repainting of Steel Bridges)

With the release of the Iowa DOT, Standard Specifications for Highway and Bridge Construction, Series 2001, article 2508, the bid items used for the repainting of existing steel bridges have been modified. The bid item "Cleaning and Painting of Structural Steel" has been dropped and replaced with the following items:

1. 2508-0804000 Bridge Cleaning for Painting, LS
2. 2508-0805000 Blast Cleaning of Structural Steel, LS
3. 2508-0990000 Paint Waste Transport and Disposal, LS (for use with hazardous waste only)
4. 2508-0991000 Painting of Structural Steel, LS

The bid item "2508-0970000 Containment, LS" was not changed.

When doing repair projects for steel girder bridges, where:

1. The beams are to be completely repainted.
2. The beams are to be partially repainted after strengthening angles have been installed.

The new bid items along with the "Containment" item should be used.

When doing repair projects for steel girder bridges, where minor repainting of bearings or expansion joints are required, the cost of cleaning and repainting, shall be included in the bid item "Painting of Structural Steel". The cost of temporary storage and disposal of non-hazardous waste shall be included in the bid item "Containment".

The following notes have been updated to include these changes in the Design Manual and CADD cell library. See attachments for a copy of notes and changes.

Containment	E210
Cleaning Painting	211A
Cleaning Painting Attachments	211B
Cleaning Painting Strengthen	E211C
Abutment Bearing Cleaned	E212
Weathering Steel Bridge	213 and M213
Non Weathering Steel Bridge	E214
Cleaned Painted Raise Plates	E470 and M470
Cleaned Painted Steel Extrusion	E471

Bridge Demolition Projects with "Hazardous" Levels of Paint	E481
Weathering Steel Bridge	E930 and M930
Beam Strengthening Notes	E1000 and M1000

GAN/DGB/bj
Attachments

Paint

	Eng.	Met.	Comm.
CONTAINMENT	E210		C210
CLEANING PAINTING	E211A		C211A
CLEANING PAINTING ATTACHMENTS	E211B		C211B
CLEANING PAINTING STRENGTHEN	E211C		C211C
ABUTMENT BEARINGS CLEANED	E212		C212
WEATHERING STEEL BRIDGE	E213	M213	C213
NON WEATHERING STEEL BRIDGE	E214		C214

E210

CONTAINMENT AND DISPOSAL OF WASTE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 2508. ALL COSTS ASSOCIATED WITH HAULING AND DEPOSITING OF WASTE AT THE DESIGNATED SITE/FACILITY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND INCLUDED IN THE CONTRACT PRICE BID FOR THE “CONTAINMENT” ITEM.

This note to be used when removing paint from an existing structure. The scrape test results will be used to determine if the waste is considered hazardous or not. Different containment and disposal methods are specified for hazardous and nonhazardous paint. In addition, the bid item “Paint Waste Transport and Disposal” is required for hazardous waste.

E211A

THE LUMP SUM BID FOR " PAINTING STRUCTURAL STEEL" SHALL INCLUDE THE COST OF PREPARING ALL THE EXISTING STRUCTURAL STEEL FOR PAINTING (INCLUDING BEARINGS) AND FIELD PAINTING EXISTING STRUCTURAL STEEL AS NOTED IN THESE PLANS. CLEANING AND PAINTING SHALL CONFORM TO STANDARD SPECIFICATION 2508.

For repainting of minor parts (bearings, expansion devices, etc.) of steel bridges. Repainting is normally a separate contract. Use containment note and scrape test note. The bid items “Bridge Cleaning for Painting” and “Blast Cleaning of Structural Steel” shall not be used, but considered incidental and included in “Painting of Structural Steel”.

E211B

THE LUMP SUM BID FOR “BRIDGE CLEANING FOR PAINTING” SHALL INCLUDE THE COSTS OF REMOVAL OF ACCUMULATED FOREIGN MATERIAL, LOOSE PAINT AND WATER WASHING AS DESCRIBED IN THE STANDARD SPECIFICATIONS 2508.

THE LUMP SUM BID FOR “BLAST CLEANING OF STRUCTURAL STEEL” SHALL INCLUDE ALL COSTS FOR THE PREPARATION OF STEEL SURFACES THAT REQUIRE PAINTING AS DESCRIBED IN THE STANDARD SPECIFICATIONS 2508.

THE LUMP SUM BID FOR “PAINTING OF STRUCTURAL STEEL” SHALL INCLUDE ALL COSTS FOR PAINTING THE STRUCTURAL STEEL AS DESCRIBED IN THE STANDARD SPECIFICATIONS 2508. AN EPOXY PAINT SYSTEM SHALL BE USED. BEFORE CLEANING THE EXISTING STRUCTURAL STEEL, THE BRIDGE CONTRACTOR SHALL REMOVE ANY ATTACHMENTS NOT BEING REUSED. IN ADDITION, ANY EXISTING STEEL INACCESSABLE AFTER REASSEMBLY WILL BE GIVEN THE FULL PAINT SYSTEM BEFORE FINAL ASSEMBLY OF THE STRUCTURE.

For remodeled steel bridges, where complete repainting is required. Use containment note and scrape test note.

E211C

THE LUMP SUM BID ITEMS FOR “BRIDGE CLEANING FOR PAINTING”, “BLAST CLEANING OF STRUCTURAL STEEL” AND “PAINTING OF STRUCTURAL STEEL” SHALL INCLUDE THE COSTS OF CLEANING, BLAST CLEANING AND FIELD PAINTING OF THE EXISTING STRUCTURAL STEEL AREA WHERE THE STRENGTHENING ANGLES WILL BE INSTALLED. THE BID ITEMS SHALL CONFORM TO THE STANDARD SPECIFICATIONS 2508. THE PAINT SYSTEM REQUIRED IS DESCRIBED IN THE “BEAM STRENGTHENING NOTES” IN THESE PLANS.

Bid items for “Bridge Cleaning for Painting”, “Blast Cleaning of Structural Steel” and “Painting of Structural Steel” and "Containment" shall be included on the plan in accordance with Article 2508.1A of the "Standard Specifications for “Non-Hazardous Paint Removal”.

Place "Beam Strengthening Notes" E1000 (M1000) on the detail sheet, which shows the strengthening angles.

E212

ABUTMENT BEARINGS (SOLE PLATES AND MASONRY PLATES) ARE TO BE CLEANED AND PAINTED. CLEANING BY VACUUM BLASTING OR BY A NON-BLASTING METHOD IS REQUIRED. SURFACE TO BE PAINTED SHALL BE PREPARED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL (SSPC) SP3. SURFACES OF THE ABUTMENT BEARINGS ARE TO BE GIVEN ONE COAT OF RUSTOLEUM PRIMER AND ONE COAT OF RUST-OLEUM FINAL COAT OR APPROVED EQUAL PRIMER AND FINAL COAT. THE COLOR OF THE DRY PAINT SHOULD APPROXIMATE THE COLOR OF CONCRETE. THIS WORK SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER LUMP SUM FOR THE BID ITEM, "PAINTING OF STRUCTURAL STEEL".

To be used on repair of a concrete beam bridge when bearings require painting. Check with your Section Leader or District Personnel to see if this should be part of contract the or if the bridge crew can handle the work. Include containment note and scrape test note.

E213

THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE 50W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 2408.30.

M213

THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709M GRADE 345W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION 2408.30.

Use this note in the General Notes for all new structures using weathering steel. A number of other notes particular to weathering steel bridges are required. See E930-C949.

E214

PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2408.30.

Use this note on any new steel structure, which cannot use weathering steel. The standard specification requires a shop applied inorganic zinc silicate paint. The specification does allow the use of the topcoat to be optional. If the topcoat is to be used, then the location (example exterior face of exterior beam) must be specified in the plans.

Paint

	Eng.	Met.	Comm.
CLEANED PAINTED RAISE PLATES	E470	M470	C470
CLEANED PAINTED STEEL EXTRUSION	E471		C471

E470

SURFACES OF EXISTING EXPANSION DEVICE ARE TO BE CLEANED OF EXISTING CORROSION AND PAINT IN PREPARATION FOR FIELD WELDING. THE 1 1/2 " THICK RAISE PLATES FOR THE EXPANSION DEVICE ARE TO BE CLEANED AND PAINTED AFTER FIELD WELDING TO THE EXISTING EXPANSION DEVICE. THE CLEANING IS TO BE BY VACUUM BLAST OR BY A NON-BLASTING METHOD AND IS TO COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL SPECIFICATIONS SSPC-SP3. THE EXPOSED TOP SURFACES OF THE COMPLETED EXPANSION DEVICE ARE TO BE GIVEN ONE COAT OF RUST-OLEUM PRIMER AND ONE COAT OF RUST-OLEUM FINAL COAT OR AN APPROVED EQUAL PRIMER AND FINAL COAT. THE COLOR OF THE DRY PAINT SHOULD APPROXIMATE THE COLOR OF CONCRETE. ONLY THE EXPOSED SURFACES OF THE EXPANSION DEVICE AND RAISE PLATES ARE TO BE PAINTED. NO PAINTING OF OTHER STEEL IS REQUIRED. BECAUSE OF THE SMALL QUANTITY, ALL COST ASSOCIATED WITH CLEANING AND PAINTING OF THE EXPANSION DEVICE AS NOTED IS TO BE INCLUDED IN THE BID ITEM "PAINTING STRUCTURAL STEEL".

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING RAISE PLATES ON EXPANSION DEVICE AS SHOWN EXCEPT ITEMS INCLUDED IN THE BID ITEM " PAINTING STRUCTURAL STEEL" AND THE BID ITEM "CONTAINMENT".

M470

SURFACES OF EXISTING EXPANSION DEVICE ARE TO BE CLEANED OF EXISTING CORROSION AND PAINT IN PREPARATION FOR FIELD WELDING. THE 40 mm THICK RAISE PLATES FOR THE EXPANSION DEVICE ARE TO BE CLEANED AND PAINTED AFTER FIELD WELDING TO THE EXISTING EXPANSION DEVICE. THE CLEANING IS TO BE BY VACUUM BLAST OR BY A NON-BLASTING METHOD AND IS TO COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL SPECIFICATIONS SSPC-SP3. THE EXPOSED TOP SURFACES OF THE COMPLETED EXPANSION DEVICE ARE TO BE GIVEN ONE COAT OF RUST-OLEUM PRIMER AND ONE COAT OF RUST-OLEUM FINAL COAT OR AN APPROVED EQUAL PRIMER AND FINAL COAT. THE COLOR OF THE DRY PAINT SHOULD APPROXIMATE THE COLOR OF CONCRETE. ONLY THE EXPOSED SURFACES OF THE EXPANSION DEVICE AND RAISE PLATES ARE TO BE PAINTED. NO PAINTING OF OTHER STEEL IS REQUIRED. BECAUSE OF THE SMALL QUANTITY, ALL COST ASSOCIATED WITH CLEANING AND PAINTING OF THE EXPANSION DEVICE AS NOTED IS TO BE INCLUDED IN THE BID ITEM "PAINTING STRUCTURAL STEEL".

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING RAISE PLATES ON EXPANSION DEVICE AS SHOWN EXCEPT ITEMS INCLUDED IN THE BID ITEM " PAINTING STRUCTURAL STEEL" AND THE BID ITEM "CONTAINMENT".

Expand this definition of "structural steel" when appropriate. Use containment note and scrape test note. See (Cleaning and Painting)

E471

SURFACES OF EXISTING EXPANSION DEVICE AS DETAILED IN THESE PLANS ARE TO BE CLEANED OF EXISTING CORROSION AND PAINT IN PREPARATION FOR FIELD WELDING. THE NEW STEEL EXTRUSION TO BE PAINTED SHALL BE CLEANED AND PAINTED AFTER FIELD WELDING TO THE EXISTING EXPANSION DEVICE. THE CLEANING IS TO BE BY VACUUM BLAST OR BY A NON-BLASTING METHOD AND IS TO COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL SPECIFICATIONS SSPC-SP3. THE EXPOSED SURFACES OF THE COMPLETED EXPANSION DEVICE ARE TO BE GIVEN ONE COAT OF RUST-OLEUM PRIMER AND ONE COAT OF RUST-OLEUM FINAL COAT OR APPROVED EQUAL PRIMER AND FINAL COAT. THE COLOR OF THE DRY PAINT SHOULD APPROXIMATE THE COLOR OF CONCRETE. ONLY THOSE SURFACES OF THE EXPANSION DEVICE NOTED TO BE PAINTED ARE TO BE PAINTED. NO PAINTING OF OTHER STRUCTURAL STEEL IS REQUIRED. BECAUSE OF THE SMALL QUANTITY, ALL COST ASSOCIATED WITH CLEANING AND PAINTING OF THE EXPANSION DEVICE AS NOTED IS TO BE INCLUDED IN THE BID ITEM "PAINTING STRUCTURAL STEEL".

THE BID ITEM "STEEL EXTRUSION JOINT WITH NEOPRENE" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING THE EXPANSION DEVICE AS SHOWN, EXCEPT ITEMS INCLUDED IN THE BID ITEM "PAINTING STRUCTURAL STEEL" AND THE BID ITEM "CONTAINMENT".

Use this note when a strip seal is to be installed on a sliding plate expansion device. The plans should show what is to be painted. Use containment note and scrape test note. See (Repair & Rehabilitation, General Information, Cleaning and Painting)

Scrape Test

	Eng.	Met.	Comm.
SCRAPE TESTS	E480		C480
Bridge demolition projects with "hazardous" levels of paint	E481		

E480

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS ____ PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS ____ PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

Place this note on any plan requiring a paint scrape test. Scrape tests will be required in the following situations:

1. *When a new bridge or culvert required removal of an existing bridge that has painted structural steel.*
2. *On retrofit rail projects when the existing steel rail is to be removed.*
3. *On repair projects when cleaning and painting structural steel, including raise plates, bearings and strengthening angles.*
4. *Bridge remodeling or widening where painting of or removal of the steel beams is involved.*

Modify this note to "accommodate" the following situations:

1. *If the scrape test indicates lead or chromium in excess of 5000 PPM an additional test will be performed to indicate leachable amount of material involved. Place this in parenthesis after the sample results [i.e. (includes ___ PPM leachable)].*

If the paint is removed from the steel by a cleaning process and there is a significant amount of paint waste (i.e. a widening or remodeling project involving complete repaint) and the leachable material is > 5 PPM for either lead or chromium notify the Section Leader.

Scrape tests are required for steel bridge removal, including steel rail retrofits. Designers need to inform their squad leader early in the design phase of any project requiring structural steel removal so that scrape tests can be received before job turn-in. Squad leaders will then notify Gary Novey, who will order the scrape tests. Results of the test analysis will be returned to us to be included on the plans as noted.

If retrofit rail plans, including removal of steel handrails, are incorporated into road plans, place the scrape test note on the retrofit rail plan.

E481

THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS IN SUCH A MANNER THAT ANY PAINT REMOVED DURING DEMOLITION IS CONTAINED, COLLECTED, AND DISPOSED OF IN ACCORDANCE WITH STANDARD SPECIFICATION 2508 AND ALL FEDERAL AND STATE REGULATIONS.

BEFORE DELIVERY OF ANY SCRAP STEEL THE CONTRACTOR SHALL PROVIDE A WRITTEN NOTICE TO THE RECEIVING FACILITY. THIS NOTICE SHALL AT A MINIMUM INCLUDE:

1. A NOTICE THAT THE SCRAP STEEL IS COATED WITH PAINT THAT HAS REGULATED MATERIALS AT LEVELS WHICH COULD BE HAZARDOUS TO EMPLOYEES OR THE ENVIRONMENT.

2. A COPY OF THE SCRAPE SAMPLE PROVIDED IN THE CONTRACT DOCUMENTS.

3. A SIGNATURE BLOCK FOR THE RECEIVING FACILITY TO CONFIRM THEIR RECEIPT OF THIS INFORMATION.

A COPY OF THIS NOTICE, SIGNED BY THE RECEIVING FACILITY, SHALL BE RETURNED TO THE ENGINEER BEFORE ANY SCRAP STEEL IS REMOVED FROM THE PROJECT.

This plan note (E481) should be used in bridge demolition projects, which have "hazardous" levels of paint. This would include the minor projects were we remove painted railings, expansion devices, etc. as intact units. Hazardous levels are where the general scrape test has shown levels of chromium or lead in the paint system at 5000 ppm or greater and the additional TCLP (leach test) show leachable levels of 5 ppm or greater.

E930

ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE 50W. THE MINIMUM YIELD POINT FOR GRADE 50W STRUCTURAL STEEL IS 50,000 PSI FOR PLATES 4 INCHES AND UNDER IN THICKNESS, AND ALL STRUCTURAL SHAPES. THE GRADE 50W STEEL IS A WEATHERING STEEL AND IS TO REMAIN UNPAINTED, EXCEPT AS NOTED.

FLOOR DRAINS INCLUDING PLATES WELDED TO THE DRAIN FOR DRAIN SUPPORT ARE TO BE GRADE 36 STEEL.

ALL PIECES COMPRISING THE [ABUTMENT AND] PIER BEARINGS SHALL COMPLY WITH THE REQUIREMENTS AS STATED IN THE NOTES ON DESIGN SHEET/S ? & ?.

SHEAR STUDS ARE TO BE OF AN APPROVED TYPE LISTED IN MATERIALS I.M. 453.10, APPENDIX A.

THE FINISH ON FLOOR DRAINS, BEARINGS AND WEATHERING STEEL SHALL BE IN ACCORDANCE WITH THE PLAN NOTES AND STANDARD SPECIFICATIONS 2408. [ALL WEATHERING STEEL EMBEDDED INTO AN INTEGRAL ABUTMENT SHALL BE PAINTED TO A DISTANCE OF 1 FOOT FROM THE CONCRETE FACE AND SEALED BY CAULKING AT THE ABUTMENT CONCRETE AND STEEL INTERFACE.] EXTERIOR SURFACES OF ALL GALVANIZED COMPONENTS WHICH ARE DESIGNATED IN THE CONTRACT DOCUMENTS TO BE PAINTED SHALL BE PREPARED ACCORDING TO THE WRITTEN RECOMMENDATION OF THE PAINT MANUFACTURER.

THE GRADE 50W STEEL FOR THE WEBS OF THE EXTERIOR GIRDERS OF THE BRIDGE SHALL BE OF THE SAME TYPE AND FROM THE SAME SOURCE.

BOLTS FOR USE WITH WEATHERING STEEL SHALL BE A325 TYPE III WITH A563 GRADE DH3 NUTS AND F436 TYPE III WASHERS.

BOLTS USED TO SPLICE GIRDER SECTIONS ARE TO BE INSTALLED SUCH THAT NUTS ARE ON THE INSIDE FACE OF THE GIRDER WEBS FOR THE EXTERIOR GIRDERS, AND ON THE TOP OF BOTH TOP AND BOTTOM FLANGES OF ALL THE GIRDERS.

THE STEEL SHALL BE KEPT FREE OF OIL, GREASE, DIRT, CRAYON OR CHALK MARKS, CONCRETE SPATTER AND ANY OTHER FOREIGN MATTER THAT MAY AFFECT THE NATURAL OXIDATION OF THE STEEL. ANY FOREIGN MATTER REMAINING ON THE STEEL AFTER COMPLETION OF BRIDGE CONSTRUCTION SHALL BE REMOVED BY THE BRIDGE CONTRACTOR AS DIRECTED BY THE ENGINEER. THE RESULTANT SURFACE SHALL BE FREE OF ALL VISIBLE RESIDUES. ALL COSTS ASSOCIATED WITH CLEANING STEEL SURFACES SHALL BE BORNE BY THE BRIDGE CONTRACTOR.

SEAL MATERIAL FOR CAULKING SHALL BE NEUTRAL CURE AND NON SAG SILICONE. TWO PRODUCTS MEETING THESE CRITERIA ARE DOW 888 OR CSL342 JOINT SEALANT.

M930

ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709M GRADE 345W. THE MINIMUM YIELD POINT FOR GRADE 345W STRUCTURAL STEEL IS 345 Mpa FOR PLATES 100 mm AND UNDER IN THICKNESS, AND ALL STRUCTURAL SHAPES. THE GRADE 345W STEEL IS A WEATHERING STEEL AND IS TO REMAIN UNPAINTED, EXCEPT AS NOTED.

FLOOR DRAINS INCLUDING PLATES WELDED TO THE DRAIN FOR DRAIN SUPPORT ARE TO BE GRADE 250 STEEL.

ALL PIECES COMPRISING THE [ABUTMENT AND] PIER BEARINGS SHALL COMPLY WITH THE REQUIREMENTS AS STATED IN THE NOTES ON DESIGN SHEET[S x &] x.

SHEAR STUDS ARE TO BE OF AN APPROVED TYPE LISTED IN MATERIALS I.M. 453.10, APPENDIX A.

THE FINISH ON FLOOR DRAINS, BEARINGS AND WEATHERING STEEL SHALL BE IN ACCORDANCE WITH THE PLAN NOTES AND STANDARD SPECIFICATIONS 2408. [ALL WEATHERING STEEL EMBEDDED INTO AN INTEGRAL ABUTMENT SHALL BE PAINTED TO A DISTANCE OF 300 mm FROM THE CONCRETE FACE AND SEALED BY CAULKING AT THE ABUTMENT CONCRETE AND STEEL INTERFACE.] EXTERIOR SURFACES OF ALL GALVANIZED COMPONENTS WHICH ARE DESIGNATED IN THE CONTRACT DOCUMENTS TO BE PAINTED SHALL BE PREPARED ACCORDING TO THE WRITTEN RECOMMENDATION OF THE PAINT MANUFACTURER.

THE GRADE 345W STEEL FOR THE WEBS OF THE EXTERIOR GIRDERS OF THE BRIDGE SHALL BE OF THE SAME TYPE AND FROM THE SAME SOURCE.

BOLTS FOR USE WITH WEATHERING STEEL SHALL BE A325 TYPE III WITH A563 GRADE DH3 NUTS AND F436 TYPE III WASHERS.

BOLTS USED TO SPLICE GIRDER SECTIONS ARE TO BE INSTALLED SUCH THAT NUTS ARE ON THE INSIDE FACE OF THE GIRDER WEBS FOR THE EXTERIOR GIRDERS, AND ON THE TOP OF BOTH TOP AND BOTTOM FLANGES OF ALL THE GIRDERS.

THE STEEL SHALL BE KEPT FREE OF OIL, GREASE, DIRT, CRAYON OR CHALK MARKS, CONCRETE SPATTER AND ANY OTHER FOREIGN MATTER THAT MAY AFFECT THE NATURAL OXIDATION OF THE STEEL. ANY FOREIGN MATTER REMAINING ON THE STEEL AFTER COMPLETION OF BRIDGE CONSTRUCTION SHALL BE REMOVED BY THE BRIDGE CONTRACTOR AS DIRECTED BY THE ENGINEER. THE RESULTANT SURFACE SHALL BE FREE OF ALL VISIBLE RESIDUES. ALL COSTS ASSOCIATED WITH CLEANING STEEL SURFACES SHALL BE BORNE BY THE BRIDGE CONTRACTOR.

SEAL MATERIAL FOR CAULKING SHALL BE NEUTRAL CURE AND NON SAG SILICONE. TWO PRODUCTS MEETING THESE CRITERIA ARE DOW 888 OR CSL342 JOINT SEALANT.

Color of the paint used on galvanized deck drains shall be specified in plans and shall match the color of the bridge girders.

Beam Strengthening

	Eng.	Met.	Comm.
BEAM STRENGTHENING NOTES	E1000	M1000	C1000
SHEAR STUDS	E1001	M1001	C1001

E1000

BEAM STRENGTHENING NOTES:

THE EXISTING _____ BEAMS TO BE STRENGTHENED WITH NEW STEEL __ x __ x __ STRENGTHENING ANGLES IN ACCORDANCE WITH THE FOLLOWING CONSTRUCTION SEQUENCE:

1.THE AREA OF THE EXISTING BEAMS WHICH WILL BE UNDER THE STRENGTHENING ANGLES AND AT LEAST ONE INCH OUTSIDE THE AREAS SHALL BE BLAST CLEANED TO A NEAR-WHITE CONDITION IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2508. VACUUM BLAST SHALL BE USED. IF THE CONTRACTOR RECYCLES THE BLAST MATERIAL, IN NO CASE SHALL THE RECYCLING PROCESS UTILIZE A WET SEPARATION METHOD. CONTAINMENT AND DISPOSAL OF WASTES SHALL BE IN ACCORDANCE WITH CURRENT THE STANDARD SPECIFICATIONS 2508.

2.THE PORTION OF THE BLAST-CLEANED SURFACES WHICH WILL BE UNDER THE STRENGTHENING ANGLES AND AN ADDITIONAL ONE INCH OUTSIDE THESE AREAS SHALL BE GIVEN A PRIME COAT OF ZINC SILICATE PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2508. THE STRENGTHENING ANGLES SHALL RECEIVE THE ZINC SILICATE PRIMER ALSO. THE ZINC SILICATE PAINT SHALL MEET THE REQUIREMENTS OF MATERIALS IM. 482.02 APPENDIX A. CARE SHALL BE TAKEN TO INSURE THAT ZINC SILICATE PRIMER IS APPLIED ONLY ON BLAST-CLEANED STEEL SURFACES AND THAT NONE IS APPLIED OVER OLD PRIMER OR PAINT.

3. RESTRICT TRAFFIC TO ONE LANE OF TWO-WAY TRAFFIC ON THE SIDE OF THE BRIDGE AWAY FROM THE EXTERIOR BEAM BEING STRENGTHENED.

4. FIELD DRILL THE EXISTING I-BEAM WEB FOR 3/4 " DIA. H.S. BOLTS USING THE SHOP DRILLED HOLES IN THE STRENGTHENING ANGLES AS A TEMPLATE, EXCEPT AT DIAPHRAGM CONNECTIONS (NOTE AND DETAIL AS APPROPRIATE).

5. AFTER DRILLING, REMOVE STRENGTHENING ANGLES AND CLEAN ALL BURRS AND CUTTINGS FROM THE STRENGTHENING ANGLES AND BEAM MEMBERS.

6. BOLT THE _____ ANGLE TO THE I-BEAM WITH 3/4 " DIA. H.S. BOLT. FULLY TIGHTEN ALL BOLTS FOR A FRICTION TYPE CONNECTION. DURING THE TIGHTENING OF BOLTS, ALL POSSIBLE EFFORTS SHALL BE MADE BY THE CONTRACTOR TO MINIMIZE THE AMOUNT OF EQUIPMENT AND SUPPLIES STORED ON THE BRIDGE DECK AS DIRECTED BY THE ENGINEER. TRAFFIC MAY BE RESTORED AFTER ALL BOLTS ARE TIGHTENED.

7. PAINT THE BOLTS, NUTS, ANGLES, AND THE BLAST-CLEANED AREA AROUND IT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2508 AND WITH THE FOLLOWING ADDITIONS/EXCEPTIONS:

A. REMOVE ANY SILICATE PRIMER APPLIED (IN STEP 2 ABOVE) OVER OLD PRIMER OR PAINT.

B. APPLY EPOXY ALUMINUM PRIMER TO THE ATTACHED ANGLES AND AN ADDITIONAL 3 INCHES OUTSIDE THE ANGLES.

C. APPLY WATERBORNE ACRYLIC PAINT FINISH COAT OVER THE EPOXY ALUMINUM PRIMER. FINAL PAINT COAT SHALL MATCH THE COLOR OF THE EXISTING PAINT.

STRENGTHENING ANGLES SHOULD BE PLACED PRIOR TO PLACEMENT OF ANY OVERLAY OR CAST IN PLACE BARRIER RAIL.

ANY DAMAGE BY THE CONTRACTOR TO PORTIONS OF THE STRUCTURE AND ITS PAINT SYSTEM NOT SPECIFICALLY COVERED BY THE SCOPE OF THESE PLANS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

ALL NEW BOLTS ARE TO BE 3/4 " DIA. H.S. BOLTS AND ALL HOLES ARE TO BE 13/16 " DIA. BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. NO ADDITIONAL DEAD LOADS AND/OR CONSTRUCTION LOADS WILL BE ALLOWED ON THE BRIDGE WHILE BOLTS ARE BEING TORQUED TO SPECIFICATIONS.

THE PRICE BID FOR "STRUCTURAL STEEL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING STRENGTHENING ANGLES (INCLUDING FIELD DRILLING EXISTING BEAMS) AS NOTED ABOVE EXCEPT FOR ITEMS INCLUDED IN THE BID ITEMS FOR “BRIDGE CLEANING FOR PAINTING”, “BLAST CLEANING OF STRUCTURAL STEEL”, “CONTAINMENT” AND PAINTING OF STRUCTURAL STEEL". CHARPY V NOTCH TESTING IS REQUIRED FOR THE STRENGTHENING ANGLES. ALSO SEE GENERAL NOTES FOR OTHER ITEMS INCLUDED IN STRUCTURAL STEEL.

M1000

BEAM STRENGTHENING NOTES:

THE EXISTING _____ BEAMS TO BE STRENGTHENED WITH NEW STEEL __ x __ x __ STRENGTHENING ANGLES IN ACCORDANCE WITH THE FOLLOWING CONSTRUCTION SEQUENCE:

1. THE AREA OF THE EXISTING BEAMS WHICH WILL BE UNDER THE STRENGTHENING ANGLES AND AT LEAST 25 mm OUTSIDE THE AREAS SHALL BE BLAST CLEANED TO A NEAR-WHITE CONDITION IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2508. VACUUM BLAST SHALL BE USED. IF THE CONTRACTOR RECYCLES THE BLAST MATERIAL, IN NO CASE SHALL THE RECYCLING PROCESS UTILIZE A WET SEPARATION METHOD. CONTAINMENT AND DISPOSAL OF WASTES SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 2508.

2. THE PORTION OF THE BLAST-CLEANED SURFACES WHICH WILL BE UNDER THE STRENGTHENING ANGLES AND AN ADDITIONAL 25 mm OUTSIDE THESE AREAS SHALL BE GIVEN A PRIME COAT OF ZINC SILICATE PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2508. THE STRENGTHENING ANGLES SHALL RECEIVE THE ZINC SILICATE PRIMER ALSO. THE ZINC SILICATE PAINT SHALL MEET THE REQUIREMENTS OF MATERIALS IM. 482.02 APPENDIX A. CARE SHALL BE TAKEN TO INSURE THAT ZINC SILICATE PRIMER IS APPLIED ONLY ON BLAST-CLEANED STEEL SURFACES AND THAT NONE IS APPLIED OVER OLD PRIMER OR PAINT.

3. RESTRICT TRAFFIC TO ONE LANE OF TWO-WAY TRAFFIC ON THE SIDE OF THE BRIDGE AWAY FROM THE EXTERIOR BEAM BEING STRENGTHENED.

4. FIELD DRILL THE EXISTING I-BEAM WEB FOR 19.0 mm DIA. H.S. BOLTS USING THE SHOP DRILLED HOLES IN THE STRENGTHENING ANGLES AS A TEMPLATE, EXCEPT AT DIAPHRAGM CONNECTIONS (NOTE AND DETAIL AS APPROPRIATE).

5. AFTER DRILLING, REMOVE STRENGTHENING ANGLES AND CLEAN ALL BURRS AND CUTTINGS FROM THE STRENGTHENING ANGLES AND BEAM MEMBERS.

6. BOLT THE _____ ANGLE TO THE I-BEAM WITH 19.0 mm DIA. H.S. BOLT. FULLY TIGHTEN ALL BOLTS FOR A FRICTION TYPE CONNECTION. DURING THE TIGHTENING OF BOLTS, ALL POSSIBLE EFFORTS SHALL BE MADE BY THE CONTRACTOR TO MINIMIZE THE AMOUNT OF EQUIPMENT AND SUPPLIES STORED ON THE BRIDGE DECK AS DIRECTED BY THE ENGINEER. TRAFFIC MAY BE RESTORED AFTER ALL BOLTS ARE TIGHTENED.

7. PAINT THE BOLTS, NUTS, ANGLES, AND THE BLAST-CLEANED AREA AROUND IT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 2508.
A. REMOVE ANY SILICATE PRIMER APPLIED (IN STEP 2 ABOVE) OVER OLD PRIMER OR PAINT.

B. APPLY EPOXY ALUMINUM PRIMER TO THE ATTACHED ANGLES AND AN ADDITIONAL 75 mm OUTSIDE THE ANGLES.

C. APPLY WATERBORNE ACRYLIC PAINT FINISH COAT OVER THE EPOXY ALUMINUM PRIMER. FINAL PAINT COAT SHALL MATCH THE COLOR OF THE EXISTING PAINT.

STRENGTHENING ANGLES SHOULD BE PLACED PRIOR TO PLACEMENT OF ANY OVERLAY OR CAST IN PLACE BARRIER RAIL.

ANY DAMAGE BY THE CONTRACTOR TO PORTIONS OF THE STRUCTURE AND ITS PAINT SYSTEM NOT SPECIFICALLY COVERED BY THE SCOPE OF THESE PLANS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

ALL NEW BOLTS ARE TO BE 19.0 mm DIA. H.S. BOLTS AND ALL HOLES ARE TO BE 20.6 mm DIA. BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH THE METRIC STANDARD SPECIFICATIONS. NO ADDITIONAL DEAD LOADS AND/OR CONSTRUCTION LOADS WILL BE ALLOWED ON THE BRIDGE WHILE BOLTS ARE BEING TORQUED TO SPECIFICATIONS.

THE PRICE BID FOR "STRUCTURAL STEEL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING STRENGTHENING ANGLES (INCLUDING FIELD DRILLING EXISTING BEAMS) AS NOTED ABOVE EXCEPT FOR ITEMS INCLUDED IN THE BID ITEMS FOR “BRIDGE CLEANING FOR PAINTING”, “BLAST CLEANING OF STRUCTURAL STEEL”, “CONTAINMENT” AND PAINTING OF STRUCTURAL STEEL". CHARPY V NOTCH TESTING IS REQUIRED FOR THE STRENGTHENING ANGLES. ALSO SEE GENERAL NOTES FOR OTHER ITEMS INCLUDED IN STRUCTURAL STEEL.

These notes specify surface preparation, paint application, and construction sequence for the installation of beam strengthening angles for a deck repair and overlay project. Place this note with the details for the strengthening angles; not in the General Notes. Modify notes as appropriate. Include notes for Containment (E210), Bridge Cleaning for Painting, Blast Cleaning of Structural Steel and Painting of Structural Steel (E211C), and Scrape Test (E225) in General Notes.