

CONTRACT DOCUMENTS AND SPECIFICATIONS
PROPOSED GRADE CROSSING REHABILITATION AT
STEAMPLANT ROAD/AIRPORT ROAD

CITY OF GALLATIN

ENGINEERING DIVISION
132 WEST MAIN STREET
GALLATIN, TENNESSEE 37066

DATE: 4-9-2013

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INVITATION TO BID
&
INFORMATION FOR BIDDERS

SECTION A

INVITATION TO BID

Sealed bids will be received by the City of Gallatin in the office of the City Engineer, Room 204, City Hall, 132 West Main Street, Gallatin, Tennessee until 10:30 a.m. local time, 4-17-2013, at which time they will be opened and read aloud for the construction of PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD.

Plans, Specifications, Proposal Forms, and Contract Documents may be inspected at, and obtained after 2:00 p.m. local time, 4-9-2013 at Crouch Engineering, P.C. located at 428 Wilson Pike Circle upon payment of \$100.00 per set or by downloading from the City's home page <http://www.gallatintn.us/> under "I Want To – Get-City Bid Information".

All bidders must be licensed contractors and eligible to bid Contracts in the State of Tennessee. The City of Gallatin reserves the right to reject any or all bids.

INFORMATION FOR BIDDERS

All bidders must satisfy themselves by personal examination of the locations of the proposed work, by examination of the specifications and requirements of the work and the accuracy of the estimate of the quantities of the work to be done, and shall not at any time after the submission of a bid dispute or complain of such estimate nor assert that there was any misunderstanding in regard to the nature or amount of work to be done. The City shall not be responsible for bidders' errors and misjudgments, nor any information on local conditions or general laws and regulations.

The Documents and Specifications contain the provisions required for the design and build of PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD. No information obtained from any officer, agent, or employee of the City on any such matters shall in any way affect the risk or obligations assumed by the Contractor, or relieve him from fulfilling any of the conditions of the contract.

All bids must be made on the blank form of **Proposal** attached hereto. **Bids must be submitted in a sealed envelope clearly marked "BID – PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD."** Bids arriving after the announced opening time or absent of the aforementioned markings will not be accepted.

All bidders must be licensed contractors and eligible to bid Contracts in the State of Tennessee. **No bid will be opened if the following information does not appear on the envelope containing the bid.**

1. Bidder's Name
2. Address
3. Tennessee Contractor's License Number
4. License Classification Applying to Bid
5. License Expiration Date
6. Name of Project for which Bid is submitted
7. Name and License information for all Subcontractors who will perform work.

Proposals which are incomplete, unbalanced, conditional, or obscure or which contain additions not called for, erasures, alterations or irregularities of any kind or which do not comply with the Invitation to Bid and Information for Bidders may be rejected at the option of the City. Bids must be written with typewriter, ink or indelible pencil; otherwise they may not be considered. Faxed bids will not be accepted.

The City of Gallatin reserves the right to disregard all nonconforming, nonresponsive, or conditional bids; to reject any or all bids; to limit quantities; to waive informalities; and to evaluate proposals and accept any proposal or any part of any proposal that is judged, in our opinion, to be of the best quality, value, and service to the City of Gallatin.

A bidder may withdraw any proposal he has submitted at any time prior to the hour set for the closing of the bids, provided the request for withdrawal is signed in a manner identical with the

proposal being withdrawn. No withdrawal or modification will be permitted for 60 days after the hour and date designated for opening the bids.

All questions or explanations requested by Bidders shall be submitted in writing to the City in ample time to permit consideration before the bid date. Necessary replies will be issued to all bidders of record as Addenda and receipt thereof shall be acknowledged on the proposal. Bidders shall check with the City prior to bid opening to secure any Addenda that may affect bidding. Oral instructions will not be given and do not form a part of the Bidding Documents.

Contractor will be paid based on quantities of work installed. Payment applications shall be made on a monthly basis.

In case of default of the Contractor, the City may procure the articles of services from other services and hold the Contractor responsible for any excess cost occasioned thereby.

Bids must be executed in the Company name and signed by an officer or individual who has authority to bind the Company.

No bid shall be altered or amended after the specified time for opening bids.

All material and workmanship shall be subject to inspection. In case any articles are found to be defective in material or workmanship, or otherwise not in conformity with the specification requirements, the City shall have the right to reject such articles or require their correction. Final inspection shall be conclusive except as regards latent defects, fraud, or such gross mistakes as amount to fraud.

A change order will be issued only in the event of a change in the scope of work.

All bid proposals must include the following:

1. Sealed envelope with required information on the outside.
2. Bid Proposal Form
3. Bid Surety or Certified check in the amount of 10% of the total bid.
4. Drug-Free Workplace Affidavit.

The successful bidder must provide the following, each of which shall be in accordance with the contract documents:

1. Performance surety covering and including labor and materials in the amount of one hundred percent (100%) of the contract price. The performance bond is to remain in place for a period of one year after project completion.
2. Certificate of Insurance naming the **City of Gallatin** additionally insured with any exclusions listed, including
 - General Liability
 - Worker's Comp
 - Auto Insurance
3. Proof of Worker's Comp for all Subcontractors
4. W-9 Form, if a new vendor

Additional Requirements:

- The successful bidder will also be responsible for payment of all taxes levied under the laws of the State of Tennessee.
- The successful bidder shall have the responsibility to insure that all persons employed under a contract with the City, whether directly or by subcontract, be legal residents and be authorized to work in the United States.
- Affirmative Action compliance is required.

All interested parties, without regard to race, color, or national origin, shall be afforded the opportunity to bid and shall receive equal consideration.

Additional information may be obtained by contacting the City of Gallatin Engineering Division, Zach Wilkinson, Project Engineer, at (615) 451-5965.

<i>EQUAL OPPORTUNITY TITLE VI POLICY STATEMENT</i>

It is the policy of the City of Gallatin to ensure compliance with Title VI of the Civil Rights Act of 1964; 49 CFR, Part 21; related statutes and regulations to the end that no person shall be excluded from participation in or be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance from the U. S. Department of Transportation on the grounds of race, color, sex, age, disability or national origin.

**BID PROPOSAL
INCLUDING DRUG FREE AFFIDAVIT**

SECTION B

PROPOSAL

ENGINEERING DIVISION
GALLATIN, TENNESSEE 37066

In response to the Invitation to Bid, the undersigned Bidder submits the following proposal for construction of PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD within the City of Gallatin as described and specified in the contract documents and conditions.

The Bidder declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the scope; that he has examined the Plans, Specifications, and Contract Documents for the work, and has read all the Special Provisions furnished prior to the opening of bids; and that he has satisfied himself relative to the work to be performed.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving bids.

The Bidder hereby agrees that if he is awarded the Contract for this Work, he will commence work before a date to be specified in a written Notice to Proceed of the Owner and to fully complete the work as directed by the City Engineer.

The undersigned Bidder does hereby declare and stipulate that this Proposal is made in good faith, without collusion or connection with any other person or persons bidding for the same work, and that it is made in pursuance of and subject to all the terms and conditions of the Contract, the Specifications, and the Plans pertaining to the Work to be done.

Attached is the required Bid Surety or Certified Check in the amount of 10% of the total bid which the Bidder agrees will be retained by the City as liquidated damages in the event that the Bidder's proposal is accepted and the Bidder fails to execute the contract within the time stated in the proposal.

**BID PROPOSAL
PROPOSED GRADE CROSSING REHABILITATION AT
STEAMPLANT ROAD/AIRPORT ROAD.**

In compliance with your legal Invitation to Bid for the City of Gallatin PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD., the undersigned Bidder, a corporation organized and existing under the laws of the State of _____, or a partnership of _____, or an individual doing business as _____ of the City of _____ State of _____, having examined the Specifications and Contract forms thereto attached, and being fully advised as to the extent and character of the work to be performed, and the equipment to be furnished, hereby proposes to furnish all labor, tools, material and equipment necessary for the Project.

The Bidder shall complete all tables to establish his Bid. The undersigned further proposes to, perform all work, and furnish all equipment and materials in accordance with the Specifications and Contract stipulations thereof, within the time limit specified, for the price so stated below.

BID SCHEDULE:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED AMOUNT
1	REMOVE AND REBUILD GRADE CROSSING WITH CENTURY PRE-CAST CONCRETE PANELS, 136#	81	TF		
2	REMOVE AND REBUILD GRADE CROSSING WITH CENTURY PRE-CAST CONCRETE PANELS, 115#	36	TF		
3	FURNISH AND INSTALL 7"X9"X10' GRADE CROSSTIES	86	EA		
4	FURNISH AND PLACE BALLAST	250	TN		
5	FURNISH AND COMPACT SUB-BALLAST	80	TN		
6	SURFACE AND LINE TRACK, REGULATE BALLAST	850	TF		
7	MOBILIZATION	1	LS		

TOTAL BID

\$ _____

TOTAL BID: Bidder agrees to perform all work and provide all materials as described in the specifications, plans, and conditions shown on the bid schedule for the sum of

_____ (\$ _____)

(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

Respectfully submitted:

Contractor

By: _____

Title: _____

Business Address: _____

Contractor's License No: _____

Telephone Number: _____

NOTICE OF AWARD

SECTION C

NOTICE OF AWARD

TO: _____

PROJECT DESCRIPTION: PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD

We have considered the Bid submitted by you for the above-described Work in response to our Invitation to Bid and are pleased to award the contract to your company.

You are required to execute the enclosed Agreement and furnish the required Contractor's Performance and Payment Bond within 10 calendar days from the date of this Notice.

If you fail to execute said Agreement and to furnish said bonds within 10 calendar days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 20__.

City of Gallatin
(Owner)

By: _____

Title: _____ Mayor _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged.

Contractor
By: _____

Title: _____

This the _____ day of _____, 20__

CONTRACT AGREEMENT

SECTION I

AGREEMENT BETWEEN
OWNER AND CONTRACTOR

THIS AGREEMENT made as of the ___ day of _____, 2013, by and between the OWNER: CITY OF GALLATIN, TENNESSEE, and CONTRACTOR: _____

WITNESSETH THAT the OWNER and the CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK. The CONTRACTOR will perform all Work as shown in the Contract Documents for the completion of the Project generally described as follows: PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD/AIRPORT ROAD

Article 2. ENGINEER. The City Engineer will act as the ENGINEER in connection with completion of the Project in accordance with the Contract Documents.

Article 3. CONTRACT TIME. The Work for this Contract shall be completed by **July 31, 2013**.

Article 4. CONTRACT PRICE. The OWNER will pay the CONTRACTOR for performance of the Work and completion of the Project in accordance with the Contract Documents subject to adjustment by Modifications as provided therein in current funds as follows:

_____ (\$ _____)
(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

Article 5. PAYMENT. The OWNER will pay the CONTRACTOR upon completion and acceptance of Work covered in this Contract.

Article 6. MISCELLANEOUS.

6.1 Neither the OWNER nor the CONTRACTOR shall, without the prior consent of the other, assign or sublet in whole or in part his interest under any of the Contract Documents and, specifically, the CONTRACTOR shall not assign any monies due or to become due without consent of the OWNER.

6.2 The OWNER and the CONTRACTOR each binds himself, his partners, successors, assigns, and legal representatives to the other party hereto in respect to all covenants, agreements, and obligation contained in the Contract Documents.

6.3 The Contract Documents constitute the entire agreement between the OWNER and the CONTRACTOR and may only be altered, amended, or repealed by a duly-executed written instrument.

Article 7. TIME FOR COMPLETION AND LIQUIDATED DAMAGES. It is hereby understood and mutually agreed, by and between the CONTRACTOR and the OWNER, that the time for completion as specified in the Contract is an ESSENTIAL CONDITION of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on a date to be specified in the Notice to Proceed, and that said Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion by July 31, 2013. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the time for the completion of Work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality. If the said CONTRACTOR shall neglect, fail, or refuse to complete the Work within the time herein specified, or any proper extension thereof granted the OWNER, then the CONTRACTOR does hereby agree, as a partial consideration for the awarding of this Contract, to pay to the OWNER, not as a penalty but as liquidated damages for such breach of Contract as hereinafter set forth, \$100 for each and every calendar day that the CONTRACTOR shall be in default after the time stipulated for completing the Work of the total Contract.

The same amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and said amount shall be retained from time to time by the OWNER from current periodical estimates.

It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever and, where under the Contract, an additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due:

7.1 To any preference, priority, or allocation order duly issued by the Government;

7.2 To unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to, acts of God or of the public enemy, acts of the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; and

7.3 To any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections 7.1 and 7.2 of this article;

Provided, further, that the CONTRACTOR shall, within ten days from the beginning of such delay, unless the OWNER shall grant a further period of time prior to the date of final settlement of the Contract, notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter.

Article 8. - CONTRACT DOCUMENTS.

- 8.01 The Contract Documents will consist of the following:
- I. This Agreement (3 pages, inclusive).
 - II. General Conditions of the Construction Contract (68 pages)
 - III. Special Conditions (1 page)
 - IV. Project Plans (5 pages)
 - V. Project Specifications (35 pages)

8.02 There are no Contract Documents other than those listed above in this Article 8. Approved Shop Drawings and Samples, other Contractor's submittals and the reports and drawings of subsurface and physical conditions are not Contract Documents.

8.03 The Contract Documents may only be amended, modified or supplemented in writing and in accordance with Article 9 of the General Conditions.

IN WITNESSETH WHEREOF the parties hereto have executed this Agreement the day and year first above written.

OWNER: CITY OF GALLATIN,
TENNESSEE

CONTRACTOR: _____

BY: _____

BY: _____
JO ANN GRAVES, MAYOR

ATTEST:

CONNIE KITTRELL, CITY RECORDER

STANDARD GENERAL CONDITIONS

SECTION II

Available at:

http://academic.cengage.com/resource_uploads/downloads/1111578710_313206.pdf

SPECIAL CONDITIONS

SECTION III

SPECIAL CONDITIONS

DISPOSAL OF MATERIAL

All debris and related appurtenances removed as part of this contract shall be stored in a manner compliant with all local, state and federal regulations for the storage of such materials. Recycling of materials, where possible, is encouraged.

WORK ZONE SAFETY

Contractor shall at all times maintain work zone safety standards in accordance with latest OSHA and TOSHA standards.

MAINTENANCE OF TRAFFIC

The maintenance of railroad traffic shall be included in bid. Roadway traffic control will be handled by the City of Gallatin, closing roadways as needed.

PROJECT PAVING

Paving of project will be done by others. Upon closure of road, one rail crossing shall be left open to allow milling work to be performed in roadway between two crossings. Excavation to a depth of 15.5" below proposed grade extending 10' from each side of crossing panels shall be done by contractor. Others will be responsible for backfilling these areas with asphalt and all other roadway paving work. Contractor shall make all reasonable accommodations and allowances to coordinate work with paving contractor and City.

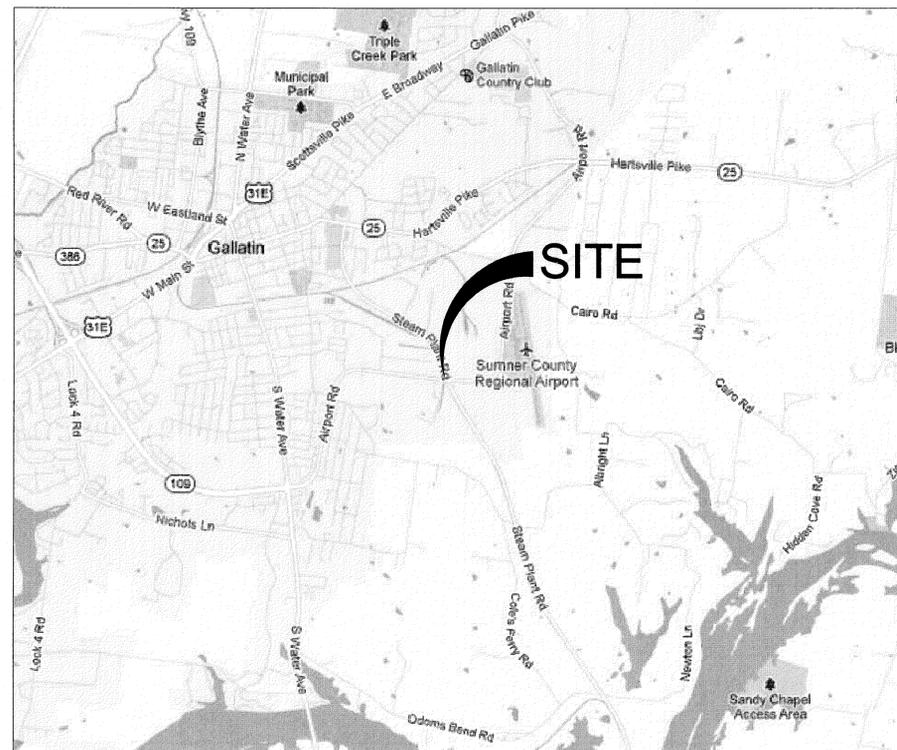
PROJECT TIMELINE

All work requiring roadway closure shall be completed in a maximum of 4 days.

PROPOSED GRADE CROSSING REHABILITATION AT STEAMPLANT ROAD / AIRPORT ROAD

FOR THE CITY OF GALLATIN IN SUMNER COUNTY, TENNESSEE

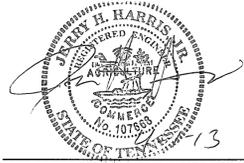
CONSTRUCTION PLANS



LOCATION MAP

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- SHEET 2 — GENERAL NOTES & QUANTITIES
- SHEET 3 — CENTURY PRE-CAST PANEL DETAILS
- SHEET 4 — PROPOSED PLAN AND PROFILE MAINLINE
- SHEET 5 — PROPOSED ROAD PROFILE AND SPUR TRACK PROFILE

DESIGNED BY:  13
CROUCH ENGINEERING, P.C.

CITY OF GALLATIN
CONSTRUCTION PLANS
PROPOSED GRADE CROSSING
REHABILITATION PROJECT
STEAMPLANT ROAD / AIRPORT ROAD

CROUCH ENGINEERING® P.C.
428 WILSON PIKE CIRCLE
BRENTWOOD, TN 37027
PHONE NO. (615) 791-0630
FOR PERMISSION, CONTACT HARRY A. CROUCH.



PROJECT NO: 13008
DATE: 03/14/2013
DRAWN BY: PDH
CHECKED BY: JHH

REVISIONS:

SHEET NUMBER

1

SCOPE: GRADE CROSSING CONSTRUCTION

- SAW CUT PAVEMENT 15' EAST AND WEST OF SPUR CENTERLINE AND MAINLINE CENTERLINE AND EXCAVATE/REMOVE ALL MATERIAL BETWEEN SAW CUTS AND NEW CROSSING PANEL TO A DEPTH OF 15.5". PAVING BY OTHERS WILL BE USED TO BACKFILL EXCAVATED AREAS.;
- RE-USE EXISTING 136 RE AND 112 RE RAIL AND OTM THROUGH CROSSINGS
- REMOVE THE EXISTING TRACK, REMOVE THE EXISTING CROSSTIES, AND EXCAVATE THE SUBGRADE, REMOVING ALL FOULED MATERIAL, TO A MINIMUM DEPTH OF 2.5' BELOW THE EXISTING TOP OF RAIL ELEVATION, REMOVING RAIL IF NECESSARY.
- COMPACT THE SUBGRADE, PLACE FILTER FABRIC, AND COMPACTED CRUSHER RUN SUB-BALLAST IN LIFTS NOT TO EXCEED 6", WITH A TOTAL PROPOSED DEPTH OF 6", AS SHOWN ON THE TYPICAL SECTION.
- REBUILD THE TRACKS AND GRADE CROSSINGS USING CENTURY PRE-CAST CONCRETE PANELS SIZED TO MATCH THE RAIL SECTION; NEW 7"x9"x10' CROSSTIES ON 18" CENTERS, NEW BALLAST, AND FIELD WELD RAIL JOINTS IN THE CROSSING AS NECESSARY.
- SURFACE AND LINE THE TRACK APPROACHES TO THE GRADE CROSSING ON EACH APPROACH, MEETING THE PROPOSED ELEVATIONS AS SHOWN ON THE PLANS.
- REGULATE BALLAST SO THAT THE BALLAST SECTION CONFORMS TO THE TYPICAL ROADBED SECTION.
- FURNISH AND INSTALL ALL OTHER ITEMS INCIDENTAL TO THE CONSTRUCTION OF THE GRADE CROSSING.
- COORDINATE ALL PAVING WORK (TO BE PERFORMED BY OTHERS) WITH THE CITY OF GALLATIN ENGINEERING DIVISION.
- COORDINATE ROADWAY TRAFFIC CONTROL WITH THE CITY OF GALLATIN ENGINEERING DIVISION.

MISCELLANEOUS

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES PRIOR TO ANY FABRICATION OR CONSTRUCTION AND IS RESPONSIBLE FOR ALIGNMENT OF ANCHOR BOLTS AND OTHER CRITICAL DIMENSIONS. ANY AND ALL SIGNIFICANT DISCREPANCIES FROM PLAN QUANTITIES OR DIMENSIONS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY SO CORRECTIONS CAN BE MADE IN A TIMELY MANNER.

THE CONTRACTOR IS RESPONSIBLE FOR SITE ACCESS. THE RAILROAD RIGHT-OF-WAY MAY BE USED AS NECESSARY. NO ADDITIONAL PAYMENT SHALL BE MADE FOR RESTORING THE SITE TO REASONABLE PRE-CONSTRUCTION CONDITIONS.

CONSTRUCTION STAKING

CONSTRUCTION STAKING WILL BE PERFORMED BY THE CONTRACTOR. THE ENGINEER WILL PROVIDE CONTROL POINTS IN THE FIELD FOR THE CONTRACTOR TO REFERENCE.

ACCESS FOR PROPERTY OWNERS

ACCESS, INGRESS AND EGRESS WILL BE MAINTAINED FOR THE PROPERTY OWNERS AT ALL TIMES. THE COST OF MAINTAINING ACCESS FOR PROPERTY OWNERS IS TO BE INCLUDED IN THE COST FOR OTHER ITEMS.

RIGHT-OF-WAY

ALL CONSTRUCTION ACTIVITIES WILL BE CONFINED WITHIN THE RAILROAD AND CITY PROPERTY. IF ADDITIONAL STAGING ROOM OR SITE ACCESS IS REQUIRED, THE CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY EASEMENTS, AND WILL FURNISH PROOF OF EASEMENTS TO THE ENGINEER. ANY AREAS DISTURBED BY ANY DIRECT OR INDIRECT ACTION ASSOCIATED WITH CONSTRUCTION WILL BE RETURNED TO PRE-CONSTRUCTION CONDITIONS OR BETTER, OR FINISHED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.

SAFETY

CONFORM TO ALL RAILROAD SAFETY RULES AND PROCEDURES, AND COORDINATE WORK WITH RAILROAD ON A DAILY BASIS, IF WORK IS WITHIN 25' OF THE RAILROAD MAINLINE. THE CONTRACTOR WILL NOT BE PERMITTED TO PARK ANY VEHICLES OR CONSTRUCTION EQUIPMENT DURING NON-WORK HOURS OR PERIODS OF INACTIVITY, WITHIN THIRTY (30) FEET OF THE CENTER LINE OF TRACK OR NEARBY ROADS, UNLESS PROTECTED BY GUARDRAIL, BRIDGE RAIL, AND/OR BARRIERS INSTALLED FOR OTHER PURPOSES.

PRIVATELY OWNED VEHICLES SHALL NOT BE ALLOWED TO BE PARKED WITHIN (30) FEET OF THE ACTIVE CENTERLINE OF THE RAILROAD MAIN LINE OR AN OPEN TRAFFIC LANE AT ANY TIME UNLESS PROTECTED AS DESCRIBED ABOVE.

THE CONTRACTOR SHALL BE REQUIRED TO CONFORM TO ALL FRA AND OSHA SAFETY REGULATIONS REGARDING TRACK AND BRIDGE WORKER SAFETY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL ASPECTS OF WORKER AND SITE SAFETY, AND SHALL HAVE A RESPONSIBLE EMPLOYEE IN CHARGE ON SITE AT ALL TIMES DURING CONSTRUCTION.

OCCUPATION OR FOULING OF THE MAIN LINE SHALL ONLY TAKE PLACE IF THE CONTRACTOR HAS PERMISSION FOR TRACK TIME FROM THE RAILROAD, CONFORMING TO THE RAILROAD'S RULES.

GRADE CROSSING CONSTRUCTION

THE CONTRACTOR WILL FURNISH AND INSTALL ALL MATERIALS NECESSARY FOR THE COMPLETE CONSTRUCTION OF THE PROPOSED GRADE CROSSINGS.

EROSION CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR RE-GRADING, SEEDING AND MULCHING ALL AREAS THAT ARE DISTURBED DURING THE COURSE OF CONSTRUCTION, PAYMENT TO BE INCLUDED IN THE CONTRACTOR'S PRICE FOR GRADE CROSSING CONSTRUCTION.

UTILITIES

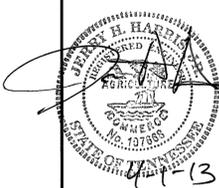
THE LOCATIONS OF UTILITIES SHOWN WITHIN THESE PLANS ARE APPROXIMATE ONLY. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. THE CONTRACTOR AND UTILITY OWNERS WILL BE REQUIRED TO COOPERATE WITH EACH OTHER IN ORDER TO EXPEDITE THE WORK REQUIRED BY THIS CONTRACT. THE CONTRACTOR WILL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION OF THIS PROJECT. IN THE EVENT THAT SPECIAL EQUIPMENT IS REQUIRED TO WORK OVER AND AROUND THE UTILITIES, THE CONTRACTOR WILL BE REQUIRED TO FURNISH SUCH EQUIPMENT. THE COST OF PROTECTING UTILITIES FROM DAMAGE AND FURNISHING SPECIAL EQUIPMENT WILL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF CONSTRUCTION. THE CONTRACTOR WILL NOTIFY THE OWNER OF HIS PLAN OF OPERATION IN THE AREA OF THE UTILITIES. PRIOR TO COMMENCING WORK, THE CONTRACTOR WILL CONTACT THE OWNERS AND REQUEST THEM TO PROPERLY LOCATE THEIR RESPECTIVE UTILITY ON THE GROUND. THIS NOTIFICATION WILL BE GIVEN AT LEAST THREE (3) BUSINESS DAYS PRIOR TO COMMENCEMENT OF OPERATIONS AROUND THE UTILITY.

ESTIMATED QUANTITIES

QUANTITIES

THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION, AND WILL PERFORM WORK ACCORDING TO THE PLANS AND SPECIFICATIONS. CONTRACTORS WILL BE REQUIRED TO VERIFY ALL QUANTITIES AND INCLUDE THE COST OF ALL ITEMS NECESSARY TO COMPLETE THE PROJECT IN THEIR BIDS.

ESTIMATED QUANTITIES			
CONSULTING ENGINEERS: CROUCH ENGINEERING, P.C.			
CITY OF GALLATIN, TENNESSEE			
QUANTITIES SCHEDULE -- MARCH, 2013			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
TRACK WORK			
1	REMOVE AND REBUILD GRADE CROSSING WITH CENTURY PRE-CAST CONCRETE PANELS, 136#	81	TF
2	REMOVE AND REBUILD GRADE CROSSING WITH CENTURY PRE-CAST CONCRETE PANELS, 115#	36	TF
3	FURNISH AND INSTALL 7"x9"x10' GRADE CROSSTIES	86	EA
4	FURNISH AND PLACE BALLAST	250	TN
5	FURNISH AND COMPACT SUB-BALLAST	80	TN
6	SURFACE AND LINE TRACK, REGULATE BALLAST	850	TF
7	MOBILIZATION	1	LS



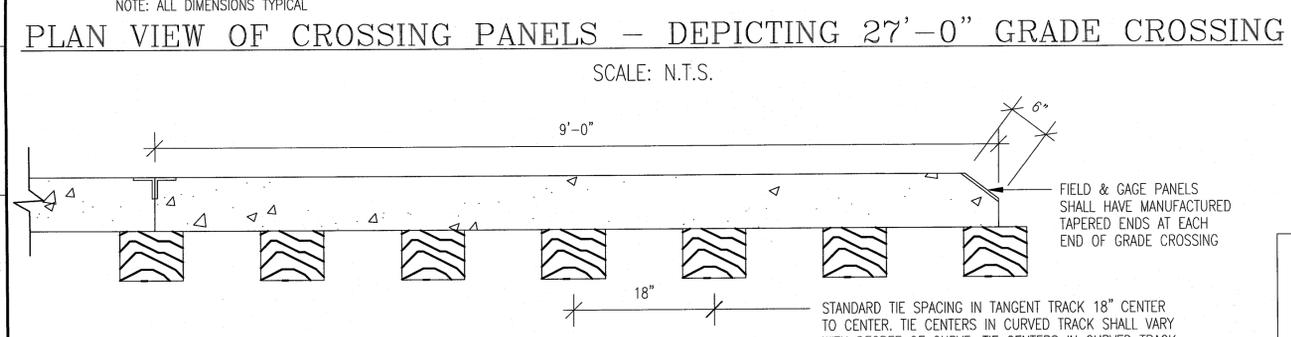
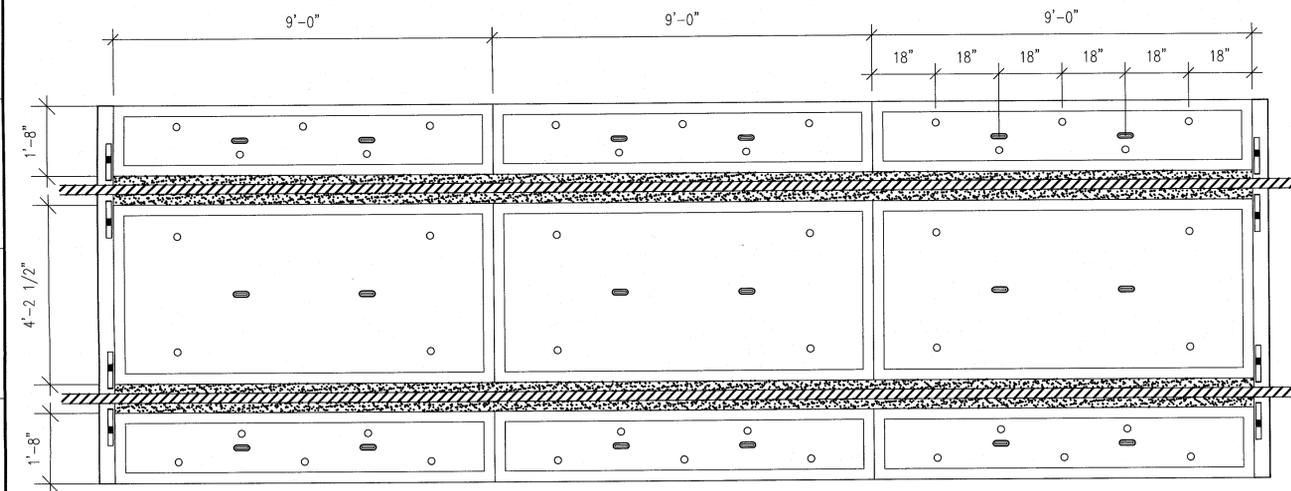
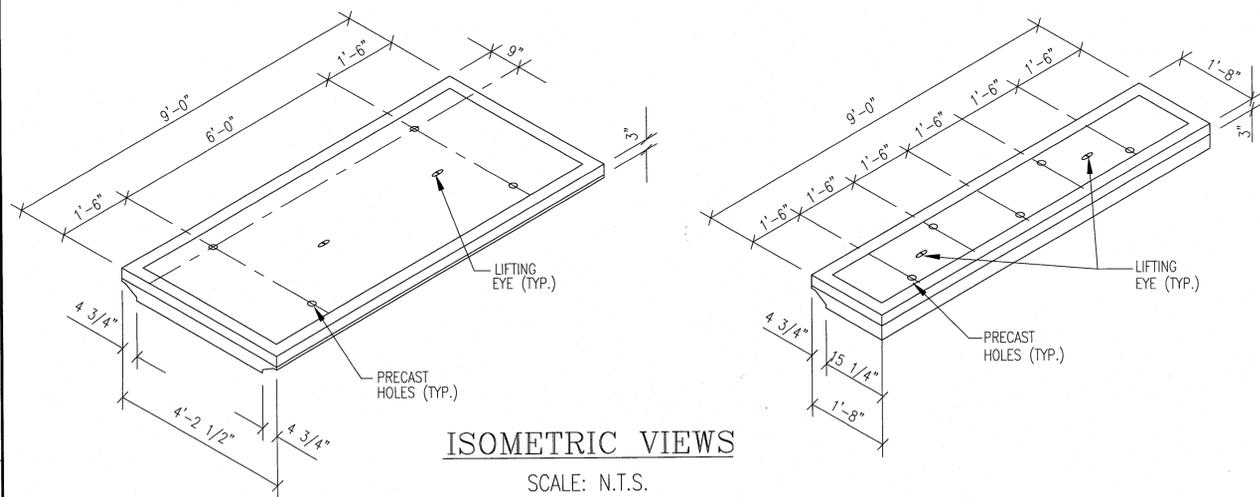
CITY OF GALLATIN
CONSTRUCTION PLANS
PROPOSED GRADE CROSSING
REHABILITATION PROJECT
STEAMPLANT ROAD / AIRPORT ROAD

CROUCH ENGINEERING® P.C.
428 WILSON PIKE CIRCLE
BRENTWOOD, TN 37027
PHONE NO. (615) 791-0630



PROJECT NO: 13008
DATE: 03/14/2013
DRAWN BY: PDH
CHECKED BY: JHH
REVISIONS:

SHEET NUMBER
2

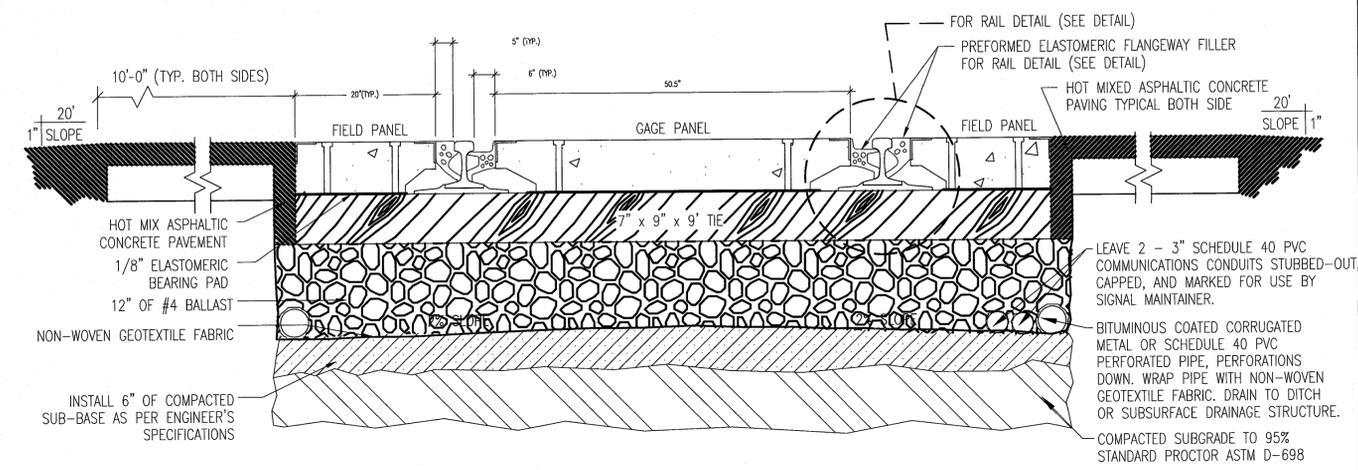
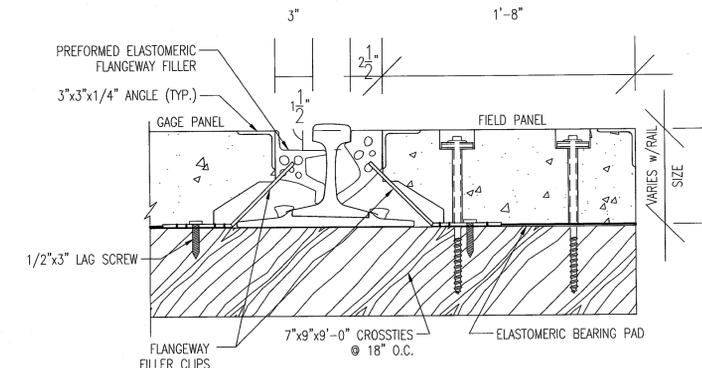
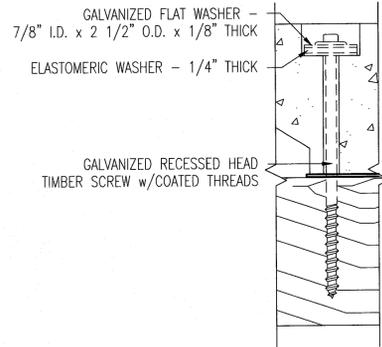


STANDARD PANEL LENGTH	9'-0"
GAGE PANEL WIDTH	4'-2 1/2"
FIELD PANEL WIDTH	1'-8"
HEIGHT DETERMINED BY RAIL SIZE	6" TO 8"
DIMENSION TOLERANCE	+/- 1/4"
CROSSTIE CENTERS REQUIRED	1'-6"
CROSSTIE LENGTH REQUIRED	9'-0"
CONCRETE	5000 lbs. PSI. 28 DAYS
REINFORCEMENT REBAR	AMERICAN GRADE 70
LIFTING EYES	4000 lbs. CAPACITY EACH
MEETS HS20-44 LOADING SPECIFICATIONS	
WEIGHT	115# 136#
GAGE PANEL WEIGHTS	3400 4150
FIELD PANEL WEIGHTS	1800 2250
WEIGHT (9' SECTION)	7000 8650

FIELD & GAGE PANELS SHALL HAVE MANUFACTURED TAPERED ENDS AT EACH END OF GRADE CROSSING

STANDARD TIE SPACING IN TANGENT TRACK 18" CENTER TO CENTER. TIE CENTERS IN CURVED TRACK SHALL VARY WITH DEGREE OF CURVE. TIE CENTERS IN CURVED TRACK SHALL BE SUPPLIED BY MANUFACTURER. ALL PANELS SHALL BE MANUFACTURED TO FIT RADIUS OF TRACK. CUSTOM TAPERED PANELS SHALL BE MANUFACTURED FOR TRACKS WITH A CURVE OF 4' OR GREATER.

NOTE:
CROSS SECTION OF THE TRACK STRUCTURE IS ONLY A GUIDE. OWNER SHALL BE RESPONSIBLE FOR ALL ENGINEERING OF PROJECT. RAILROAD TRACK CROSS SECTION WILL VARY DEPENDING UPON PROJECT LOCATION & CONDITIONS.



CITY OF GALLATIN
CONSTRUCTION PLANS
PROPOSED GRADE CROSSING
REHABILITATION PROJECT
STEAMPLANT ROAD / AIRPORT ROAD

CROUCH ENGINEERING P.C.
428 WILSON PIKE CIRCLE
BRENTWOOD, TN 37027
PHONE NO. (615) 791-0630



PROJECT NO: 13008
DATE: 03/14/2013
DRAWN BY: PDH
CHECKED BY: JHH
REVISIONS:

SHEET NUMBER
3



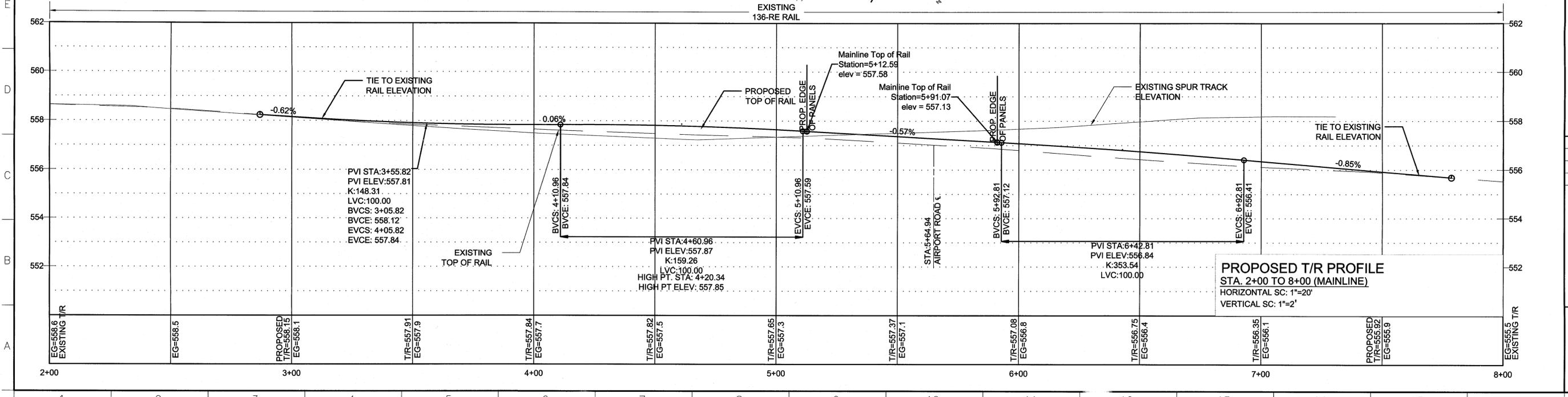
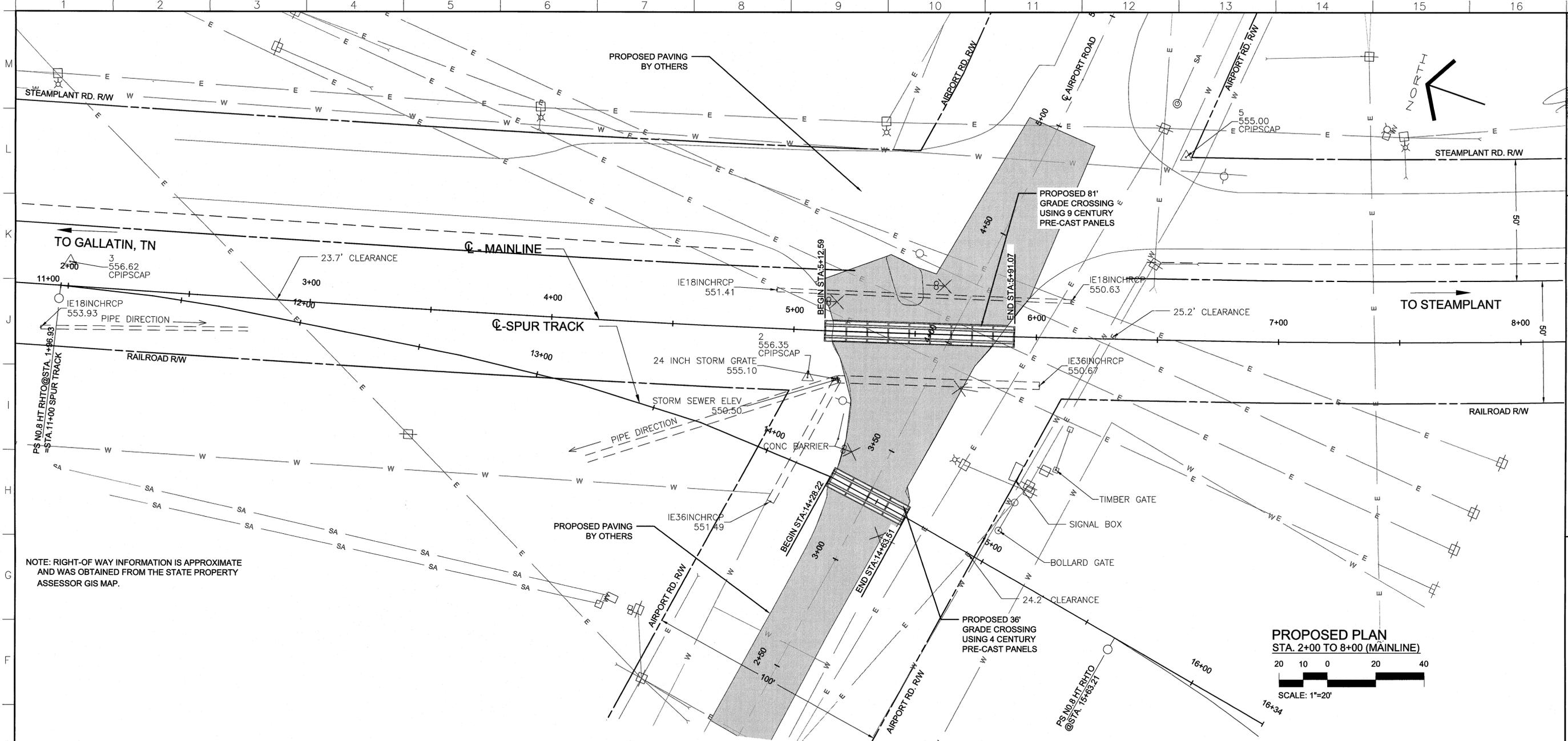
CITY OF GALLATIN
 CONSTRUCTION PLANS
 PROPOSED GRADE CROSSING
 REHABILITATION PROJECT
 STEAMPLANT ROAD / AIRPORT ROAD

CROUCH ENGINEERING P.C.
 428 WILSON PIKE CIRCLE
 BRENTWOOD, TN 37027
 PHONE NO. (615) 791-0630



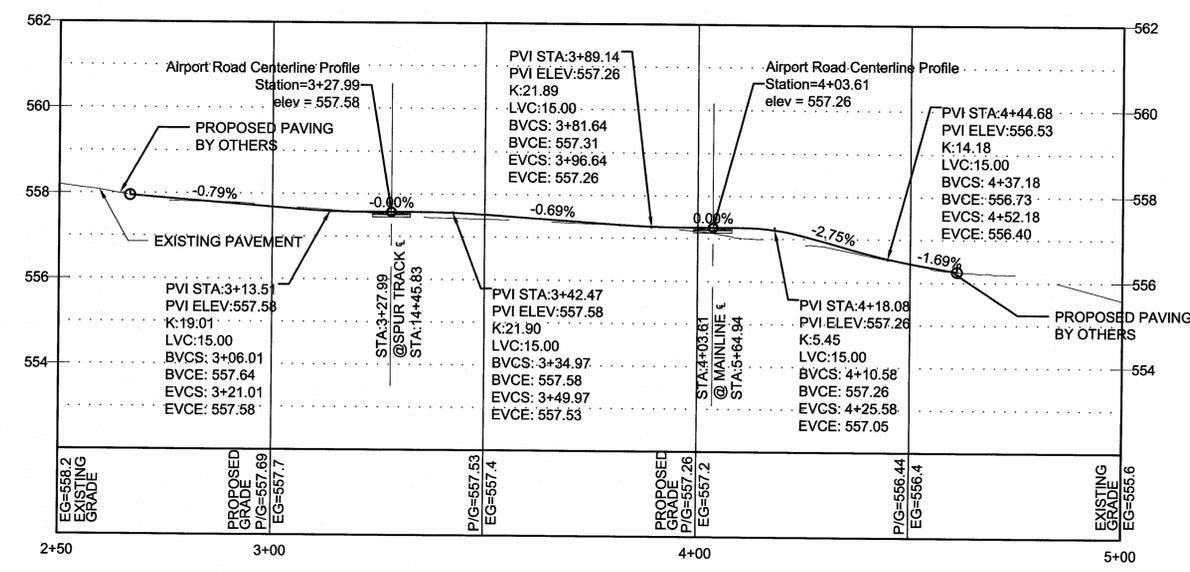
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 DATE: 03/14/2013
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 CHECKED BY: JHH
 REVISIONS:

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4

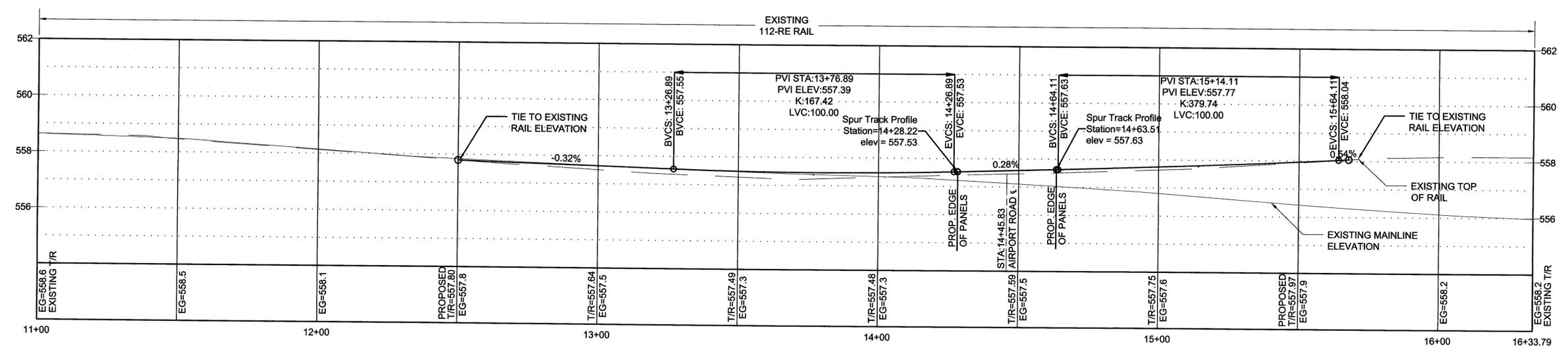


NOTE: RIGHT-OF WAY INFORMATION IS APPROXIMATE AND WAS OBTAINED FROM THE STATE PROPERTY ASSESSOR GIS MAP.

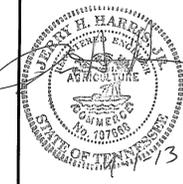
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PROPOSED ROAD PROFILE
 STA. 2+50 TO 5+00
 HORIZONTAL SC: 1"=20'
 VERTICAL SC: 1"=2'



PROPOSED T/R PROFILE
 STA. 12+00 TO 16+34 (SPUR TRACK)
 HORIZONTAL SC: 1"=20'
 VERTICAL SC: 1"=2'



CITY OF GALLATIN
 CONSTRUCTION PLANS
 PROPOSED GRADE CROSSING
 REHABILITATION PROJECT
 STEAMPLANT ROAD / AIRPORT ROAD

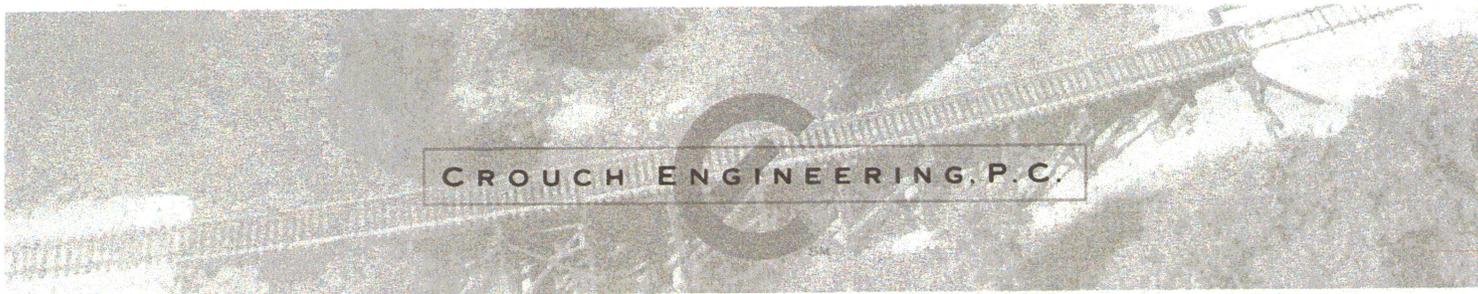
CROUCH ENGINEERING® P.C.
 428 WILSON PIKE CIRCLE
 BRENTWOOD, TN 37027
 PHONE NO. (615) 791-0630



PROJECT NO: 13008
 DATE: 03/14/2013
 DRAWN BY: PDH
 CHECKED BY: JHH
 REVISIONS:

SHEET NUMBER
5

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16



CROUCH ENGINEERING, P.C.

PROJECT SPECIFICATIONS

CITY OF GALLATIN, TENNESSEE
PROPOSED GRADE CROSSING REHABILITATION

AT STEAMPLANT ROAD / AIRPORT ROAD

PREPARED FOR

MR. NICK TUTTLE
ENGINEERING DIVISION
CITY OF GALLATIN
132 W. MAIN ST.
GALLATIN, TN 37066

Prepared By



March 2013

CROUCH ENGINEERING,® P.C.
428 Wilson Pike Circle
Brentwood, TN 37027
Telephone (615) 791-0630, FAX (615) 791-8451
www.crouchengineering.com

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CEPC Project No. 13008

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GENERAL TASKS:

- The scope of work is defined herein, by plans and construction details, and by the final cost schedule. Any changes in the scope of work, quantities, work locations, or other aspects of the project must be approved by the Engineer and Owner prior to performing work under a change order;
- Furnish a working cell phone, and have the foreman or superintendent on site keep the working cell phone on hand at all times for communication with the Railroad, satisfying the Railroad's requirements for communication between the Railroad and Contractor;
- Keep a copy of the Project Documents, including Plans and Specifications on site during the entire course of the project;
- Maintain a daily log of weather conditions, equipment in use, working limits, material installed and other relevant data and submit the signed daily log forms to the Engineer on a weekly basis;
- Furnish the original, dated, signed certified weight ticket for all stone products to the Engineer;
- Complete safety training and/or safety orientation as required by the Railroad; conform to the Railroad safety rules; and conform to FRA bridge and track worker safety regulations;
- Using the project contact list, before the start of work, verify local emergency phone numbers, and keep the list on site; have directions to the nearest local emergency medical center on site; and, distribute the list to all Contractor employees at the beginning of the project;
- Provide access to the work site;
- Furnish all bonds and insurance, meeting the requirements of the Project Documents;
- Perform all construction staking required for the project, including laying out proposed turnout;
- Clean the project site of all debris, Contractor owned released materials and rubbish, and perform grading, dressing, and seeding to provide a permanent stand of grass on all disturbed areas;
- Maintain close contact with the Owner regarding work to be performed each day, working limits, and permission for track time;
- Keep in contact with the Engineer on a weekly basis calling the Engineer, regarding schedule and work in progress, submitting daily log forms to the Engineer on a weekly basis;
- Install materials at the locations described in the scope of work and as marked in the field;
- Work in such a manner to protect the existing tracks, roadbed, bridges, culverts, and other structures and appurtenances from any type of damage during the

construction or demolition process, and repair any damage resulting from the Contractor's actions or inactions at the Contractor's expense;

- Provide all traffic control measures required for the safe movement of the Contractor's equipment and the traveling public, and arrange any road closures with all local authorities;
- The Contractor is solely responsible for making arrangements for traffic control and will be responsible for providing traffic control plans conformed to the most recent edition of the Manual on Uniform Traffic Control Devices, if a traffic control plan is required by the local authority;
- Perform any other tasks necessary for the completion of the project as per the Plans and Specifications herein; and,

SPECIFIC TASKS:

Grade Crossing Construction:

- Remove existing track and crossties through both proposed crossing locations;
- Re-use existing 136 RE and 112 RE rail and OTM through both crossings;
- Remove the existing track, remove the existing crossties, and excavate the subgrade, removing all fouled material, to a minimum depth of 2.5' below the existing top of rail elevation, removing rail if necessary.
- Compact the subgrade, place filter fabric, and compacted crusher run sub-ballast in lifts not to exceed 6", with a total proposed depth of 6", as shown on the typical section.
- Rebuild the tracks and grade crossings using Century Pre-cast concrete panels sized to match the rail section; new 7"x9"x10' crossties on 18" centers, new ballast, and field weld rail joints in the crossing as necessary.
- Surface and Line the Track Approaches to the grade crossing on each approach, meeting the proposed elevations as shown on the Plans.
- Regulate ballast so that the ballast section conforms to the typical roadbed section.
- Furnish and install all other items incidental to the construction of the grade crossing.
- Coordinate all paving work (to be performed by Others) with the City of Gallatin

SEE PLANS FOR DETAILS OF WORK

SECTION 2 - RAILROAD TRACK SPECIFICATIONS

2.1 Introduction

The Contractor is required to conform to the Project Documents for this project, including Plans and Specifications. The Contractor will supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Project Documents.

The Contractor will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will be responsible to see that the finished work complies accurately with the Project Documents and Plans and Specifications herein.

2.1.1 References

The publications listed below form a part of the Specifications to the extent referenced. The publications are referred to in the text by basic designation only.

NOTE: The American Railway Engineering And Maintenance Of Way Association (AREMA) Was Formerly The American Railway Engineering Association (AREA). AREMA And AREA When Used As References Will Be Considered To Reference The American Railway Engineering And Maintenance Of Way Association.

AREMA MRE - Manual for Railway Engineering, most recent edition (2002)

AREA PTWP (1995) Portfolio of Trackwork Plans

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 88 (1990) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C 117 (1995) Materials Finer than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing

ASTM C 127 (1988; R 1993) Specific Gravity and Absorption of Coarse Aggregate

ASTM C 131 (1989) Resistance to Degradation of Small -Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C 136 (1995a) Sieve Analysis of Fine and Coarse Aggregates

ASTM C 142 (1978; R 1990) Clay Lumps and Friable Particles in Aggregates

ASTM C 535 (1989) Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C 702 (1993) Reducing Samples of Aggregate to Testing Size

ASTM D 75 (1987; R 1992) Sampling Aggregates

ASTM D 566 (1993) Dropping Point of Lubricating Grease

ASTM D 1241 (1968; R 1994) Materials for Soil-Aggregate Sub-base, Base, and Surface Courses

ASTM D 1683 (1990a) Failure in Sewn Seams of Woven Fabrics

ASTM D 3776 (1985; R 1990) Mass Per Unit Area (Weight) of Woven Fabric

ASTM D 3786 (1987) Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method

ASTM D 4354 (1989; R 1994) Sampling of Geosynthetics for Testing

ASTM D 4355 (1992) Deterioration of Geotextiles from Exposure to ultraviolet Light and Water (Xenon-Arc Type Apparatus)

ASTM 4491 (1992) Water Permeability of Geotextiles by Permittivity

ASTM D 4533 (199 1) Trapezoid Tearing Strength of Geotextiles

ASTM D 4595 (1986; R 1994) Tensile Properties of Geotextiles by the Wide Width Strip Method

ASTM D 4632 (199 1) Grab Breaking Load and elongation of Geotextiles

ASTM D 4716 (1987) Constant Head Hydraulic Transmissivity (In-Plane Flow) of Geotextiles and Geotextile Related Products

ASTM D 4751 (1993) Determining Apparent Opening Size of a Geotextile

ASTM D 4759 (1988; R 1992) Determining the Specification Conformance of Geosynthetics

ASTM D 4791 (1995) Flat or Elongated Particles in Coarse Aggregate

ASTM D 4833 (1988) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

ASTM E 11 (1995) Wire-Cloth Sieves for Testing Purposes

ASTM F 405 (1993) Corrugated Polyethylene (PE) Tubing and Fittings

ASTM F 512 (1993) Smooth-Wall Poly (Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation

AMERICAN WELDING SOCIETY (AWS)

AWS 131.1 (1994) Structural Welding code- Steel

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWS)

AWPA C6 (1995) Cross Ties Switch Ties Preservative Treatment by Pressure Processes

AWPA M2 (1995) Standard for Inspection of Treated Timber Products

AWPA M6 (1995) Brands Used on Forest Products

AWPA P2 (1995) Standard for Creosote Solutions

MUTCD Manual on Uniform Traffic Control Devices, Most Recent Edition.

2.1.2 Submittals

The Owner's General Approval is required for submittals with a "GA" designation.

Submittals having an "FIO" designation should also be submitted to the Owner, but are submitted For Information Only.

All materials and equipment furnished by the Contractor for the project will be new and of good quality, except as may be otherwise provided in the Project Documents. All material and equipment will be applied, installed, connected, cleaned, and conditioned in accordance with the instructions of the applicable supplier, except as may be otherwise provided in the Project Documents.

2.1.2.1 Ballast (FIO)

Name of Supplier, type of material, gradation analysis, and Certificates of Compliance for the materials to be installed on this project.

2.1.2.2 Sub-Ballast (FIO)

Name of Supplier, type of material, gradation analysis, and Certificates of Compliance for the materials to be installed on this project.

2.1.2.3 Walkway Stone (FIO)

Name of Supplier, type of material, gradation analysis, and Certificates of Compliance for the materials to be installed on this project.

2.1.2.4 Timber Crossties (FIO)

Name of the tie manufacturer, Rail Tie Association membership status, the wood species proposed, and product data for the ties to be furnished, including the type of seasoning to be utilized, prior to ordering the ties.

Certificates of Compliance for materials. Certified test and inspection reports for crossties and switch ties subsequent to treatment a minimum of seven calendar days prior to any ties being installed in track. Test and inspection reports will contain the information required by Part 7 of AWPA M2.

2.1.2.5 Rail (FIO)

Manufacturer's data on new rail, including: rail weight, rail section, drilling, rail length, date rolled, and the name of the mill where the rail was rolled. For relay rail the required information will include weight, section, lengths, and the name of the supplier. The maximum allowable vertical wear on the rail head and the maximum allowable horizontal wear on the side of the rail is noted in the Specifications. Provide information regarding the section, quality, hole punch, and wear data for relay rail.

The Contractor will be required to monitor the quality of rail furnished by the owner and will not install any defective rail.

2.1.2.6 Tie Plates (FIO)

Submit the manufacturer's information and Certificate of Compliance for materials, and submit size and punch or proposed materials.

2.1.2.7 Rail Anchors (FIO)

Submit the manufacturer's information and Certificate of Compliance for materials.

2.1.2.8 Cut Track Spikes (FIO)

Submit the manufacturer's information and Certificate of Compliance for materials.

2.1.2.9 Track Bolts (FIO)

Submit the manufacturer's information and Certificate of Compliance for materials.

2.1.2.10 Joint Bars (GA)

The design of the joint bars to be furnished with each rail section will be provided. Include the type of joint bar and method of manufacture, along with the number of bolt holes, rail section, and whether new or relay material. The owner will furnish all joint bars required for the 131 RE rail.

2.1.2.11 Compromise Joint Bars (GA)

The design of the compromise joint bars to be furnished with each rail section will be provided. Include the type of joint bar and method of manufacture, along with the number of bolt holes, rail section, and whether new or relay material.

2.1.2.12 Field Weld Rail (Thermite Welding Procedures); GA

A detailed statement covering the step-by-step procedures to be employed in making the welds, including a complete description of each of the following items, as applicable, and any other essential characteristics included in the welding procedure:

1. The manufacturer's trade name for the welding process.
2. The method to be used for cutting and cleaning the rail ends. Flame, or torch, cutting of rail ends will not be allowed.
3. The minimum and maximum spacing between rail ends.
4. The method used for maintaining the rails in alignment during the welding operation.
5. The method used for preheating, including time and temperature
6. The tapping procedure, including the minimum time required to cool the weld under the mold insulation.
7. The method used (including a description of special tools and equipment) for removing the upset metal and finishing the weld to the final contour.
8. Quality control procedures to be utilized.
9. The contractual agreements with any subcontractor employed by the Contractor for performance of the work.

If the Contractor elects to perform electric butt welding to produce CWR on location, the Contractor will provide a detailed explanation of the proposed process to the Owner.

2.1.2.13 Tie Plugs (FIO)

Provide the manufacturer's name and a description of the product(s) to be used.

2.1.2.14 Geotextiles (FIO)

Independent testing laboratory's certified test reports for geotextiles, including necessary analysis and interpretation. These reports will provide results of the laboratory testing performed on samples of the geotextile material delivered to the jobsite. Test reports will be submitted at least five (5) working days prior to the installation of the geotextile.

2.1.2.15 Turnouts (GA)

2.1.2.16 Derails (GA)

2.1.2.17 Gage Rods (FIO)

2.1.2.18 Railroad/Highway Grade Crossing Materials or Surface (FIO)

Within 10 days of the Notice to Proceed, the brand name of the pre-manufactured crossing material or crossing surface material proposed for use, detailed installation procedure for the pre-manufactured crossing material or crossing surface material, along with manufacturer's literature concerning the product. For built-in-place crossings, the type of materials to be used, together with manufacturer's literature. The Contractor must submit the name and location of the hot mix asphalt plant(s) that will be used for the project, along with the proposed mix to be used.

2.1.2.19 Components or Products; FIO

Performance data for components or products proposed as an equivalent to those herein specified. The Owner's written approval is required for any such equivalent type component or product that the Contractor proposes to use.

2.1.2.20 Schedule of Materials and Equipment; FIO

A complete schedule of the materials proposed for installation within 10 days of receipt of Notice to Proceed, and before installation of the materials. The schedule will include a list of equipment proposed for the work.

All certifications of compliance are due no later than 30 days from the date of Notice to Proceed unless stated otherwise herein.

2.1.2.21 Electric Arc Welding; FIO

A detailed specification covering the step-by-step procedures to be employed in making the electric arc welds. A complete description of each of the following items, as applicable, and any other essential characteristics, will be included in the procedure Specifications.

1. Type, size, and capacity of electric welding machine (250 amp minimum), grinder, and other equipment. Also, size and type of material (welding rod or wire)
2. The method to be used for removal of defective /excess metal prior to welding (arc, air, or grinding).
3. The method to be used to prevent warping.
4. The method used for preheating, including time and temperature.
5. The method of applying metal buildup and slag removal.
6. The method of securing original contour of items welded.
7. Quality control procedures to be followed.
8. Welding Materials; GA Welding materials (rod or wire), name and manufacturer of materials (low carbon steel) for welding rail and materials (manganese alloy) for welding manganese railroad crossing inserts or castings.

2.1.2.22 Ultrasonic Test; FIO (N/A)

2.1.3 Delivery, Storage, and Handling of Materials

The Contractor will unload materials immediately upon delivery of materials to the site.

The Contractor is solely responsible for the security and protection of all materials delivered to the project site. The Contractor is responsible for replacing lost, stolen or damaged materials at no additional cost to the Owner.

All track materials will be handled in such a manner as to protect such materials from being damaged, and will be stored in such a manner as to be protected from vandalism. Materials damaged during unloading, handling, or installation will be replaced by the Contractor at the Contractor's expense.

Geotextiles will be shipped and stored in their original ultraviolet resistant cover until the day of installation. Geotextiles will be stored in such a manner as to be protected from vandalism, temperatures greater than 60 degrees C (140 degrees F), dirt, dust, mud, debris, moisture, sunlight, and ultraviolet rays.

Geotextiles delivered to the project site will be clearly labeled on the material cover to show the manufacturer's name, brand name, fabric type, location and date of manufacture, lot identification, width, and length.

2.1.4 Qualifications

Track Construction, Rehabilitation, and Maintenance

Track construction tasks will be performed under the direction of qualified and competent supervisory personnel experienced in railroad track construction and maintenance.

All track crew members will be knowledgeable of the applicable Safety Rules, and will be current in their annual roadworker safety training, as evidenced by a current card representing certification.

Welding

Welding will be performed under the direct supervision of an experienced welding supervisor or foreman.

2.1.5 Site Conditions

Temporary Work:

During construction, the Contractor will restore the track to a condition both safe and suitable for service as needed by the Railroad for its regular train operations.

Track time must be scheduled with the Owner and Railroad, and the track restored and/or cleared for service by the designated time. The Contractor is responsible for train delays.

Drainage will be maintained through the project site during the full term of the project. Accumulation of water that might be detrimental to, or affect the stability of the roadbed will not be permitted. Ditches will be maintained in good working condition, and no debris will be allowed to block ditches or culverts. Empty spike kegs and similar containers will not be left in or near ditches, but will be disposed of off the Site and Railroad right-of-way as soon as they are emptied.

2.2 Ballast

2.2.1 Description

The Contractor will be responsible for purchasing, transporting, distributing, placing, and regulating ballast, in accordance with the Plans and Specifications. Ballast will be used for surfacing and lining work and for constructing the proper roadbed section in reasonably close conformity with the lines, grades, and cross-sections indicated on the Plans or as so designated within the Scope of Work.

2.2.2 Materials

The Contractor will be responsible for purchasing, transporting, distributing, placing, and regulating AREA No. 4, 5, or 5A ballast for all work so designated within the Scope of Work. Materials will conform to the AREA guidelines for material, hardness, carbonate content, testing, processing and gradation (AREA Section 1-2 Ballast).

The Contractor will be responsible for furnishing the quantity of ballast necessary to surface and line track in order to bridge the top of rail to the proposed elevations, and conform to the typical roadbed section.

Material will be washed, and free from organic matter, fines and other debris.

Material will be limestone or granite, approved by the Owner.

Material for ballast will meet the minimum property requirements set forth in the AREA MRE.

2.2.3 Equipment

Ballast may be distributed by hy-rail dump truck, backhoe, or front end loader. If a backhoe or front end loader are used, the Contractor will repair any and all damage caused to the roadbed, Sub-Ballast, slopes, ditches, vegetation, etc., at the Contractors expense. Formation of ruts that may impair proper roadway drainage will be avoided when distributing ballast from trucks or other off-track equipment. Any ruts formed greater than 1 inch will be leveled and graded to drain by the Contractor.

All equipment necessary for the satisfactory performance of this work will be on the site and approved, before the work will be permitted to begin.

2.2.4 Construction Requirements

Placement of Ballast - Ballast will be placed so that track can be surfaced and lined to the proposed lines and grades indicated.

Ballast will not be placed on soft, muddy, or frozen areas. Where the prepared sub-grade (roadbed) is soft, muddy, rutted, exhibits severe depressions, or is otherwise damaged, the ballast will not be placed until the damaged sub-grade has been repaired and approved by the Owner.

Sufficient ballast will be placed to meet the requirements of the typical section, at the locations shown on the Plans, or called out in the Scope of Work or Specifications.

Ballast will be unloaded as closely as possible to the point of use to avoid unnecessary handling. Excess ballast will be picked up and redistributed at the Contractor's expense.

Where existing track is being surfaced or lined, sufficient ballast will be used so that the Contractor may tamp the track and surface the track to its final top of rail elevation, and conform to the typical roadbed section, including ballast shoulder width, as shown on the Plans and required in the Specifications.

If additional ballast is required for dressing, the material will be provided by the Contractor, with no increase in unit price. The Contractor will distribute ballast as per the Scope of Work, Plans, and Specifications.

The minimum shoulder ballast width for track constructed within the scope of the project will be 8".

The final depth of ballast after surfacing for new track construction will be the depth indicated on the Plans, represent the lift required in the Scope of Work, or raise the top of rail to the elevations proposed on the Plans, whichever requirement applies at each location.

2.2.5 Measurement and Payment

Payment for ballast will be included in the contractor's unit price for ballast or construct grade crossings.

2.3 Sub-Ballast

2.3.1 Description

The Contractor will be responsible for purchasing, transporting, distributing, placing, material in accordance with these Specifications, and in reasonably close conformity with the lines, grades, and cross-sections indicated on the Plans or as so designated within the Scope of Work.

Sub-ballast will be used for grade crossing base during reconstruction of the proposed grade crossings.

2.3.2 Materials

The Contractor will be responsible for purchasing, transporting, distributing, placing, and compacting sub-ballast (approved by the Engineer), for all work so designated within the Scope of Work. Materials will conform to the AREMA guidelines for material, moisture content, testing, processing and gradation (AREMA Section 1-2 Ballast). Sub-Ballast will consist of a foundation course for a typical railroad roadbed and will be composed of either limestone, conglomerate, crushed or screened pit run gravel, crushed slag or other granular materials containing no more than 3% organics by weight by ASTM C-123.

The materials will meet the requirements hereinafter specified. Aggregate retained on a No. 10 sieve will consist of hard, durable particles or fragments of stone, gravel, sand or slag. Materials that break up when alternately frozen and thawed or soaked and dried will not be used. Allowable wear, based on the Los Angeles Abrasion Test, will not be greater than 50%. A higher or lower percentage of wear may be submitted to the Engineering for approval.

Gradations

It is the intent of this specification that the Sub-Ballast will consist of gradations as set forth in the following table:

Sieve Size (Optimum)	2 Inch	1 Inch	¾ Inch	No. 10	No. 40	No. 200
% Passing (Optimum)	100	95	67	38	21	
% Passing (Permissible)	100	90-100	50-84	26-50	12-30	0-10

2.3.3 Equipment

The Contractor will furnish all necessary equipment to transport, unload, spread, shape, move and compact the materials listed above. All equipment cost will be included in the contract price (see measure and payment section below).

2.3.4 Construction Requirements

Sub-ballast will be used in the grade crossing. 6" compacted lifts will be placed on the excavated subgrade, compacted using approved compaction equipment. Pug mix or added water will be used to achieve proper compaction.

Stone will be placed in compacted lifts, not to exceed 6" in thickness each.

All unstable or otherwise objectionable materials will be removed from the sub-grade. The sub-grade will be compacted using a smooth drum vibratory roller and/or wacker packer, approved by the Engineer. The sub-grade will be in an acceptable condition to receive the sub-ballast.

The Contractor will insure that the moisture content of the material is within acceptable limits for proper compaction, and that excessive water has not been added.

When placing material in multiple lifts, the Contractor will plan and coordinate its work in such a manner that the previously placed and compacted lifts be allowed sufficient time for curing and development of sufficient stability before vehicles hauling materials for the succeeding lifts, or other heavy equipment, are permitted on the sub-ballast. Prior to placing the succeeding lifts of material, the surface of the lower lift will be sufficiently moist to insure a strong bond between lifts. The edges and or edge slopes of the Sub-Ballast will be bladed and compacted, or otherwise dressed to conform to the lines, grades and dimensions shown on the Plans.

2.3.5 Measurement and Payment

Payment for sub-ballast will be included in the unit cost for sub-ballast.

2.4 Walkway Stone (N/A)

2.5 Timber Crossties

2.5.1 Description

The Contractor will be responsible for purchasing, unloading, distributing, and installing crossties and switch ties required for track and turnout construction to complete the track work indicated on the Plans or as so designated within the Scope of Work.

2.5.2 Materials

All ties will be hardwood, and will conform to the most recent AREMA Guidelines, Recommendations and Specifications.

Size Requirements:

Crossties for grade crossing will be new 7"x9"x10' Grade ties.

Tie Plugs

Treated timber hardwood plugs will be furnished by the Railroad and installed by the Contractor at every location where existing ties remain and spikes are drawn.

2.5.3 Equipment

All equipment necessary for the satisfactory performance of this work will be on the site and approved, before the work will be permitted to begin.

2.5.4 Construction Requirements

All new crossties will be installed by the Contractor as per the scope of work.

Tie spacing for grade crossings will be 18" center to center.

Crossties will be placed with heartwood down wherever possible.

Crossties will be placed at right angles (perpendicular) to the centerline of the track. The first ties adjacent to the tie installed will be straightened and properly placed if they are not perpendicular to the centerline.

The end of each crosstie will line up with the ends of adjacent crossties on a designated 'line side' prior to and after spiking, which will be used consistently throughout the project. Line side in curves will be the outside ("high") rail of the track.

All ties installed in existing track will be mechanically tamped immediately after insertion to insure that the base of the rail fits tightly against each tie plate. This tamping will be done immediately following the tie installation, and will not be considered a part of the surfacing operation.

No ballast or debris will be left between the crosstie and tie plate, or between the tie plate and rail.

Ties will be spiked as per the spiking pattern provided on the Plans or as per the Specifications.

If any released crossties are sold to a third party, the Contractor will furnish said party a copy of the Consumer Information Sheets, attached, and will furnish the Owner and Owner a copy of the bill of sale.

Crossties will be handled so as to avoid breaking or bruising. The use of picks in the handling of ties will not be permitted. Ties will not be thrown from railroad cars or trucks onto rails, other track material or rocks. Moving and placing ties with picks, spike mauls, sledges, or shovels is prohibited. Surfaces damaged, cut, or drilled in the field will be coated with a preservative subject to the approval of the Owner.

2.5.5 Measurement and Payment

Payment for crossties will be included in the contractor's unit price for crossties.

2.6 Railroad Track Construction (N/A)

2.7 Rail (N/A)

2.8 Rail Testing (N/A)

2.9 Tie Plates (N/A)

2.10 Rail Anchors

The Contractor is responsible for removing and re-installing existing rail anchors.

2.11 Cut Track Spikes

2.11.1 Description

The Contractor will furnish and install all new cut track spikes for track construction.

2.11.2 Materials

The Contractor will furnish new, high carbon steel, cut track spikes, conforming to Chapter 5, Part 2 of AREA MRE, will be utilized. Track spikes will be 5/8" square by 6" long. Spiking will conform to the appropriate pattern detail as shown or as per these Specifications.

2.11.3 Equipment

The Contractor will furnish all necessary equipment to move or install the materials listed above.

2.11.4 Construction Requirements

Spiking Procedures - Rail will be spiked promptly after being installed. Spikes will be started and driven vertically and square with the rail. In no case will spikes be overdriven, or straightened while being driven.

Spikes will not be installed through the slots in skirted-type, slotted joint bars (angle bars).

No spikes will be driven against the ends of joint bars. Spikes started crooked will be pulled, the holes plugged, and spikes re-driven.

Spikes will be driven with the under side of the head of the spike contacting the top of the base of the rail with a minimum of pressure.

Number of Spikes – in general, the Contractor will conform to the spiking pattern detail. Six rail-holding spikes will be used on each tie on tangents and curves less than 6 degrees (Spiking Pattern “B”). Ties in grade crossings will be double spiked each rail, 8 spikes total, ten rail-holding spikes will be used on each tie in curves including and over 6 degrees.

2.11.5 Measurement and Payment

Payment for furnishing and installing spikes will be included in the contractor’s unit price for removing and rebuilding grade crossings or installation crossties.

2.12 Track Bolts (N/A)

2.13 Joint Bars (N/A)

2.14 Compromise Joint (N/A)

2.15 Field Weld Rail

2.15.1 Description

The Contractor is responsible for welding rail in specified crossings to be removed and rebuilt.

2.15.2 Materials

Welding kits will be Orgothermite or approved equal.

Rail Welding Kits - Kits for thermite type rail welds will be approved by the Engineer before use.

2.15.3 Equipment

The Contractor will furnish all necessary equipment to move or install the materials listed above. All equipment cost will be included in the contract price (see measure and payment section below).

2.15.4 Construction Requirements

The Contractor will furnish rail-welding kits and will make field welds at locations as per the scope of work. Welds will be made by qualified personnel.

Rail ends at joints will be blank, or, if drilled, will be cropped so that no bolt hole is within five and one-half inches (5 ½") of the proposed weld. The remaining bolt holes will be packed with sand prior to making the weld.

Cropping of rail ends will be accomplished by using a rail saw. No torch cutting of rails will be allowed.

Prior to performing the weld, the rail will be properly aligned on both the gage side and running surface.

The Contractor is responsible for ordering and furnishing all weld kits.

Payment for field welds will be based on the number of field welds completed, and payment made per the unit bid price.

End Preparation - Rails to be welded will meet the requirements of AREMA MRE, Paragraph 1, "Specifications for Fabrication of Continuous Welded Rail" given in Chapter 4, Part 2 of AREMA MRE. The rail ends will be aligned in accordance with the paragraph entitled "Gap and Alignment". Rail ends will show no steel defects, dents, or porosity before welding. Bolt holes will not be made, or permitted to remain, in the ends of the rail to be welded. One handling hole may be made in each end of the welded string. Rail ends containing such holes will be cropped during track construction. Rail which must be cut for any reason will be cut squarely and cleanly by means of approved rail saws or abrasive cutting wheels in accordance with Chapter 5 of AREMA MRE, article, "Recommended Practice For Use of Abrasive Wheels".

Cleaning - The rails to be welded will be cleaned of grease, oil, dirt, loose scale, and moisture to a minimum of 6 inches back from the rail ends, including the railhead surface. Cleaning will be accomplished by use of a wire brush, to completely remove dirt and loose oxide and by use of oxygen-acetylene torch to remove grease, oil and moisture. A power grinder with an abrasive

wheel will be used to remove scale, rust, burrs, lipped metal and mill brands which would interfere with the fit of the mold for 2 inches on each side of the rail ends.

Gap and Alignment - The minimum and maximum spacing between rail ends will be as specified by the rail welding kit manufacturer and the approved welding procedures.

The ends of the rails to be welded will be properly gapped and aligned so as to produce a weld conforming to the alignment tolerances below. Alignment of rail will be made on the head of the rail. The rail gap and alignment will be held constant during the complete welding cycle.

Vertical alignment will be such that a flat running surface is provided. Any adjustment for the difference in the height of the rails will be made at the base.

Horizontal alignment will be such that any difference in the width of rail heads occurs on the field side. Horizontal offsets will not exceed 0.04 inch in the head and/or 0.12 inch in the base.

Surface Misalignment Tolerance - Combined vertical offset and crown camber will not exceed 0.04 in./ft at 315 degrees C (600 degrees F) or less. Combined vertical offset and dip camber will not exceed 0.01 in./ft at 315 degrees C (600 degrees F) or less.

Gage Misalignment Tolerance - Combined horizontal offset and horizontal kink camber will not exceed 0.04 in./ft at 315 degrees C (600 degrees F) or less.

Thermite Welding - Welding will be done in accordance with Chapter 4, Part 2 of AREMA MRE, articles "Thermite Welding - Rail Joints" and "Specifications for Fabrication of Continuous Welded Rail", except as modified by these Specifications. All welds will be visually inspected at the time of welding.

Thermite Weld Preheating - The rail ends will be preheated prior to welding to a sufficient temperature and for sufficient time as indicated in the approved welding procedures to insure full fusion of the weld metal to the rail ends without cracking of the rail or weld.

Thermite Weld Cooling - The molds will be left in place after tapping for sufficient time to permit complete solidification of the molten metal and proper slow cooling to prevent cracking and provide a complete weld with proper hardness and ductility.

Weld Finishing and Tolerances - Welded joints in finished track will be brought to a true surface and alignment by means of a proper grinding or planing machine (shear). Finish grinding will be performed with an approved grinder operated by a skilled workman grinding evenly and leaving the joints in a smooth and satisfactory condition. Finishing will eliminate all cracks. The completed weld will be finished by mechanically controlled grinding in conformance with the following requirements:

A finished deviation of not more than plus or minus 0.01 inch of the parent section of the rail head surface will be allowed. The gage side of the rail head will be finished to plus or minus 0.01 inch of the parent section.

Welds produced by welding kits which are specially designed to produce reinforced welds need not be ground in the finishing area except as necessary to remove fins, burrs, cracks, etc.

Weld Quality - Each completed weld will have full penetration and complete fusion and be entirely free of cracks or fissures. Welds will meet the acceptance criteria given in AWS D 1. 1

Weld Numbering - The Contractor will semi-permanently mark a sequential weld number on the rail immediately adjacent to the weld using a quality lead paint marker at the time the weld is made. Welds will be numbered sequentially in the order in which they are made. Replacement welds (made to correct defective welds) will be assigned a new sequential number by adding a letter to the defective weld number (i.e., defective weld 347 would be replaced by 347A).

Visual Inspection - Each welded joint will be thoroughly inspected by the Contractor in the presence of the Engineer after removal of the mold and grinding of excess metal. The Contractor will pay particular attention to surface cracking, slag inclusion, gas pockets, and lack of fusion. The Contractor will correct or replace, at no extra cost, any weld found to be defective. The method of correction will be as approved by the Engineer.

Testing - Each weld will be ultrasonically tested following the visual inspection. The method of testing and acceptance will be in accordance with AWS D1.1 The Contractor will correct or replace all defective welds, at no additional cost. The method of correction will be as approved by the Engineer. Ultrasonic testing will be performed by the Contractor after the rail has been installed in track. The testing will determine whether or not each weld meets the criteria specified. Welds which are deemed unacceptable by the Engineer will be cut out of the rail and replaced by a section of new rail and two new welds. Saw cuts will be made at least 6 inches from the centerline of the faulty weld. Replacement welds and replacement rails will be at the sole expense of the Contractor. Replacement welds will be renumbered as indicated, and retested.

Additional Rail Markings- in addition to the weld number, the following information is to be marked on the web of the rail at each weld:

Initials of person making weld

Ambient (air) temperature at time of weld

Rail temperature (taken with a rail thermometer placed on the shady side of the rail)

Date of weld

Time of day weld was made

2.15.5 Measurement and Payment

Payment for work and materials related to field welds will be included in the cost to remove and rebuild grade crossings.

RECORD OF FIELD WELD

INSTALLATION _____ WELD NUMBER _____

FINAL INSTALLED LOCATION _____ TRACK _____

STATION _____ RAIL L. R. (Circle)

DATE TIME AM / PM (Circle)

AIR TEMPERATURE _____ F. WEATHER _____
RAIL TEMPERATURE _____ F.

WELD KIT MANUFACTURER _____

RAIL GAP (NEAREST 1/16 IN.) _____ RAIL CUT REQUIRED? YES NO

BACK RAIL
MANUFACTURER _____ USED RAIL? YES NO (Circle)
YEAR/MONTH ROLLED _____ HEAT NUMBER _____

AHEAD RAIL
MANUFACTURER _____ USED RAIL? YES NO (Circle)
YEAR/MONTH ROLLED _____ HEAT NUMBER _____

REMARKS:

ULTRASONIC TEST DATE AND RESULTS _____

KIT MFG, REPRESENTATIVE PRESENT _____ WELDING FORMAN _____
(Initial)

ENGINEER'S REPRESENTATIVE PRESENT _____ RECORDER _____
(Signed) (Initial)

_____ RECORDER _____
(Signed) (Initial)

End Of Section

2.16 Tie Plugs

2.16.1 Description

The Contractor is responsible for furnishing and installing treated hardwood plugs, wherever spikes are drawn.

2.16.2 Materials

The Contractor will furnish Treated hardwood plugs.

2.16.3 Equipment

The Contractor will furnish all necessary equipment to plug spike holes for this project.

2.16.4 Construction Requirements

The Contractor will not install new ties prior to installing rail.

If spikes are withdrawn, the holes will be plugged with treated hardwood plugs or approved plugging compound. Tie plugs will not be installed in prebored holes unless spikes have been driven and withdrawn.

2.16.5 Measurement and Payment

All costs related to plugging holes where spikes are drawn will be included in the cost of other items.

2.17 Geo Textiles

2.17.1 Description

The Contractor will furnish and place 16 oz/sy geotextile filter fabric required for the rehabilitation of the road crossing.

The Contractor will furnish and place geotextile where the track is removed, undercut, re-graded, and track rebuilt, between the subgrade and ballast.

2.17.2 Materials

Material will be minimum 16 oz/sy in weight, and will meet AREMA guidelines for material, weave, resistance to tearing, shearing and puncture.

2.17.3 Equipment

The Contractor will furnish all equipment necessary for moving or placing geotextile.

2.17.4 Construction Requirements

Place the centerline of the roll of fabric along the centerline of track. After the track has been removed, and the roadbed excavated to a distance of 18" below proposed bottom of tie, the Contractor will compact the subgrade, place filter fabric, and backfill the excavated area with compacted limestone crusher run as per Plans for crossings, and backfill with ballast (surface in lifts not to exceed 3") for the track undercutting location.

If it is necessary to overlap sections of fabric, the minimum overlap is 24".

2.17.4 Measurement and Payment

Payment for all work related to this item is to be included in the unit price for remove and rebuild grade crossing.

2.18 Turnouts (N/A)

2.19 Derails (N/A)

2.20 Surface and Line Track, Regulate Ballast

2.20.1 Description

The purpose of this work is to raise the top of rail to proposed elevations, provide the proper line and surface for tangents and curves, conforming to the typical section, profile, Plans, and scope of work herein.

2.20.2 Materials

Ballast (see Section 2.2 above)

2.20.3 Equipment

The Contractor will furnish all necessary equipment to move or install the materials listed above. All equipment cost will be included in the contract price (see measure and payment section below).

Tampers will not engage in tamping track unless all tamper vibrator motors are operational. Each tamping foot will have at least 4 square inches of surface area on each side. Each tamping foot/vibrator motor will be operational and in good working order at any time the tamper is in operation

2.20.4 Construction Requirements

Track will be lined and surfaced in order to meet FRA Class 5 tolerances (FRA Section 213.55 Alignment, and Section 213.63 Track Surface).

Where bridges and crossings are located within a curve, the curve will be plotted and lined so that the line of the curve matches the line of the bridge or crossing. A smooth transition will be made into and out of all bridges and road crossings that are not being removed, rebuilt, or rehabilitated.

After all surfacing work is completed, all tie cribs are to be filled with ballast and the ballast shoulder section restored behind the surfacing work. At a minimum, the ballast shoulder section will be 8". Ballast will not be windrowed or piled at the ends of the ties.

Track will be broomed with a mechanical sweeper, with all sweeper hoses in good condition. No ballast is to be left on top of the ties or on the base of the rail.

Tamper will make at least three tamper foot insertions and squeezes per tie.

Tamping machine should be capable of lining and surfacing track in one operation. The operator will be experienced in plotting and lining curves.

The cost of regulating ballast before and after tamping is to be included within the firm fixed price.

Regulating ballast includes transferring ballast from one side of the track to the other, or moving ballast up or down the track as necessary to restore the ballast section to the standards herein specified.

The Contractor will be responsible for readjusting downed crossties after the track is surfaced. When ties are down, the spikes will be pulled, tie plate removed, spike holes plugged, and the tie nipped and respiked. Additional ballast will then be placed, as necessary, and the tie retamped. Any ballast disturbed during this process will be redressed. No spike heads, tie plate shoulders or ballast will be left under the base of rail. The Contractor will repair each of these defects before the surfacing work is judged to be completed.

The Contractor is responsible for surfacing and lining track at locations specified in the Scope of Work, and will furnish equipment capable of performing the work.

Superelevation – shall be 0”.

Track Lifts - The track, after being aligned, will be brought to grade and surface in lifts not to exceed 3 inches. After each lift, the ballast will be tamped. When using track jacks, placement of jacks will be such that undue bending or stressing of rail or joints is prevented. Both rails will be raised at one time and as uniformly as possible, except where superelevation is required. Initial track lifts will be made such that, subsequent to the passage of not less than five (5) train operations, a final lift of no more than 2 inches is required.

Tamping - Raising and tamping of track will be performed with an automatic, vibratory, squeeze type power tamper with 16 tamping heads, capable of raising both rails simultaneously and maintaining cross level. The equipment to be used for surfacing operations will be subject to approval by the Owner. Every tie in the track will receive three or more full insertions of the tamping heads. Ballast will be power-tamped under both sides of ties from each end to a point 12 inches inside each rail for 8-foot ties, 15 inches inside each rail for 8-ft-6 in. ties, 18 inches inside each rail for 9-foot ties. The center will be filled with ballast, but tamping will not be permitted in the center of the tie between the above stated limits. Both ends of the ties will be tamped simultaneously and tamping inside and outside of the rail will be done at the same time. Regardless of the kind of ballast or the kind of power tamper used, tamping tools will be worked opposite each other on the same tie. Ballast under road crossing ties will be tamped the entire length of each tie. All ties will be tamped to provide solid bearing against the base of the rail after the track is raised to grade at final surfacing. All downed ties will be brought up to the base of rail and machine tamped. The resultant track surface and alignment will be both uniform and smooth. Tamping of track in snow or frozen ballast conditions will not be permitted.

Respiking of Ties - After tamping has been completed and the jacks removed, all downed ties will be returned to their original position, respiked and retamped to provide full bearing against the rail. The Contractor will insure that no spike heads, ballast, or tie plate shoulders are left under the base of rail.

Runoff of Track Raises - Runoff at the end of a track raise will not exceed ½-inch in 31 feet of track unless otherwise approved by the Owner.

Horizontal Realignment - Horizontal realignment of curved track, if required, will be established by the Contractor using manual or mechanical means as described in the AREA MRE Chapter 5, Part 3 article titled, "String Lining of Curves by the Chord Method".

Final Surfacing - After preliminary surfacing has been completed, grade and line stakes will be checked and the track brought to grade and alignment.

Final Tamping - Track will be brought to grade and the ballast tamped in the manner described for preliminary surfacing except that the tamping distance inside the rail will be decreased from 15 to 13 inches.

Final Dressing - After final alignment, ballast will be dressed to the section indicated, and will be level with the tops of the ties. The portion of the sub-grade outside the ballast line will be left with a full, even surface, and the shoulder of the sub-grade properly dressed to the indicated section, so as to provide proper drainage away from the track.

Surplus Ballast - Surplus ballast remaining after final surfacing and dressing of the ballast section will be distributed or otherwise disposed of as directed by the Owner.

Cleanup - Upon completion of the work, the Contractor will remove all rubbish, waste, and discarded materials generated by the work from the project area. Areas in which the Contractor has worked, including, but not limited to, project areas, material storage sites, and borrow or disposal areas, will be left in a clean, well-graded, and well-drained condition.

Shoulder Removal and Reconstruction

Where track construction, undercutting, or rehabilitation operations result in a deposit of materials along the track shoulders that would impede the free drainage of the geotextile and track structure, the Contractor will remove the material and reconstruct the shoulders, using the materials and dimensions as indicated.

Final Adjustments - 90 calendar days after the notice of completion has run, and track has been accepted and placed in service, the Contractor will return to the job site to perform any resurfacing operations necessary to achieve final surface, line, and/or cross-level, track alignment or grade.

Gage - Gage will indicate standard track gage (4' 8-1/2"), to be measured at a point 5/8" below the top of rail, on both rails, between the inside of each rail.

The rail will be held to gage while spikes are being driven.

Rail will be properly seated in the tie plates, with the outside edge of the rail base and the field shoulder of the tie plate aligned and in contact.

The rail and tie plates will be spiked to each tie in accordance with the standard of the railway, or in accordance with the track spiking chart, attached, as directed by the Owner.

For new track construction and installation of new rail, necessary gaging will be done at the time the new rail is laid.

2.20.4 Measurement and Payment

For all work related to this item, all costs will be included in the contractor's unit price for surfacing.

2.21 Grade Crossings

2.21.1 Description

The Contractor will construct the grade crossings as per the Scope of Work and Plans.

2.21.2 Materials

The Contractor will perform excavation, dispose of released materials, and furnish and install all material required for crossing work including sub-ballast, filter fabric, and pre-cast concrete panels as required at each specific location.

Concrete Panels –	Century Pre-cast concrete panels
	5,000 psi concrete
	70 ksi steel reinforcement

2.21.3 Equipment

The Contractor will furnish all necessary equipment to remove the existing track, excavate to proposed subgrade, move the materials, construct temporary and new crossings, install the materials listed above, and dispose of all released materials.

2.21.4 Construction Requirements

After the track has been removed, the contractor will excavate to a point 2.5' below the proposed T/R elevation through the crossing.

The Contractor will compact the subgrade achieving 95% modified Proctor compaction, using approved compaction equipment, place filter fabric through the length of the crossing, then furnish and place a 6" sub-ballast conforming to the crossing manufacturer's guidelines and recommendations. The Contractor will then install the pre-cast concrete panels as per the manufacturer's guidelines.

Excavated material will be removed from the right-of-way and disposed of in a proper and legal manner.

The Contractor will be required to coordinate all work with the Railroad, Engineer, and City of Gallatin.

2.21.5 Measurement and Payment

Payment for all work related to this item will be included in the price for grade crossings.