

Texas Department of Transportation
BOOK 2 – TECHNICAL PROVISIONS
FOR
LOOP 375 - BORDER HIGHWAY WEST EXTENSION
PROJECT
Design-Build Project
ATTACHMENT 14-1
RAILROAD-APPROVED DESIGN PLANS
December 20, 2013

GOVERNING SPECIFICATIONS, SPECIAL PROVISIONS, AND SPECIAL SPECIFICATIONS

STANDARD SPECIFICATIONS:

**ADOPTED BY THE TEXAS DEPARTMENT OF
TRANSPORTATION JUNE 1, 2004.**

ITEMS 1 TO 9	INCL., GENERAL REQUIREMENTS AND COVENANTS
ITEM 100	PREPARING RIGHT OF WAY
ITEM 104	REMOVING CONCRETE
ITEM 110	EXCAVATION
ITEM 132	EMBANKMENT
ITEM 247	FLEXIBLE BASE
ITEM 423	RETAINING WALLS
ITEM 462	CONCRETE BOX CULVERTS AND STORM DRAINS
ITEM 466	HEADWALLS AND WINGWALLS
ITEM 496	REMOVING STRUCTURES
ITEM 500	MOBILIZATION
ITEM 506	TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

SPECIAL SPECIFICATIONS:

ITEM XXXX	BALLASTED TRACK CONSTRUCTION
ITEM XXXX	PRECAST CONCRETE RAILROAD GRADE CROSSING PANELS

SPECIAL PROVISIONS:

SPECIAL PROVISIONS WILL GOVERN AND TAKE PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HEREON WHEREVER IN CONFLICT THEREWITH.

FHWA FORM 1273		
SPECIAL PROVISION	TO ITEM 000	(000---007)
SPECIAL PROVISION	TO ITEM 000	(000---011)
SPECIAL PROVISION	TO ITEM 000	(000---2301)
SPECIAL PROVISION	TO ITEM 000	(000---2329)
SPECIAL PROVISION	TO ITEM 000	(000---2332)
SPECIAL PROVISION	TO ITEM 000	(000---2839)
SPECIAL PROVISION	TO ITEM 001	(001---015)
SPECIAL PROVISION	TO ITEM 002	(002---017)
SPECIAL PROVISION	TO ITEM 002	(002---044)

SPECIAL PROVISION	TO ITEM 003	(003---033)
SPECIAL PROVISION	TO ITEM 004	(004---017)
SPECIAL PROVISION	TO ITEM 005	(005---004)
SPECIAL PROVISION	TO ITEM 006	(006---030)
SPECIAL PROVISION	TO ITEM 006	(006---047)
SPECIAL PROVISION	TO ITEM 007	(007---918)
SPECIAL PROVISION	TO ITEM 009	(009---012)
SPECIAL PROVISION	TO ITEM 009	(009---015)
SPECIAL PROVISION	TO ITEM 100	(100---002)
SPECIAL PROVISION	TO ITEM 100	(100---XXX)
SPECIAL PROVISION	TO ITEM 132	(132---011)
SPECIAL PROVISION	TO ITEM 132	(132---XXX)
SPECIAL PROVISION	TO ITEM 247	(247---033)
SPECIAL PROVISION	TO ITEM 247	(247---XXX)
SPECIAL PROVISION	TO ITEM 423	(423---XXX)
SPECIAL PROVISION	TO ITEM 462	(462---015)
SPECIAL PROVISION	TO ITEM 462	(462---XXX)
SPECIAL PROVISION	TO ITEM 466	(466---XXX)
SPECIAL PROVISION	TO ITEM 500	(500---011)
“BUY AMERICA”		

SPECIAL PROVISION

110---XXX

Excavation

For this project, Item 110, "Excavation," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

110.2 Construction. The section is supplemented with the following:

For excavations within Union Pacific Railroad (UP) rights of way, the following shall apply:

The Contractor shall follow all requirements by the Union Pacific Railroad and its specifications regarding excavation.

110.2.1 EXCAVATION

Before excavation begins, the area shall be cleared and grubbed. The Contractor shall perform all excavation to the elevations and grades shown on the Drawings and as staked in the field. This work shall consist of excavating the material from roadbed areas, or the borrow areas, and placing the material as embankment, shaping and sloping necessary for the construction, preparation, compaction and completion of roadbeds and other earthwork.

The Contractor shall excavate all materials including rock and common materials that must be removed to accomplish the excavation as shown on the Drawings. All excavated materials will be used in the formation of embankments, roadbeds, and other earthwork so long as such excavation material is satisfactory for such use. **Materials must be tested by an independent testing laboratory and/or approved by the Engineer prior to placement.**

Where excess excavation materials or unsatisfactory material exists, such materials will be disposed of in areas on the Right of Way, approved by the Engineer and the Railroad, or off the Right of Way in a legal and proper manner. Contractor shall provide the Engineer with a copy of agreements made with any landowner.

Excavation shall be done in a manner and sequence that will provide proper drainage at all times.

No blasting will be allowed without sufficient advanced notice given to the Engineer. This time will permit the safe and continuous operation of the UP.

The Contractor shall construct intercepting ditches above the cut slopes where natural ground slopes toward the track (see UP Engineering **Standard Drawing No. 0001B and the projects' Shoofly Track Typical Sections**).

After cut has been completed, the Contractor shall scarify the top six inches (6") of material below the top of proposed subgrade, adjust moisture content, and compact such scarified material (see **Section 110.2.2**).

In cut sections where the material to be excavated is solid rock, the Contractor shall excavate twelve inches (12") below the subgrade elevations as shown on the Drawings and shall replace such excavated twelve inches (12") of solid rock with embankment material approved by the Engineer. This twelve inches (12") of embankment shall have the moisture content adjusted and be compacted to specifications (see **Section 110.2.2**).

110.2.2 MOISTURE AND DENSITY REQUIREMENTS

In cut sections, after cut has been completed, the Contractor shall scarify the six inches (6") of material below the top of proposed subgrade, adjust moisture content and compact the scarified material to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density. **After cut sections are excavated to subgrade, scarified and recompacted the Engineer shall observe and approve (by proof rolling or other methods) these areas before any subballast is placed.**

In cut sections where the material to be excavated is solid rock the Contractor shall excavate twelve inches (12") below the subgrade elevations as shown on the Drawings. The Contractor shall replace such excavated twelve inches (12") of solid rock with embankment material approved by the Engineer, adjust the moisture content of this material and compact to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density.

After the required clearing and grubbing, the foundations for embankments shall be prepared by scarifying the top six inch (6") layer of existing ground, adjusting moisture content, and compacting such scarified material to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density. **After the foundation areas are scarified and recompacted the Engineer shall observe and approve (by proof rolling or other methods) these foundation areas before any embankment material is placed.**

Embankments and backfills of less than three foot (3') of fill shall be compacted to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density.

When embankments and backfills are composed of more than three foot (3') of fill, the materials within three feet (3') of the established subgrade (top of fill) elevation shall be compacted to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density. Material below said three foot (3') from subgrade (top of fill) elevation shall be compacted to not less than 90% of maximum density.

Unless otherwise directed by the Engineer, the moisture content of the soil at the time of compaction shall be at the optimum moisture content or within minus four percentage points (4%) of the optimum moisture content as stated in ASTM D 1557 Modified and as determined by tests taken by the Engineer in accordance with ASTM standards.

Each embankment lift shall be tested for compaction compliance before the next lift is placed.

All compaction shall be determined using ASTM D 1556 for field tests and ASTM D 1557 for moisture and density.

Copies of all soils tests and observations shall be provided to the Engineer, the Engineer will not approve placing subballast before these tests are received and evaluated.

110.2.3 SHORING

When working near UP tracks, temporary shoring may be required. UP's "Guidelines for Temporary Shoring" can be found on the Internet at:

<http://www.uprr.com/aboutup/operations/specs/index.shtml>

Also see Union Pacific Railroad/ Burlington Northern Railroad **Common Standard Plan No. 710000, Sheet 1 of 1 and Plan No. 710001, Sheet 1 of 1.**

Before beginning any work that would require shoring, as determined by the above standards, the Contractor shall provide detailed plans of the intended shoring. If the shoring falls within Zones A or B, the plans shall include design calculations provided by the Contractor. Plans and calculations must be signed and stamped by a Professional Engineer; licensed in the state the work will be done.

For excavations within BNSF Railway (BNSF) rights of way, the following shall apply:

The Contractor shall follow all requirements by the BNSF Railway and its specifications regarding excavation.

110.2.4 ROADWAY EXCAVATION

A. Disposal of Excess Material

1. Excavation in excess of that needed to make the embankments according to the plans and specifications shall be used to widen embankments, flatten slopes, or be deposited in spoil banks, at locations and in height and form as directed by the Engineer. Payment for such excess material placed outside of the limits of the staked embankment section shall be in **excavation only**.
2. Stakes set beyond the limits of standard or designated embankment sections for the purpose of assisting Contractor in establishing limits of disposal areas shall not constitute a standard, designated, or staked section for pay purposes.

B. Waste

1. At the discretion of the Engineer and with his written consent, the Contractor may waste excavated materials in a manner and location approved by the Engineer.

2. If the Contractor should desire to waste off of the right-of-way, he may do so only with the written approval of the Engineer. Before entering on the property, the Contractor must obtain easement, license, permission or other means to release use of the property from landowner or his authorized agent. Such agreement shall be submitted to the Engineer in writing. Such agreement shall be at the Contractor's expense.
3. The Contractor's activities shall be conducted in a manner which will not impact Railroad property, including fences, ditches, underground and overhead utilities, etc.

C. Haul

1. Transporting excavated material shall be considered as merely incidental to the grading work. It is the Contractor's responsibility to thoroughly inspect the project site, plans, and contract documents. Submittal of a bid by the Contractor shall be taken as an indication of the Contractor's understanding of the relationship of excavation, embankment, borrow and haul distances for the grading work required for this project. No direct payment will be made for so-called overhaul.
2. Vehicles used for hauling shall be satisfactory to the Engineer and shall be sufficient in number and capacity to meet the project schedule for the work involved. Whenever feasible the Contractor shall route his hauling equipment over the grade in such a manner as to maintain uniform compaction across the roadway and minimize damage to completed work.

D. Overbreak and Slides

1. Properly licensed and approved Contractors are required for all blasting operations. Excessive blasting or "overshooting" will not be permitted. The Engineer shall have authority to require the Contractor to discontinue any method of blasting which leads to overshooting, is dangerous to the public, destructive to property or to natural features, or in the opinion of the Engineer, causes excessive rock damage to the finished excavation slope. Preshear or cushion techniques shall be used when called for on the plans, in the special provisions, or when directed by the Engineer.
2. Any material outside the specified cross section which is shattered or loosened by blasting shall be removed at the Contractor's expense.
3. Material outside the design slopes which is deemed unstable by the Engineer because of its natural formation shall be removed and paid for as excavation of the proper classification.
4. Slides, which in the judgment of the Engineer are unavoidable, shall be measured and paid for as excavation according to the classification in which the material is found after the slide occurs.

- E. Finishing Excavated Slopes: All excavated slopes, including roadway, channel, road, and borrow pit adjacent to embankment, shall be trimmed accurately to authorized cross sections. In rock or other material, when in the judgment of the Engineer a true slope cannot be made, an irregular slope approximating the design slope will be permitted. No loose material shall be left on the sides or in the bottom of any excavation. This work shall be considered as incidental to excavation and direct payment for this work will not be made.

110.2.5 BORROW

- A. No borrowing will be permitted except as shown on the plans or as instructed by the Engineer in writing. No borrowing will be permitted except in materials approved by the Engineer. Borrow pits shall be left in neat and regular shape and shall be excavated so that they will drain as directed by the Engineer. Necessary clearing, grubbing and satisfactory drainage of borrow pits and the disposal of debris thereon shall be considered related operations to the borrow excavation and not paid for separately.
- B. If the Contractor should desire to borrow off of the right-of-way, he may do so only with the written approval of the Engineer. Before entering on the property, the Contractor must obtain easement, license, permission or other means to release use of the property from landowner or his authorized agent. The Contractor is also responsible for all federal, state and local environmental permitting and requirements All agreements and authorizations shall be submitted to the Engineer in writing.
- C. The necessary borrow materials will be obtained from a source selected by the Contractor. The Contractor will advise the Engineer and Railroad in writing at the time of submission of his proposal along with all data regarding the suitability of such material to be used in the construction of the proposed embankments and approved by the Engineer. Further, the Contractor shall furnish the Engineer and Railroad copies of all agreements from such an independent source, and shall be responsible for the construction of all necessary haul roads, opening up the borrow areas, payment to the landowner for all materials, restoration of the borrow areas, and removal of all haul roads.
- D. The Contractor shall be responsible for all survey work at each borrow area to determine the quantity of material removed. Survey work shall include all cross sections and limits of material removed. All such survey work and method of measurement of borrow materials removed shall be done in a manner acceptable to the property owner. Payment for borrow materials shall be made directly to respective property owner.
- E. The Contractor's activities shall be conducted in a manner which will not impact Railroad property including fences, ditches, underground and overhead utilities, etc.

110.2.6 DITCH EXCAVATION

- A. When ordered by the Engineer, intercepting surface ditches shall be made at the top of excavations and at the foot of embankments, or at other locations where conditions make

them desirable. The cross section and location of such ditches shall be as directed by the Engineer; ditch outlets shall diverge sufficiently from adjoining works to prevent erosion damage. Material excavated shall be placed without compaction on the downhill side of the excavation in one operation such as may be accomplished by a motor grader or dozer. Payment for such ditches shall be in excavation only.

110.2.7 ROCK EXCAVATION

A. Blasting

1. A track window will be required for all blasting. The track window should be requested as part of the Shot Plan (see section 1.3.A) to be submitted for each individual blast. The track window must be received prior to commencement of blasting operations. The blast shall occur within the first 30 minutes of the window unless otherwise approved in writing.
2. Slopes that require blasting either because of the hardness of the bedrock or inaccessibility of mechanical equipment shall be excavated in such a manner that the resulting slope is left in a safe and stable condition, and minimal damage to the slope face due to the effects of the blasting and material removal. The Contractor shall scale and dress the slope after each lift, removing all loose fragments not firmly attached to the slope face, and any overhangs the Engineer considers as a potential hazard to rail maintenance activities and operations.
3. All slopes higher than 10 feet shall be excavated using the methods of controlled blasting. For the purpose of these specifications, controlled blasting refers to the techniques known as presplitting and cushion blasting. Controlled blasting consists of the controlled use of explosives in carefully spaced and aligned drill holes to provide a planar surface in the rock at the specified backslope.
4. Production blasting away from the specified backslope shall be designed and executed to eliminate the possibility of placing excavated material on the mainline track. Exceptions to placing material on the mainline track will be discussed in paragraph 3.5.A.
5. The Contractor shall submit to the Engineer for review the Shot Plan for each individual blast containing the full details of the drilling and blasting operations, including the following minimum information:
 - a. Station limits of proposed shot.
 - b. Plan and section views of proposed drill pattern including hole spacing, diameter, depth, drill hole angles, burden, and subdrill depth. Dust control measures, if required, shall be described for the drilling equipment.
 - c. Loading diagram showing type and amount of explosive, primers, initiators, and location and depth of stemming and decking. If dust is considered an environmental problem with the blasting, the use of water bag stemming may be required, and at no additional cost to the Owner.
 - d. Initiation sequence of blast holes including delay system and timing.

- e. Name of Blaster-in-Charge
- f. Date of plan, date of proposed shot, length of window requested.

Review of the blast plan by the Engineer shall not relieve the Contractor of the responsibility for the accuracy, adequacy and safety of the plan when implemented in the field.

- 6. The Contractor shall obtain all required federal, state and local permits related to the blasting operations, including the transportation, handling, and storage of explosives.
- 7. The following general guidelines are to be followed in the blasting operations. Localized site conditions, geologic or other, may require changes in some of the following guidelines, however, the Contractor's equipment and operations shall be capable of adhering to the requirements and results expected of the controlled blasting operations:
 - a. The Contractor shall remove all overburden soil and loose rock along the top of the excavation for a distance of at least 10 feet beyond the limits of the controlled blasting area.
 - b. The controlled blasting and production holes shall be not less than 2-1/2 inches nor more than 3 inches in diameter, unless the Contractor demonstrates that larger diameter holes produce adequate results, in the opinion of the Engineer.
 - c. The Contractor shall control drilling operations by the use of the proper equipment and workmanship to ensure that no hole shall deviate from the plane of the planned slope by more than 9 inches either parallel or normal to the slope. Drill holes exceeding these limits shall not be paid unless satisfactory slopes, as described by these specifications, are obtained.
 - d. The length of controlled blast holes shall not exceed 20 feet unless, in the opinion of the Engineer, the Contractor can demonstrate the accuracy of his drilling and the results of the blasting produces a uniform slope free of undue irregularities or overbreak.
 - e. Before placing charges, the Contractor shall determine that the hole is free of obstructions for its entire length.
 - f. The maximum diameter of explosives used in presplit or cushion blast holes shall not be greater than 1/2 the diameter of the drill hole, and the resultant charge density shall be less than 1/4 pound per foot of drill hole, except that greater charge may be used in the bottom 1 to 3 feet of the hole. Higher charge densities shall be permitted only after field tests performed by the Contractor demonstrate adequate results, in the opinion of the Engineer. Use only explosives manufactured specifically for use in presplit and cushion blast holes. Cartridges shall be spaced 12 to 24 inches down the hole, or columnar charges used. ANFO shall not be used in the presplit or cushion holes.
 - g. The spacing of the presplit/cushion holes shall be 30 inches, unless with written approval based on trial blasts in the actual slopes show that greater or lesser spacing give adequate results.

- h. The stemming above the explosive column for presplit/cushion holes shall be a minimum of 3 feet, and the hole directly above the explosive column shall be blocked to prevent the stemming from filling in around the explosive. Stemming shall be 3/8 minus sand or similar material.
- i. The spacing of cushion blasting holes shot as part of the production blasting shall be less than or equal to the final burden resulting from the production blasting.
- j. If presplitting is used, these holes shall be fired before the production holes, while if cushion blasting is used, the holes shall be fired after the production holes.
- k. Production blast holes shall not be drilled closer than 3 feet to the controlled blast line, without the written approval of the Engineer. Production holes shall not exceed 3 inches in diameter. Delay patterns, charge densities, and hole spacing for the production holes shall be designed to break the rock without heaving it onto the mainline track or into the river. A minimum delay of 10 millisecond (MS) per foot of burden shall be used between production rows.
- l. The spacing-to-burden ratio for production holes drilled on a rectangular pattern shall be 6-to-5 unless field trials performed by the Contractor demonstrate to the satisfaction of the Engineer that other spacing-to-burden ratios produce adequate results. Maximum hole spacing shall be 8 feet.
- m. Adjacent holes in any direction shall not be detonated on the same delay.
- n. The maximum charge-per-delay shall be 15 pounds, and the maximum charge-per blast shall be 200 lbs, unless otherwise specified by the Engineer or Special Provisions.
- o. Ground vibrations from the blasting shall not exceed 2 inches per second, as measured at the track structure.
- p. Blast mats approved by the Engineer shall be required over any blast capable of producing fly rock or other debris that can reach any track.

B. Mechanical Excavation

- 1. Occasionally slopes contain rock that can be excavated with mechanical equipment such as large dozer rippers and impact breakers. The requirements for final slope face, including scaling and dressing, are the same as for slopes formed by blasting, as are the requirements for dust control, equipment/personnel blockage of the mainline or other tracks.

C. Slope Scaling and Clearing

- 1. Prior to commencing excavation operations, the perimeter of the slopes shall be scaled of loose rock and cleared of trees to a distance of 25 feet in back of the cut slope line. Rock scaling is incidental to the cost of Rock excavation and will not be paid separately, while clearing is payable under the pay item of Clearing and Grubbing.
- 2. Contractor is also responsible for scaling and dressing the slope after each lift, removing all loose fragments not firmly attached to the slope face, and any

overhangs the Engineer considers as a potential hazard. This scaling and dressing is incidental to the rock excavation and will not be paid separately.

110.2.8 SPECIAL BLASTING SITUATIONS

- A. For rock excavation, a detailed Blast Plan Submittal and Mechanical Excavation Submittal shall be presented for review to the Engineer at least two weeks prior, unless otherwise directed by the Engineer, to commencing blasting and mechanical excavation operations at the site.
- B. Very steep slopes located near the track will require special efforts to protect the track and ample time to remove the excavated material which will foul the track. The Contractor shall submit a detailed plan for excavating these areas, including the method of protecting track, a site/location specific blasting plan to avoid damage to the track structure, and maximum time required for the track window. NOTE: Coordination for the track window will need to take place a minimum of 7 days prior.

110.2.9 ROCK EXCAVATION BELOW SUBGRADE

- A. When directed by the Engineer, rock or other similarly hard material shall be removed to specified depth below subgrade and backfilled with compacted materials approved for roadbed.
- B. Unless otherwise specified, rock shall be removed to a depth of 1 foot below subgrade and backfilled by the method as shown on the plans or in the special provisions.
- C. If developed in well-graded sizes with a maximum dimension of no greater than 6 inches, the fines from the rock excavation may be used for backfill. Backfill placement procedures shall be as specified in Paragraph 3.6.B.
- D. If rock excavation does not yield sufficient fines acceptable to the Engineer, select material shall be used for backfilling.
- E. Select material will be used to level off the bottom of the excavation so track can be laid without damage to ties. If select material for backfilling or material qualifying as sub-ballast is not available within the length of the longest haul of excavation to embankment on the project, the Company may elect to train haul same, at its expense, or have Contractor truck haul material to the site. If truck hauling by the contractor is required, payment shall be in accordance with the contract unit rates for subballast.
- F. The select material excavated from the designated undercut section and fines from rock excavation used to backfill the designated undercut section will be paid for at the same unit prices that apply to roadway grading.
- G. Additional select material as may be required beneath the designated undercut section due to the roughness of rock excavation shall be considered as incidental to rock excavation and direct payment for this material will not be made.

110.2.10 SUBGRADE AND EMBANKMENT FOUNDATION PREPARATION

- A. Embankment Foundation Preparation: The Contractor shall proof roll the ground surface of all areas to receive embankment prior to commencement of fill operations. Proofrolling shall consist of the Engineer's observation of soil deflection beneath the tires of the Contractor's heaviest rubber tired equipment, e.g. loaded water trucks, loaded scrapers, or loaded dump trucks. Proof rolling shall consist of a minimum of two passes. Any soft zones detected in this manner which cannot be effectively compacted with repeated passes of a roller shall be treated in accordance with Paragraph 3.7 C. When shown on the plans, in the special provisions, or when directed by the Engineer, the Contractor shall plow, scarify, and break up the full width of the embankment foundation, and then shall condition the material, as may be required, and compact to the density specified for earth fill embankment for the particular material to a depth of at least 6 and up to 18 inches (if necessary to reach the specified density) below the ground surface. This work shall be considered as incidental to embankment and direct payment for such work will not be made.
- B. Excavation Base Preparation: When shown on the plans, in the special provisions, or when directed by the Engineer, the Contractor shall plow, scarify, and break up the base of the excavations for the entire crown width of the subgrade, and then shall condition and compact the material to the density specified for earth fill embankment for the particular material to a depth of at least 6 and up to 18 inches (if necessary to reach the specified density) below finished surface of the excavated section. This work shall be considered as incidental to excavation and direct payment for such work will not be made.
- C. Where soils encountered at subgrade elevation in excavations or in foundations for embankments less than 3 feet high are naturally soft, loose, or contain excessive moisture, the Engineer may require that one or more of the following improvement techniques be used in order to establish a firm, stable subgrade or foundation.
1. Removal and Replacement: When directed by the Engineer, the soils shall be removed to a depth determined by the Engineer. The area of overexcavation shall be backfilled with material suitable for embankment and compacted to a density of not less than that specified for earth fill embankments. Payment for excavating the soils will be made in accordance with the contract unit price for excavation. Payment for backfilling and compacting with suitable soils will be made at the contract unit price for embankment.
 2. Use of geosynthetics: When directed by the Engineer, geotextiles and/or geogrids shall be placed over the soft or wet soils in order to provide reinforcement and stability of soft soils. The type and weight of geosynthetic shall be as specified by the Engineer. Placement requirements and payment provisions shall be as specified in Section 03400, "GEOSYNTHETICS."
 3. Soil Treatment/Modification: In special situations as shown on the plans, in the special provisions, or as directed by the Engineer, treatment of the soils using lime, flyash, or other additive to stabilize or condition wet soils may be used. Use

of fly ash or other additive shall be in accordance with all applicable federal, state, and local environmental regulations. The additives may be applied directly to the ground and blended using the most effective method available, or the additives and soil may be blended on stable ground and worked into the soft or wet soils. Use of additives for soil treatment/modification shall not be interpreted as a lime or cement stabilized subgrade. Payment for soil treatment/modification shall be at contract unit prices.

- D. Embankments on Swampy Ground: Embankments which are to be constructed across low or swampy ground which will not support the weight of trucks or other hauling equipment will receive special consideration for construction. The considerations may be, but are not limited to: (a) removal and replacement of unstable material; (b) displacement of unstable material by surcharging with rock or granular material to provide a stable base; (c) placing a woven geotextile fabric or geogrid and the placement (dumping) of material, preferably rock, in a uniformly distributed layer of thickness not greater than that necessary to support the equipment while placing subsequent layers. The Engineer will approve the method to be used and will specify the type and thickness of geosynthetic material if it is to be used. Compaction requirements are specified in 3.6 ROADWAY EMBANKMENT - B. EARTH FILL (3) Compaction requirements. Placement requirements and payment provisions shall be as specified in Section 03400 "GEOSYNTHETICS."

110.3 Measurement. The section is supplemented with the following:

Where excavation is identified as "unclassified," no recognition will be made of classification of any kind. The excavation's measurement includes any and all additional work required to meet the Union Pacific Railroad and BNSF Railway requirements for the excavation identified herein and through the railroads' review of applicable tests on excavation.

110.4 Payment. The section is supplemented with the following:

Where the bid item is identified as "unclassified," the work will be paid for at the unit bid price bid for "Excavation (Unclassified)." This price is full compensation for authorized excavation; drying; undercutting subgrade and reworking or replacing the undercut material in rock cuts; hauling; disposal of material not used elsewhere on the project; scarification and compaction; and equipment, labor, materials, tools, and incidentals.

SPECIAL PROVISION

132---XXX

Embankment

For this project, Item 132, "Embankment," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

132.3 Construction. The section is supplemented with the following:

For excavations within Union Pacific Railroad (UP) rights of way, the following shall apply:

The Contractor shall follow all requirements by the Union Pacific Railroad and its specifications regarding excavation.

132.3.1 EMBANKMENT

Embankments shall be constructed and compacted to the elevations and grades set forth in the Drawings and as staked in the field.

After the required clearing and grubbing, the foundations for embankments shall be prepared by scarifying the top six inch (6") layer of existing ground, adjusting moisture content, and compacting such scarified material (see **Section 132.3.2**).

If the quantity of materials required for construction of embankments exceeds the quantity of materials removed from excavation necessary to complete the project, additional embankment material will be obtained by:

a) Widening cuts in the grading area. The Contractor shall consult with the Engineer before widening any cuts. Cuts shall be cleared and grubbed and widened in such a manner as to:

- 1.) Be at least as stable as the original cut
- 2.) Provide adequate drainage for the roadbed
- 3.) Retain the same, or lesser degree of, slope lines as original cut

b) Establishing borrow areas within the right-of-way, if available, or from areas outside of the right-of-way, provided by the Contractor, to obtain the additional embankment materials. All borrow areas shall be cleared and grubbed. **All imported materials shall be clean and free of any contaminated and hazardous materials. Materials are to be tested at the source by the Contractor and approved by the Engineer prior to placement. Copies of laboratory tests are to be given to the Engineer.**

The Contractor shall not place any material that is to be used in the construction of an embankment on top of a frozen surface. With the prior approval of the Engineer, the Industry shall remove all layers of frozen ground and frozen materials in order to prepare a proper foundation for construction of embankments. Furthermore, the material being placed for embankment shall contain no frozen material.

Wherever an embankment is placed on or against an existing embankment, the existing embankment side slope will be cut in steps to tie the new embankment into the existing side slope. These steps should not be over one foot (1') vertically and cannot be cut until embankment material will be placed immediately following the cutting of these steps. **No steps will be left uncovered overnight.**

132.3.2 MOISTURE AND DENSITY REQUIREMENTS

In cut sections, after cut has been completed, the Industry shall scarify the six inches (6") of material below the top of proposed subgrade, adjust moisture content and compact the scarified material to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density. **After cut sections are excavated to subgrade, scarified and recompacted the Engineer shall observe and approve (by proof rolling or other methods) these areas before any subballast is placed.**

In cut sections where the material to be excavated is solid rock the Contractor shall excavate twelve inches (12") below the subgrade elevations as shown on the Drawings. The Contractor shall replace such excavated twelve inches (12") of solid rock with embankment material approved by the Engineer, adjust the moisture content of this material and compact to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density.

After the required clearing and grubbing, the foundations for embankments shall be prepared by scarifying the top six inch (6") layer of existing ground, adjusting moisture content, and compacting such scarified material to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density. **After the foundation areas are scarified and recompacted the Engineer shall observe and approve (by proof rolling or other methods) these foundation areas before any embankment material is placed.**

Embankments and backfills of less than three foot (3') of fill shall be compacted to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density.

When embankments and backfills are composed of more than three foot (3') of fill, the materials within three feet (3') of the established subgrade (top of fill) elevation shall be compacted to a dense and unyielding condition and to a minimum of 95% (Modified Proctor) of maximum density. Material below said three foot (3') from subgrade (top of fill) elevation shall be compacted to not less than 90% of maximum density.

Unless otherwise directed by the Engineer, the moisture content of the soil at the time of compaction shall be at the optimum moisture content or within minus four percentage points (4%) of the optimum moisture content as stated in ASTM D 1557 Modified and as determined by tests taken by the Engineer in accordance with ASTM standards.

Each embankment lift shall be tested for compaction compliance before the next lift is placed.

All compaction shall be determined using ASTM D 1556 for field tests and ASTM D 1557 for moisture and density.

Copies of all soils tests and observations shall be provided to the Engineer, the Engineer will not approve placing subballast before these tests are received.

132.3.3 FINISH GRADING

The Roadbed shall be finished to the lines and grades shown on the Drawings and as staked. The Contractor shall protect finished roadbeds from damage, from all causes, until accepted by the UP.

Blue Tops (finished grade stakes) are required at one hundred foot (100') intervals and are to be set at the shoulders and at the centerline. If the distance between the shoulder stake and the centerline stake is over one hundred foot (100'), an intermediate Blue Top will be required.

132.3.4 SLOPE PROTECTION AND EROSION CONTROL

This work shall consist of installing silt fence and ditch checks for controlling stormwater erosion during construction. A copy of the Contractor's Storm Water Pollution Prevention Plan will be given to the Engineer before the beginning of construction.

For embankments within BNSF Railway (BNSF) rights of way, the following shall apply:

The Contractor shall follow all requirements by the BNSF Railway and its specifications regarding embankments.

132.3.5 EMBANKMENT FILL

- A. It is the intent of these specifications that all suitable materials from roadway, cut ditch, channel, or other excavation, other than surface ditch, be used so far as practicable in forming embankments, dikes, or similar facilities.
- B. When the areas staked for excavations are insufficient or unsuitable to form the embankments, the deficiency shall be obtained by widening cuts or borrowing at points as directed by the Engineer. Such cut widening beyond the limits of the designated and staked excavation section and other borrow excavation shall be considered as incidental to embankment and the cost of the work shall be included in the unit price for embankment.
- C. Stakes set beyond the limits of standard or designated excavation sections for the purpose of assisting Contractor in establishing limits of cut widening or borrow shall not constitute a standard, designated, or staked section for pay purposes.

132.3.6 SELECT MATERIAL

- A. Select material shall be limited to non-expansive, non-swelling soils meeting the following criteria:

<u>Liquid Limit</u> (Test Method ASTM D 4318)	<u>Maximum Allowable Percent</u> <u>Passing No. 200 Sieve</u> (Test Method ASTM D 1140)
Greater than 50	30%
Between 30 and 50	40%
Less than 30	50%

- B. The plasticity index of select material as determined in accordance with ASTM Designation: D 4318 shall not exceed 15%.

132.3.7 GRANULAR EMBANKMENT FILL

- A. Granular embankment fill shall consist of crushed stone or gravel meeting the following quality requirements:

Sodium Sulfate Soundness, 5 cycle (Test Method ASTM C 88)	25% Maximum Loss
Los Angeles Abrasion (Test Method ASTM C 131)	45% Maximum Loss
Deleterious Substances (shale, clay lumps, coal, soft and unsound fragments)	10% Maximum

- B. Granular embankment fill shall be uniformly graded from coarse to fine and shall meet the following gradation requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
3"	100
No. 4	45-85
No. 16	25-65
No. 50	10-30
No. 200	0-15

132.3.7 SUBGRADE AND EMBANKMENT FOUNDATION PREPARATION

- A. Embankment Foundation Preparation: The Contractor shall proof roll the ground surface of all areas to receive embankment prior to commencement of fill operations.

Proofrolling shall consist of the Engineer's observation of soil deflection beneath the tires of the Contractor's heaviest rubber tired equipment, e.g. loaded water trucks, loaded scrapers, or loaded dump trucks. Proof rolling shall consist of a minimum of two passes. Any soft zones detected in this manner which cannot be effectively compacted with repeated passes of a roller shall be treated in accordance with Paragraph 132.3.7 C. When shown on the plans, in the special provisions, or when directed by the Engineer, the Contractor shall plow, scarify, and break up the full width of the embankment foundation, and then shall condition the material, as may be required, and compact to the density specified for earth fill embankment for the particular material to a depth of at least 6 and up to 18 inches (if necessary to reach the specified density) below the ground surface. This work shall be considered as incidental to embankment and direct payment for such work will not be made.

- B. Excavation Base Preparation: When shown on the plans, in the special provisions, or when directed by the Engineer, the Contractor shall plow, scarify, and break up the base of the excavations for the entire crown width of the subgrade, and then shall condition and compact the material to the density specified for earth fill embankment for the particular material to a depth of at least 6 and up to 18 inches (if necessary to reach the specified density) below finished surface of the excavated section. This work shall be considered as incidental to excavation and direct payment for such work will not be made.
- C. Where soils encountered at subgrade elevation in excavations or in foundations for embankments less than 3 feet high are naturally soft, loose, or contain excessive moisture, the Engineer may require that one or more of the following improvement techniques be used in order to establish a firm, stable subgrade or foundation.
 - 1. Removal and Replacement: When directed by the Engineer, the soils shall be removed to a depth determined by the Engineer. The area of overexcavation shall be backfilled with material suitable for embankment and compacted to a density of not less than that specified for earth fill embankments. Payment for excavating the soils will be made in accordance with the contract unit price for excavation. Payment for backfilling and compacting with suitable soils will be made at the contract unit price for embankment.
 - 2. Use of geosynthetics: When directed by the Engineer, geotextiles and/or geogrids shall be placed over the soft or wet soils in order to provide reinforcement and stability of soft soils. The type and weight of geosynthetic shall be as specified by the Engineer. Placement requirements and payment provisions shall be as specified in Section 03400, "GEOSYNTHETICS."
 - 3. Soil Treatment/Modification: In special situations as shown on the plans, in the special provisions, or as directed by the Engineer, treatment of the soils using lime, flyash, or other additive to stabilize or condition wet soils may be used. Use of fly ash or other additive shall be in accordance with all applicable federal, state, and local environmental regulations. The additives may be applied directly to the ground and blended using the most effective method available, or the additives and soil may be blended on stable ground and worked into the soft or wet soils.

Use of additives for soil treatment/modification shall not be interpreted as a lime or cement stabilized subgrade. Payment for soil treatment/modification shall be at contract unit prices.

- D. Embankments on Swampy Ground: Embankments which are to be constructed across low or swampy ground which will not support the weight of trucks or other hauling equipment will receive special consideration for construction. The considerations may be, but are not limited to: (a) removal and replacement of unstable material; (b) displacement of unstable material by surcharging with rock or granular material to provide a stable base; (c) placing a woven geotextile fabric or geogrid and the placement (dumping) of material, preferably rock, in a uniformly distributed layer of thickness not greater than that necessary to support the equipment while placing subsequent layers. The Engineer will approve the method to be used and will specify the type and thickness of geosynthetic material if it is to be used. Compaction requirements are specified in 3.6 ROADWAY EMBANKMENT - B. EARTH FILL (3) Compaction requirements. Placement requirements and payment provisions shall be as specified in Section 03400 "GEOSYNTHETICS."

132.3.8 ROADWAY EMBANKMENT

A. General

1. Roadway embankment shall be constructed as shown on the plans, in these specifications, in the special provisions, or as instructed by the Engineer. Embankment material and depths of different embankment material shall be as shown on the plans, in the special provisions, or as instructed by the Engineer.
2. In general, it is desirable that the upper portion of all embankments be constructed of predominantly coarse grained soils (i.e., select or granular embankment materials). Soils with high plasticity (Unified Soils Classifications of CH, MH, or OH) should not be used in the upper portions of embankments unless stabilized using lime or cement stabilization. Other soils containing significant percentages of fine grained soils (USCS classifications CL, ML, SC, SM, GC, and GM) are potentially susceptible to pumping or frost heaving and exhibit poor drainage characteristics. The use of these soils in the upper portions of embankments should be avoided unless stabilized or used in conjunction with a hot-mix asphalt roadbed or granular embankment. The most desirable materials to be used in the upper portions of embankments are well-graded sands and gravels (SW and GW classifications). These soils are well drained, have good compaction characteristics, and are not susceptible to frost heave or pumping.
3. Wherever an embankment is to be placed on or against an existing slope steeper than four horizontal to one vertical, such slope shall be cut into steps as the construction of new embankment progresses. Such steps shall have a horizontal dimension of not more than 6 feet and a vertical rise of 2 feet. The Contractor shall modify slope cuts as requested by the Engineer to maintain slope and track structure integrity. Steps cut into the slope shall not be allowed to remain unsupported overnight.

B. Earth Fill

1. Embankments built of soil material or material consisting of gravel or small pieces of rock 6 inches or less in maximum dimension shall be placed, using conditioned material when necessary, and compacted until the required degree of compaction is obtained thoroughly and uniformly throughout the layer. No stones larger than 3 inches in diameter will be permitted within the top 12 inches of roadway embankment.
2. Embankments shall be constructed in layers containing only that amount of material which will ensure sufficient and uniform compaction, but in no case shall any layer or lift exceed 8 inches after compaction. Each successive lift or layer shall be carefully leveled and completely and uniformly compacted over the full width of the embankment before a succeeding layer is placed.
3. Compaction requirements for earth embankments are as follows. All embankments shall be compacted to a density of not less than 95% of the maximum standard laboratory density, and not more than +4 percentage points above the optimum moisture content, unless otherwise specified on the drawings. The standard laboratory density and optimum moisture content shall be the maximum density and optimum moisture as determined in accordance with ASTM Designation: D 698 (Standard Proctor Test). Compaction shall be accomplished by sheeps foot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.
4. Embankment material which does not contain sufficient moisture to permit the required compaction shall have water added in sufficient quantity to obtain the specified compaction. Material containing an excess of moisture shall be aerated until the material is near optimum moisture content before being compacted. When it is necessary to add water, it shall be thoroughly and uniformly mixed with the material before it is compacted using equipment and methods approved by the Engineer. When it is necessary for the Contractor to furnish water, he shall provide means for adequate and proper distribution. The quantity of water used shall not exceed the maximum amount that will permit the equipment to obtain the required densities, and at no time shall free water be allowed to stand on the surface of a fill.
5. At the option of the Contractor, excavation areas and borrow sources may be watered prior to excavating the material. Moisture content of pre-watered excavation shall be brought to near optimum before compaction in the embankment.
6. Earth fills shall be uniformly compacted to the required densities using methods and equipment best suited for the material encountered.
7. With the approval of the Engineer, the Contractor may construct embankment during freezing weather. For this purpose, the Contractor shall provide the

necessary amount of earth moving and compacting equipment to provide a continuous operation during freezing weather on both excavation and embankment areas. The Contractor shall control his operations to ensure that no frozen material is placed in the fills, and that the material placed is completely compacted before freezing. If materials freeze before the required compaction is obtained, the placing of fills shall stop and the frozen material shall be removed at the Contractor's expense before filling resumes.

8. Select material may be required, when shown on the plans, in the special provisions, or directed by the Engineer, for the upper portion of the embankment and to backfill excavations to the top of subgrade. The top of the select material shall be placed on a slope in accordance with plans.
 - a. If, in the opinion of the Engineer, suitable materials for select material are available within the limits of excavation, the Engineer shall select the materials to be used and payment for placement of the select material will be at contract prices for embankment.
 - b. When, in the opinion of the Engineer, select materials are not available within the above described haul limits, select material may be imported from locations shown on the plans, in the special provisions, or as directed by the Engineer. Payment will be at contract prices, if established, or by special provision.
 - c. Select material shall, when practicable, be hauled directly from excavation to its final position in the subgrade prism. When shown on the plans, in the special provisions, or when in the opinion of the Engineer it is not possible to haul select material directly from the excavation to its final location, select material shall be excavated and placed in stockpiles for use at designated locations. Such work will be considered incidental to excavation and no separate payment will be made for such stockpiling and subsequent placement in embankment.
9. When shown on the plans, in the special provisions, or directed by the Engineer, either parts or all of the embankment shall be constructed of granular embankment fill. The materials required for granular embankment fill are provided in Section 2.4. Placement and compaction of granular embankment fill shall be in accordance with the requirements for earth fill.

C. Rock Fill

1. Embankments built of materials comprised predominantly of rock larger than 6 inches in maximum dimension shall be constructed by placing the material in layers not exceeding the maximum size of the rock present, but in no case shall the thickness of layers exceed 24 inches, unless approved by the engineer. The maximum size of any individual rock shall not exceed 16 inches in any one dimension, or as approved by the Engineer. The material shall be dumped from the hauling equipment on top of the layer being constructed and then pushed

ahead over the face of the layer by the spreading equipment. Dumping of rockfill material directly onto uncompacted areas will not be permitted.

2. Layers shall extend the full width of the roadbed and a dense, solid embankment shall be obtained for the full width by distributing the larger stones over the area and filling between them with fine material sufficient to fill the interstices. Each layer shall be compacted by routing the spreading equipment and the loaded hauling equipment over the entire width of the fill until compaction is obtained, or with vibratory compactors.

132.3.9 FINISHING AND TRIMMING

- A. All cuts, embankments and ditches shall be left in a neatly trimmed condition to the specified width, elevations, and slopes. Waste and stockpile areas shall be left in a neat trimmed condition to the satisfaction of the engineer.
- B. The finished roadway surface shall be compacted and finished to a true surface with no depressions which will hold water or prevent proper drainage. The finished top of subgrade shall conform to the grades shown on the plans with a tolerance of plus or minus 0.05 feet from the profile grade and cross section, shall be uniform, and free from sharp breaks in the surface.
- C. When requested by the Engineer, the contractor shall be responsible for “track packing” of the final slopes that are 2:1 or flatter. Track packing or “walking” of the slopes using tracked equipment is required prior to seeding and mulching. The slopes shall be “walked” perpendicular to the contours. For slopes steeper than 2:1, the contractor must submit a detailed plan, for approval, showing how to compact and provide the tracked sections as noted for seeding. “Tracking” of the final slopes will be considered incidental to the cost of excavation or embankment.

132.3.10 SUBGRADE AND EMBANKMENT PROTECTION

- A. During construction, embankments and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained to drain effectively at all times. The finished subgrade shall not be disturbed by traffic or other operations and shall be protected and maintained by the Contractor in a satisfactory condition until ballast, subbase, base, or pavement is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No subbase, base course, subballast, ballast, or pavement shall be laid until the subgrade has been checked and approved, and in no case shall subbase, base, surfacing, pavement, subballast, or ballast be placed on a muddy, spongy, or frozen subgrade.

132.4 Measurement. The section is supplemented with the following:

Where embankment is identified as “unclassified,” no recognition will be made of classification of any kind. The embankment’s measurement includes any and all additional work required to

meet the Union Pacific Railroad and BNSF Railway requirements for the embankment material identified herein and through the railroads' review of applicable tests on embankment.

132.5 Payment. The section is supplemented with the following:

Where the bid item is identified as "unclassified," the work will be paid for at the unit bid price bid for "Embankment (Unclassified)." This price is full compensation for furnish embankment; hauling; placing, compacting, finishing, and reworking; disposal of waste material; and equipment, labor, tools, and incidentals.

SPECIAL PROVISION**247---XXX****Flexible Base**

For this project, Item 247, “Flexible Base,” of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 247.6. Payment, is supplemented by the following:

247.6 Payment. Where the pay item designates “Matl Only,” the Contractor is to furnish the material for installation by others. This will be paid for at the unit price bid for “Matl Only” and is full compensation for furnishing materials, temporary stockpiling, assistance provided in stockpile sampling and operations to level stockpiles for measurement, loading, hauling, delivery of materials, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.

SPECIAL PROVISION

423---XXX

Retaining Walls

For this project, Item 423, “Retaining Walls,” of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

423.2. Materials, Section A. General. The second row in Table 1 for “Cast-in-place, reinforced; Class C” shall be voided and replaced by “Cast-in-place, reinforced; Class F”.

423.2. Materials, Section B. Fabrication, 3. Machine-Made Precast. The first paragraph is voided and not replaced.

423.3. Construction, Section B. Definitions. The fourth bullet listed is voided and replaced by the following:

- Precast Concrete Retaining Wall – A retaining wall that uses formed precast concrete units as facing elements and embedded stems within a volume of select fill to form a gravity structure for support.

423.3. Construction, Section G. Concrete Block Retaining Walls. This section is voided and replaced by the following;

G. Precast Concrete Retaining Walls. The precast concrete units may be sampled and tested by the Engineer prior to shipment or upon delivery to the construction site. Display for approval samples of precast units indicating the color, texture, and finish. Store, transport, and handle all precast units carefully to prevent cracking or damage.

Grade and compact the foundation for the structure, and place the leveling pad as described in Section 423.3.E, “Permanent MSE Walls.”

Place the precast concrete units in accordance with the approved working drawings.

Construct walls to a vertical and horizontal alignment tolerance of 3/4 in. when measured along a 10-ft. straightedge. Construct walls to an overall vertical tolerance (deviation from the vertical or battered control line, top to bottom) of 1/2 in. per 10 ft. of wall height. Place adjacent facing elements so that the maximum out-of-plane offset at any facing element joint is less than 1/2 in. Place facing elements with maximum 3/4 in. gaps between precast units.

Prevent surface water or rainwater from damaging the retaining walls during construction. Shape the backfill to prevent water from ponding or flowing on the backfill or against the wall face. Remove and replace all portions of the retaining wall damaged or moved out of tolerance by erosion, sloughing, or saturation of the retaining wall or embankment backfill.

423.4. Measurement. The second sentence of the first paragraph is voided and replaced by the following;

Unless otherwise shown on the plans, the area will be measured from 2 ft. below finished grade of the ground line on the face of the exterior wall to the top of the wall including any coping required (not including railing).

SPECIAL PROVISION

462---XXX

Concrete Box Culverts and Storm Drains

For this project, Item 462, "Concrete Box Culverts and Storm Drains," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 462.1. Description is supplemented by the following:

Concrete box culverts shall be cast-in-place as shown on plans.

Article 462.2. Materials, Section A. General, is supplemented by the following:

The last three sentences of the first paragraph are voided and replaced by the following: Provide Class S concrete for cast-in-place culverts (minimum 28-day compressive strength of 4000 psi). Provide ASTM 615 Grade 60 or ASTM A706 reinforcing steel, or ASTM A497 welded steel wire fabric.

Article 462.3. Construction is supplemented by the following:

Provide a minimum of 12" of crushed stone bedding below culvert barrel. Crushed stone bedding and structure backfill shall be in accordance with the plans and the American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering.

SPECIAL PROVISION

466---XXX

Headwalls and Wingwalls

For this project, Item 466, “Headwalls and Wingwalls,” of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 466.1. Description is supplemented by the following:

Concrete headwalls and wingwalls shall be cast-in-place as shown on plans.

Article 466.2. Materials, Section A. General, is supplemented by the following:

The paragraph after the bullet points is voided and replaced by the following: Provide Class S concrete for cast-in-place culverts (minimum 28-day compressive strength of 4000 psi). Provide ASTM 615 Grade 60 or ASTM A706 reinforcing steel, or ASTM A497 welded steel wire fabric.

Article 462.3. Construction is supplemented by the following:

Provide a minimum of 12” of crushed stone bedding below wingwalls and apron. Crushed stone bedding and structure backfill shall be in accordance with the plans and the American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering.

SPECIAL SPECIFICATION**XXXX****Ballasted Track Construction**

1. Description. This Item shall govern for the construction of ballasted track on constructed trackbed. Ballasted track construction includes, but is not limited to, placing ballast, distributing and lining ties, installing and field welding running rail and other track material (OTM – plates, spikes, screw lags, clips, safety straps, etc.), raising and lining track, and other incidentals as specified herein.

2. Materials.

(1) **Rail.** Use Type RE 136 lb Standard Strength Continuous Welded Rail meeting the requirements of BNSF Railway/Union Pacific Railroad Common Standards Dwg. No. 176000, “136 Lb. Rail Section” and conforming to the requirements of American Railway Engineering and Maintenance of Way Association (AREMA) Chapter 4 “Rail.” Rail on tangent track and on curves of 1 degree 30 minutes or less shall be new 136 RE standard carbon. Rail on curves greater than 1 degree 30 minutes shall be 136 RE head hardened rail. All rail, excluding rail for industry leads, shall be continuously shop welded and transported in 400 feet or longer sections to the project site or 39 feet pieces trucked in and welded into the track using the flash butt weld process, unless shorter sections are required due to curve length, or fit between switches.

(2) **Ties.** Wood track crossties shall conform to the current AREMA Specifications, Chapter 30, “Ties”. The wood track crossties shall be new Oak or Douglas Fir Wood ties, 7 inches x 9 inches x 9 feet minimum AREMA-7 inch Grade. Wood crossties shall be treated according to the American Wood Preservers Association Standards, based on 50 percent creosote and 50 percent coal tar solution with a minimum preservative retention of 8 pounds per cubic foot of Wood. Wood crossties shall be seasoned, dimensioned and prebored prior to treatment and treated in accordance with AWPA Standard C6 “Crossties and Switch Ties - Preservative Treatment by Pressure Processes”, or ASTM D 1760 “Standard Specification for Pressure Treatment of Timber Products”. All wood ties shall be fitted with anti-splitting devices, regardless of their tendency to split.

Wood ties shall be fabricated and preplated in accordance with Union Pacific Standard Drawing 0211G, “Preplating Dimensions for Wood Ties”. Wood ties shall be inspected and certified by an approved commercial testing laboratory stating that the wood ties to be used meet the specifications in accordance with AWPA Standard M2 “Standard for Inspection of Treated Wood Products”. Results of test and inspections shall be furnished to the Engineer.

Concrete ties shall conform to the current AREMA Specifications, Chapter 30, “Ties”. The concrete ties shall follow Union Pacific Railroad Standard Dwg. 0204B “Prestressed Scalloped Concrete Tie 497S” and shall meet details as defined in the standard drawing.

- (3) **Tie Plates.** Hot worked, high carbon, double shoulder, flat bottom tie plates shall conform to the AREMA specifications, Chapter 5, “Track”, and Union Pacific Standard Drawing 0442C, “Double Shoulder Tie Plate for 6” Base Rail 1:40 Cant”, with punched A-6 square spike holes.

Where necessary on curves, use Curve Block Assemblies in accordance with Union Pacific Railroad Standard Drawing 262000, “Curve Block Assembly”.

- (4) **Track Spikes and Coach Screws.** Supply new high carbon steel track spikes conforming to the requirements of Union Pacific Standard Drawing 0451A, “Cut Spike for Wood Ties” and coach screws conforming to the requirements of Union Pacific Standard Drawing 130800, “Rectangular Head Timber Coach Screw”. Track spikes and coach screws must meet the requirements of AREMA Chapter 5 “Track”. Deliver track spikes to the Job Site in Engineer-approved containers (kegs). Install in accordance with Federal Railroad Administration (FRA) Standards.
- (5) **Joint Bars, Compromise Joint Bars and Track Bolts.** Use joint bars, compromise joint bars and track bolts conforming to the requirements of Union Pacific Standard Drawings 180100, “36”, 6-Hole 136 Lb Joint Bar”, 0904E, “Miscellaneous Joint Bars”, 0948B, “Compromise Joints”, and/or 0950G, “Track Bolt” and the requirements of AREMA Chapter 4, Part 2, Section 2.8, “Specifications for Quenched Carbon-Steel Joint Bars, Microalloyed Joint Bars, and Forged Compromise Joint Bars”. Compromise joint bars must be new and of the size, shape, and punch necessary to fit the rail sizes and sections being joined. Only factory designed and produced (forged or cast) compromise joint bars may be used to join rails of different sizes and/or sections.
- (6) **Rail Anchors.** Use Grip type rail anchors conforming to the requirements of Union Pacific Standard Drawing 0457A, “Heavy Duty Rail Anchor”. Provide and Install in accordance with AREMA Chapter 5, Section 7 “Rail Anchors”
- (7) **Pipe Underdrains.** Pipe underdrains shall be minimum 8 inch Class 1 corrugated steel pipe conforming to the provisions of AREMA Chapter 1, Section 4.3.
- (8) **Subballast.** Subballast shall consist of a foundation coarse for a typical railroad roadbed and shall be composed of crushed limestone or crushed concrete materials meeting Union Pacific Railroad Requirements and as approved by the Engineer. However, only 100% crushed material from oversized quarried rock or crushed concrete as the source will be accepted. Aggregate retained on a No. 10 sieve must consist of hard, durable particles or fragments of stone, gravel, sand or slag. Materials that break up when alternately frozen and thawed or wetted and dried are not permitted. Aggregate must not have a percentage of wear of more than 50 percent, by the Los Angeles abrasion test. A higher or lower percentage of wear may be specified by the Engineer, depending on the material available.

Subballast shall be in accordance with Item 247 “Flexible Base”, Type A, Grade 1 except as follows:

Gradations. Unless otherwise indicated on the plans, provide subballast consisting of gradations as set forth in Table 1.

Table 1
Subballast Gradations

Sieve Size	2"	1"	3/4"	No. 10	No. 40	No. 200
% Passing (optimum)	100	95	67	38	21	7
% Passing (permissible.)	100	90-100	50-84	26-50	12-30	0-10

- (9) **Ballast.** Railroad ballast material shall be crushed granite stone in conformance with AREMA Chapter 1, Part 2. Ballast gradation shall conform to AREMA Number 4. Point of origin (quarry) must be approved by the Railroad(s).

3. Property Requirements.

(1) Physical Analysis.

- (a) **Method of Sampling.** Secure field samples in accordance with ASTM D-75. Reduce test samples from field samples in accordance with ASTM C 702.
- (b) **Sieve Analysis.** Perform sieve analysis in accordance with ASTM C 136. All sieve analyses require wet sieving.
- (c) **Material Finer than No. 200 Sieve.** Test material finer than a No. 200 Sieve in accordance with ASTM C 117.
- (d) **Bulk Specific Gravity and Absorption.** The minimum bulk specific gravity is 2.4. Determine bulk specific gravity and percentage of absorption in accordance with ASTM C 127.
- (e) **Percentage of Clay Lumps and Friable Particles.** Determine percentage of clay lumps and friable particles in accordance with ASTM C 142.
- (f) **Resistance to Degradation.** Determine the resistance to degradation in accordance with ASTM C 131 or C 535 as follows: test materials having gradations containing particles retained on the 1" sieve by ASTM C 535, test materials having gradations of 100 percent passing the 1" sieve by ASTM C 131.
- (g) **Sodium Sulfate Soundness.** Sodium sulfate soundness tests shall be made in accordance with ASTM C 88.
- (h) **Unit Weight.** The weight per cubic foot shall be determined in accordance with ASTM C 29.
- (i) **Percentage of Flat and/or Elongated Particles.** Percent of flat and/or elongated particles shall be determined in accordance with U.S. Army Corps of Engineers Test CRD-C-119.
- (j) **Plasticity Index.** The plastic limit, liquid limit and plasticity index shall be determined in accordance with ASTM D 423 and D 424. Each sample shall be tested in two ways; one test shall test the fines generated by the Los Angeles Machine, and the other test shall test the fines contained in the total sample. The portions of these samples generated by the Los Angeles Machine, and passing the

#40 sieve shall be non-plastic (NP). The portion of the total sample passing the #40 sieve shall have a liquid limit of not more than 25, and plasticity index of not more than 6.

- (2) **Chemical Analysis.** No specific chemical analysis is considered essential for the evaluation of granite, trap rocks, or quartzite type materials, provided the materials are defined by applicable method.

For carbonate materials, dolomitic limestone is defined as having a magnesium carbonate content of 28 to 36 percent. Those carbonate materials indicating magnesium carbonate values above 36 percent shall be defined dolomite. Carbonate material indicating magnesium carbonate values below 28 percent shall be defined as limestone. Chemical analysis will be used in selecting or evaluating plant sites. Magnesium carbonate content of carbonate materials shall be tested and defined in accordance with ASTM C 25.

The blending, stockpiling and other production handling operations shall be managed by the producer to minimize segregation of the finished product. Stockpiling operations shall minimize, as practical, breakage or excessive fall in stockpiling operations and movement of wheeled or tracked machines over stockpile material shall be limited. Processed ballast shall be washed and/or rescreened as necessary to remove fine particle contamination as defined by the specification.

(a) **Loading.** The manufacturer shall ensure the fitness of the cars for loading of prepared materials, arranging to clean cars of deleterious materials, plug leaks, close doors, and other like operations as necessary.

(b) **Inspection.** TxDOT or its representative reserve the right to visit the producers facility during usual business hours unscheduled for the following purposes:

Prior to installation, the supplier should provide the Engineer with certified results of ballast quality and gradation as conducted by a testing laboratory acceptable to the Engineer. The supplier shall receive approval from the Engineer for the testing laboratory prior to performing tests.

4. **General Requirements.** Before starting work, the Contractor shall fully inform the Engineer of the construction methods he proposes to use, the adequacy of which shall be subject to the approval of the Engineer.

All on-track equipment used in connection with the project shall comply with Federal Railroad Administration regulations contained in 49 CFR 214 Subpart D, Roadway Maintenance Machine Safety

Concurrence on the part of the Engineer of any proposed construction methods or approval of equipment does not relieve the Contractor of the responsibility for the safety or correctness of the methods, the adequacy of his equipment or from carrying out the work in full accordance with the contract.

The following codes, regulations, reference standards, and specifications apply to work included in this section:

- (a) AREMA, Manual for Railway Engineering, Chapter 1 “Roadway and Ballast”, Chapter 4 “Rail” and Chapter 5 “Track”.
- (b) American Welding Society (AWS): D1.1
- (c) Applicable referenced ASTM Specifications
- (d) Track Safety Standards of the Federal Railroad Administration (FRA)
- (e) Union Pacific Railroad Company (UPRR) Technical Specifications for the Construction of Industrial Tracks and Track Standard Drawings
- (f) BNSF Railway Standard Construction Specifications

Any Items not covered specifically herein shall be in accordance with AREMA Standards and recommended practices subject to the approval of the Engineer. Construction must adhere to all Union Pacific Railroad/BNSF Railway Standard Plans and FRA requirements.

The following review/approval milestones will be monitored during the project:

- (a) **Grading.** Reviewed and approved prior to placement of subballast.
- (b) **Ballasted Trackwork.** Review, approve and coordinate the track construction to assure compliance with Union Pacific Railroad and BNSF Railway requirements as applicable.
- (c) **Welding.** All welds, including compromise welds shall be done in accordance with Union Pacific Railroad and BNSF Railway Requirements Governing the Inspection, Grinding, and Heat Treating of Track Components.

All workers employed in the project or supervising the project shall have been certified according to Federal Railroad Administration regulations contained in 49 CFR 214, Subpart C, Roadway Worker Protection and provide proof of qualification. E-RAILSAFE certification is approved by both UPRR and BNSF.

When the Contractor desires to occupy any space above the top of rail within the horizontal distance of 25 feet on either side of the centerline of any track, measured at right angles to the track centerline, it will be necessary that he obtain authority from the Railroad with at least 24 hours of advance notice. The authority will be requested and granted according to the Railroad operating rules, and the Contractor will fully comply with all safety instructions issued by the Railroad in regards to occupancy of the track. If, in the judgment of the Railroad, flagmen are required, they will be furnished at the Contractor’s expense.

The Contractor shall comply with Union Pacific Railroad and BNSF Railway regarding the railroads’ required insurance and right-of-entry requirements for all of their employees working within railroad rights of way.

The Contractor shall require his employees, agents, or subcontractors to comply with any and all instructions or warnings of the Railroad’s flagmen as to clearance for the passage of trains. Contractor shall conduct its operations so as to not to interfere with the continuous and uninterrupted use and operation of the railroad tracks and property of Railroad(s), including without limitation, the operations of Railroads’ lessees, licenses or others, unless

specifically authorized in advance by the Railroad Representative. Nothing shall be done or permitted to be done by Contractor at any time that would in any manner impair the safety of such operations. When not in use, Contractor's machinery and materials shall be kept at least fifty (50) feet from the centerline of the Railroad's nearest track, and there shall be no vehicular crossings of Railroad's track except at existing open public crossings, unless so approved and authorized by the Railroad.

All scaffolding, materials, and equipment used in the Contractor's operations shall, at all times, be maintained at a clearance from the tracks as approved by the Engineer, except when working within the limits of authority granted to occupy the tracks.

TxDOT's acceptance of trackage and its appurtenances which have been built shall be based on the Engineer's written statement that construction and construction materials have met TxDOT standards.

Unless otherwise specified by the plans or directed by the Engineer, all removed materials shall become the property of the Contractor. All removed materials and debris must be removed from the railroad right of way and TxDOT property and disposed of in a manner approved by the Engineer.

The replacement of railroad ties, ballast distribution, surfacing work, and associated mechanical operations will be performed using standard on-track equipment.

Designated materials storage areas and mobilization areas must have SW3P plans implemented as shown in the plans before off-track equipment operates in those areas.

5. Construction. All trackwork shall be constructed in accordance with the following:

(1) Subgrade.

Railroad subgrade shall be constructed in a firm and unyielding manner and compacted to a minimum density of 95% modified proctor, regardless of the depth, except that all fill within 100 feet of bridge ends and 20 feet of outer edges of culverts shall be compacted to 100%. Moisture content of fill material shall be adjusted to within -3% and +3% of optimum moisture content prior to compaction. Subgrade stabilization shall be in accordance with TxDOT's Standard Specification Item 260, "Lime Treatment (Road-Mixed)", to the lines, grades, and thickness as shown on the plans. If geotechnical report suggests other stabilization methods, the alternative method will be considered. Stabilization method must be approved in advance of work by the Engineer.

(2) Trackwork

All wood ties shall be spaced uniformly at 19.5 inches center-to-center of ties (24 crossties per 39 feet of rail), and laid with heart side down, except when ties are not true, the bow side shall be laid upward.

All concrete ties shall be spaced uniformly at 24 inches center-to-center of ties.

Ties shall be placed and maintained square to the line of rail on straight track and radially on curves. The right-hand end of ties (direction determined by facing away from initial point of the line) shall be lined parallel with the rail.

Tie hooks, tongs or tie crane shall be used in handling ties, to avoid damage to the ties. New treated ties must not be adzed without authority from the Engineer. If adzing is authorized, an approved preservative shall be applied to the adzed surface.

Tie plates must set squarely on the tie and shall be of the dimensions to fit the base of rail used. All track shall be fully tie plated and spiked in accordance with proper criteria. Tie plates shall be centered and have full bearing on ties. Rail shall be properly seated in the tie plates and not riding on the shoulder of the tie plate. Tie plates and rail shall be cleaned before being laid. Tie plates must be placed with slope of plate towards center of track.

All rail shall be gauged when laid. The standard gauge is 4 feet 8-1/2 inches between points 5/8 inch below the top of rail on the two inside edges of the rail. All gauges used by the Contractor will be checked by the Engineer. If found to be more than 1/16 inch in variance from the master gauge, those gauges shall immediately be removed from the job.

Track bolts, with nuts and lock washers, which have wrench turn fittings, shall be used where required. Spring washers shall be the correct size to fit the bolt. All bolts will be tightened with an approved bolt machine or torque wrench to a torque of 650 foot-pounds. Bolting shall be started with the center bolts working toward the ends and all nuts shall be turned up tight with bolt heads staggered inside and outside of the rail alternately.

All track spikes are to be the proper size. Care shall be taken to make sure that the base of rail is not riding on the shoulder of the tie plate when spikes are driven. Spikes shall be started, driven vertically, and square when driven into the spike holes of the tie plate. Crooked or bent spikes shall be removed and replaced. Straightening with maul of spikes started crooked will not be permitted. When spikes are pulled, the hole shall be plugged with a standard treated tie plug. In driving the spikes, the last few blows of the hammers shall be such that the spike head will not be bent or broken, and the hammer shall not be permitted to strike directly upon the rail. All rail shall be spiked to ties with not less than four spikes per tie, one spike in contact with gauge side and one in contact with field side of each rail.

Spikes shall be staggered so that the outside spikes shall be on the same side of the tie and the inside spikes on the opposite side.

Rail shall not be struck with maul or heavy tool when spiking, gauging or lining.

Immediately after completion of track surfacing, spikes shall be settled in place with the underside of the head of the spike contacting the top of base of rail with a minimum of pressure.

Tie plugs, where required, shall fill holes from which spikes are drawn. The plugs shall conform to the current AREMA Specifications for Tie Plugs, and are to be treated with a Creosote oil solution.

Grip type rail anchors shall be applied by an approved rail anchor applicator machine and in the approved manner for the particular type of anchor furnished. Rail anchors shall be installed after the ballast operation and the track is raised, lined and ties re-spaced. Under no circumstances shall rail anchors be installed on ties under or immediately adjacent to rail joints, nor shall anchors be installed on one side of the tie under one rail and on the opposite side of the tie under the other rail. Care shall be taken to avoid overdriving or damaging anchors. Anchors shall not be driven along the rail.

Sufficient rail anchors shall be applied and maintained to effectively control longitudinal rail movement. Anchors shall be installed on the same side(s) of the tie on both rails. Anchors must not be applied to one rail only, but must be applied to both rails in a uniform pattern. For continuously welded rail (CWR), anchors must not be applied on the opposite rail directly across from the joints or straps.

Track shall be box anchored every other tie. Box anchoring is defined as installing opposing anchors to bear against each side of the tie on each rail for a total of four anchors per cross tie.

When laying rail in tangent track, the right-hand rail (direction determined by facing away from initial point of line), shall be laid first and lined to the staked track alignment. After each right-hand rail is lined and spiked, the left-hand rail shall be laid to accurate gauge and spiked to gauge every third tie with gauge spikes fully driven (except through joint areas) before the track gauges are removed.

The left hand rail shall be laid into the track, and rail joint bolts installed (if used) before spiking to gauge, and before gauge spikes are driven. The left-hand rail shall be held in place snugly against the track gauges with lining bars.

When laying up to existing track tie-in locations, a combination of rails less than standard length may be used to avoid cutting, if practicable. Rail saws shall be used when necessary to cut rail. The use of a torch or track chisel will not be permitted. All necessary new bolt holes shall be marked, using an approved rail drilling template and the drilling operation shall be carefully performed. Both cutting and drilling shall utilize proper lubrication. Cut rails shall be drilled and fully bolted. There shall be no extra holes in the rail. The burred edges on bolt holes drilled in the field shall be carefully removed by grinding. When necessary to cut secondhand rail, the cut end shall be beveled. When necessary to cut new standard carbon rail, the cut end shall be end hardened and beveled in accordance with Railroad Specifications.

The desired laying temperature of the rail is 115 degrees Fahrenheit. The Contractor shall record the temperature of each rail laid. Rail temperature measurements shall be taken on the base of rail on the side away from the sun.

When it is not possible to lay rail at the desired laying temperature, the Contractor shall make the necessary adjustment at a later date. The exact procedure used to adjust the rail temperature must be approved by the Engineer.

The Contractor should apply all rail anchors immediately behind the laying of CWR. Ballast must be unloaded and all cribs filled as soon as rail anchors have been applied. The track should be surfaced and tamped as soon as possible after the laying of the CWR.

De-stressing rail must conform with UPRR’s Engineering Track Maintenance Field Manual, Sections 4.5.1, 4.5.5, 4.13, 7.8.1 and 7.8.2. The Contractor shall supply all field weld kit, molds, bentonite, sand, paste, etc. for UPRR and BNSF railroad force account crews to use for cutovers. Welds will be Boue one-shot.

- (3) **Joint Bars.** At the time rail is being laid, joint bars shall be applied, placing one bolt at each end of rail in the joint bar. Before the bolts are tightened, and after the track has been surfaced and lined, the joint bars shall be removed and the joint bars as well as the rail ends within the limits of the joint bar area shall be thoroughly cleaned with a wire brush to remove all rust, dirt and mill scale. The contact surface of the joint bars shall then be lubricated using a liberal amount of lubricant as approved by the Engineer. After application of lubricant, the joint bars are to be reapplied; taking care to see that no dirt, gravel or other foreign material is permitted to get into the lubricated area.
- (4) **Staggering of Rail Joints.** Rail not in CWR locations shall be staggered according to the Union Pacific Maintenance of Way Rules or at the direction of the Engineer, except when balancing the joints for switch leads, road crossings, bridge ends and signal circuits, as well as in secondary tracks where use of prefabricated track panels is authorized. To reduce the resonant reaction, rail joints shall be staggered at 12 feet from the nearest joint on the opposite rail. To avoid unnecessary rail cutting in providing staggered joints, a two-foot tolerance will be permitted in either direction. When laying rail, joints must not be located in road crossings, bridge decks, or on ends of bridges.
- (5) **Rail Expansion Shims.** Expansion shims must be used to establish the proper opening between rails. At joints, the opening between rail ends must be as shown in the following table:

For 39-foot Rail:

Rail Temperature	Opening
Below 25° F	1/2"
51° F to 75° F	1/8"
Above 75° F	1/8" every other joint

For 78-foot Rail:

Rail Temperature	Opening
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Below 25° F	1/2"
25° F to 50° F	3/8"
51° F to 75° F	1/4"
75° F to 100° F	1/8"
Above 100° F	1/8" every other joint

Rail thermometers of the approved type must be used to determine the rail temperature.

Exception: Expansion shims must not be used at the ends of strings when laying CWR.

- (6) **Joint Bar Lubrication.** The application of lubricants and general maintenance of rail joints in jointed-rail territory are necessary to ensure that the rail is working properly to accommodate rail expansion and contraction resulting from temperature variations, and prevent the occurrence of track buckles or sun kinks and pull-aparts. Joint bars and rail ends must be cleaned and lubricated with an approved joint lubricant when installing joint bars. Joints must be installed with the full number of bolts and the nuts tightened to the proper tension.

When laying new or second hand jointed rail, or constructing new track using jointed rail, the contact surface of the rail ends and joint bars shall be lubricated using a liberal amount of approved lubricant.

To maintain free rail movement in existing joint rail territory, joint area must be thoroughly lubricated along all marring surfaces and into the interior of the bars, using a Hudson sprayer or equivalent. Frozen joint conditions shall be corrected by loosening the bolts and breaking the bars free from the rail to permit proper oiling and ensure free rail movement within the joint.

- (7) **Mismatched Rail.** Where the running surface of rails at joints are mismatched by more than one eighth (1/8) inch, the Contractor shall build up, grind and profile the rail per Union Pacific Railroad and BNSF Railway Instructions Governing the Inspection, Welding and Heat Treating of Track Components. A rail of more section shall not be ground down to match the lesser, but the lesser built up.
- (8) **Compromised Joints.** At permanent connections of different rail sections, compromise joints or compromise welds shall be installed in accordance with Union Pacific Railroad and BNSF Railway Track Standard Drawings, and where practicable they shall not be located in crossings, main track curves, on open deck bridges, or in turnouts.

Compromise joints are required at all locations between the ends of rail of different weights or cross section. The Contractor shall install all compromise joints as directed by the Engineer. Installation of compromise joints shall be considered incidental to track laying and no separate payment made therefore. Compromise joints shall not be placed within the limits of turnouts.

- 6. Ballasting and Surfacing.** Furnishing, delivery and unloading of ballast to project site is the Contractor's responsibility. Care must be taken to insure that track and walkways are safe for movement.

Haul and place ballast material in such a way that damage to adjacent areas is avoided.

Ballast shall be uniformly distributed and the track raised, lined, surfaced, and tamped, with the finished surface of the ballast dressed in accordance with the approved drawings.

The track shall be laid and connected before ballast is spread and raised. It will not be permissible to operate over long stretches of track before it has been raised and surfaced unless approved by the Engineer. Immediately prior to unloading ballast for the final 4 inch raise, the track shall be lined as close as practical to the stakes and all ties straightened and respaced as necessary. Ballast shall then be spread evenly and leveled to the required section, taking care to assure that subgrade material is not intermixed with the ballast.

Ballast shall be spread and the track raised in a series of lifts to the approved elevation. No single lift shall be higher than 4 inches. In raising track, if jacks or mechanical tampers are used they shall be so regulated as to avoid the binding or straining of joints. Sufficient sets of track jacks, if used, shall be simultaneously used and properly spaced to avoid sharp breaks or bends in the rail when the track is raised. Both rails shall be raised simultaneously and to proper cross level by utilizing standard track level boards with each set of track raising jacks (minimum three insertions). Tamping is to be done by a Jackson 6700 or approved equivalent in a manner that will produce uniform compaction. Tamping must not disturb subgrade/subballast. Thorough tamping under the rail set is required, and joint ties shall be tamped especially firm. Tamping will not be permitted at the middle of a tie. Both ends of a tie shall be tamped simultaneously and tamping inside and outside the rail shall be done at the same time. All ties that are pulled loose in the track raising operation shall be placed in their proper position and properly tie-plated and fully spiked before tamping. The track shall be true to line and grade as staked with tangent track level transversely. During each track raise, the track is to be tamped in such a manner that it will be uniform.

During the raising and tamping operations, sufficient spot boards, track level boards or other approved surfacing devices shall be constantly used to insure the correct surface and cross level in the track after tamping work is completed. After ballasting is completed and the track is in correct gauge, surfaced and lined according to the stakes, the ballast shall be trimmed neatly to the section shown on the drawings, and any surplus material shall be spread evenly along the slopes of the ballast section. Dressing of the ballast by placing earth higher than the ballast toe and thus preventing proper drainage will not be permitted.

Bring the initial layer of compacted ballast to an elevation that will establish the track surface no higher than 2 inches below final base of rail grade. Refer to plans and cross sections for ballast depth and base of rail grades.

Ballast shall be inserted under ties in minimum 2-1/2 inch, maximum 4 inch lifts. Cribs shall be filled with ballast to the top of tie.

Do not perform track surfacing unless the cribs are filled with ballast.

Special care must be taken when surfacing during hot weather in order to avoid track buckles.

Perform track surfacing by an approved method which prevents undue bending of the rail or straining of the joints.

Both rails shall be raised at one time and as uniformly as possible.

Ties that have been pulled loose shall be replaced to proper position and shall be fully tamped to proper elevation.

Ballast shall be kept clean and free of segregation during handling and placing operations.

Ballast shall be thoroughly tamped from each tie end to 15 inches outside and inside of rail. Centers are to be filled but not tamped.

Tamping tools shall be inserted simultaneously on opposite sides of the same tie to prevent the tie from cocking, to insure that the ballast under the tie is completely compacted and that the rail is firmly seated on the tie plate.

When using power tampers in tandem, the machines should be of the same type and have identical tamping heads to produce uniform compaction.

Track shall be constructed to the alignment and grade prescribed by the plans. Deviation from established gauge and cross level shall not exceed 1/4 inch; deviation from profile grade and horizontal alignment shall not exceed 1/4 inch in 50 feet. All work shall be acceptable to the Engineer.

Tangent track shall be cross level.

No humps or sags will be accepted nor will irregularities in alignment, either on tangent or curved track, that exceed previously-defined deviations.

Maximum allowable adjustment in line after final resurfacing is 2 inches.

Top of track ballast shall be dressed parallel with top of ties, extending 12 inches beyond the end of tie, then on three to one slope to subballast. Not less than three insertions of tamping tools shall be made.

Before final acceptance, all track shall be surfaced and accurately lined to remove all irregularities of cross level, surface or line caused by settlement or compaction of ballast following traffic loading. Any ties not giving full support to rails shall be retamped. Bolts shall be retightened, if necessary, to bring to full tension and spikes set down to full rail contact.

The UPRR's and BNSF's acceptance of installed trackage and its appurtenances which have been built shall be based on the UPRR's and BNSF's Representative's written statement that construction and construction materials have met UPRR/BNSF standards.

- 7. Field Rail Welding.** All field welding shall be performed in accordance with the following:

Clean the rails to be free of grease, oil, dirt, loose scale, and moisture to a minimum of six inches back from the rail ends, including the rail end surfaces, by use of a wire brush. Align the faces of the rail ends. Rail ends to show no steel defects, dents, or porosity before welding. If rail must be cut to length for any reason, cut it square and clean by means of rail saws or abrasive cutting wheels in accordance with AREMA, "Specifications for Steel Rails." Straighten rail not meeting the requirements of AREMA, "Specifications For Fabrication of Continuous Welded Rail", to be within the specified tolerance. If any rail cannot be straightened, cut it back a sufficient distance to achieve the required alignment. Perform all straightening or cutting prior to welding. Align and properly gap the ends of the rails to be welded to produce a weld which conforms to the alignment tolerances specified.

Hold the rail gap and alignment during field welding without change during the complete welding cycle. Align rail on the head of the rail. Vertical alignment shall provide for a flat running surface. Horizontal alignment shall be in such a manner that any difference in the width of heads of rails occurs on the field side. Horizontal offsets shall not exceed 0.040 inch in the head and 0.125 inch in the base. Surface misalignment tolerance shall conform to the following:

- (a) **Combined Vertical Offset and Crown Camber.** Not to exceed 0.080 inch per foot at 600 degrees Fahrenheit or less. No dip camber shall be allowed.
- (b) **Gauge Misalignment Tolerance.** Combined horizontal offset and horizontal kink camber not to exceed 0.080 inch per foot at 600 degrees Fahrenheit or less.

All rails for electric-flash butt welds shall have the scale removed down to the bright metal in those end zones, top and bottom of the rails where the welding current-carrying electrodes contact on head and base of rail. All electric-flash butt welds shall be forged to point of refusal to further plastic deformation and have a minimum upset of 1/2 inch, with 5/8 inch as standard. If flashing on electric-flash butt welds is interrupted because of malfunction or external reason, with less than 1/2 inch of flashing distance remaining before upsetting, rails shall be reclamped in the machine and flashing initiated again. Rails for preheated rail welds shall be cleaned 2 inches on each side of the weld, to remove scale and rust using a power actuated grinder, with abrasive wheel.

Rail ends shall be preheated prior to welding to at least the temperature designed by the welding manufacturer and for a sufficient time to ensure full fusion of the weld metal to the rail ends without cracking of the rail or weld.

Inspect each weld using a 3 foot straightedge along the centerline of the rail and 0.625 inch below top of rail on the gauge side of the rail head. Center the straightedge over the weld. The gap between the straightedge and the rail to comply with the requirements of AREMA, Chapter 4 and the Union Pacific Railroad and BNSF Railway Instructions Governing the Inspection, Grinding and Heat Treating of Track Components.

Bring rails and joints in the finished track to a true surface and alignment by means of an approved grinding machine.

If end bolt hole is drilled in rail to be welded, the minimum allowable distance from end of rail to edge of end bolt hole is 6".

Finish the completed weld by grinding to conform with the following requirements:

- (a) Rail head surface and sides shall be finished ground to a smooth and uniform surface.
- (b) The web zone (underside of head, web, top of base, both fillets each side) shall be finished to not greater than 1/8 inch of parent contour or closer, but shall not be deeper than parent section. Finishing shall eliminate all cracks.
- (c) All notches created by offset conditions or twisted rails shall be eliminated by grinding to blend the variations.
- (d) All fins on the weld due to shearing drag shall be removed prior to final inspection.
- (e) All heavy grinding shall be performed on the hot metal, immediately following welding, by an approved rail grinder, to prevent metallurgical damage. Finish grinding shall be carried out in a cooled down condition. Use a straightedge frequently while grinding to make sure that a good straight surface is produced. If a hard grinder must be used, extra care must be taken to insure a smooth running surface without low spots. Any grinding of the web and base of the weld should be done while the web is at least 450 degrees Fahrenheit.
- (f) Jagged, notched or badly mismatched end faces shall be preflashed to an even or mated condition before setting up rails for preheating and final flashing to assure that the entire surfaces of the rail ends are uniformly flashing immediately preceding upsetting.

Test all welds at the time of welding and ultrasonically test both the welds and the rail once the rails have been laid in final position. Ultrasonically inspect welds in accordance with ASTM E164 and the AWS D1.1. Use ultrasonic test equipment capable of detecting a 3/64 inch discontinuity, 6-1/2 inches below the top of rail. At a minimum, scan the weld from the top and both sides of the rail head and the base. Scan the weld from both sides on the face for longitudinal and transverse discontinuities using the applicable scanning pattern or patterns. Use equipment which has a distance amplitude correction feature. Calibrate the equipment daily using an 11 W calibration block, also made of rail steel.

Inspection Personnel: Qualify all inspection personnel in accordance with AWS D1.1. Cut out and re-weld all welds giving fault indication in ultrasonic inspection.

De-stressing rail must conform with UPRR's Engineering Track Maintenance Field Manual, Sections 4.5.1, 4.5.5, 4.13, 7.8.1 and 7.8.2. The Contractor shall supply all field weld kit, molds, bentonite, sand, paste, etc. for UPRR crews to use for cutovers. Welds will be Boue one-shot.

8. Track Removal

After designated sections of ballasted track and turnouts are no longer needed to carry traffic they shall be disconnected from the rail line and all salvageable materials shall be removed. Removal of track components shall be coordinated by the railroad and follow construction sequence plan. Removal of track shall consist of removal of rail, ties, ballast, and other

track materials (OTM). Salvageable material becomes the property of the Contractor and shall be removed from Railroad property.

Fill in ditches, except as needed for drainage and scarify abandoned trackbed and/or plow so as to mix it with soil to the satisfaction of the Engineer. The entire area of the removed ballasted track and turnouts shall be smoothed by blading or other methods.

Unless otherwise specified, all removed materials shall become the property of the contractor.

9. Measurement. Track construction components will be measured as follows:

- Track (New) (Concrete Tie) will include ballasted track construction with concrete ties and is measured by the track foot for construction.
- Track (New) (Wood Tie) will include ballasted track construction with wood ties and is measured by the track foot for construction.
- Track (New) (Wood Tie) (Matl Only) will include furnishing materials only for ballasted track construction with wood ties by others and is measured by the track foot for those materials.
- Track Shift Tie Replacement (Matl Only) will include furnishing materials only for the wood ties and associated OTM for the track shift (20% of existing wood ties) and will be measured by the track foot of track shift.
- Track (Resurface) will include resurfacing of track as defined in section 7 and will be measured by the track foot for construction.
- Turnout (New) will include furnishing and installing turnout, ties, and ballast as defined by the size defined and is measured by each turnout installed.
- Turnout (New) (Matl Only) will include furnishing materials only, including ballast, for turnout for installation by others as defined by the size defined and is measured by each turnout furnished.
- Remove Track will include removal of existing rail, ties, ballast, and other track materials as defined in section 8 and will be measured by the track foot of removal.
- Remove Turnout will include removal of existing turnout and associated ballast and other track materials as defined in section 8 and will be measured by each turnout removed.

10. Payment. The work performed and material furnished by this Item and measured as provided under "Measurement", will be paid for as follows:

Payment for furnishing and installing ballasted track will be made at the unit price bid for "Track (New)". This price shall be full compensation for transportation; storage; installation of materials including all welding, placing ballast; for raising track to final grade and alignment; and for all other materials, tools, equipment and incidentals necessary to complete the work.

Payment for furnishing ballasted track with installation by others will be made at the unit price bid for "Track (New) (Matl Only)". This price shall be full compensation for transportation and storage required for ballasted track construction, including rail, ties, ballast, and other track materials; and for all other materials, tools, equipment and incidentals necessary to complete the work.

Payment for furnishing materials for track shift with installation by others will be made at the unit price bid for "Track Shift Tie Repl (Matl Only)". This price shall be full compensation for transportation and storage required for the track shift tie replacement, including ties and other track materials; and for all other materials, tools, equipment and incidentals necessary to complete the work.

Payment for resurfacing track will be made at the unit price bid for "Track (Resurface)". This price shall be full compensation for raising track to final grade and alignment; and for all other materials, tools, equipment and incidentals necessary to complete the work.

Payment for furnishing and installing new turnouts will be made at the unit price bid for "Turnout (New)". This price shall be full compensation for transportation; storage; installation of materials including all welding, placing ballast; for raising track to final grade and alignment; and for all other materials, tools, equipment and incidentals necessary to complete the work.

Payment for furnishing new turnouts with installation by others will be made at the unit price bid for "Turnout (New) (Matl Only)". This price shall be full compensation for transportation and storage required for the turnout; and for all other materials, tools, equipment and incidentals necessary to complete the work.

Payment for removal of track will be made at the unit price bid for "Remove Track". This price shall be full compensation for removal of existing track including loading, hauling, disposal, stockpiling, removal of appurtenances, excavation and backfill, equipment, labor, tools, and incidentals.

Payment for removal of turnouts will be made at the unit price bid for "Remove Turnout". This price shall be full compensation for removal of existing turnouts including loading, hauling, disposal, stockpiling, removal of appurtenances, excavation and backfill, equipment, labor, tools, and incidentals.

SPECIAL SPECIFICATION
XXXX
Precast Concrete Railroad Grade Crossing Panels

1. **Description.** Furnish and install precast concrete railroad grade crossing panels.
2. **Materials.** Use materials that meet requirements of the following Texas Department of Transportation, American Railway Engineering and Maintenance-of-Way Association, and BNSF Railway/Union Pacific Railroad Common Standards:
 - Item 421, “Hydraulic Cement Concrete”
 - Item 424, “Precast Concrete Structures”
 - Item 426, “Prestressing”
 - Item 440, “Reinforcing Steel”
 - Item 442, “Metal for Structures”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200200 “Layout for Concrete Panels on 9’-0” Long Wood Ties (9W)”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200201 “Prestressed and Precast Concrete Panels for 9’-0” Long Wood Ties (9W)”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200400 “Layout for Concrete Panels on 8’-6” Long Concrete Ties (85C)”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200200 “Precast Concrete Panels for 8’-6” Concrete Ties (85C)”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200900 “Typical Details for Concrete Panels”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200901 “General Specifications for Road Crossings with Concrete Panels”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200902 “Curved Concrete Panels”
 - BNSF Railway/Union Pacific Railroad Common Standards Dwg No. 200903 “Shunt Resistance Test for Concrete Panels”
3. **Construction.** Install Precast Concrete Panels in accordance to the requirements and directions shown in the BNSF Railway/Union Pacific Railroad Common Standards referenced under “Materials.”
 - Ensure crossing panel support through the crossing is uniform. Provide a maximum concrete tie spacing of 24 inches center to center and maximum wood tie spacing of 19-1/2 inches center to center.

- Handle and support precast panels at specified lifting insert locations only. Use properly sized lifting equipment and connection inserts to handle the length of panels being installed.
 - Construct approach asphalt paving, where applicable, of the length and width shown on the plans that conforms to TxDOT Item 340 Type “C” Mix.
 - Only welded rail joints are allowed in the crossing area. Welded rail joints shall be installed exterior to the crossing panel footprint. Do not install bolted joint bars in the crossing.
 - Provide perforated drain pipe and filter fabric, if shown in the BNSF Railway/Union Pacific Railroad Common Standards, conforming to TxDOT Item 556, “Pipe Underdrains”
- 4. Measurement.** This item will be measured by the linear foot of Precast Concrete Railroad Grade Crossing Panels installed.
- 5. Payment.** The work performed and Materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid under the unit price bid for “Precast Concrete Railroad Grade Crossing Panels” of the type specified. This price is full compensation for furnishing, installing, concrete panels, adjusting tie spacing, pipe underdrains, filter fabric and filter material, asphalt approach pavement, track surfacing, and alignment in the area of the crossing and for 100 feet to either side of the crossing.

Installation of ballast and subballast will be paid for separately under Item XXXX, “Ballasted Track Construction,” and Item 247, “Flexible Base,” respectively.

FED RD.	PROJECT NO.		SHEET NO.
6			1
STATE	DIST.	COUNTY	
TEXAS	ELP	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
2552	04	027	BHW RAIL

STATE OF TEXAS

DEPARTMENT OF TRANSPORTATION

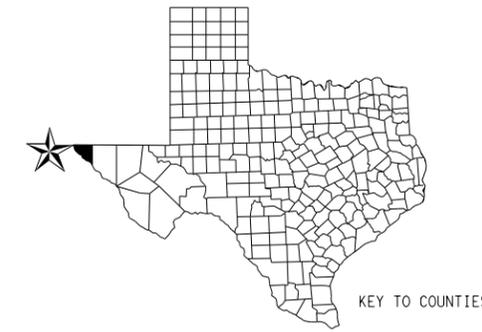
PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENTS

EL PASO COUNTY - CITY OF EL PASO

PROJECT: BORDER HIGHWAY WEST RAIL
CSJ: 2552-04-027

LIMITS FROM NORTH OF SCHUSTER AVENUE TO PARK DRIVE
NET LENGTH OF PROJECT = PROP UPRR ML #4 - 1.38 MI
PROP BNSF CONNECTION - 0.71 MI
PROP UPRR TRACKS 610/611 - 0.34 MI

FOR THE RELOCATION AND CONSTRUCTION OF
UPRR AND BNSF TRACKS



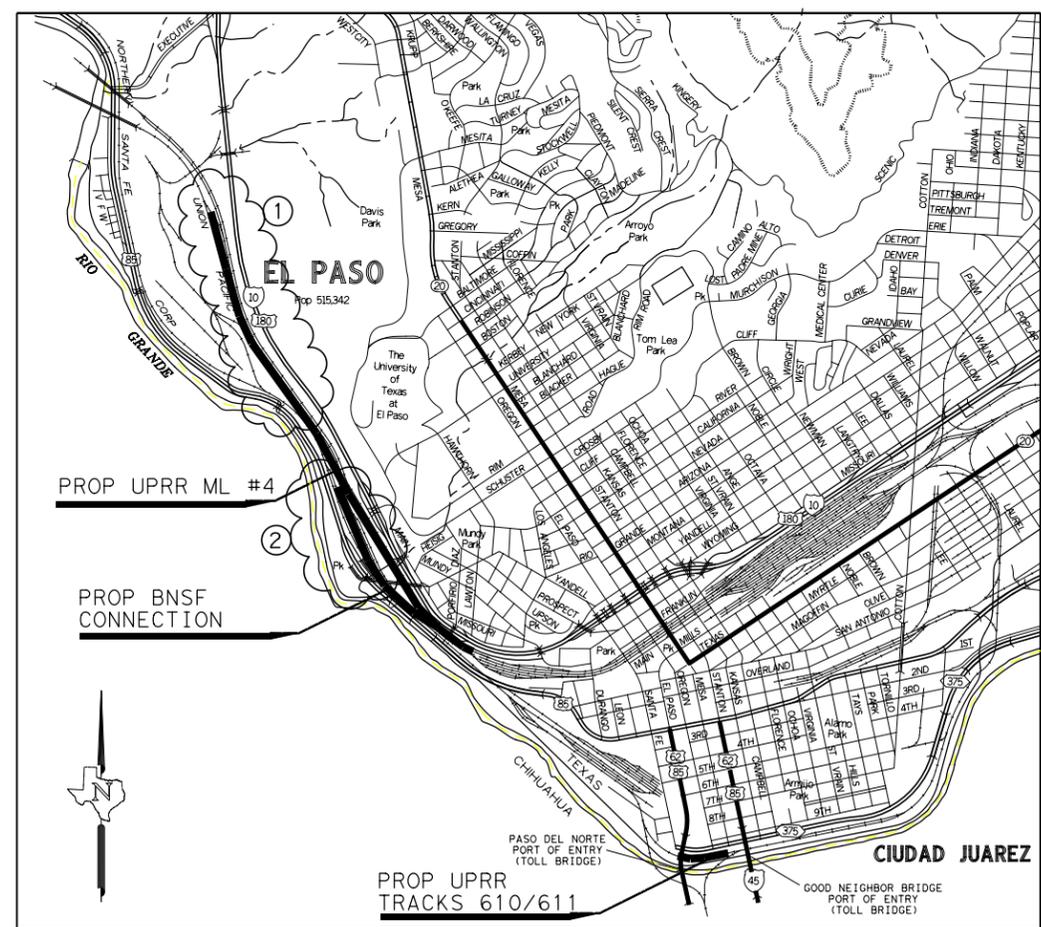
CONTRACTOR: _____
 TIME CHARGES BEGAN: _____
 DATE CONTRACTOR BEGAN WORK: _____
 DATE WORK WAS COMPLETED: _____
 DATE WORK WAS ACCEPTED: _____
 TOTAL DAYS CHARGED: _____
 ORIGINAL CONTRACT AMOUNT: _____
 AMOUNT OF CONTRACT AMMENDMENTS: _____
 FINAL CONTRACT COST: _____

 EL PASO AREA ENGINEER PE / DATE

INDEX OF SHEETS
 SHEET NO. DESCRIPTION
 SEE SHEET NO. 2

60% SUBMISSION

- LEGEND (ALL DRAWINGS)
- ① CHANGES TO INCLUDE PROPOSED ICEHOUSE ALIGNMENT TRACK
 - ② CHANGES TO EXTEND PROPOSED BNSF RAIL CONNECITON



FOR THE CITY OF EL PASO

EXAMINED AND APPROVED _____

MAYOR

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DATE

DESIGN CONSULTANT PREPARED PLANS
 JOSHUA A. MIETH, P.E. 97346
 HNTB CORPORATION
 FIRM REGISTRATION NUMBER 420

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, JUNE 1, 2004 AND SPECIFICATION ITEMS LISTED AND DATED AS SHOWN ON THE INDEX OF SHEETS SHALL GOVERN ON THIS PROJECT. REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA-1273, MARCH, 1994)

SCALE: NONE
 EQUATIONS: NONE
 R.R. CROSSINGS: NONE
 DESIGN EXCEPTIONS: NONE

RECOMMENDED _____ 20 _____
 FOR LETTING:

 SAFETY REVIEW COMMITTEE CHAIRPERSON

RECOMMENDED _____ 20 _____
 FOR LETTING:

 DIRECTOR OF TRANSPORTATION
 PLANNING & DEVELOPMENT



BY THE TEXAS DEPARTMENT OF TRANSPORTATION
 ALL RIGHTS RESERVED

APPROVED FOR LETTING: _____

DIRECTOR, TRAFFIC OPERATIONS DIVISION

APPROVED FOR LETTING: _____

DIRECTOR, DESIGN DIVISION

RECOMMENDED _____ 20 _____
 FOR LETTING:

 DISTRICT ENGINEER

INDEX OF SHEETS

SHEET	DESCRIPTION
1	COVER
2	INDEX OF SHEETS
3	PROJECT NOTES
4	CONTROL POINTS & GEOMETRY
5	SUMMARY OF QUANTITIES
6-10	TYPICAL SECTIONS - PROP UPRR ML #4
11-14	TYPICAL SECTIONS - BNSF RAIL CONNECTION
15	TYPICAL SECTIONS - PROP UPRR TRACK 610/PROP UPRR TRACK 611/UPRR SHOOFLY ML #4
16	KEY MAP - PROP UPRR ML #4/UPRR SHOOFLY ML #4
17	KEY MAP - BNSF RAIL CONNECTION/PROP UPRR TRACK 610/611
18	HORIZONTAL ALIGNMENT DATA - PROP UPRR ML #4
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20	HORIZONTAL ALIGNMENT DATA - PROP UPRR TRACK 610/TRACK 611
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81-89	CROSS SECTIONS - PROP UPRR ML #4
90-93	CROSS SECTIONS - BNSF RAIL CONNECTION
94	CROSS SECTIONS - PROP UPRR TRACK 610/611

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Model Name:

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Design File Name: IP*PWP:dms79716\LP375BHW-RR-PP-IND01.dgn

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Engineer: JOSHUA A MIETH
P.E. Serial No.: 97346
Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
The HNTB Companies
Engineers Architects Planners
TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)

INDEX OF SHEETS

SHEET 1 OF 1

DGN: RGN	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO. XX XXXX (XXX)	HIGHWAY NO. BHW RAIL
CHK DGN: JAM				
DWG: RGN	DIST. ELP	COUNTY EL PASO	CONT. NO. 2552	SECT. NO. 04
CHK DWG: JAM			JOB NO. 027	SHEET NO. 2

GENERAL NOTES

1. TRACK STATIONING, ELEVATIONS AND DIMENSIONS SHOWN ON DRAWINGS ARE IN FEET (U.S. CUSTOMARY UNITS).
2. TRACKS ON PLAN AND PROFILE DRAWINGS ARE INDICATED BY CENTERLINE OF TRACK. EXCEPT WHERE INDICATED, OFFSET DISTANCES FROM TRACKS TO OTHER FACILITIES ARE MEASURED FROM CENTERLINE OF TRACK.
3. STATIONING THROUGH DIVERGING LEGS OF TURNOUTS IS MEASURED ON THE CENTERLINE OF TRACK AND ALONG THE TANGENT EXTENSION LINES OF THE TURNOUT. TRACK LENGTHS THROUGH THE TURNOUT RUN FROM THE POINT OF SWITCH TO THE POINT OF INTERSECTION OF THE TURNOUT (PITO) AND ALONG THE TANGENT OF THE TURNOUT CLOSURE CURVE TO THE END OF THE TURNOUT CURVE AND BEYOND.
4. ON SUPERELEVATED CURVES, THE TRACK PROFILE IS THE ELEVATION OF THE TOP OF THE LOW RAIL.
5. TRACK GAGE FOR ALL TRACKS SHALL BE 4'-8 1/2". RAIL SHALL BE 136# RE CONTINUOUS WELDED RAIL.
6. SPEEDS INDICATED ON HORIZONTAL TRACK ALIGNMENT DATA SHEETS ARE MAXIMUM DESIGN SPEEDS.
7. TRACKWORK SHALL BE COORDINATED WITH OTHER WORK PERFORMED BY OTHER CONTRACTORS AND THE RAILROAD.
8. THE WORK SHALL BE IN ACCORDANCE WITH UPRR AND BNSF DOCUMENTS, CRITERIA, STANDARDS, AND DETAILS AND AREMA GUIDELINES.
9. THE PLANS SHALL GOVERN OVER AREMA MANUAL AND SPECIFICATIONS. THE SPECIFICATIONS SHALL GOVERN OVER AREMA MANUAL.
10. CONTRACTOR SHALL PROVIDE ALL TRACK MATERIALS (RAIL, TIES, BALLAST, AND OTM) FOR THE PROJECT AND INCIDENTAL MATERIAL NOT SHOWN.
11. BEFORE ORDERING ANY MATERIALS, THE CONTRACTOR SHALL MAKE A DETAILED FIELD INSPECTION OF THE SITE VERIFYING ALL PERTINENT DIMENSIONS AND ELEVATIONS. ANY VARIATIONS IN DIMENSIONS OR ELEVATIONS FROM THOSE SHOWN ON THE PLANS SHALL BE REPORTED IMMEDIATELY TO UPRR/BNSF PROJECT MANAGER AND OWNER PROJECT MANAGER.
12. CONTRACTOR SHALL VERIFY THE LOCATION, RELOCATION, ABANDONMENT, AND/OR TEMPORARY SUPPORT OF ALL UTILITIES AFFECTED BY THE CONSTRUCTION OF THE STRUCTURE AND EMBANKMENT AND COORDINATE THESE ACTIVITIES WITH THE APPROPRIATE UTILITY COMPANIES, AGENCIES AND/OR AUTHORITIES AND UPRR SIGNAL DEPARTMENT. ENSURE RAILROAD UTILITIES AND SIGNAL CABLES ARE LOCATED. FOR INFORMATION ON, AND RELOCATION OF, FIBER OPTIC CABLE, CALL 1-800-336-9193.
13. CONTRACTOR SHALL APPLY FOR AND OBTAIN ALL CONSTRUCTION PERMITS NECESSARY TO PERFORM THE WORK AS REQUESTED BY THE OWNER.
14. CONTRACTOR SHALL PROVIDE THE TXDOT AND RAILROAD WITH A DETAILED CONSTRUCTION PLAN DEFINING THE ACTIVITY, SCHEDULE AND PROCEDURE FOR EACH ASPECT OF THE WORK. CONSTRUCTION SHALL NOT BEGIN UNTIL THE CONSTRUCTION PLAN HAS BEEN APPROVED BY TXDOT AND RAILROAD.
15. CONTRACTOR SHALL DIRECT LOCAL DRAINAGE AS REQUIRED TO PERFORM WORK.
16. CONTRACTOR SHALL PROVIDE AND PLACE ALL FILL AND SUBBALLAST MATERIAL PER UPRR/BNSF SPECIFICATIONS MENTIONED ABOVE. PERFORM GRADING AS REQUIRED TO DRAIN AND MATCH EXISTING EMBANKMENTS AND DRAINAGE FLOW LINE.
17. CONTRACTORS SHALL NOTIFY SERVICE ALERT, (800) 642-2444 AND UPRR FIBER OPTICS HOTLINE (800) 336-9193, 48 HOURS PRIOR TO ANY EXCAVATION. THE USA AUTHORIZATION NUMBERS SHALL BE KEPT AT THE JOB SITE.
18. NO WORK WHATSOEVER SHALL BE COMMENCED WITHOUT FIRST NOTIFYING THE UPRR/BNSF ENGINEER:

STEVE MARTCHENKE	TIM HUYA
UNION PACIFIC RAILROAD	BNSF RAILWAY
101 SOUTH WATSON ROAD	2650 LOU MENK DRIVE
ARLINGTON, TX 76010	FORT WORTH, TX 76131
(817) 353-7625	(817) 352-2902
19. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, COUNTY, AND CITY LAWS AND ORDINANCES AND REGULATIONS OF THE DEPARTMENT OF INDUSTRIAL RELATIONS, OSHA, NPDES AND INDUSTRIAL ACCIDENT COMMISSION RELATED TO THE SAFETY AND CHARACTER OF THE WORK, EQUIPMENT AND LABOR PERSONNEL.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITY AGENCIES.
21. CONTRACTOR SHALL PROTECT IN PLACE (BY ANY MEANS NECESSARY) ALL EXISTING UTILITIES TO REMAIN. UNLESS OTHERWISE SPECIFIED HEREIN, CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REPAIR AT HIS EXPENSE, FOR ANY DAMAGE TO EXISTING UTILITIES, STRUCTURES, OR OTHER SITE FEATURES, AS A RESULT OF HIS WORK.
22. PRIOR TO PLACING CURBS, PAVEMENTS, BASE, SUBBASE, TRACK, ETC., ALL UNDERGROUND UTILITIES SHALL BE INSTALLED, BACKFILL COMPLETED, AND THE ENGINEER NOTIFIED BY EACH OF THE UTILITY COMPANIES HAVING FACILITIES WITHIN THE WORK AREA, THAT THE UTILITY INSTALLATION HAS SATISFACTORILY PASSED ACCEPTANCE TESTS.
23. ALL EXISTING UNDERGROUND UTILITIES THAT ARE NOT TO BE RE-USED SHALL BE ABANDONED IN PLACE. ALL EXISTING PIPELINES TO BE ABANDONED IN PLACE SHALL BE CEMENT SLURRY FILLED AND CAPPED AT LEAST 3'-0" BELOW TOP OF PROPOSED SUBGRADE. UNDERGROUND UTILITIES 4 INCHES IN DIAMETER OR GREATER SHALL BE ABANDONED IN PLACE AND FILLED WITH GROUT PER TXDOT REQUIREMENTS.
24. ANY UNDERGROUND STRUCTURES SUCH AS CESSPOOLS, CISTERNS, MINING SHAFTS, TUNNELS, SEPTIC TANKS, WELLS, AND PIPELINES NOT LOCATED PRIOR TO CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DETERMINATION OF APPROPRIATE ACTION SUCH AS REMOVAL OR TREATMENT IN A MANNER JUDGED SUITABLE TO THE ENGINEER.
25. CONTRACTOR SHALL COORDINATE LOCATION OF ALL PROPOSED UTILITIES WITH UPRR/BNSF TO ASSURE ACCURACY OF UTILITY CONNECTIONS AND COMPLIANCE WITH LOCAL CODES.
26. ANY EXISTING CONDITIONS FOUND TO BE A VARIANCE WITH THESE DRAWINGS MUST BE IMMEDIATELY REPORTED TO THE ENGINEER.
27. CONTRACTOR SHALL MAINTAIN AND CLEAN, TO THE SATISFACTION OF THE ENGINEER, ALL ACCESS AND SERVICE ROADS USED DURING CONSTRUCTION.
28. CONTRACTOR SHALL PERFORM ALL CONSTRUCTION IN SUCH A MANNER AS TO PROTECT ADJACENT EXISTING BUILDINGS AND OTHER SITE ELEMENTS WHICH ARE TO REMAIN IN SERVICE.
29. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS FOR ALL IMPROVEMENTS.
30. NO FIELD CHANGES WILL BE PERMITTED WITHOUT DIRECT WRITTEN AUTHORIZATION FROM THE UPRR/BNSF ENGINEER OR HIS REPRESENTATIVE.
31. CONTRACTOR SHALL COORDINATE WORK WHICH AFFECTS ADJACENT PROPERTY OWNERS. ANY QUESTIONS OR AGREEMENTS BETWEEN ADJACENT PROPERTY OWNERS AND CONTRACTOR SHALL BE MADE IN WRITING. A COPY OF SUCH AGREEMENT SHALL BE PROVIDED TO THE UPRR ENGINEER OR HIS REPRESENTATIVE.
32. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) TO COMPLY WITH STATE REGULATIONS.
33. RIGHT-OF-WAY LINES SHOWN ON THE PLANS ARE APPROXIMATE.
34. MATCH LINES FOR SHEETS ARE BASED ON THE EXISTING MAIN LINE STATIONING UNLESS OTHERWISE SPECIFIED.
35. TRACK LAYING, BALLASTING, AND INSTALLATION OF ROAD CROSSING PANELS WILL BE DONE BY CONTRACTOR UNLESS OTHERWISE STATED.
36. WHERE EXISTING CULVERTS ARE TO BE EXTENDED, THE CONTRACTOR SHALL EXPOSE EXISTING DRAINAGE STRUCTURES AND FIELD VERIFY SIZE AND TYPE BEFORE ORDERING.
37. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL PAVEMENT MARKINGS THAT WILL BE IN CONFLICT WITH THE PROPOSED WORK.
38. CONTRACTOR SHALL COMPLY WITH ALL CITY STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS REQUIREMENTS.
39. CONTRACTOR SHALL MAINTAIN AT LEAST ONE ACCESS TO ALL AFFECTED BUSINESSES. IF NECESSARY, MULTIPHASE CONSTRUCTION SHALL BE UTILIZED.
40. NO WORK SHALL BE PERMITTED WITHIN 13 FEET CLEAR POINT OF ANY LIVE TRACK(S) UNLESS AUTHORIZED BY THE RESPECTIVE RAILROAD.
41. UPRR AND BNSF FLAGMAN, AS APPLICABLE, IS REQUIRED IF WORKING WITHIN 25 FEET OF ACTIVE TRACK OR WHEN THERE IS THE POTENTIAL OF FOULING THE TRACK.
42. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL SALVAGED ITEMS AND IS THE OWNER OF ALL SALVAGED MATERIAL.
43. ANY NEW TURNOUT SHALL CONFORM TO UPRR/BNSF COMMON STANDARDS.
44. CONTRACTOR SHALL FOLLOW SAFETY REQUIREMENTS FOR EACH RESPECTIVE RAILROAD.

NOTE: ADDITIONAL SURVEY, TOPOGRAPHIC INFORMATION, SUBSURFACE UTILITY INFORMATION, AND GEOTECHNICAL INFORMATION ARE FORTHCOMING AND ARE NOT INCLUDED AS PART OF THIS 60% SUBMISSION. DETAILS, AS APPLICABLE, ARE DETERMINED USING ENGINEERING JUDGMENT AS PART OF THIS SUBMISSION.

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY


HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)

PROJECT NOTES

SHEET 1 OF 1

DGN: RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN: JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG: RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG: JAM	ELP	EL PASO	2552	04	027	3

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Model Name:

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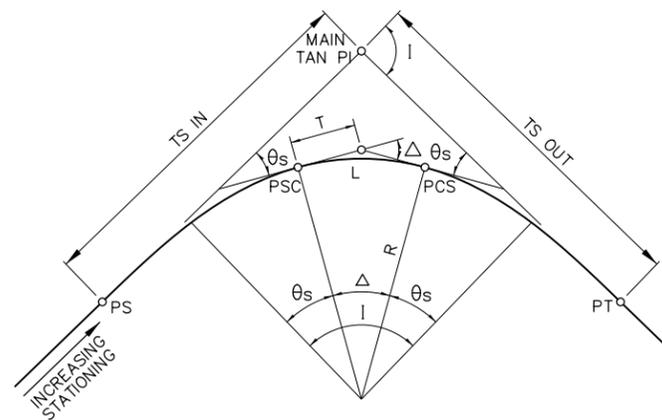


FIGURE A
 CIRCULAR CURVES
 WITH SPIRAL TRANSITION

- I - TOTAL INTERSECTION ANGLE
 - θ_s - SPIRAL ANGLE = $\frac{A}{2} L^2$
 - Δ - CENTRAL ANGLE OF CIRCULAR CURVE = $I - 2\theta_s$
 - Dc - DEGREE OF CURVE
 - A - RATE OF CHANGE OF DEGREE OF CURVE PER 100-ft. OF LENGTH = $\frac{Dc}{L}$
 - R - RADIUS OF CIRCULAR CURVE
 - T - TANGENT LENGTH OF CIRCULAR CURVE = $R \tan \frac{\Delta}{2}$
 - L - LENGTH OF CIRCULAR CURVE = $\frac{\Delta}{Dc} \times 100$
 - PS - TANGENT TO SPIRAL
 - PSC - SPIRAL TO CURVE
 - PCS - CURVE TO SPIRAL
 - PT - SPIRAL TO TANGENT OR CURVE TO TANGENT
 - MAIN TAN PI - POINT OF INTERSECTION OF MAIN TANGENTS
 - (TS IN)
(TS OUT) - TANGENT LENGTH OF COMPLETE CURVE = $(R+o) \tan \frac{I}{2} + t$
- (WHEN SPIRALS OF EQUAL LENGTH ARE USED ON BOTH SIDES OF CIRCULAR CURVE, SEE FIGURE C. FOR o AND t).

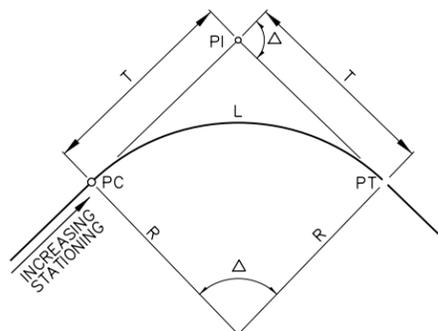


FIGURE B
 SIMPLE CIRCULAR CURVE

- R = RADIUS OF CIRCULAR CURVE
- Δ = CENTRAL ANGLE OF CIRCULAR CURVE
- $T = R \tan \frac{\Delta}{2}$
- $L = \frac{\Delta}{Dc} \times 100$
- $Dc = 2 \sin^{-1}(50/R) =$ DEGREE OF CURVE (CHORD DEFINITION)
- PC - POINT ON CURVE

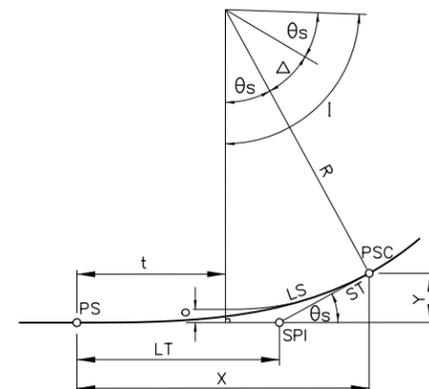


FIGURE C
 SPIRAL TRANSITION CURVE

SPIRAL TRANSITION CURVE DATA:
 THE SPIRAL USED IS DEFINED BY THE TALBOT SPIRAL.

- LS = LENGTH OF SPIRAL (PS TO PSC)
 - $\theta_s = \frac{A}{2} L^2$
 - $X = 100 L_1 - 0.000762A^2 L_1^5$
 - $Y = 0.291AL_1^3 - 0.00000158A^3 L_1^7$
 - $o = 0.0727AL_1^3$
 - $t = 50L_1 - 0.000127A^2 L_1^5$
 - $ST = \frac{Y}{\sin \theta_s}$
 - $LT = X - \frac{Y}{\tan \theta_s}$
 - $Dc = 2 \sin^{-1}(50/R) =$ DEGREE OF CURVE (CHORD DEFINITION)
 - L_1 - TOTAL NO. OF STATIONS IN SPIRAL
 - SPI - SPIRAL POINT OF INTERSECTION
- NOTE: Dc, θ_s , Δ , AND I ARE IN DEGREES.
 ALL OTHERS DIMENSIONS ARE FEET.

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 Engineer: JOSHUA A MIETH
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HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CONTROL POINTS
 & GEOMETRY

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	4

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Model Name:

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ITEM NO	100	110	132	247	247	XXX	XXX	XXX	XXX	XXX
DESCRIPTION CODE	2002	2001	2006	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
DESCRIPTION	PREPARING ROW	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)	SUBBALLAST	SUBBALLAST (MATL ONLY)	TRACK (RESURFACE)	TRACK SHIFT TIE REPL (MATL ONLY)	TRACK (NEW) (CONCRETE TIE)	TRACK (NEW) (WOOD TIE)	TRACK (NEW) (WOOD TIE) (MATL ONLY)
QUANTITY	STA	CY	CY	CY	CY	TF	TF	TF	TF	TF
QUANTITY	117	108,344	32,197	15,576	1,910	1,500	1,779	6,685	4,561	951

ITEM NO	XXX	XXX	XXX	XXX	XXX	XXX	XXX
DESCRIPTION CODE	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
DESCRIPTION	BALLAST	BALLAST (MATL ONLY)	#11 TURNOUT (NEW)	#11 TURNOUT (NEW) (MATL ONLY)	#15 TURNOUT (NEW) (MATL ONLY)	#20 TURNOUT (NEW) (MATL ONLY)	CONCRETE CROSSING PANELS
QUANTITY	CY	CY	EA	EA	EA	EA	TF
QUANTITY	10,845	3,954	1	1	1	4	120

ITEM NO	104	104	496	496	496	496	496	XXX	XXX
DESCRIPTION CODE	2001	2013	2006	2054	XXXX	XXXX	XXXX	XXXX	XXXX
DESCRIPTION	REMOVING CONC (PAV)	REMOVING CONC (FOUNDATION)	REMOVE STR (HEADWALL)	REMOVE STR (WOOD STR)	REMOVE STR (GRADE CROSSING EQUIPMENT)	REMOVE STR (LIGHT POLE)	REMOVE STR (BILLBOARD)	REMOVE TRACK	REMOVE TURNOUT
QUANTITY	SY	SY	EA	EA	EA	EA	EA	TF	EA
QUANTITY	2,884	89	2	1	1	23	1	9,120	1

ITEM NO	423	423	462	462	466
DESCRIPTION CODE	XXXX	XXXX	XXXX	XXXX	XXXX
DESCRIPTION	RETAINING WALL (SPECIAL) (CUT) SF	RETAINING WALL (SPECIAL) (FILL) SF	CONC BOX CULV (7 FT X 7 FT) (4 BOX EXT) (E-80 LOADING) LF	CONC BOX CULV (14 FT X 10 FT) (2 BOX EXT) (E-80 LOADING) LF	WINGWALL EA
QUANTITY	27,892	28,053	41	45	2
QUANTITY	27,892	28,053	41	45	2

REV. NO.	DATE	DESCRIPTION	BY



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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

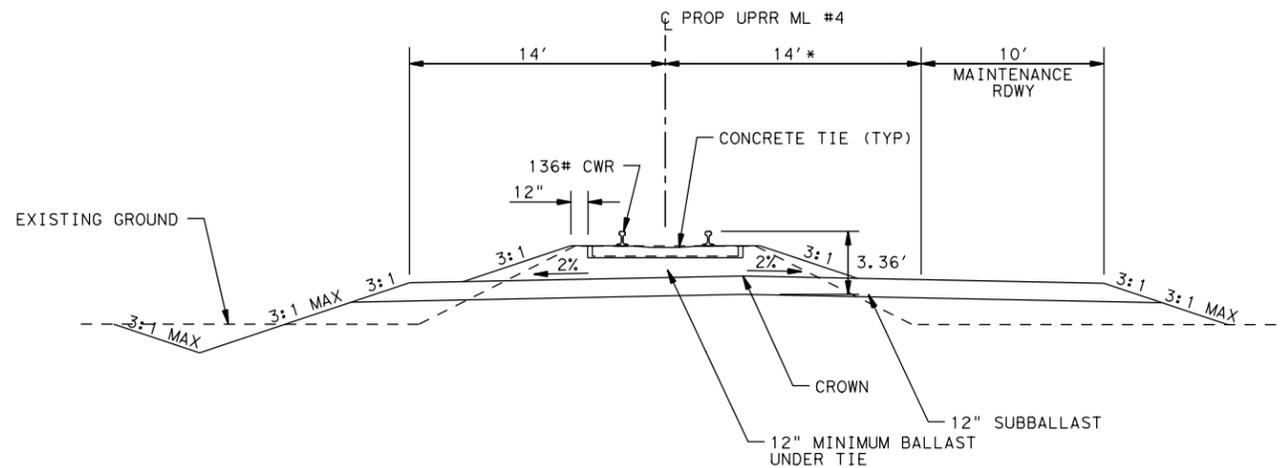
BORDER HIGHWAY WEST (LP 375)

SUMMARY OF QUANTITIES

SHEET 1 OF 1

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	5

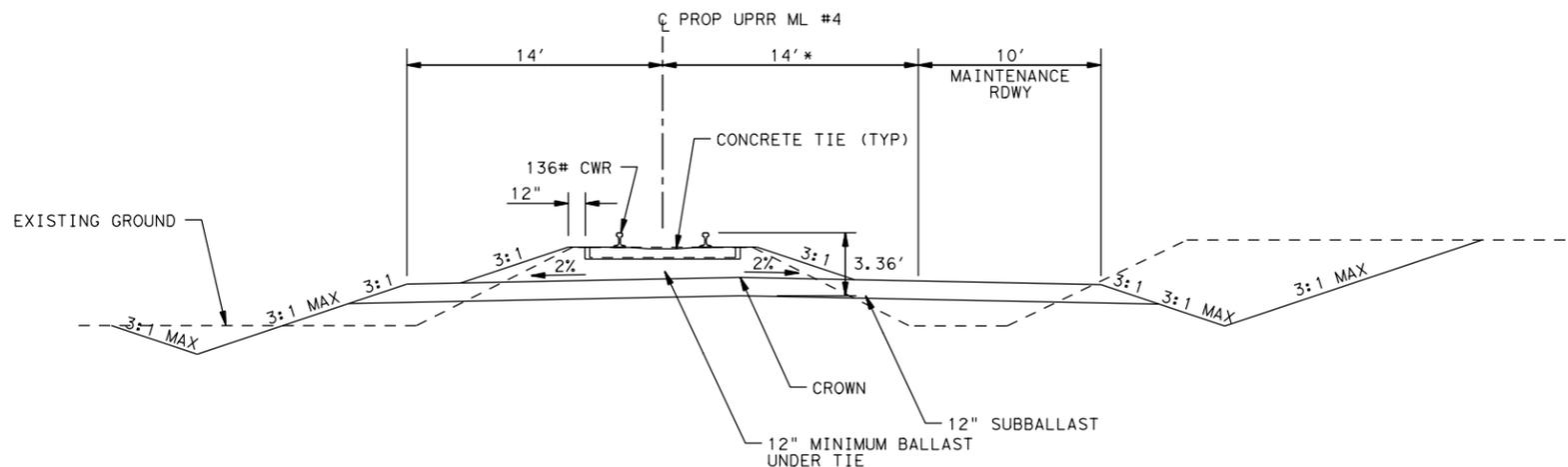
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TYPICAL SECTION

STA 324+95.47 TO STA 329+00
 STA 331+00 TO STA 338+00

- *STA 324+95.47 TO STA 325+45.47 VARIES 14' TO 14.38' (Ea FROM 0" TO 0.75")
- *STA 325+45.47 TO STA 329+00.00 14.38' TYP (Ea OF 0.75")
- *STA 331+00.00 TO STA 334+69.71 14.38' TYP (Ea OF 0.75")
- *STA 334+69.71 TO STA 335+19.71 VARIES 14' TO 14.38' (Ea FROM 0" TO 0.75")



TYPICAL SECTION

STA 329+00 TO STA 331+00
 *STA 329+00.00 TO STA 331+00.00 14.38' TYP (Ea OF 0.75")

NOTES:

- TRACK TYPICAL SECTIONS SHALL FOLLOW UNION PACIFIC RAILROAD ENGINEERING STANDARD DRAWING 0002C "ROADBED SECTIONS FOR CONCRETE TIE TRACK CONSTRUCTION".
- TRACK SUPERELEVATION SHALL FOLLOW STANDARD DRAWING 0002C AS APPLICABLE AND DEFINED FOR EACH TYPICAL SECTION.
- CONCRETE TIES SHALL FOLLOW STANDARD DRAWING 0201.
- CONTRACTOR SHALL NOT EXCAVATE WITHIN 13 FEET OF EXISTING TRACK CENTERLINES.

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 PROP UPRR ML #4

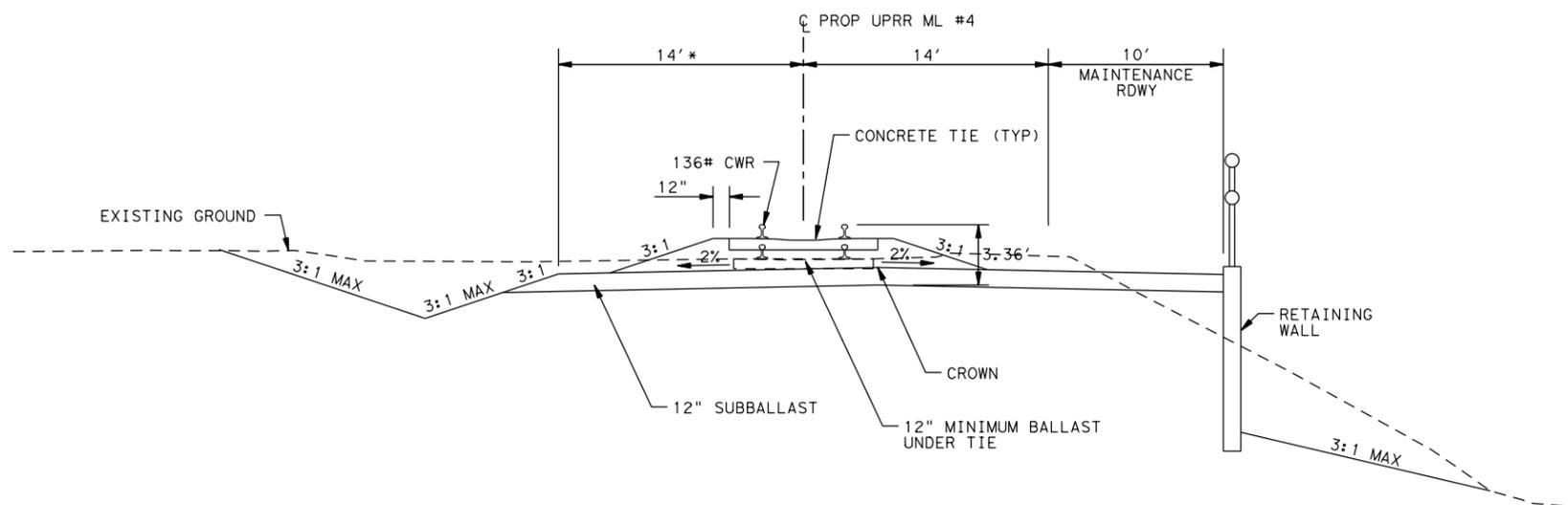
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CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	6

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Model Name:

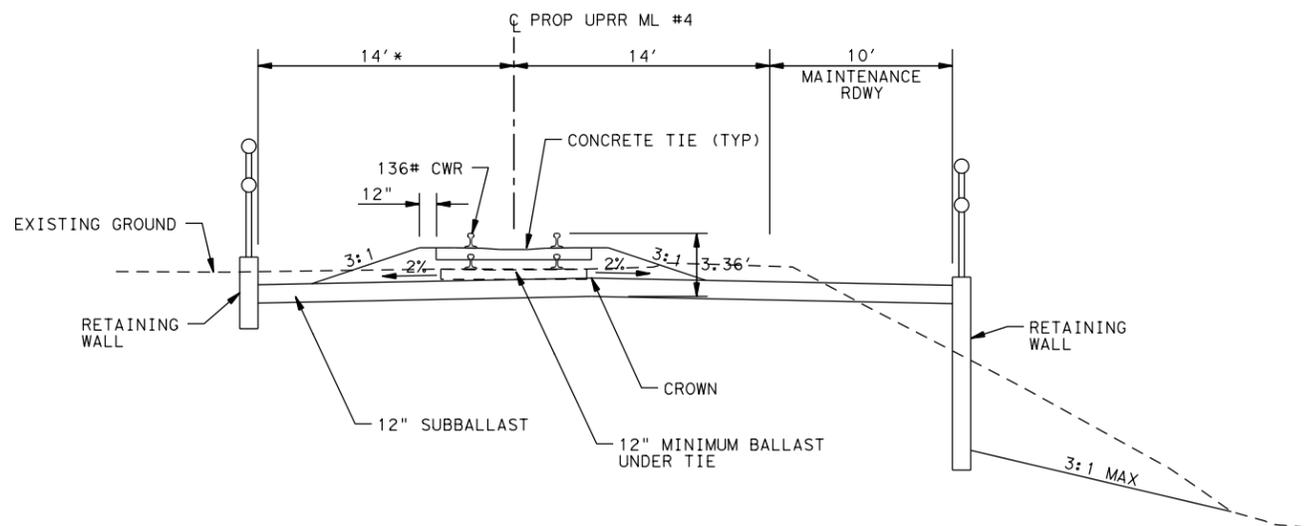
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1



TYPICAL SECTION

STA 338+00 TO STA 342+00
 *STA 340+35.62 TO STA 340+85.62 VARIES 14' TO 14.63' (Ea FROM 0" TO 1.25")
 *STA 340+85.62 TO STA 342+00 14.63' TYP (Ea OF 1.25")



TYPICAL SECTION

STA 342+00 TO STA 344+00
 *STA 342+00 TO STA 344+00 14.63' TYP (Ea OF 1.25")

NOTES:

TRACK TYPICAL SECTIONS SHALL FOLLOW UNION PACIFIC RAILROAD ENGINEERING STANDARD DRAWING 0002C "ROADBED SECTIONS FOR CONCRETE TIE TRACK CONSTRUCTION".

TRACK SUPERELEVATION SHALL FOLLOW STANDARD DRAWING 0002C AS APPLICABLE AND DEFINED FOR EACH TYPICAL SECTION.

CONCRETE TIES SHALL FOLLOW STANDARD DRAWING 0201.

CONTRACTOR SHALL NOT EXCAVATE WITHIN 13 FEET OF EXISTING TRACK CENTERLINES.

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 PROP UPRR ML #4

SHEET 2 OF 5

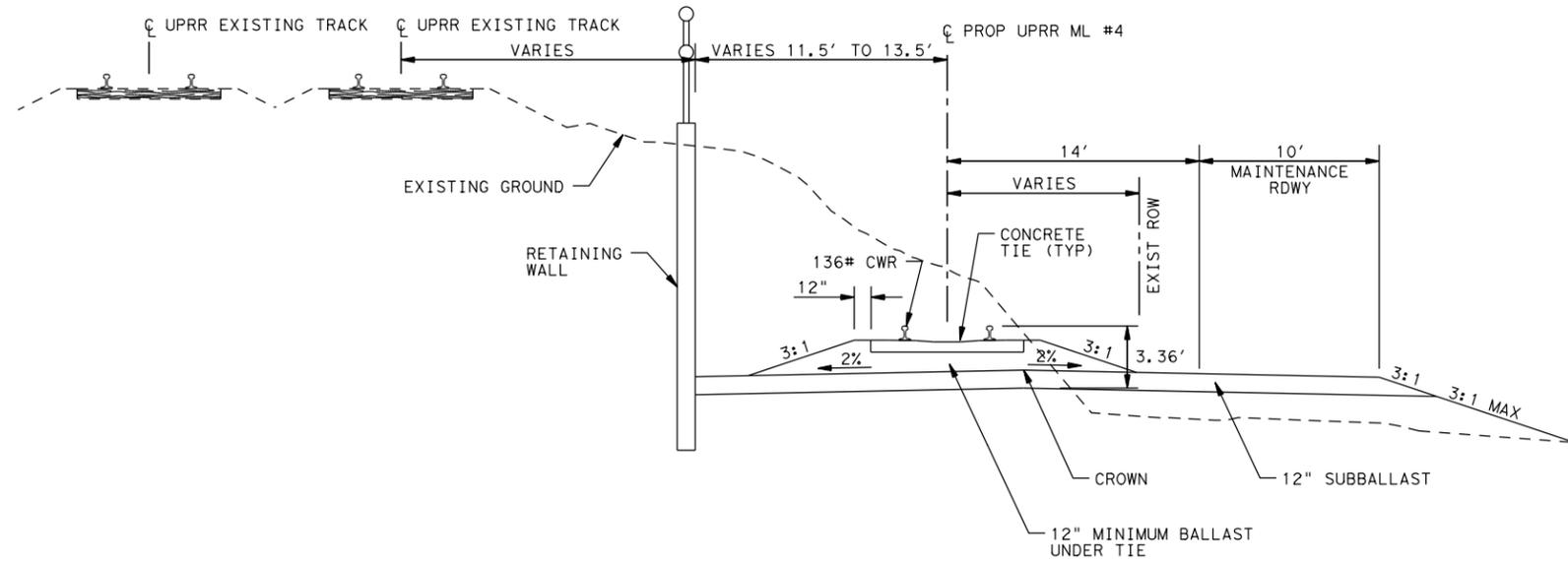
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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	7

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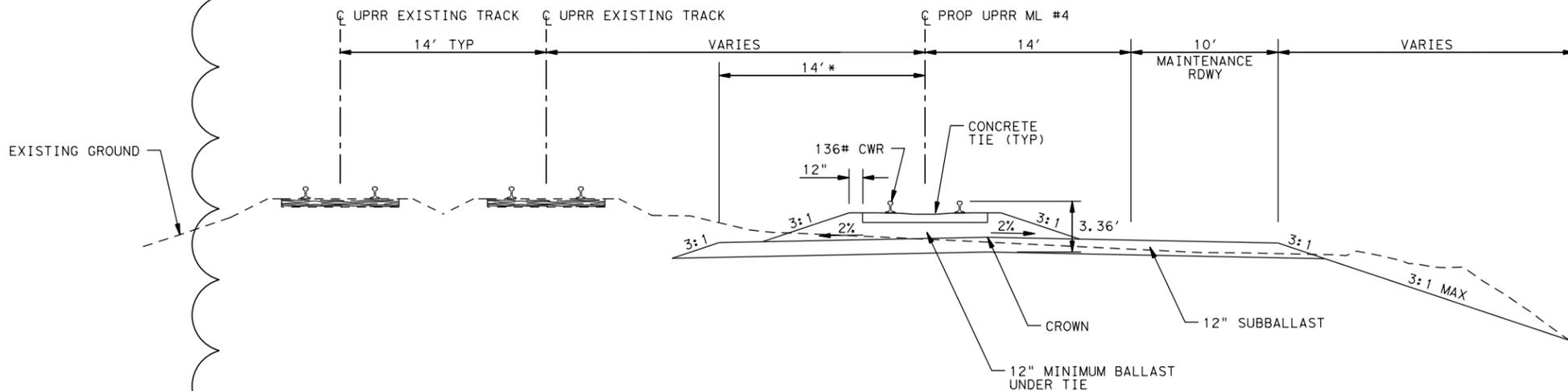
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TYPICAL SECTION
 STA 344+00 TO STA 348+00
 *STA 344+00 TO STA 348+00 (Ea OF 1.25")

NOTES:

- TRACK TYPICAL SECTIONS SHALL FOLLOW UNION PACIFIC RAILROAD ENGINEERING STANDARD DRAWING 0002C "ROADBED SECTIONS FOR CONCRETE TIE TRACK CONSTRUCTION".
- TRACK SUPERELEVATION SHALL FOLLOW STANDARD DRAWING 0002C AS APPLICABLE AND DEFINED FOR EACH TYPICAL SECTION.
- CONCRETE TIES SHALL FOLLOW STANDARD DRAWING 0201.
- CONTRACTOR SHALL NOT EXCAVATE WITHIN 13 FEET OF EXISTING TRACK CENTERLINES.



TYPICAL SECTION
 STA 348+00 TO STA 352+00
 *STA 348+00 TO STA 352+00 14.63' TYP (Ea OF 1.25")

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 PROP UPRR ML #4

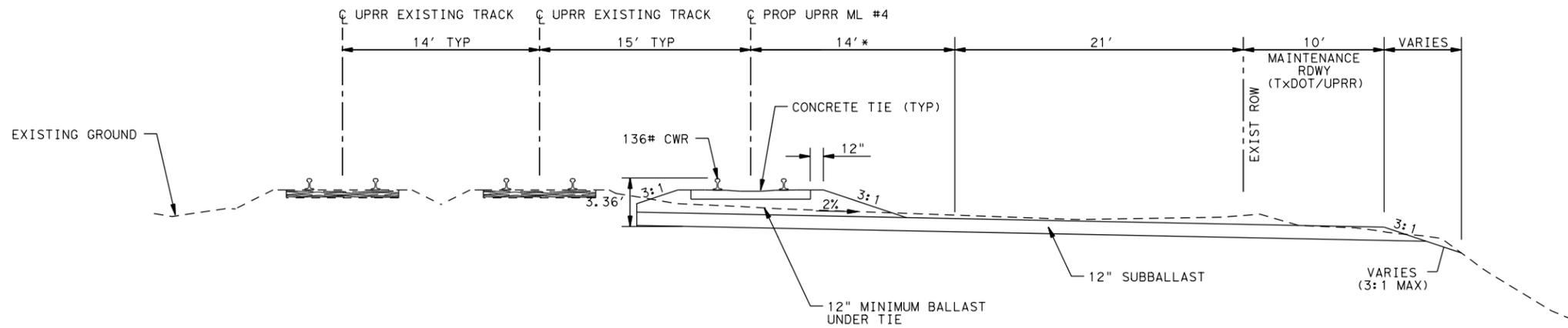
SHEET 3 OF 5

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	8

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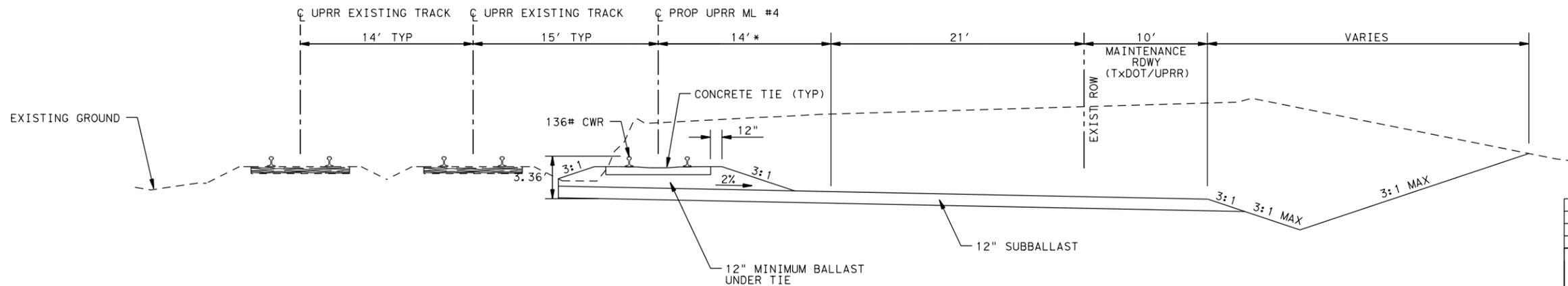
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NOTES:
 TRACK TYPICAL SECTIONS SHALL FOLLOW UNION PACIFIC RAILROAD ENGINEERING STANDARD DRAWING 0002C "ROADBED SECTIONS FOR CONCRETE TIE TRACK CONSTRUCTION".
 TRACK SUPERELEVATION SHALL FOLLOW STANDARD DRAWING 0002C AS APPLICABLE AND DEFINED FOR EACH TYPICAL SECTION.
 CONCRETE TIES SHALL FOLLOW STANDARD DRAWING 0201.
 CONTRACTOR SHALL NOT EXCAVATE WITHIN 13 FEET OF EXISTING TRACK CENTERLINES.

①
TYPICAL SECTION
 STA 352+00 TO STA 360+00
 *STA 352+00 TO STA 352+52.95 (Ea FROM 0" TO 1.25")
 *STA 356+72.59 TO STA 357+32.59 VARIES 14' TO 14.63' (Ea FROM 0" TO 1.25")
 *STA 357+32.59 TO STA 360+00 14.63' TYP (Ea OF 1.25")
 *STA 386+92.71 TO STA 388+33.71 VARIES 14' TO 15.25' (Ea FROM 0" TO 2.50")
 *STA 388+33.71 TO STA 390+00 15.25' TYP (Ea OF 2.50")



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 P.E. Serial No.: 97346
 Date: 18-DEC-2013

TYPICAL SECTION
 STA 360+00 TO STA 374+62
 STA 375+08 TO STA 390+00
 *STA 360+00 TO STA 360+09.63 14.63' TYP (Ea OF 1.25")
 *STA 360+09.63 TO STA 360+69.63 VARIES 14' TO 14.63' (Ea FROM 0" TO 1.25")

REV. NO.	DATE	DESCRIPTION	BY

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BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 PROP UPRR ML #4

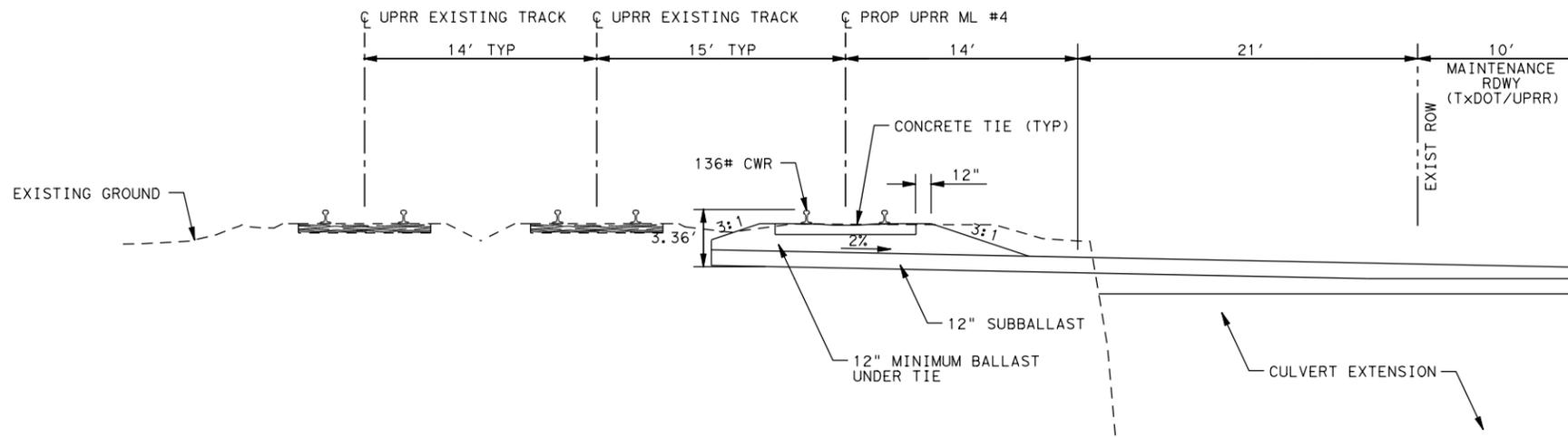
SHEET 4 OF 5

DGN: RGN	FED. RD. DIV. NO.: 6	STATE: TEXAS	PROJECT NO.: XX XXXX (XXX)	HIGHWAY NO.: BHW RAIL
CHK DGN: JAM	DIST.: ELP	COUNTY: EL PASO	CONT. NO.: 2552	SECT. NO.: 04
DWG: RGN	JOB NO.: 027	SHEET NO.: 9		
CHK DWG: JAM				

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Model Name:

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TYPICAL SECTION
 STA 374+62 TO STA 375+08

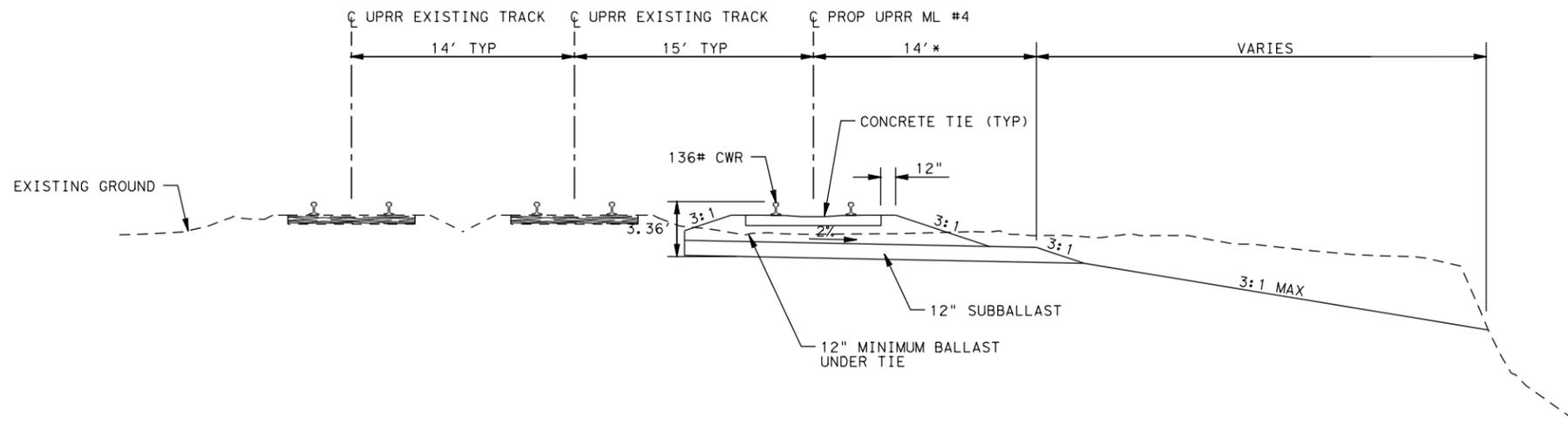
NOTES:

TRACK TYPICAL SECTIONS SHALL FOLLOW UNION PACIFIC RAILROAD ENGINEERING STANDARD DRAWING 0002C "ROADBED SECTIONS FOR CONCRETE TIE TRACK CONSTRUCTION".

TRACK SUPERELEVATION SHALL FOLLOW STANDARD DRAWING 0002C AS APPLICABLE AND DEFINED FOR EACH TYPICAL SECTION.

CONCRETE TIES SHALL FOLLOW STANDARD DRAWING 0201.

CONTRACTOR SHALL NOT EXCAVATE WITHIN 13 FEET OF EXISTING TRACK CENTERLINES.



TYPICAL SECTION
 STA 390+00 TO STA 397+89.54
 *STA 390+00 TO STA 396+48.54 15.25' TYP (Ea OF 2.50")
 *STA 396+48.54 TO STA 397+89.54 VARIES 14' TO 15.25' (Ea FROM 0" TO 2.50")

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



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BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 PROP UPRR ML #4

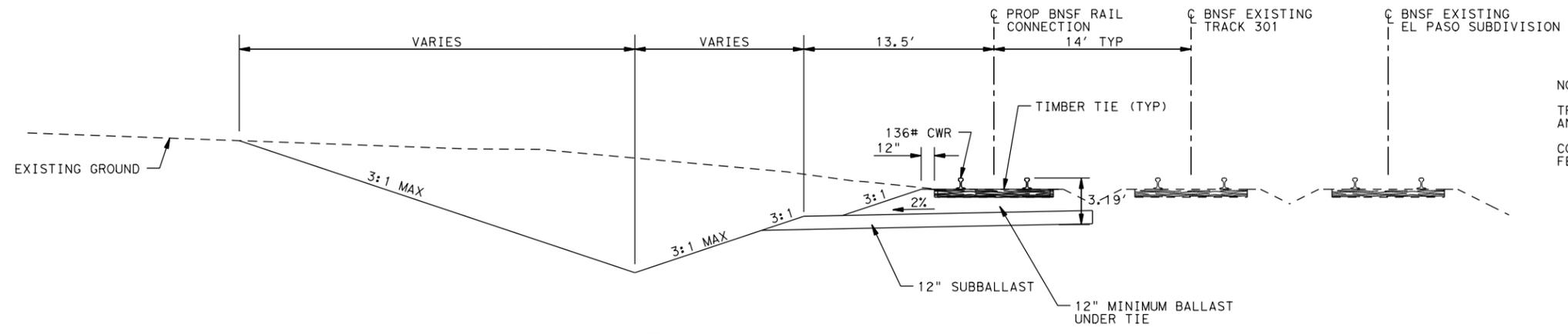
SHEET 5 OF 5

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	10

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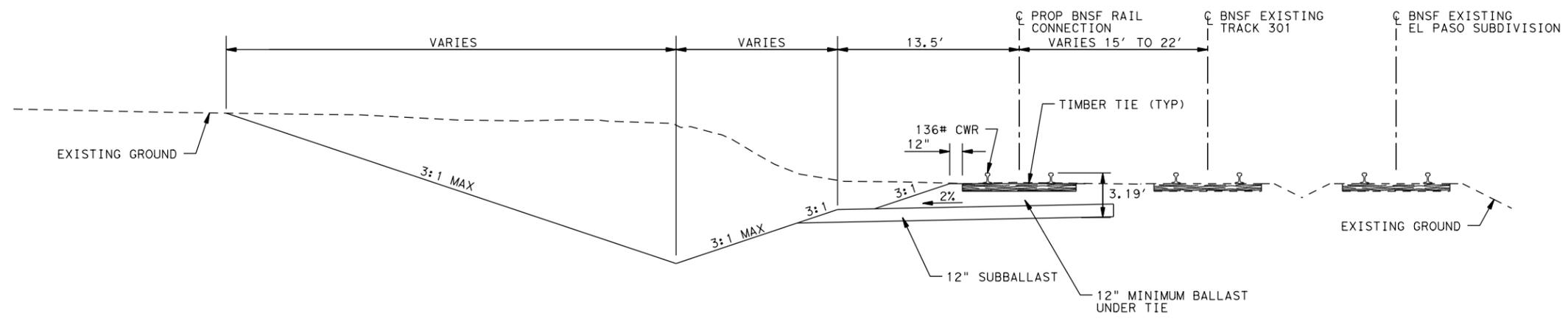
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NOTES:
 TRACK TYPICAL SECTIONS, TRACK SUPERELEVATION,
 AND TIMBER TIES SHALL FOLLOW BNSF STANDARDS.
 CONTRACTOR SHALL NOT EXCAVATE WITHIN 13
 FEET OF EXISTING TRACK CENTERLINES.

② TYPICAL SECTION
 STA 14+20.35 TO STA 19+98.52
 *STA 17+71.32 TO STA 18+11.32 (Ea FROM 0" TO 0.75")
 *STA 18+11.32 TO STA 19+98.52 (Ea OF 0.75")



TYPICAL SECTION
 STA 19+98.52 TO STA 23+83
 STA 24+15 TO STA 27+00
 *STA 19+98.52 TO STA 23+83 (Ea OF 0.75")
 *STA 24+15 TO STA 27+00 (Ea OF 0.75")

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 BNSF RAIL CONNECTION

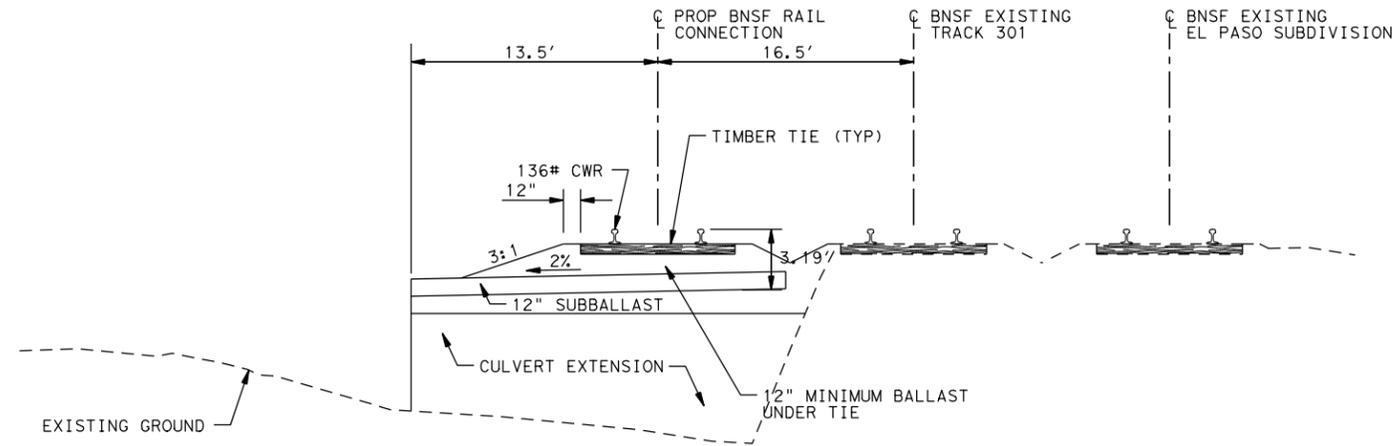
SHEET 1 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	11

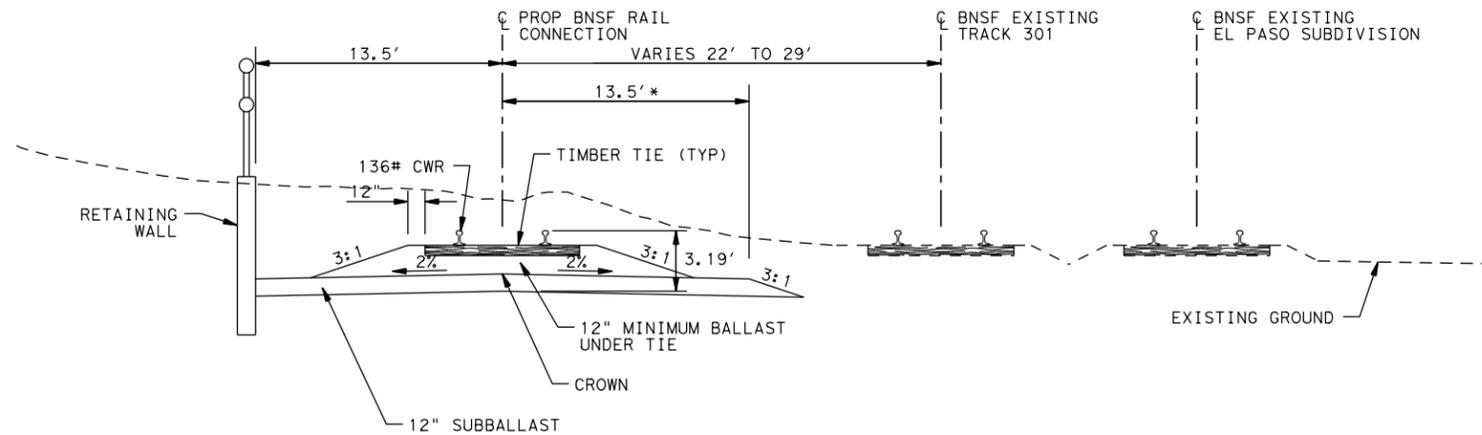
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TYPICAL SECTION
 STA 23+83 TO STA 24+15
 *STA 23+83 TO STA 24+15 (Ea OF 0.75")



TYPICAL SECTION
 STA 27+00 TO STA 36+00
 *STA 27+00 TO 28+00.44 13.88' TYP (Ea OF 0.75")
 *STA 28+00.44 TO STA 28+40.44 VARIES 13.5' TO 13.88' (Ea FROM 0" TO 0.75")

NOTES:
 TRACK TYPICAL SECTIONS, TRACK SUPERELEVATION,
 AND TIMBER TIES SHALL FOLLOW BNSF STANDARDS.
 CONTRACTOR SHALL NOT EXCAVATE WITHIN 13
 FEET OF EXISTING TRACK CENTERLINES.

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 Date: 18-DEC-2013

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BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 BNSF RAIL CONNECTION

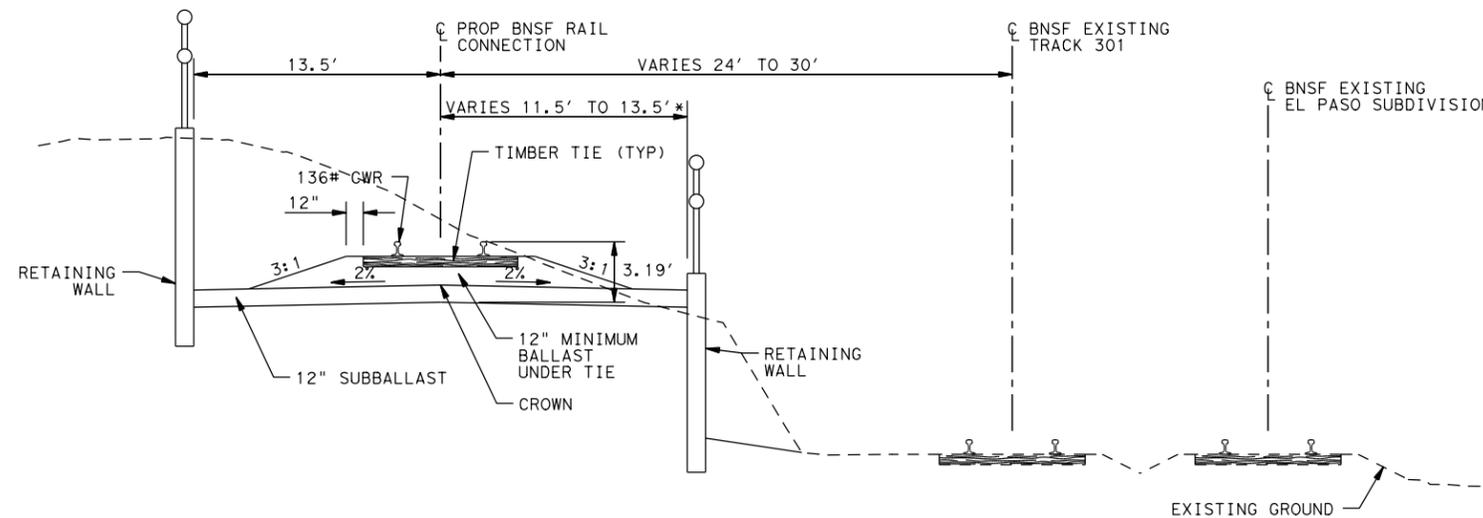
SHEET 2 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	12

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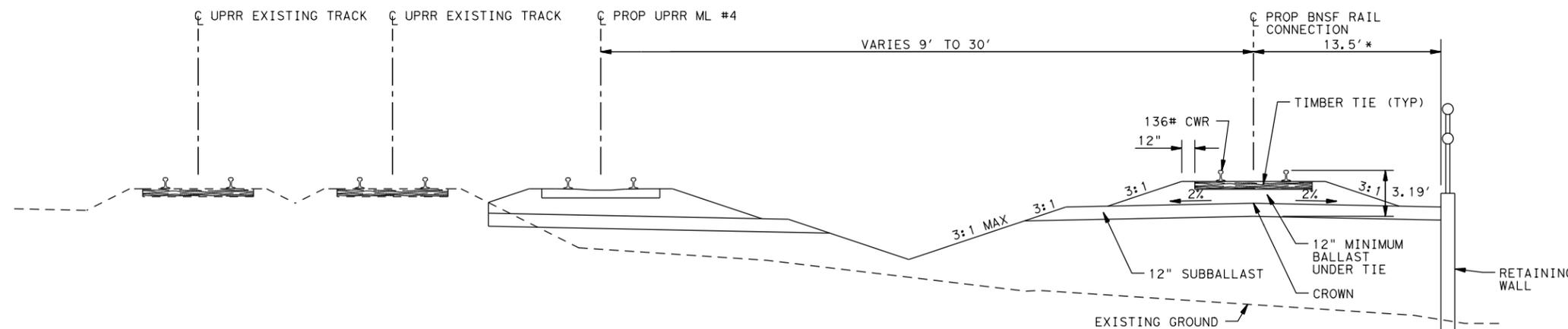
TYPICAL SECTION

STA 36+00 TO STA 45+40

- *STA 40+87.37 TO STA 41+27.37 (Ea FROM 0" TO 0.75")
- *STA 41+27.37 TO STA 43+20.31 (Ea OF 0.75")
- *STA 43+20.31 TO STA 43+60.31 (Ea FROM 0" TO 0.75")
- *STA 45+22.07 TO STA 45+40 (Ea FROM 0" TO 1.25")

NOTES:

TRACK TYPICAL SECTIONS, TRACK SUPERELEVATION,
 AND TIMBER TIES SHALL FOLLOW BNSF STANDARDS.
 CONTRACTOR SHALL NOT EXCAVATE WITHIN 13
 FEET OF EXISTING TRACK CENTERLINES.



TYPICAL SECTION

STA 45+40 TO STA 50+15.34

- *STA 45+40 TO STA 45+82.09 (Ea FROM 0" TO 1.25")
- *STA 45+82.07 TO STA 49+55.34 (Ea OF 1.25")
- *STA 49+55.34 TO STA 50+15.34 (Ea FROM 0" TO 1.25")

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 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 BNSF RAIL CONNECTION

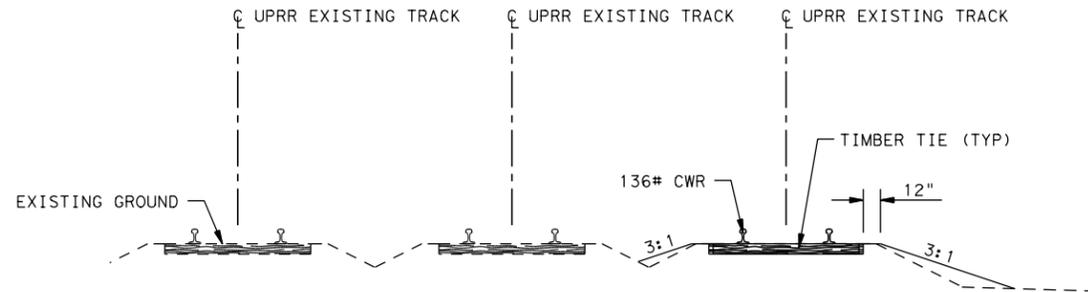
SHEET 3 OF 4

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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	13

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Model Name:

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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PP-TYP09.dgn



TYPICAL SECTION
 STA 50+15.34 TO STA 51+81.05

NOTES:
 TRACK TYPICAL SECTIONS, TRACK SUPERELEVATION,
 AND TIMBER TIES SHALL FOLLOW BNSF STANDARDS.
 CONTRACTOR SHALL NOT EXCAVATE WITHIN 13
 FEET OF EXISTING TRACK CENTERLINES.

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

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BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 BNSF RAIL CONNECTION

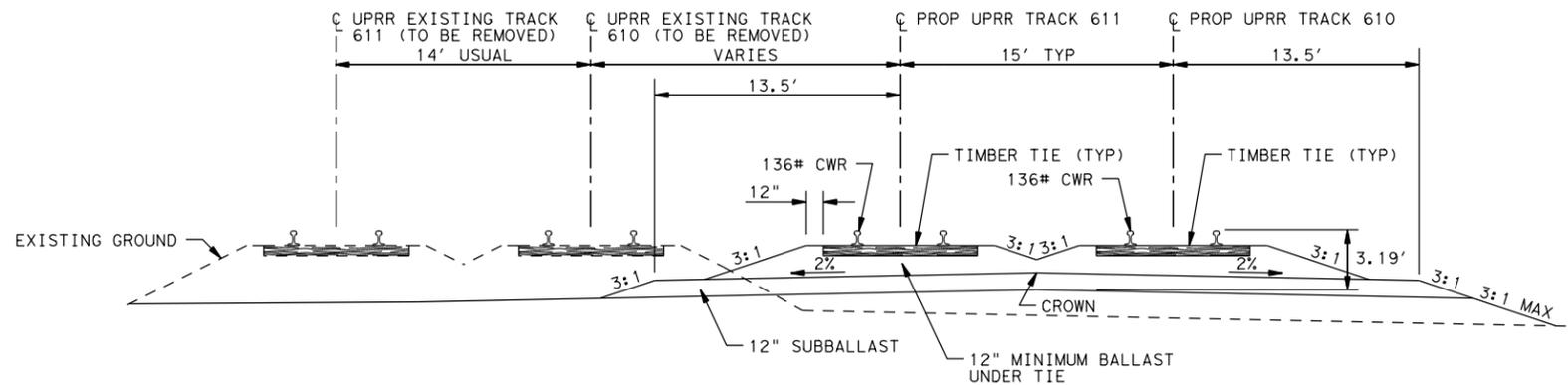
SHEET 4 OF 4

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK:	JAM	ELP	EL PASO	2552	04
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				027	14

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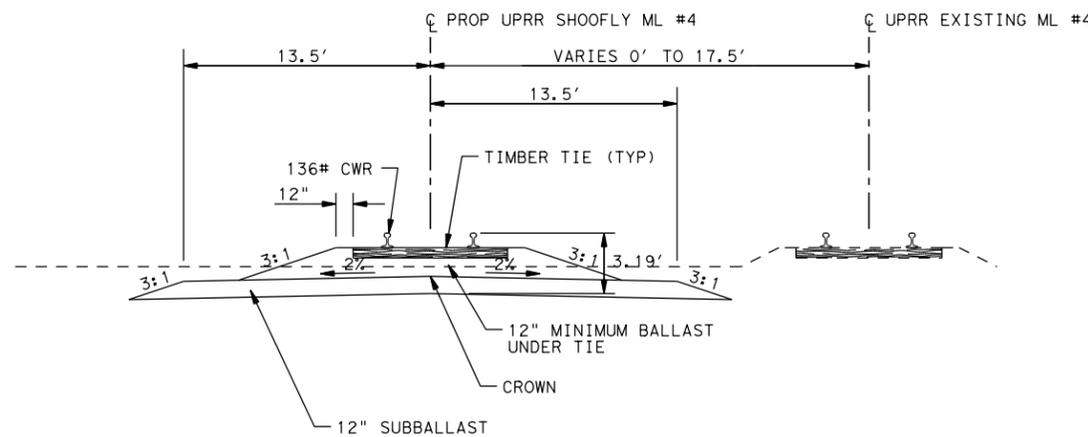
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TYPICAL SECTION

STA 200+00.63 TO STA 208+16.84 (PROP UPRR TRACK 610)
 STA 102+35.27 TO STA 112+13.99 (PROP UPRR TRACK 611)



TYPICAL SECTION

STA 12+52.41 TO STA 22+87.96

NOTES:

TRACK TYPICAL SECTIONS SHALL FOLLOW UNION PACIFIC RAILROAD ENGINEERING STANDARD DRAWING 0001B "ROADBED SECTIONS FOR WOOD TIE TRACK CONSTRUCTION".

TRACK SUPERELEVATION SHALL FOLLOW STANDARD DRAWING 0001B AS APPLICABLE AND DEFINED FOR EACH TYPICAL SECTION.

TIMBER TIES SHALL FOLLOW STANDARD DRAWING 210D.

CONTRACTOR SHALL NOT EXCAVATE WITHIN 13 FEET OF EXISTING TRACK CENTERLINES.

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TYPICAL SECTIONS
 PROP UPRR TRACK 610/
 PROP UPRR TRACK 611/
 UPRR SHOOFLY ML #4

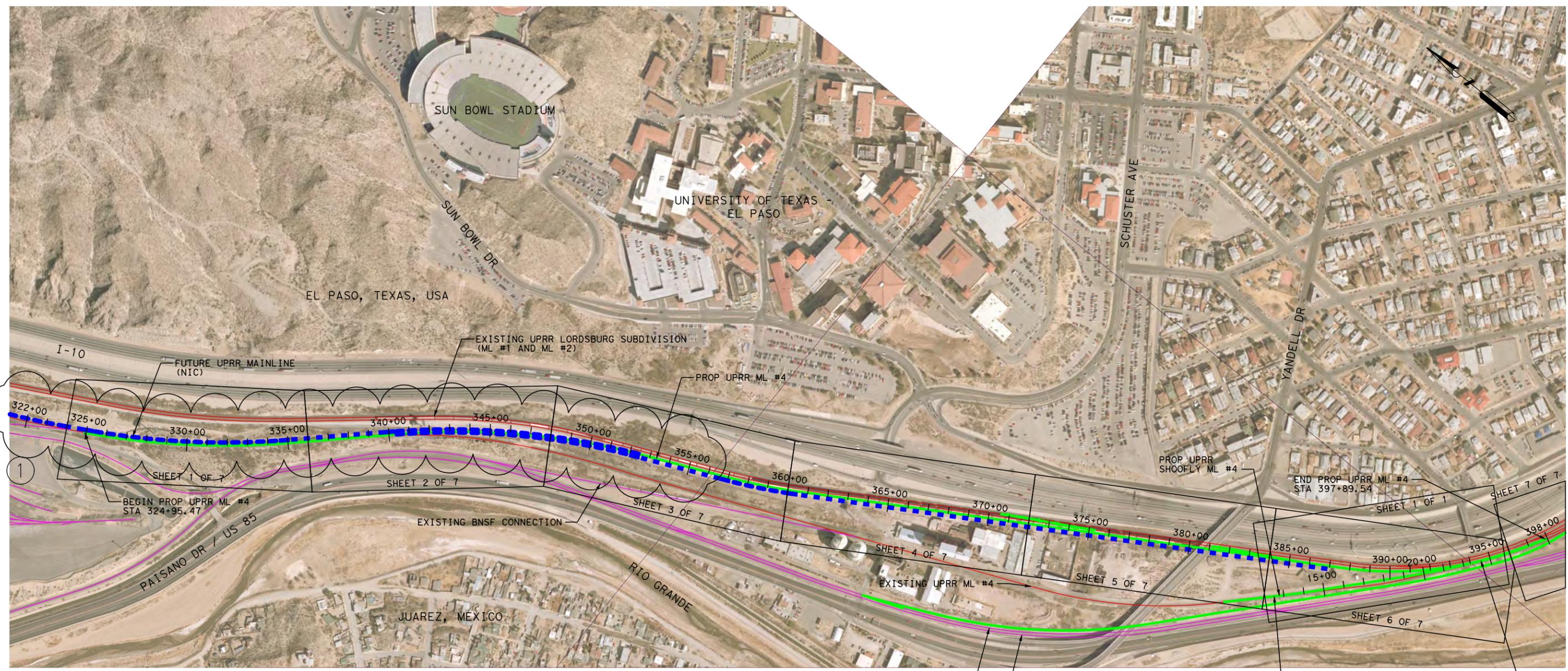
SHEET 1 OF 1

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	15

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Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-KM01.dgn



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - - - FUTURE TRACK (NIC)

BEGIN PROP UPRR ML #4 STA 324+95.47
 END PROP UPRR ML #4 STA 397+89.54
 BEGIN PROP UPRR SHOOFLY ML #4 STA 12+52.41
 END PROP UPRR SHOOFLY ML #4 STA 22+87.96
 EXISTING BNSF TRACK 301
 EXISTING BNSF EL PASO SUBDIVISION

SCALE: PLAN 1" = 500'

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



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 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 KEY MAP
 PROP UPRR ML #4/
 UPRR SHOOFLY ML #4

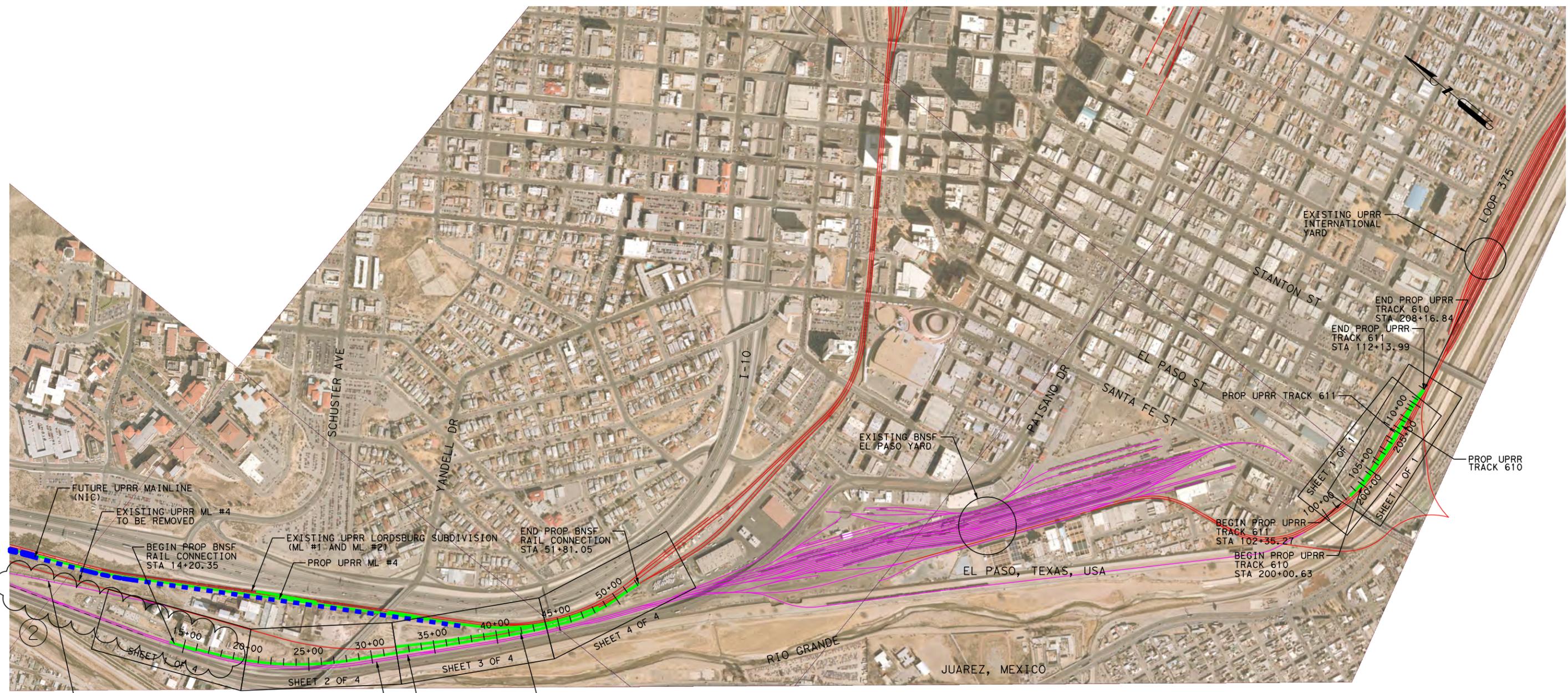
SHEET 1 OF 1

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	16

Scale: 800,000000:1.000000
 Plotted on: 18-DEC-2013 11:41

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.dgn
 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-KM02.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - - - FUTURE TRACK (NIC)

EXISTING BNSF CONNECTION
 BEGIN PROP BNSF RAIL CONNECTION STA 14+20.35
 EXISTING UPRR LORDSBURG SUBDIVISION (ML #1 AND ML #2)
 PROP UPRR ML #4
 END PROP BNSF RAIL CONNECTION STA 51+81.05
 PROP BNSF RAIL CONNECTION
 EXISTING BNSF TRACK 301
 EXISTING BNSF EL PASO SUBDIVISION

EXISTING UPRR INTERNATIONAL YARD
 END PROP UPRR TRACK 610 STA 208+16.84
 END PROP UPRR TRACK 611 STA 112+13.99
 PROP UPRR TRACK 611
 BEGIN PROP UPRR TRACK 611 STA 102+36.27
 BEGIN PROP UPRR TRACK 610 STA 200+00.63
 PROP UPRR TRACK 610

SCALE: PLAN 1" = 800'

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY


HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 KEY MAP
 BNSF RAIL CONNECTION/
 PROP UPRR TRACK 610/611

SHEET 1 OF 1

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	17

Scale: 100.000000:1.000000
Plotted on: 18-DEC-2013 11:44

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-HAD01.dgn

PROP UPRR ML #4

	STATION	NORTHING	EASTING
Element: Linear			
PT	323+92.45	10665088.0593	376234.4541
PS	324+95.47	10664997.8965	376284.2955
(MATCH EXISTING UPRR ML #4)			
Tangent Direction:	S 28° 56' 01" E		
Tangent Length:	103.02		
Element: Clothoid			
PS	324+95.47	10664997.8965	376284.2955
SPI	325+28.81	10664968.7237	376300.4220
PSC	325+45.47	10664954.1903	376308.5805
Entrance Radius:	0.00		
Exit Radius:	3819.83		
Length:	50.00		
Angle:	0° 22' 30" Left		
Constant:	437.03		
Long Tangent:	33.33		
Short Tangent:	16.67		
Long Chord:	50.00		
Xs:	50.00		
Ys:	0.11		
P:	0.03		
K:	25.00		
Tangent Direction:	S 28° 56' 01" E		
Radial Direction:	S 61° 03' 59" W		
Chord Direction:	S 29° 03' 31" E		
Radial Direction:	S 60° 41' 29" W		
Tangent Direction:	S 29° 18' 31" E		
Element: Circular			
PSC	325+45.47	10664954.1903	376308.5805
PI	330+09.86	10664549.2467	376535.9030
CC	10666824.0396	379639.4584	
PCS	334+69.71	10664210.5662	376853.6299
Radius:	3819.83		
Delta:	13° 51' 47" Left		
Degree of Curvature(Chord):	1° 30' 00"		
Length:	924.24		
Tangent:	464.39		
Chord:	921.98		
Middle Ordinate:	27.92		
External:	28.12		
Tangent Direction:	S 29° 18' 31" E		
Radial Direction:	S 60° 41' 29" W		
Chord Direction:	S 36° 14' 24" E		
Radial Direction:	S 46° 49' 42" W		
Tangent Direction:	S 43° 10' 18" E		
Element: Clothoid			
PCS	334+69.71	10664210.5662	376853.6299
SPI	334+86.38	10664198.4111	376865.0330
PT	335+19.71	10664174.2505	376887.9979
Entrance Radius:	3819.83		
Exit Radius:	0.00		
Length:	50.00		
Angle:	0° 22' 30" Left		
Constant:	437.03		
Long Tangent:	33.33		
Short Tangent:	16.67		
Long Chord:	50.00		
Xs:	50.00		
Ys:	0.11		
P:	0.03		
K:	25.00		
Tangent Direction:	S 43° 10' 18" E		
Radial Direction:	S 46° 49' 42" W		
Chord Direction:	S 43° 25' 18" E		
Radial Direction:	S 46° 27' 12" W		
Tangent Direction:	S 43° 32' 48" E		
Element: Linear			
PT	335+19.71	10664174.2505	376887.9979
PS	340+35.62	10663800.3154	377243.4279
Tangent Direction:	S 43° 32' 48" E		
Tangent Length:	515.91		
Element: Clothoid			
PS	340+35.62	10663800.3154	377243.4279
SPI	340+68.95	10663776.1548	377266.3928
PSC	340+85.62	10663763.9955	377277.7916
Entrance Radius:	0.00		
Exit Radius:	3618.80		
Length:	50.00		
Angle:	0° 23' 45" Right		
Constant:	425.37		
Long Tangent:	33.33		
Short Tangent:	16.67		
Long Chord:	50.00		
Xs:	50.00		
Ys:	0.12		
P:	0.03		
K:	25.00		
Tangent Direction:	S 43° 32' 48" E		
Radial Direction:	S 46° 27' 12" W		
Chord Direction:	S 43° 24' 53" E		
Radial Direction:	S 46° 50' 57" W		
Tangent Direction:	S 43° 09' 03" E		
Element: Circular			
PSC	340+85.62	10663763.9955	377277.7916
PI	346+74.40	10663334.4449	377680.4730
CC	10661289.0250	374637.6770	
PCS	352+52.95	10662799.3952	377926.2125
Radius:	3618.80		
Delta:	18° 28' 56" Right		
Degree of Curvature(Chord):	1° 35' 00"		

CURVE ML4-1
V=40 MPH
Dc=01° 30' 00"
R=3819.83'
Ls=50'
Ea=3/4"

PROP UPRR ML #4 (CONT)

	STATION	NORTHING	EASTING
Element: Linear			
PT	353+02.95	10662753.8628	377946.8714
PS	356+72.59	10662416.9017	378098.8220
Tangent Direction:	S 24° 16' 22" E		
Tangent Length:	369.64		
Element: Clothoid			
PS	356+72.59	10662416.9017	378098.8220
SPI	357+12.59	10662380.4375	378115.2653
PSC	357+32.59	10662362.2925	378123.6775
Entrance Radius:	0.00		
Exit Radius:	2864.93		
Length:	60.00		
Angle:	0° 36' 00" Left		
Constant:	414.60		
Long Tangent:	40.00		
Short Tangent:	20.00		
Long Chord:	60.00		
Xs:	60.00		
Ys:	0.21		
P:	0.05		
K:	30.00		
Tangent Direction:	S 24° 16' 22" E		
Radial Direction:	S 65° 43' 38" W		
Chord Direction:	S 24° 28' 22" E		
Radial Direction:	S 65° 07' 38" W		
Tangent Direction:	S 24° 52' 22" E		
Element: Circular			
PSC	357+32.59	10662362.2925	378123.6775
PI	358+71.22	10662236.5218	378181.9854
CC	10663567.2936	380722.8738	
PCS	360+09.63	10662116.9683	378252.1642
Radius:	2864.93		
Delta:	5° 32' 26" Left		
Degree of Curvature(Chord):	2° 00' 00"		
Length:	277.04		
Tangent:	138.63		
Chord:	276.93		
Middle Ordinate:	3.35		
External:	3.35		
Tangent Direction:	S 24° 52' 22" E		
Radial Direction:	S 65° 07' 38" W		
Chord Direction:	S 27° 38' 35" E		
Radial Direction:	S 59° 35' 12" W		
Tangent Direction:	S 30° 24' 48" E		
Element: Clothoid			
PCS	360+09.63	10662116.9683	378252.1642
SPI	360+29.63	10662099.7202	378262.2890
PT	360+69.63	10662065.4381	378282.8985
Entrance Radius:	2864.93		
Exit Radius:	0.00		
Length:	60.00		
Angle:	0° 36' 00" Left		
Constant:	414.60		
Long Tangent:	40.00		
Short Tangent:	20.00		
Long Chord:	60.00		
Xs:	60.00		
Ys:	0.21		
P:	0.05		
K:	30.00		
Tangent Direction:	S 30° 24' 48" E		
Radial Direction:	S 59° 35' 12" W		
Chord Direction:	S 30° 48' 48" E		
Radial Direction:	S 58° 59' 12" W		
Tangent Direction:	S 31° 00' 48" E		
Element: Linear			
PT	360+69.63	10662065.4381	378282.8985
PS	386+92.71	10659817.3323	379634.4032
Tangent Direction:	S 31° 00' 48" E		
Tangent Length:	2623.08		

CURVE ML4-2
V=40 MPH
Dc=01° 35' 00"
R=3618.80'
Ls=50'
Ea=3/4"

1

CURVE ML4-3
V=40 MPH
Dc=02° 00' 00"
R=2864.93'
Ls=60'
Ea=1/4"

PROP UPRR ML #4 (CONT)

	STATION	NORTHING	EASTING
Element: Clothoid			
PS	386+92.71	10659817.3323	379634.4032
SPI	387+86.72	10659736.7634	379682.8392
PSC	388+33.71	10659697.4390	379708.5920
Entrance Radius:	0.00		
Exit Radius:	1830.41		
Length:	141.00		
Angle:	2° 12' 24" Left		
Constant:	508.02		
Long Tangent:	94.01		
Short Tangent:	47.01		
Long Chord:	140.99		
Xs:	140.98		
Ys:	1.81		
P:	0.45		
K:	70.50		
Tangent Direction:	S 31° 00' 48" E		
Radial Direction:	S 58° 59' 12" W		
Chord Direction:	S 31° 44' 56" E		
Radial Direction:	S 56° 46' 48" W		
Tangent Direction:	S 33° 13' 12" E		
Element: Circular			
PSC	388+33.71	10659697.4390	379708.5920
PI	392+47.99	10659350.8654	379935.5565
CC	10660700.2382	381239.8612	
PCS	396+48.54	10659135.8003	380289.6371
Radius:	1830.41		
Delta:	25° 30' 21" Left		
Degree of Curvature(Chord):	3° 07' 50"		
Length:	814.83		
Tangent:	414.28		
Chord:	808.12		
Middle Ordinate:	45.15		
External:	46.30		
Tangent Direction:	S 33° 13' 12" E		
Radial Direction:	S 56° 46' 48" W		
Chord Direction:	S 45° 58' 23" E		
Radial Direction:	S 31° 16' 27" W		
Tangent Direction:	S 58° 43' 33" E		
Element: Clothoid			
PCS	396+48.54	10659135.8003	380289.6371
SPI	396+95.55	10659111.3977	380329.8134
PSC	397+89.54	10659065.7255	380411.9805
Entrance Radius:	1830.41		
Exit Radius:	0.00		
Length:	141.00		
Angle:	2° 12' 24" Left		
Constant:	508.02		
Long Tangent:	94.01		
Short Tangent:	47.01		
Long Chord:	140.99		
Xs:	140.98		
Ys:	1.81		
P:	0.45		
K:	70.50		
Tangent Direction:	S 58° 43' 33" E		
Radial Direction:	S 31° 16' 27" W		
Chord Direction:	S 60° 11' 50" E		
Radial Direction:	S 29° 04' 02" W		
Tangent Direction:	S 60° 55' 58" E		
Element: Circular			
PSC	397+89.54	10659065.7255	380411.9805
(MATCH EXISTING UPRR ML #4)			
PI	398+60.93	10659031.0432	380474.3761
CC	10659813.2070	380827.4644	
PT	399+31.98	10659007.1857	380541.6583
Radius:	855.19		
Delta:	9° 32' 36" Left		
Degree of Curvature(Chord):	6° 42' 13"		
Length:	142.44		
Tangent:	71.39		
Chord:	142.28		
Middle Ordinate:	2.96		
External:	2.97		
Tangent Direction:	S 60° 55' 58" E		
Radial Direction:	S 29° 04' 02" W		
Chord Direction:	S 65° 42' 16" E		
Radial Direction:	S 19° 31' 26" W		
Tangent Direction:	S 70° 28' 34" E		
INTERIM REVIEW ONLY	Document incomplete: not intended for permit, bidding or construction. Engineer: JOSHUA A MIETH P.E. Serial No.: 97346 Date: 18-DEC-2013		

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
HORIZONTAL ALIGNMENT
DATA
PROP UPRR ML #4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	18

PROP BNSF RAIL CONNECTION

	STATION	NORTHING	EASTING
Element: Linear			
POS #15	14+20.35	10661483.4638	378088.5609
(MATCH EXISTING BNSF TRACK 301)			
PITO #15	14+60.33	10661446.2603	378103.1997
(MATCH EXISTING BNSF TRACK 301)			
Tangent Direction:	S 21°28'42.88" E		
Tangent Length:	39.98		
Element: Linear			
PITO #15	14+60.33	10661446.2603	378103.1997
PS	17+71.32	10661165.0859	378236.0915
Tangent Direction:	S 25°17'48.81" E		
Tangent Length:	311.00		
Element: Clothoid			
PS	17+71.32	10661165.0859	378236.0915
SPI	17+97.99	10661140.9764	378247.4865
PSC	18+11.32	10661128.9658	378253.2765
Entrance Radius:	0.00		
Exit Radius:	2599.59		
Length:	40.00		
Angle:	0°26'26.90" Left		
Constant:	322.46		
Long Tangent:	26.67		
Short Tangent:	13.33		
Long Chord:	40.00		
Xs:	40.00		
Ys:	0.10		
P:	0.03		
K:	20.00		
Tangent Direction:	S 25°17'48.81" E		
Radial Direction:	S 64°42'11.19" W		
Chord Direction:	S 25°26'37.78" E		
Radial Direction:	S 64°15'44.28" W		
Tangent Direction:	S 25°44'15.72" E		
Element: Circular			
PSC	18+11.32	10661128.9658	378253.2765
PI	23+11.94	10660678.0168	378470.6691
CC		10662257.8429	380594.9658
PCS	28+00.44	10660340.0530	378839.9860
Radius:	2599.59		
Delta:	21°48'01.81" Left		
Degree of Curvature(Chord):	2°12'15.00"		
Length:	989.12		
Tangent:	500.61		
Chord:	983.16		
Middle Ordinate:	46.90		
External:	47.76		
Tangent Direction:	S 25°44'15.72" E		
Radial Direction:	S 64°15'44.28" W		
Chord Direction:	S 36°38'16.62" E		
Radial Direction:	S 42°27'42.47" W		
Tangent Direction:	S 47°32'17.53" E		
Element: Clothoid			
PCS	28+00.44	10660340.0530	378839.9860
SPI	28+13.78	10660331.0516	378849.8224
PT	28+40.44	10660313.2008	378869.6331
Entrance Radius:	2599.59		
Exit Radius:	0.00		
Length:	40.00		
Angle:	0°26'26.90" Left		
Constant:	322.46		
Long Tangent:	26.67		
Short Tangent:	13.33		
Long Chord:	40.00		
Xs:	40.00		
Ys:	0.10		
P:	0.03		
K:	20.00		
Tangent Direction:	S 47°32'17.53" E		
Radial Direction:	S 42°27'42.47" W		
Chord Direction:	S 47°49'55.46" E		
Radial Direction:	S 42°01'15.57" W		
Tangent Direction:	S 47°58'44.43" E		
Element: Linear			
PT	28+40.44	10660313.2008	378869.6331
PS	40+87.37	10659478.5062	379795.9727
Tangent Direction:	S 47°58'44.43" E		
Tangent Length:	1246.92		
Element: Clothoid			
PS	40+87.37	10659478.5062	379795.9727
SPI	41+14.04	10659460.6554	379815.7834
PSC	41+27.37	10659451.7994	379825.7508
Entrance Radius:	0.00		
Exit Radius:	2864.93		
Length:	40.00		
Angle:	0°23'59.93" Left		
Constant:	338.52		
Long Tangent:	26.67		
Short Tangent:	13.33		
Long Chord:	40.00		
Xs:	40.00		
Ys:	0.09		
P:	0.02		
K:	20.00		
Tangent Direction:	S 47°58'44.43" E		
Radial Direction:	S 42°01'15.57" W		
Chord Direction:	S 48°06'44.40" E		
Radial Direction:	S 41°37'15.64" W		
Tangent Direction:	S 48°22'44.36" E		

CURVE BNSF-1
V=30 MPH
Dc=02°12'15"
R=2599.59'
Ls=40'
Ea=3/4"

CURVE BNSF-2
V=30 MPH
Dc=02°00'00"
R=2864.93'
Ls=40'
Ea=3/4"

CURVE BNSF-2
V=30 MPH
Dc=05°00'00"
R=1146.28'
Ls=60'
Ea=1/4"

PROP BNSF RAIL CONNECTION (CONT)

	STATION	NORTHING	EASTING
Element: Circular			
PSC	41+27.37	10659451.7994	379825.7508
PI	42+23.88	10659387.6981	379897.8965
CC		10661593.4942	381728.6415
PCS	43+20.31	10659328.5973	379974.1924
Radius:	2864.93		
Delta:	3°51'31.33" Left		
Degree of Curvature(Chord):	2°00'00.00"		
Length:	192.94		
Tangent:	96.51		
Chord:	192.91		
Middle Ordinate:	1.62		
External:	1.63		
Tangent Direction:	S 48°22'44.36" E		
Radial Direction:	S 41°37'15.64" W		
Chord Direction:	S 50°18'30.02" E		
Radial Direction:	S 37°45'44.32" W		
Tangent Direction:	S 52°14'15.68" E		
Element: Clothoid			
PCS	43+20.31	10659328.5973	379974.1924
SPI	43+33.65	10659320.4321	379984.7332
PT	43+60.31	10659304.2493	380005.9283
Entrance Radius:	2864.93		
Exit Radius:	0.00		
Length:	40.00		
Angle:	0°23'59.93" Left		
Constant:	338.52		
Long Tangent:	26.67		
Short Tangent:	13.33		
Long Chord:	40.00		
Xs:	40.00		
Ys:	0.09		
P:	0.02		
K:	20.00		
Tangent Direction:	S 52°14'15.68" E		
Radial Direction:	S 37°45'44.32" W		
Chord Direction:	S 52°30'15.63" E		
Radial Direction:	S 37°21'44.39" W		
Tangent Direction:	S 52°38'15.61" E		
Element: Linear			
PT	43+60.31	10659304.2493	380005.9283
PS	45+22.07	10659206.0850	380134.4970
Tangent Direction:	S 52°38'15.61" E		
Tangent Length:	161.76		
Element: Clothoid			
PS	45+22.07	10659206.0850	380134.4970
SPI	45+62.07	10659181.8100	380166.2907
PSC	45+82.07	10659170.0923	380182.5002
Entrance Radius:	0.00		
Exit Radius:	1146.28		
Length:	60.00		
Angle:	1°29'58.29" Left		
Constant:	262.25		
Long Tangent:	40.00		
Short Tangent:	20.00		
Long Chord:	60.00		
Xs:	60.00		
Ys:	0.52		
P:	0.13		
K:	30.00		
Tangent Direction:	S 52°38'15.61" E		
Radial Direction:	S 37°21'44.39" W		
Chord Direction:	S 53°08'15.03" E		
Radial Direction:	S 35°51'46.11" W		
Tangent Direction:	S 54°08'13.89" E		
Element: Circular			
PSC	45+82.07	10659170.0923	380182.5002
PI	47+70.38	10659059.7757	380335.1051
CC		10660099.0623	380854.0438
PCS	49+55.34	10659004.0769	380514.9818
Radius:	1146.28		
Delta:	18°39'27.65" Left		
Degree of Curvature(Chord):	5°00'00.00"		
Length:	373.27		
Tangent:	188.30		
Chord:	371.62		
Middle Ordinate:	15.16		
External:	15.36		
Tangent Direction:	S 54°08'13.89" E		
Radial Direction:	S 35°51'46.11" W		
Chord Direction:	S 63°27'57.72" E		
Radial Direction:	S 17°12'18.46" W		
Tangent Direction:	S 72°47'41.54" E		
Element: Clothoid			
PCS	49+55.34	10659004.0769	380514.9818
SPI	49+75.35	10658998.1606	380534.0881
PT	50+15.34	10658987.3325	380572.5961
Entrance Radius:	1146.28		
Exit Radius:	0.00		
Length:	60.00		
Angle:	1°29'58.29" Left		
Constant:	262.25		
Long Tangent:	40.00		
Short Tangent:	20.00		
Long Chord:	60.00		
Xs:	60.00		
Ys:	0.52		
P:	0.13		
K:	30.00		
Tangent Direction:	S 72°47'41.54" E		
Radial Direction:	S 17°12'18.46" W		
Chord Direction:	S 73°47'40.41" E		
Radial Direction:	S 15°42'20.17" W		
Tangent Direction:	S 74°17'39.83" E		

PROP BNSF RAIL CONNECTION (CONT)

	STATION	NORTHING	EASTING
Element: Linear			
PT	50+15.34	10658987.3325	380572.5961
PITO #15	51+41.07	10658953.2999	380693.6253
Tangent Direction:	S 74°17'39.83" E		
Tangent Length:	125.72		
Element: Linear			
PITO #15	51+41.07	10658953.2999	380693.6253
(MATCH EXISTING UPRR ML #4)			
POS #15	51+81.05	10658939.9386	380731.3064
(MATCH EXISTING UPRR ML #4)			
Tangent Direction:	S 70°28'33.83" E		
Tangent Length:	39.98		

INTERIM REVIEW ONLY
Document incomplete: not intended for permit, bidding or construction.
Engineer: JOSHUA A MIETH
P.E. Serial No.: 97346
Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY
			
			
HNTB Corporation The HNTB Companies Engineers Architects Planners TBPE FIRM REGISTRATION NO.: 420			
BORDER HIGHWAY WEST (LP 375) HORIZONTAL ALIGNMENT DATA BNSF RAIL CONNECTION			
SHEET 1 OF 1			
DGN: RGN	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO. XX XXXX (XXX)
CHK: JAM			HIGHWAY NO. BHW RAIL
DWG: RGN	DIST. ELP	COUNTY EL PASO	CONT. NO. 2552
CHK: JAM			SECT. NO. 04
			JOB NO. 027
			SHEET NO. 19

Scale: 100.000000:1.000000
Plotted on: 18-DEC-2013 11:44

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
Design File Name: IP*PWP: dms79715\LP375BHW-RR-PP-HAD02.dgn

PROP UPRR TRACK 610

PROP UPRR TRACK 611

STATION NORTHING EASTING

STATION NORTHING EASTING

Element: Circular
 PC 199+82.39 10654972.4210 384945.3670
 PI 199+91.51 10654972.8207 384954.4828
 CC 10655828.7925 384907.8178
 PT 200+00.63 10654973.4144 384963.5881
 Radius: 857.19
 Delta: 1° 13' 11" Left
 Degree of Curvature (Chord): 6° 41' 16"
 Length: 18.25
 Tangent: 9.12
 Chord: 18.25
 Middle Ordinate: 0.05
 External: 0.05
 Tangent Direction: N 87° 29' 22" E
 Radial Direction: S 2° 30' 38" E
 Chord Direction: N 86° 52' 46" E
 Radial Direction: S 3° 43' 49" E
 Tangent Direction: N 86° 16' 11" E

Element: Linear
 PT 200+00.63 10654973.4144 384963.5881
 (MATCH EXISTING UPRR TRACK 610)
 PC 203+46.94 10654995.9454 385309.1587
 Tangent Direction: N 86° 16' 11" E
 Tangent Length: 346.30

Element: Circular
 PC 203+46.94 10654995.9454 385309.1587
 PI 203+91.51 10654998.8453 385353.6353
 CC 10655828.1987 385254.8962
 PT 204+36.00 10655006.4688 385397.5495
 Radius: 834.02
 Delta: 6° 07' 05" Left
 Degree of Curvature (Chord): 6° 52' 26"
 Length: 89.06
 Tangent: 44.57
 Chord: 89.02
 Middle Ordinate: 1.19
 External: 1.19
 Tangent Direction: N 86° 16' 11" E
 Radial Direction: S 3° 43' 49" E
 Chord Direction: N 83° 12' 38" E
 Radial Direction: S 9° 50' 54" E
 Tangent Direction: N 80° 09' 06" E

CURVE
 TRACK 610-1
 V=15 MPH
 Dc=06° 07' 05"
 R=834.02'

Element: Linear
 PT 204+36.00 10655006.4688 385397.5495
 PC 206+70.78 10655046.6271 385628.8746
 (MATCH EXISTING UPRR TRACK 610)
 Tangent Direction: N 80° 09' 06" E
 Tangent Length: 234.78

Element: Circular
 PC 206+70.78 10655046.6271 385628.8746
 PI 207+43.86 10655059.1263 385700.8739
 CC 10653369.4931 385920.0272
 PT 208+16.84 10655065.4090 385773.6795
 Radius: 1702.22
 Delta: 4° 54' 59" Right
 Degree of Curvature (Chord): 3° 21' 59"
 Length: 146.06
 Tangent: 73.08
 Chord: 146.02
 Middle Ordinate: 1.57
 External: 1.57
 Tangent Direction: N 80° 09' 06" E
 Radial Direction: S 9° 50' 54" E
 Chord Direction: N 82° 36' 35" E
 Radial Direction: S 4° 55' 55" E
 Tangent Direction: N 85° 04' 05" E

CURVE
 TRACK 610-2
 V=15 MPH
 Dc=03° 21' 59"
 R=1702.22'

Element: Linear
 PT 208+16.84 10655065.4090 385773.6795
 (MATCH EXISTING UPRR TRACK 610)
 POE 208+93.77 10655072.0225 385850.3185
 Tangent Direction: N 85° 04' 05" E
 Tangent Length: 76.92

Element: Circular
 (MATCH EXISTING UPRR TRACK 611)
 PCC 102+44.25 10655000.7053 384836.7761
 PI 103+34.14 10654985.9597 384925.4509
 CC 10655768.7656 384964.4958
 PT 104+23.24 10654991.8082 385015.1530
 Radius: 778.61
 Delta: 13° 10' 18" Left
 Degree of Curvature (Chord): 7° 21' 50"
 Length: 178.99
 Tangent: 89.89
 Chord: 178.60
 Middle Ordinate: 5.14
 External: 5.17
 Tangent Direction: S 80° 33' 32" E
 Radial Direction: S 9° 26' 28" W
 Chord Direction: S 87° 08' 40" E
 Radial Direction: S 3° 43' 49" E
 Tangent Direction: N 86° 16' 11" E

CURVE
 TRACK 611-1
 V=15 MPH
 Dc=07° 26' 56"
 R=769.74'

Element: Linear
 PT 104+23.24 10654991.8082 385015.1530
 PC 107+16.89 10655010.9136 385308.1828
 Tangent Direction: N 86° 16' 11" E
 Tangent Length: 293.65

Element: Circular
 PC 107+16.89 10655010.9136 385308.1828
 PI 107+60.66 10655013.7613 385351.8595
 CC 10655828.1987 385254.8962
 PT 108+04.35 10655021.2478 385394.9839
 Radius: 819.02
 Delta: 6° 07' 05" Left
 Degree of Curvature (Chord): 7° 00' 00"
 Length: 87.46
 Tangent: 43.77
 Chord: 87.41
 Middle Ordinate: 1.17
 External: 1.17
 Tangent Direction: N 86° 16' 11" E
 Radial Direction: S 3° 43' 49" E
 Chord Direction: N 83° 12' 38" E
 Radial Direction: S 9° 50' 54" E
 Tangent Direction: N 80° 09' 06" E

CURVE
 TRACK 611-2
 V=15 MPH
 Dc=07° 00' 00"
 R=819.02'

Element: Linear
 PT 108+04.35 10655021.2478 385394.9839
 PC 110+49.72 10655063.2169 385636.7401
 Tangent Direction: N 80° 09' 06" E
 Tangent Length: 245.37

Element: Circular
 PC 110+49.72 10655063.2169 385636.7401
 PI 111+32.07 10655077.3017 385717.8731
 CC 10654137.5740 385797.4329
 PT 112+13.99 10655077.0575 385800.2193
 Radius: 939.49
 Delta: 10° 01' 06" Right
 Degree of Curvature (Chord): 6° 06' 05"
 Length: 164.27
 Tangent: 82.35
 Chord: 164.06
 Middle Ordinate: 3.59
 External: 3.60
 Tangent Direction: N 80° 09' 06" E
 Radial Direction: S 9° 50' 54" E
 Chord Direction: N 85° 09' 39" E
 Radial Direction: S 0° 10' 12" W
 Tangent Direction: S 89° 49' 48" E

CURVE
 TRACK 611-3
 V=15 MPH
 Dc=06° 06' 05"
 R=939.49'

Element: Linear
 PT 112+13.99 10655077.0575 385800.2193
 (MATCH EXISTING UPRR TRACK 611)
 POE 112+63.90 10655076.9095 385850.1225
 Tangent Direction: S 89° 49' 48" E
 Tangent Length: 49.90

Scale: 100.000000:1.000000
 Plotted on: 18-DEC-2013 11:44

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
 Design File Name: IP*PWP: dms79715\LP375BHW-RR-PP-HAD03.dgn

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 HORIZONTAL ALIGNMENT
 DATA
 PROP UPRR TRACK 610/
 TRACK 611

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	20

PROP UPRR SHOOFLY ML #4

PROP UPRR SHOOFLY ML #4 (CONT)

STATION NORTHING EASTING

Element: Linear
 POB 10+00.00 10660107.2460 379170.9092
 PS 12+52.41 10659930.1747 379350.7926

(MATCH EXISTING UPRR ML #4)
 Tangent Direction: S 45° 27' 05" E
 Tangent Length: 252.41

Element: Clothoid
 PS 12+52.41 10659930.1747 379350.7926
 SPI 12+92.41 10659902.1140 379379.2989
 PSC 13+12.41 10659888.1960 379393.6619

Entrance Radius: 0.00
 Exit Radius: 3819.83
 Length: 60.00
 Angle: 0° 27' 00" Left
 Constant: 478.74
 Long Tangent: 40.00
 Short Tangent: 20.00
 Long Chord: 60.00
 Xs: 60.00
 Ys: 0.16
 P: 0.04
 K: 30.00
 Tangent Direction: S 45° 27' 05" E
 Radial Direction: S 44° 32' 55" W
 Chord Direction: S 45° 36' 05" E
 Radial Direction: S 44° 05' 55" W
 Tangent Direction: S 45° 54' 05" E

Element: Circular
 PSC 13+12.41 10659888.1960 379393.6619
 PI 13+66.67 10659850.4360 379432.6290
 CC 14+20.93 10662631.3773 382051.8643
 PCS 14+20.93 10659813.7981 379472.6529

Radius: 3819.83
 Delta: 1° 37' 40" Left
 Degree of Curvature(Chord): 1° 30' 00"
 Length: 108.51
 Tangent: 54.26
 Chord: 108.51
 Middle Ordinate: 0.39
 External: 0.39
 Tangent Direction: S 45° 54' 05" E
 Radial Direction: S 44° 05' 55" W
 Chord Direction: S 46° 42' 55" E
 Radial Direction: S 42° 28' 16" W
 Tangent Direction: S 47° 31' 44" E

CURVE SHOO-1
 V=20 MPH
 Dc=01° 30' 00"
 R=3819.83'
 Ls=60'
 Ea=0"

Element: Clothoid
 PCS 14+20.93 10659813.7981 379472.6529
 SPI 14+40.93 10659800.2937 379487.4054
 PT 14+80.93 10659773.5175 379517.1215

Entrance Radius: 3819.83
 Exit Radius: 0.00
 Length: 60.00
 Angle: 0° 27' 00" Left
 Constant: 478.74
 Long Tangent: 40.00
 Short Tangent: 20.00
 Long Chord: 60.00
 Xs: 60.00
 Ys: 0.16
 P: 0.04
 K: 30.00
 Tangent Direction: S 47° 31' 44" E
 Radial Direction: S 42° 28' 16" W
 Chord Direction: S 47° 49' 44" E
 Radial Direction: S 42° 01' 16" W
 Tangent Direction: S 47° 58' 44" E

STATION NORTHING EASTING

Element: Linear
 PT 14+80.93 10659773.5175 379517.1215
 PC 19+05.68 10659489.1885 379832.6682
 Tangent Direction: S 47° 58' 44" E
 Tangent Length: 424.75

Element: Circular
 PC 19+05.68 10659489.1885 379832.6682
 PI 20+96.97 10659361.1360 379974.7803
 CC 10662372.1847 382430.4428
 PCC 22+87.96 10659247.6806 380128.7970

Radius: 3880.73
 Delta: 5° 38' 38" Left
 Degree of Curvature(Chord): 1° 28' 35"
 Length: 382.28
 Tangent: 191.29
 Chord: 382.12
 Middle Ordinate: 4.71
 External: 4.71
 Tangent Direction: S 47° 58' 44" E
 Radial Direction: S 42° 01' 16" W
 Chord Direction: S 50° 48' 04" E
 Radial Direction: S 36° 22' 37" W
 Tangent Direction: S 53° 37' 23" E

CURVE SHOO-2
 V=20 MPH
 Dc=01° 28' 35"
 R=3819.83'

Element: Circular
 PCC 22+87.96 10659247.6806 380128.7970
 (MATCH EXISTING UPRR ML #4)
 PI 24+56.60 10659147.6587 380264.5775
 CC 10661373.3743 381694.6756
 PT 26+24.79 10659065.7255 380411.9805

Radius: 2640.18
 Delta: 7° 18' 35" Left
 Degree of Curvature(Chord): 2° 10' 13"
 Length: 336.83
 Tangent: 168.64
 Chord: 336.60
 Middle Ordinate: 5.37
 External: 5.37
 Tangent Direction: S 53° 37' 23" E
 Radial Direction: S 36° 22' 37" W
 Chord Direction: S 57° 16' 40" E
 Radial Direction: S 29° 04' 02" W
 Tangent Direction: S 60° 55' 58" E

Scale: 100.000000:1.000000
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Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PP-HAD04.dgn

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 HORIZONTAL ALIGNMENT
 DATA
 PROP UPRR SHOOFLY
 ML #4

SHEET 1 OF 1

INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:			
CHK	DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:	
CHK	DWG:	JAM	ELP	EL PASO	2552	04	027	21

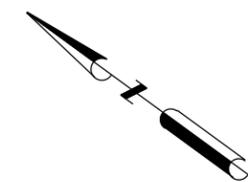
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Model Name:

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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PP-UPRR01.dgn



1



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. BORDER HIGHWAY WEST IS TO BE DESIGNED BY DEVELOPER. ACTUAL CLEARANCE TO BE DEVELOPED DURING DEVELOPER DESIGN.
 8. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

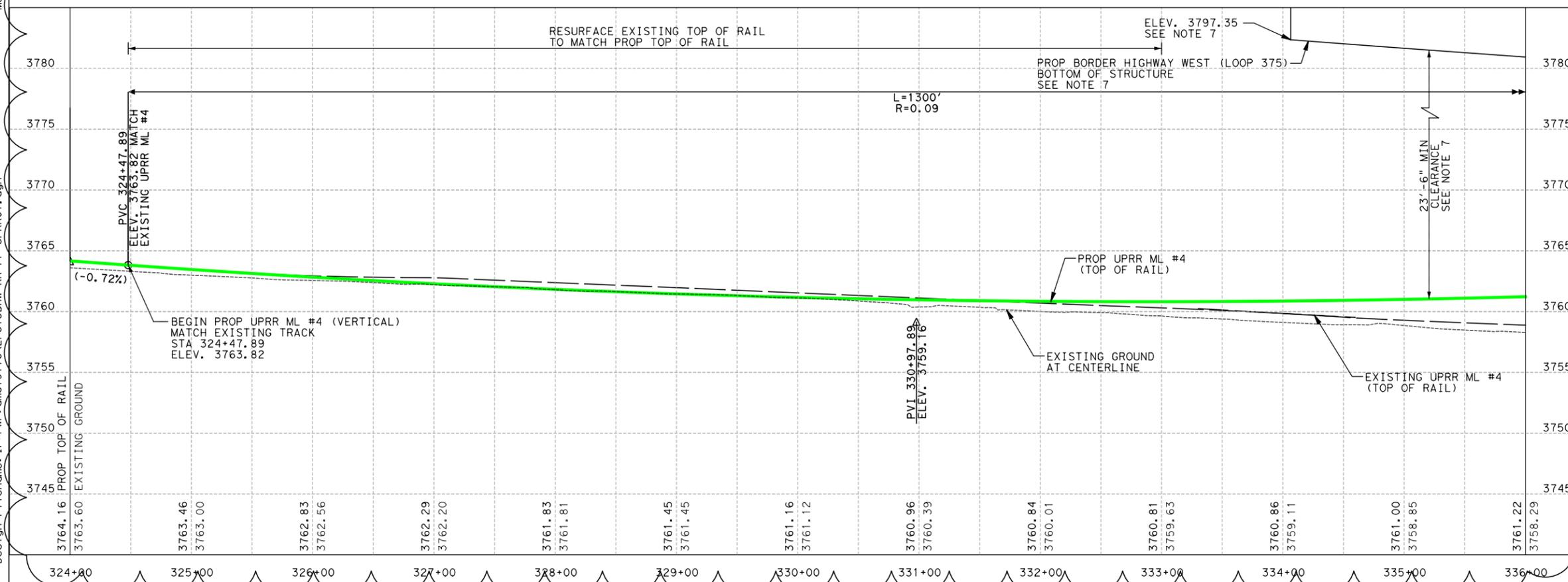


**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4**

STA 324+93.06 TO STA 336+00

SHEET 1 OF 7

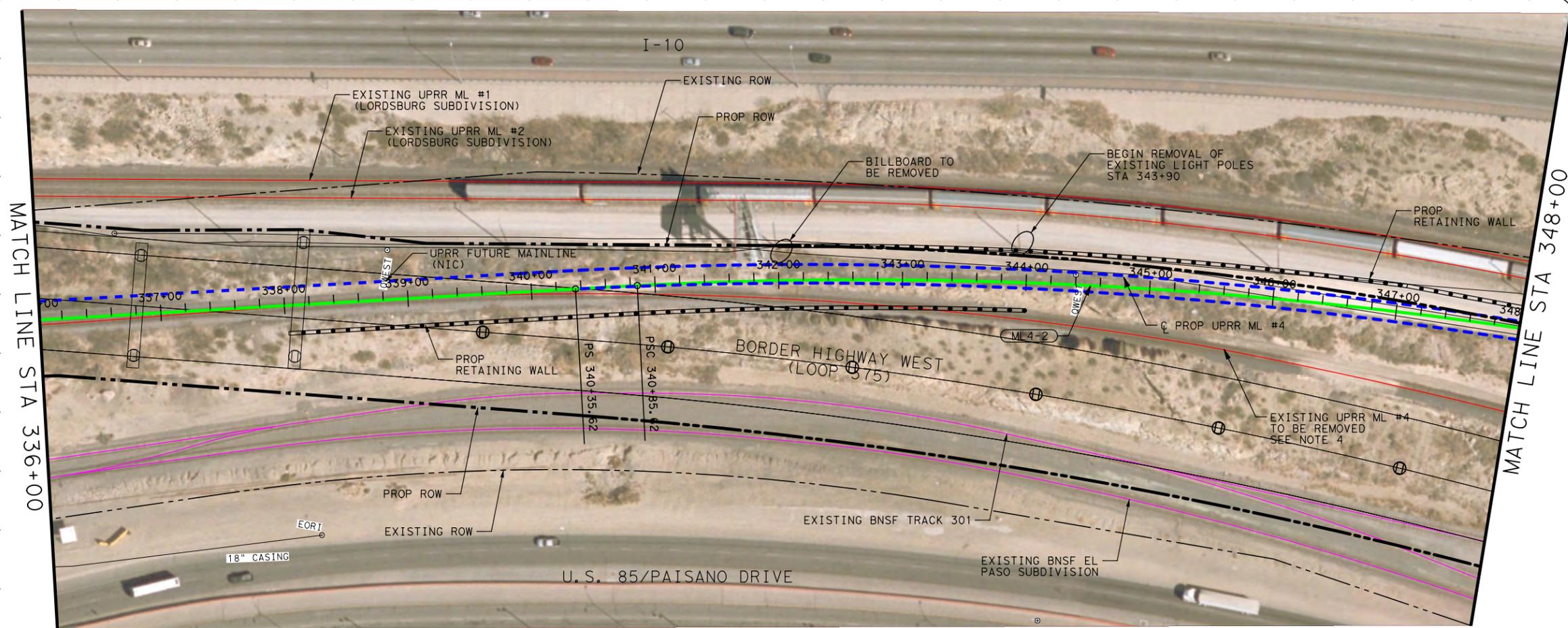
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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	22



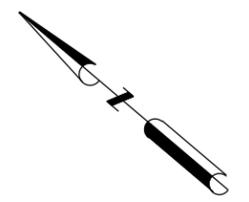
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Model Name:

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1

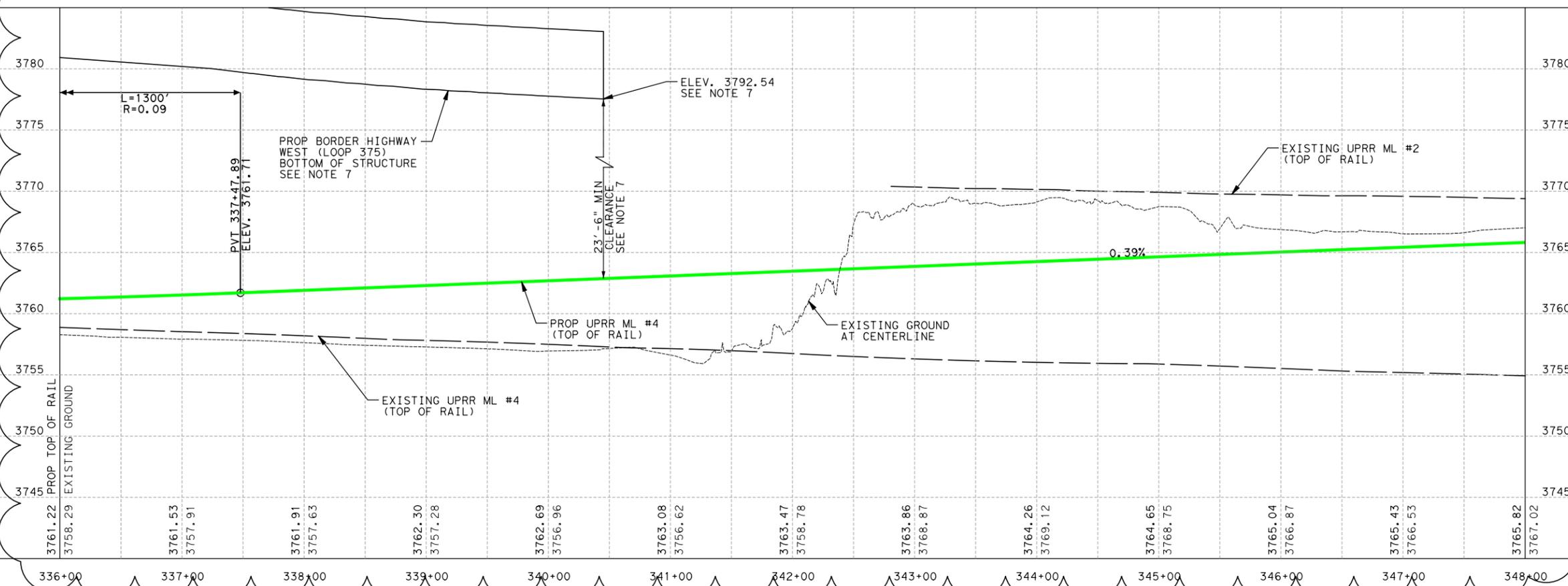


- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. BORDER HIGHWAY WEST IS TO BE DESIGNED BY DEVELOPER. ACTUAL CLEARANCE TO BE DEVELOPED DURING DEVELOPER DESIGN.
 8. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'



REV. NO.	DATE	DESCRIPTION	BY



**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4**

STA 336+00 TO STA 348+00

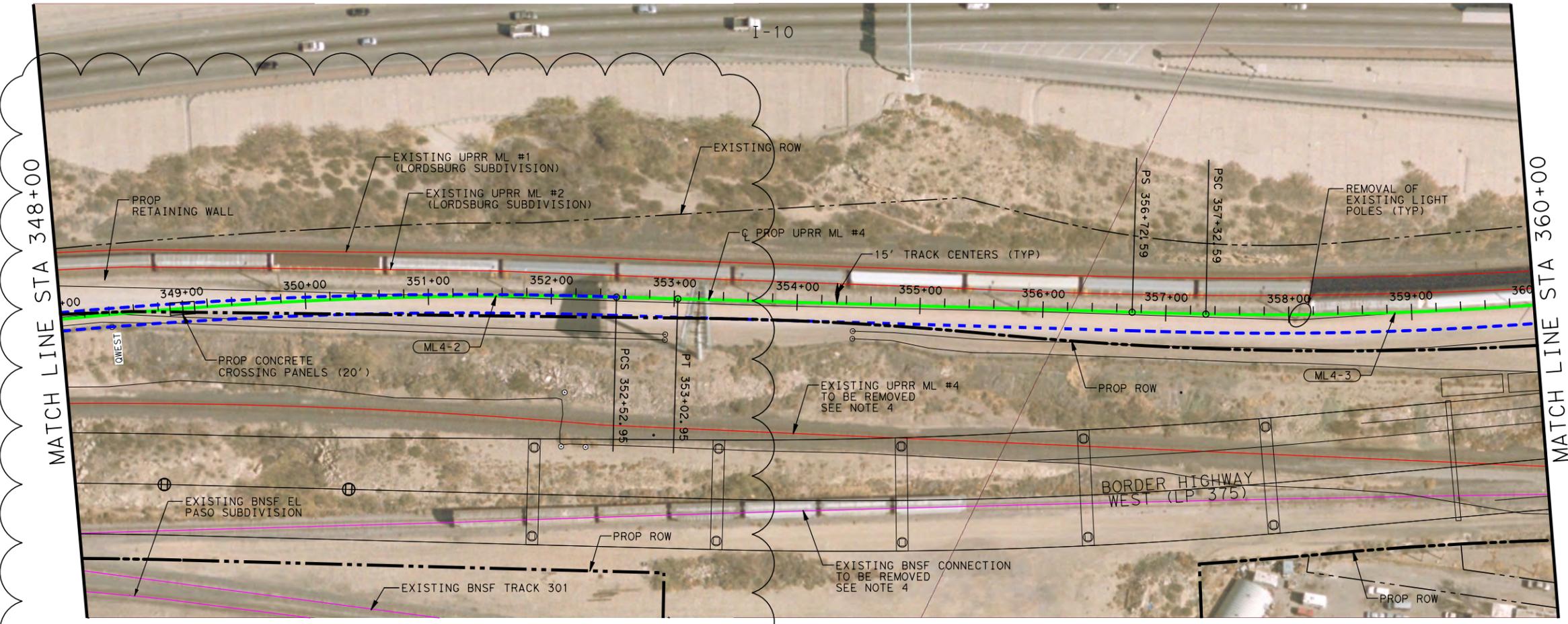
SHEET 2 OF 7

GN:	RG:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	23

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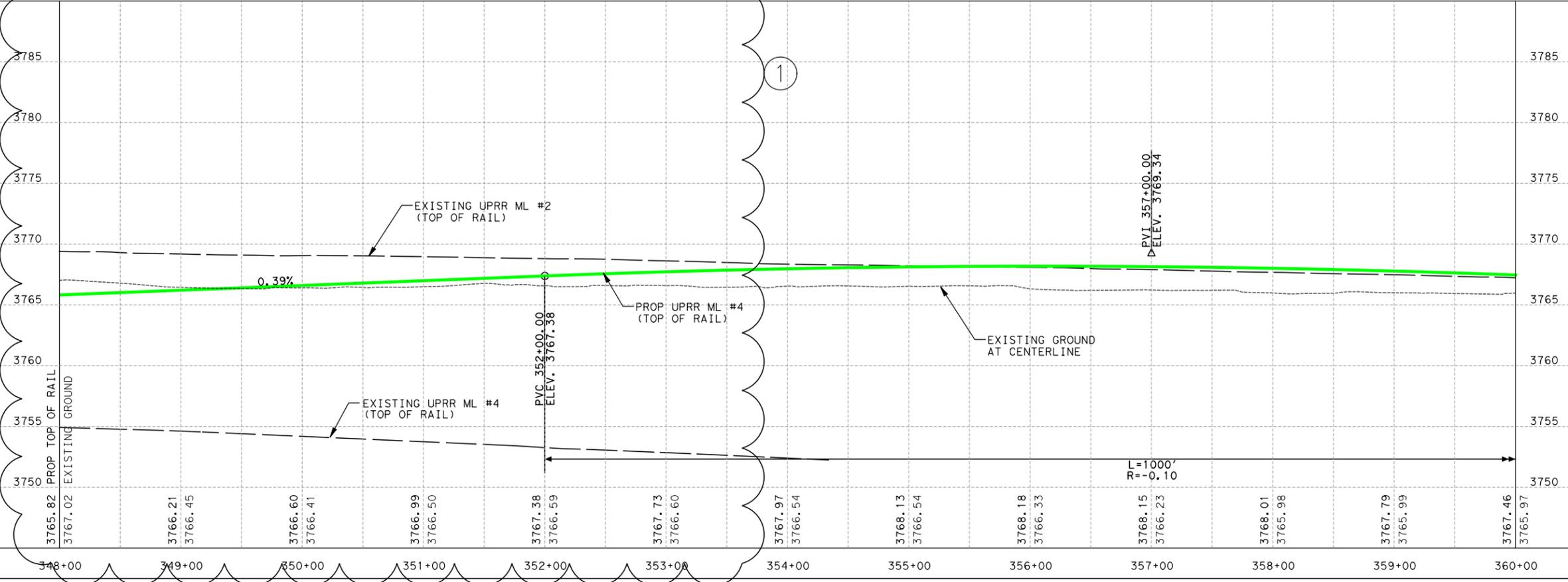
Model Name:

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 Design File Name: IP*PWP:dms79716\LP375BHW-RR-PP-UPRR03.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - - - FUTURE TRACK (NIC)

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.



INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4
 STA 348+00 TO STA 360+00

SHEET 3 OF 7

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	24

Scale: 100.000000:1.000000
 Plotted on: 18-DEC-2013 11:48

Model Name:

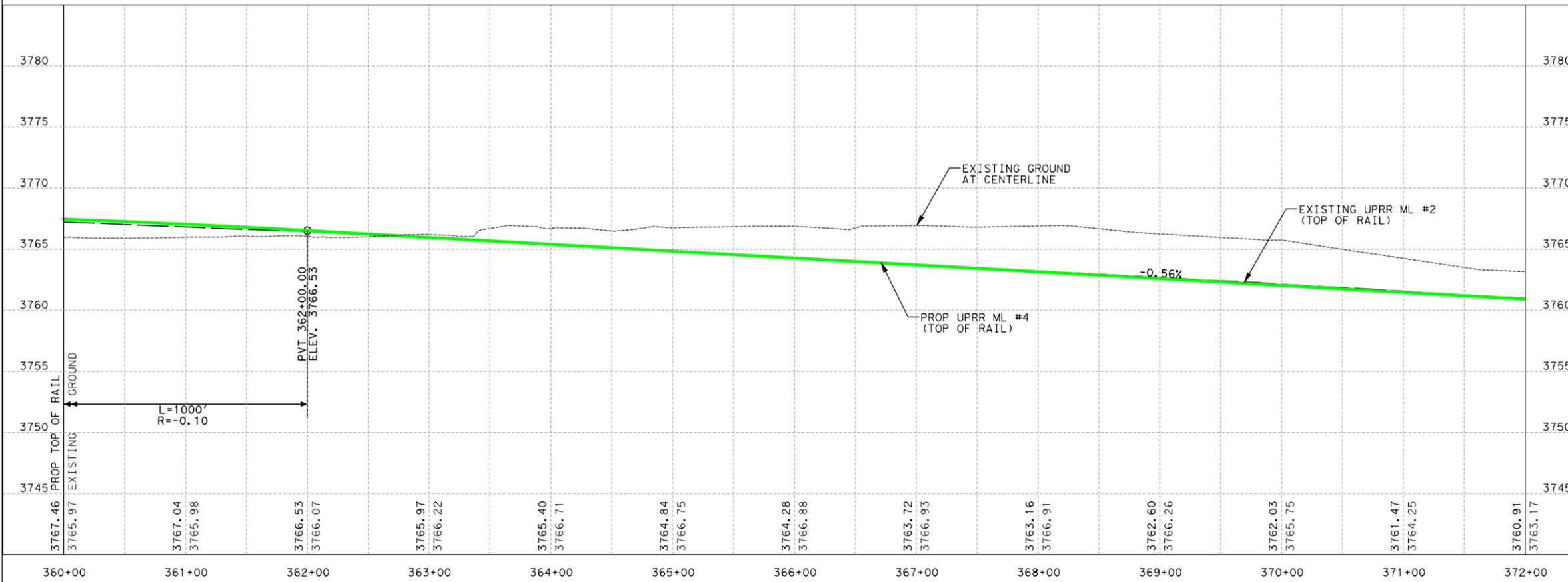
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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-UPRR04.dgn



LEGEND:

- EXISTING UPRR TRACK
- EXISTING BNSF TRACK
- PROP TRACK
- PROP TURNOUT (POWERED)
- RETAINING WALL
- FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.



INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4**
 STA 360+00 TO STA 372+00

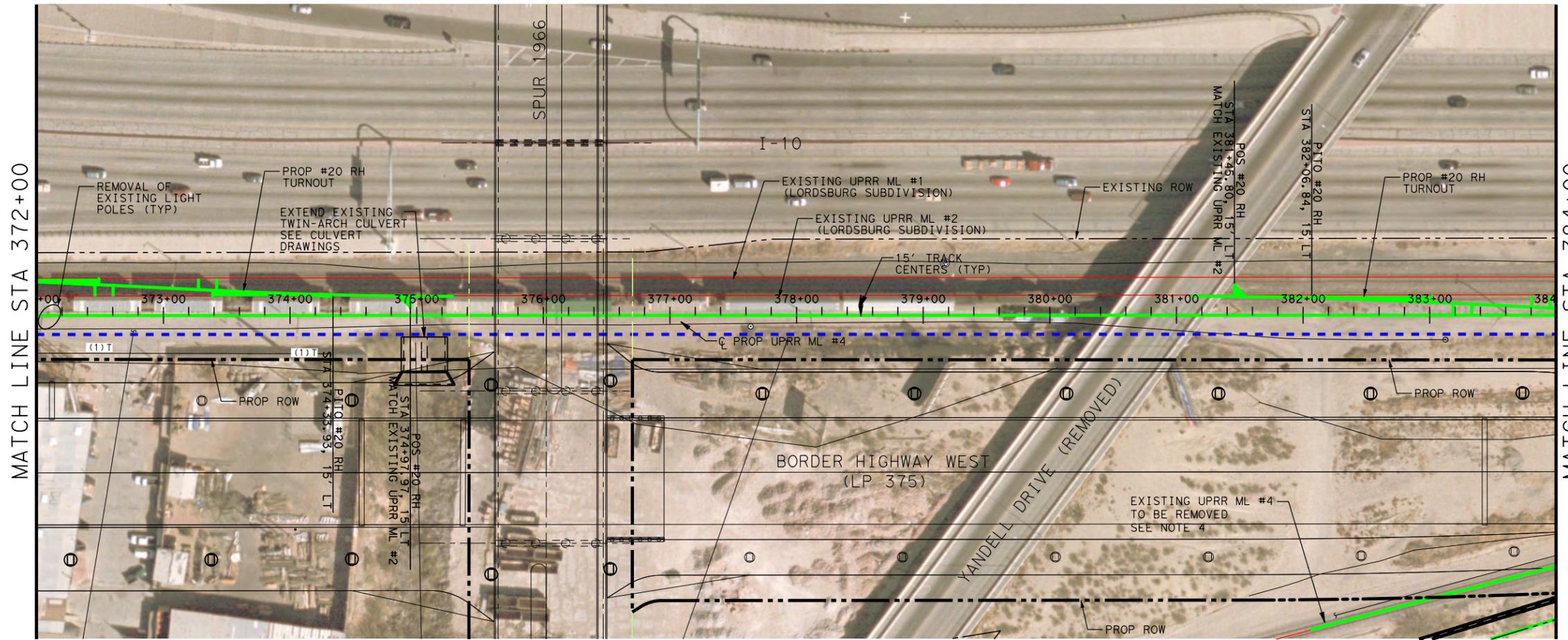
SHEET 4 OF 7

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	25

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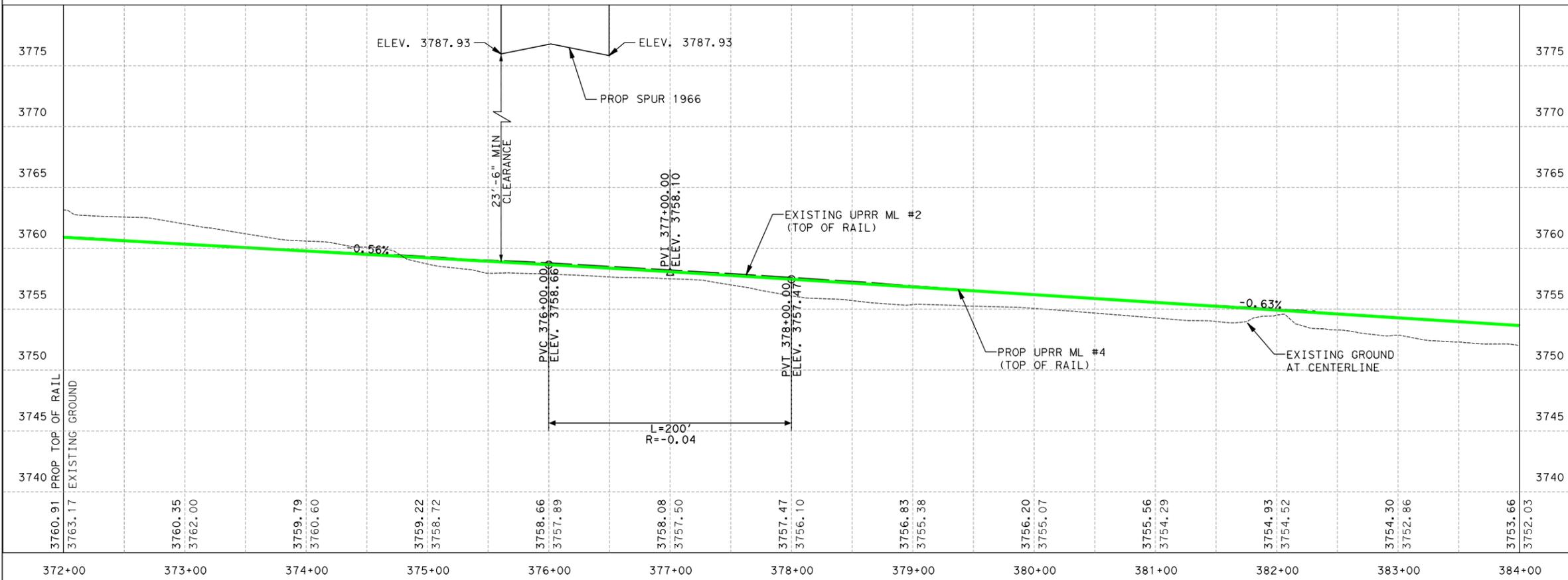
Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-UPRR05.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

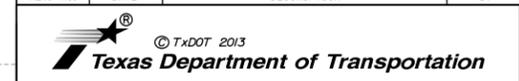
- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.



INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4
 STA 372+00 TO STA 384+00

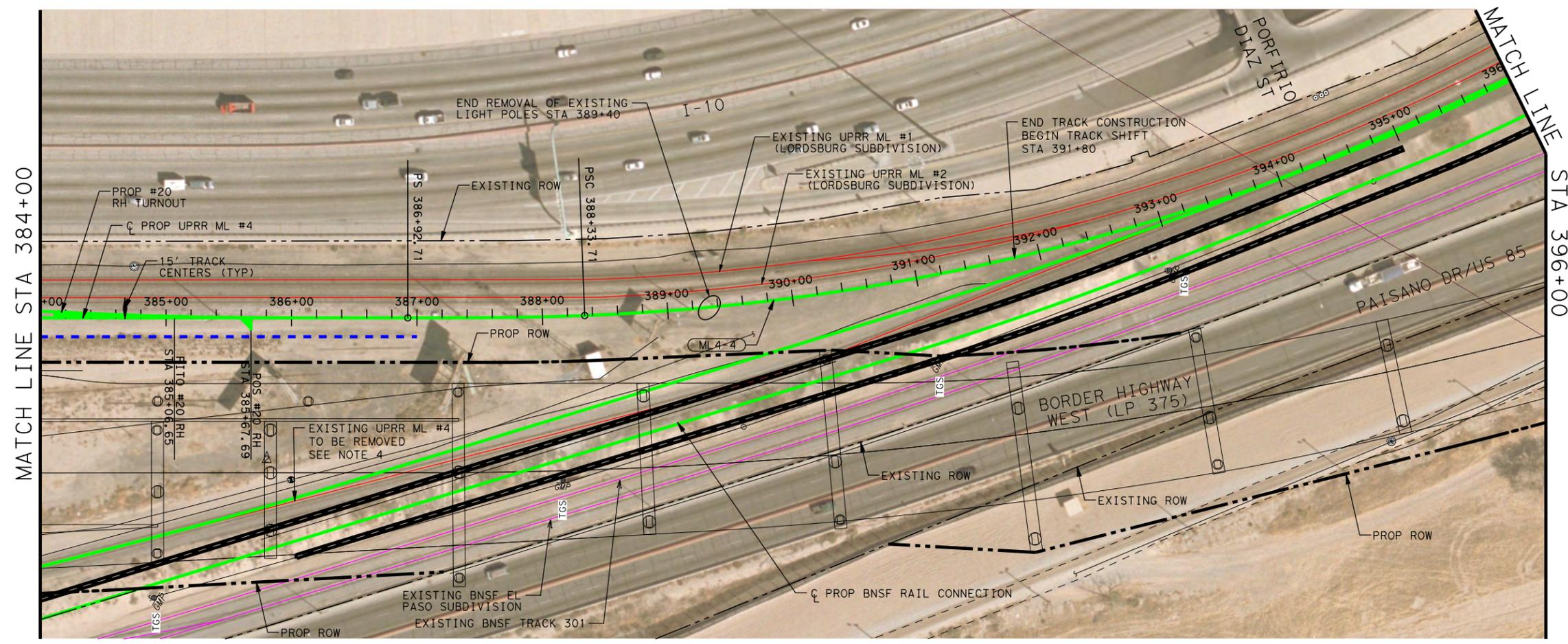
SHEET 5 OF 7

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
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DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	26

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 Plotted on: 18-DEC-2013 11:50

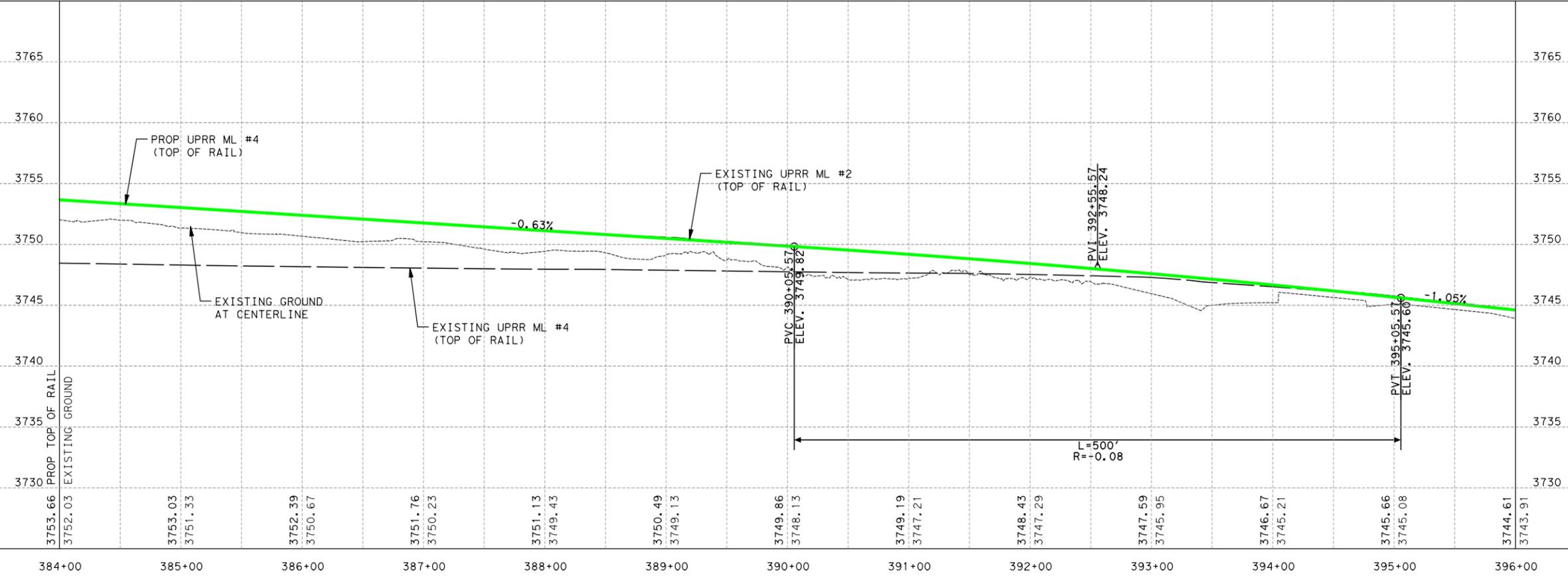
Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-UPRR06.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
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 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.



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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4
 STA 384+00 TO STA 396+00**

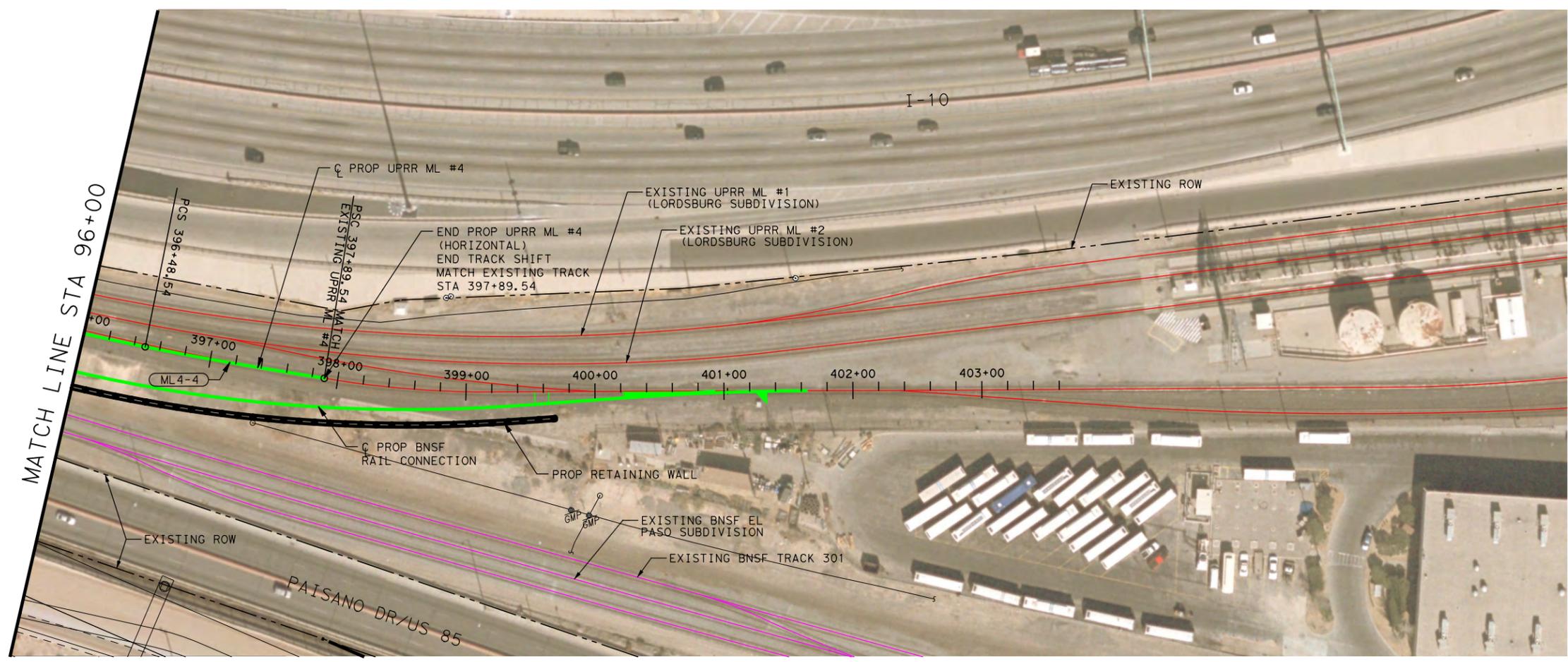
SHEET 6 OF 7

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
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DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	27

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Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-UPRR07.dgn



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - - - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
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 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. ALL CURVES FOR UPRR FUTURE MAINLINE (NIC) SHALL BE 40MPH.

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 Engineer: JOSHUA A MIETH
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 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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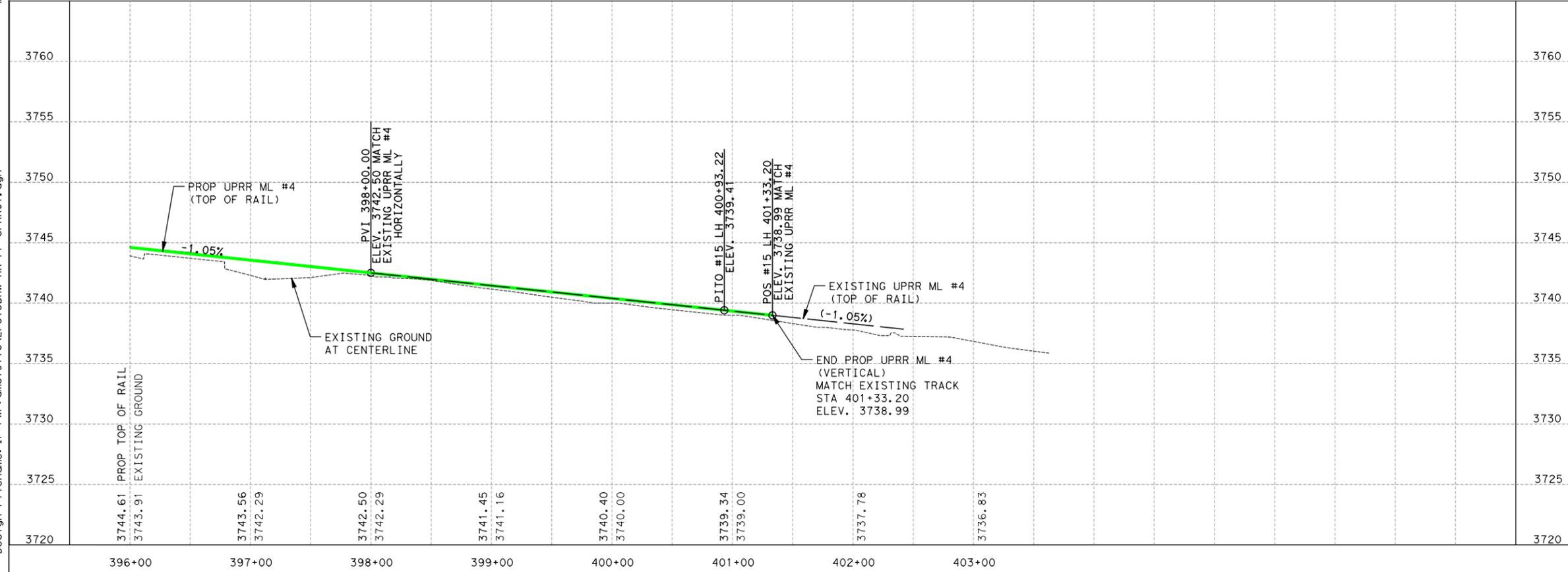
HNTB Corporation
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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR ML #4

 STA 396+00 TO STA 397+89.54

SHEET 7 OF 7

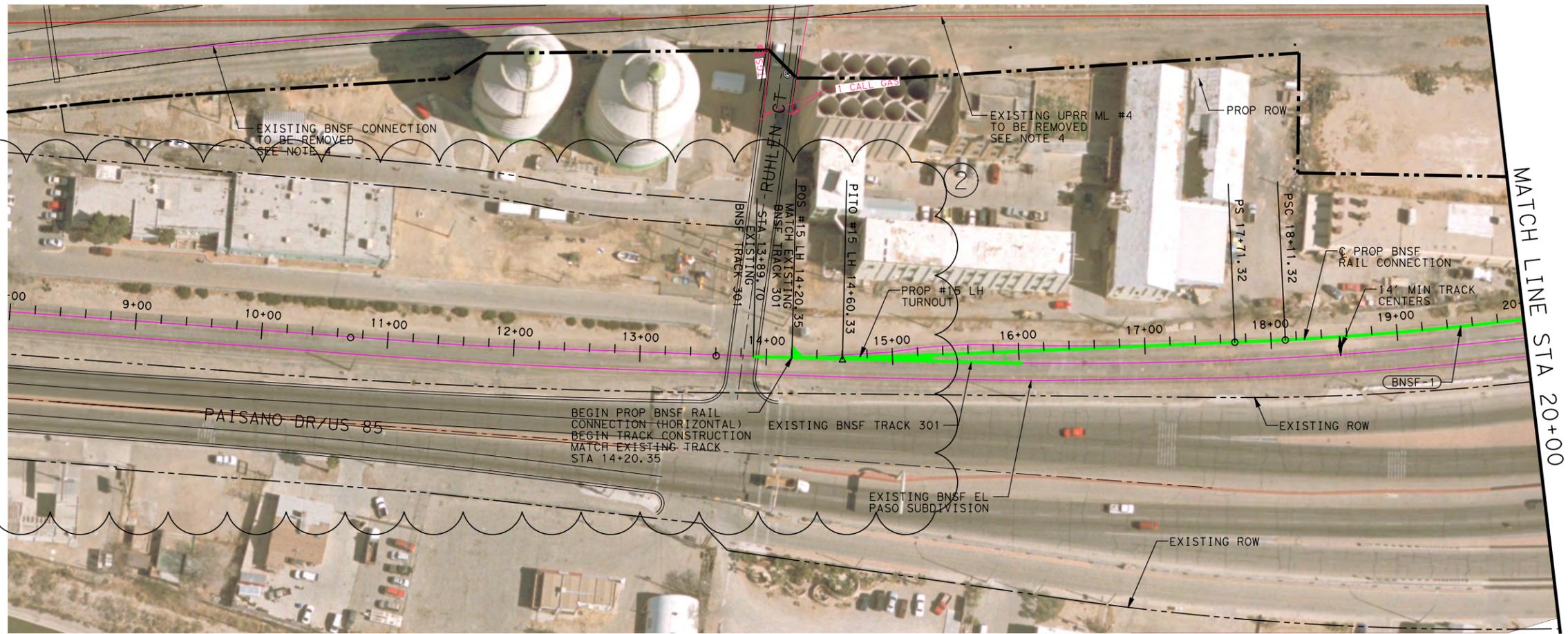
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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
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CHK:	JAM	ELP	EL PASO	2552	04	027	28



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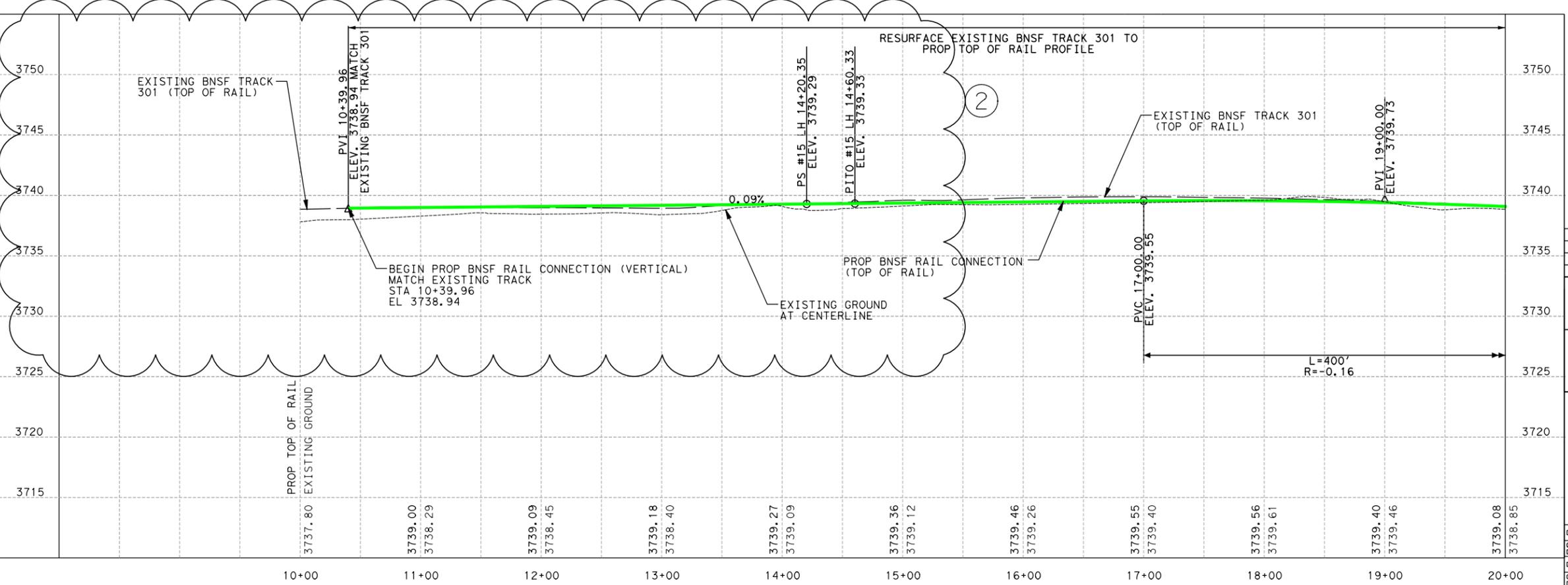
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- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
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 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 BNSF RAIL CONNECTION**

STA 14+20.35 TO STA 20+00

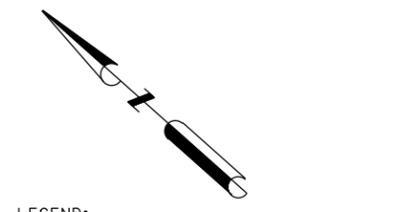
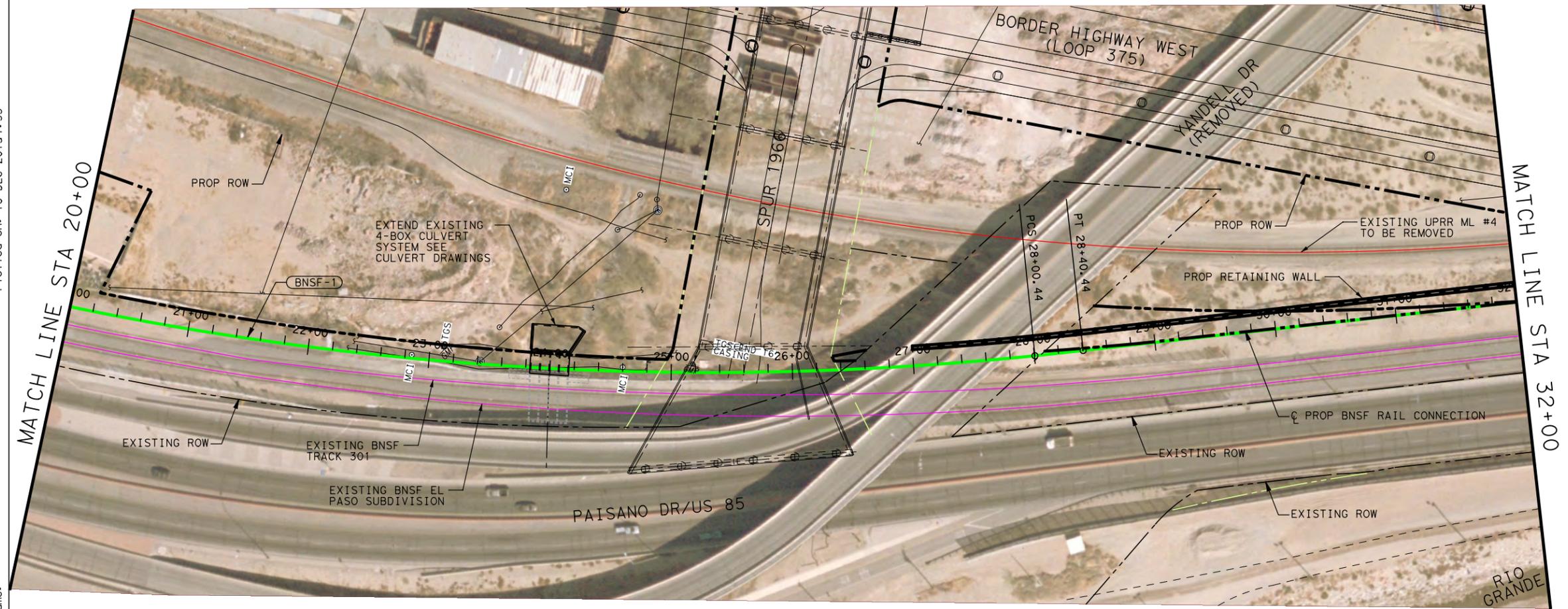
SHEET 1 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
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DWG:	RGN	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	JAM	ELP	EL PASO	2552	04
DWG:	JAM	ELP	EL PASO	2552	04
					JOB NO.:
					027
					SHEET NO.:
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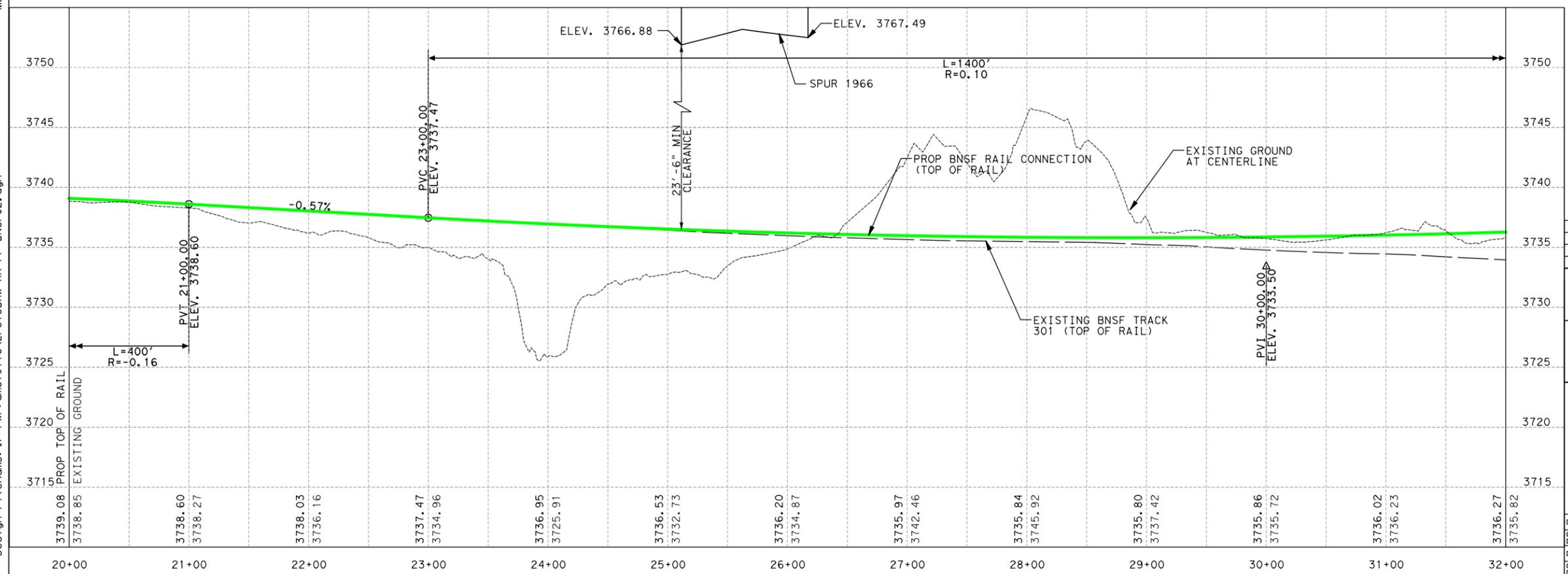
Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i .pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-BNSF02.dgn



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
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 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.



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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 BNSF RAIL CONNECTION**

 STA 20+00 TO STA 32+00

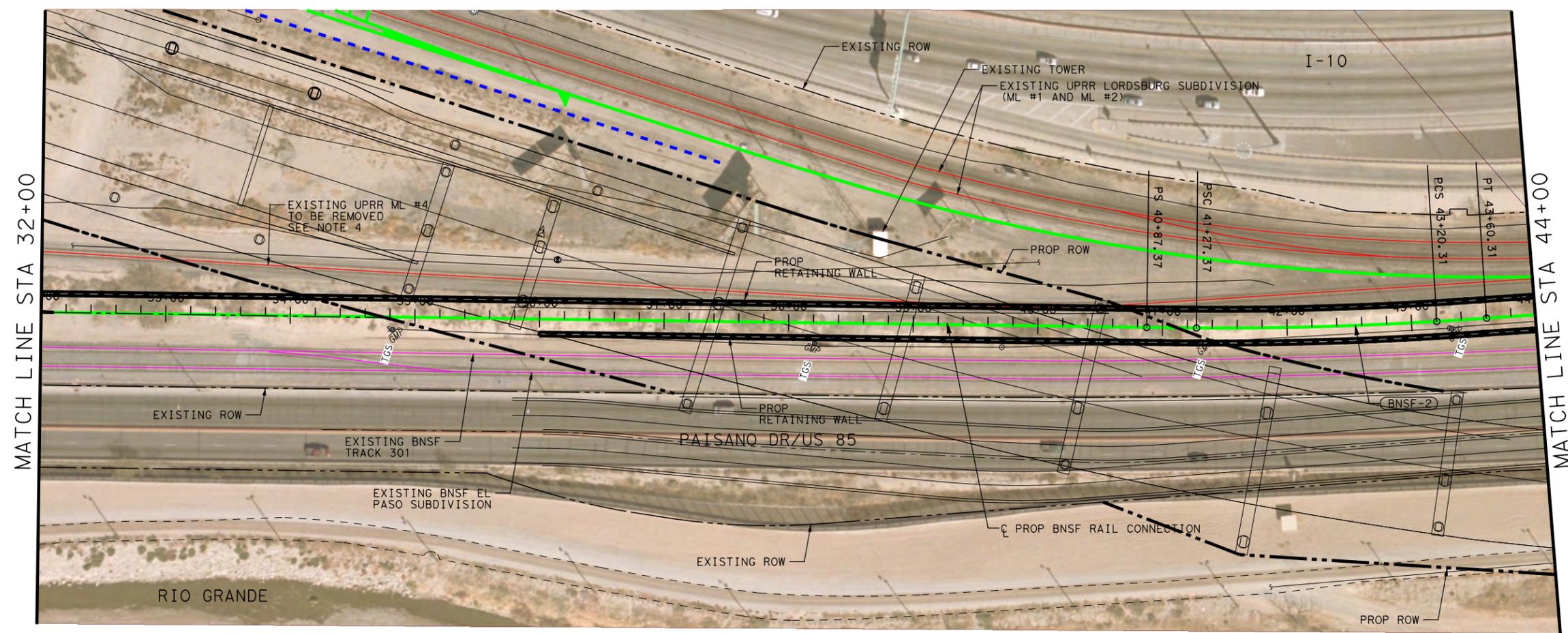
SHEET 2 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	30

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Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-BNSF03.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
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 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.
 7. BORDER HIGHWAY WEST IS TO BE DESIGNED BY DEVELOPER. ACTUAL CLEARANCE TO BE DEVELOPED DURING DEVELOPER DESIGN.

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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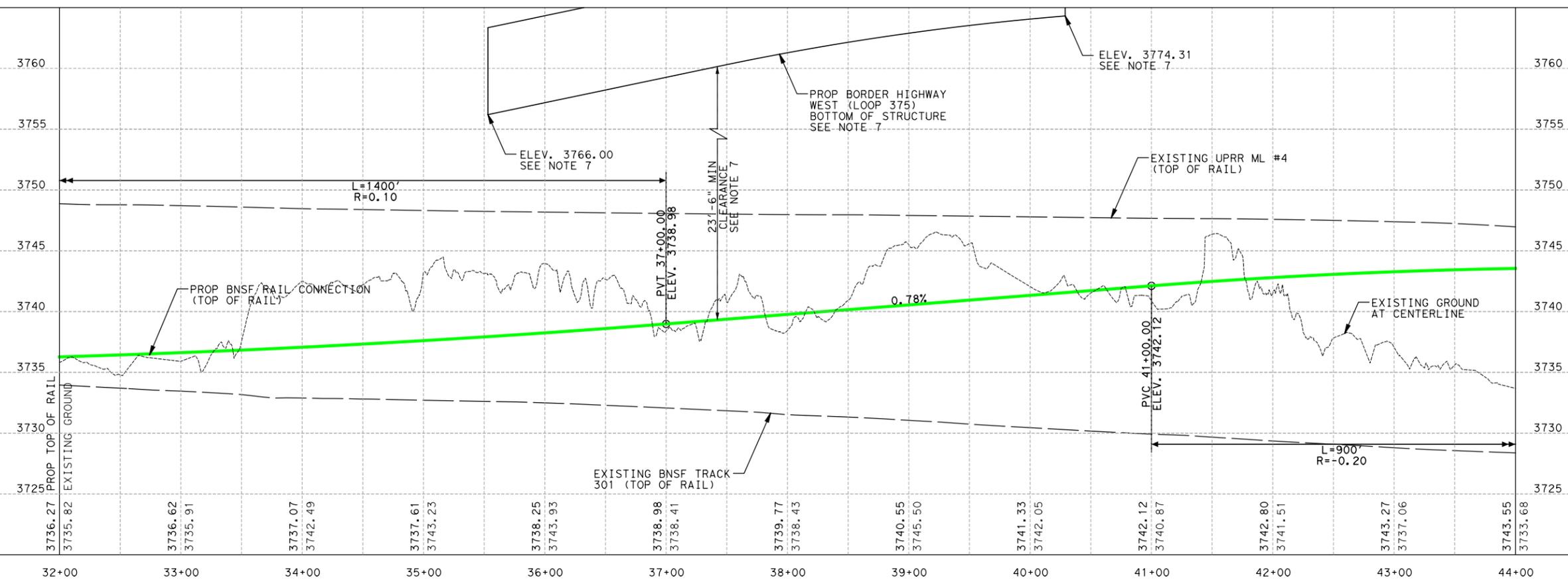
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 TBPE FIRM REGISTRATION NO.: 420

**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 BNSF RAIL CONNECTION**

STA 32+00 TO STA 44+00

SHEET 3 OF 4

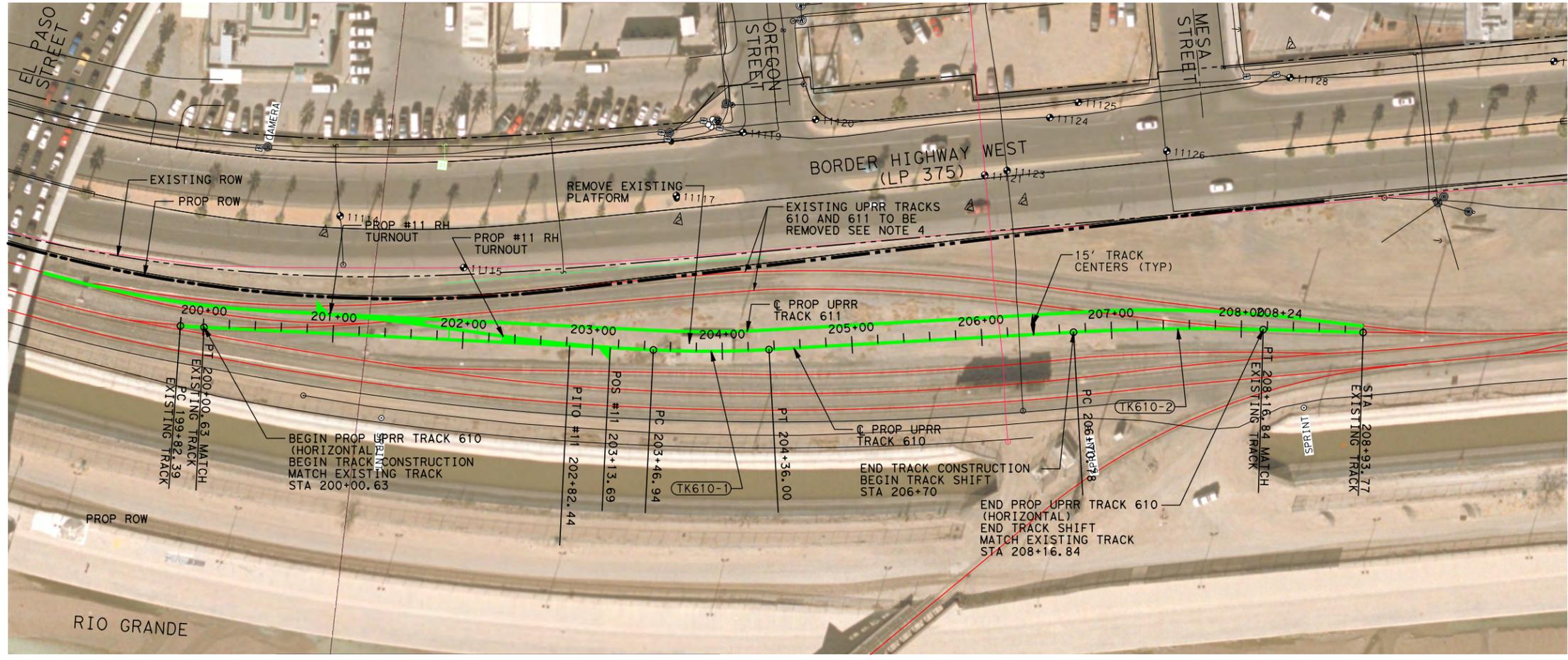
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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
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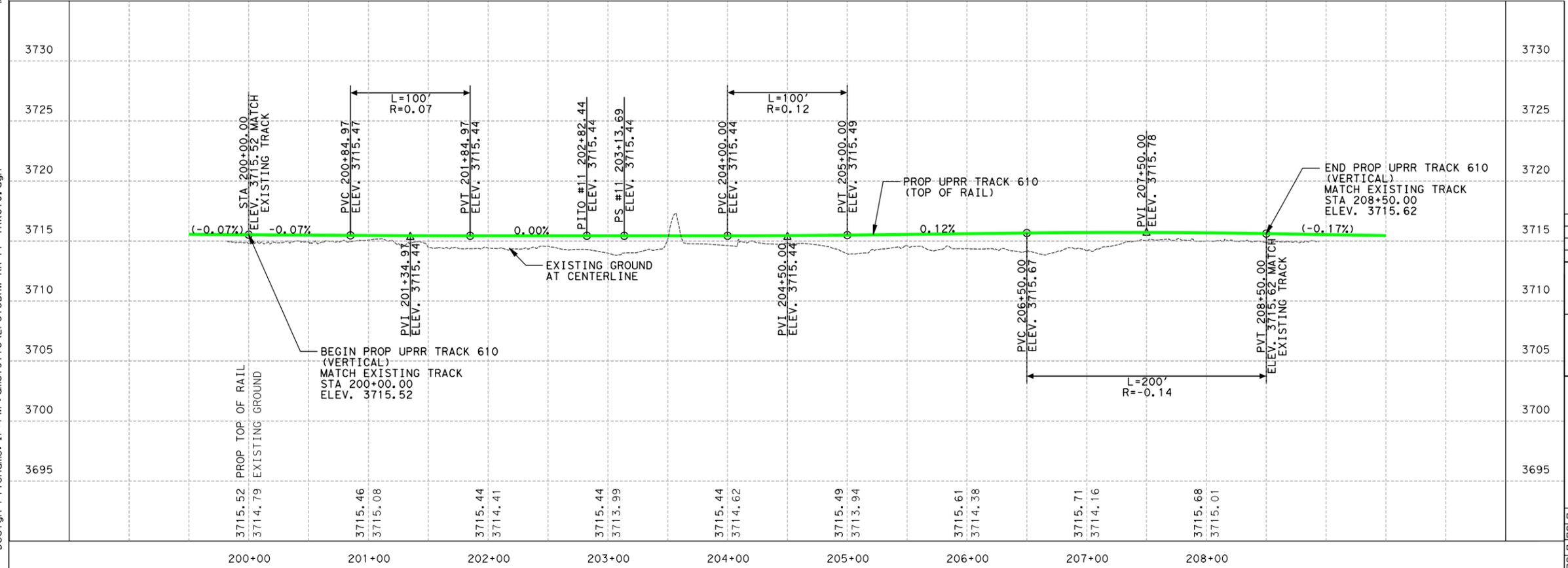
Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-TRK610.dgn



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
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 5. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR PROPOSED TRACK ALIGNMENT DATA.
 6. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.



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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR TRACK 610**
 STA 200+00.63 TO STA 208+16.84

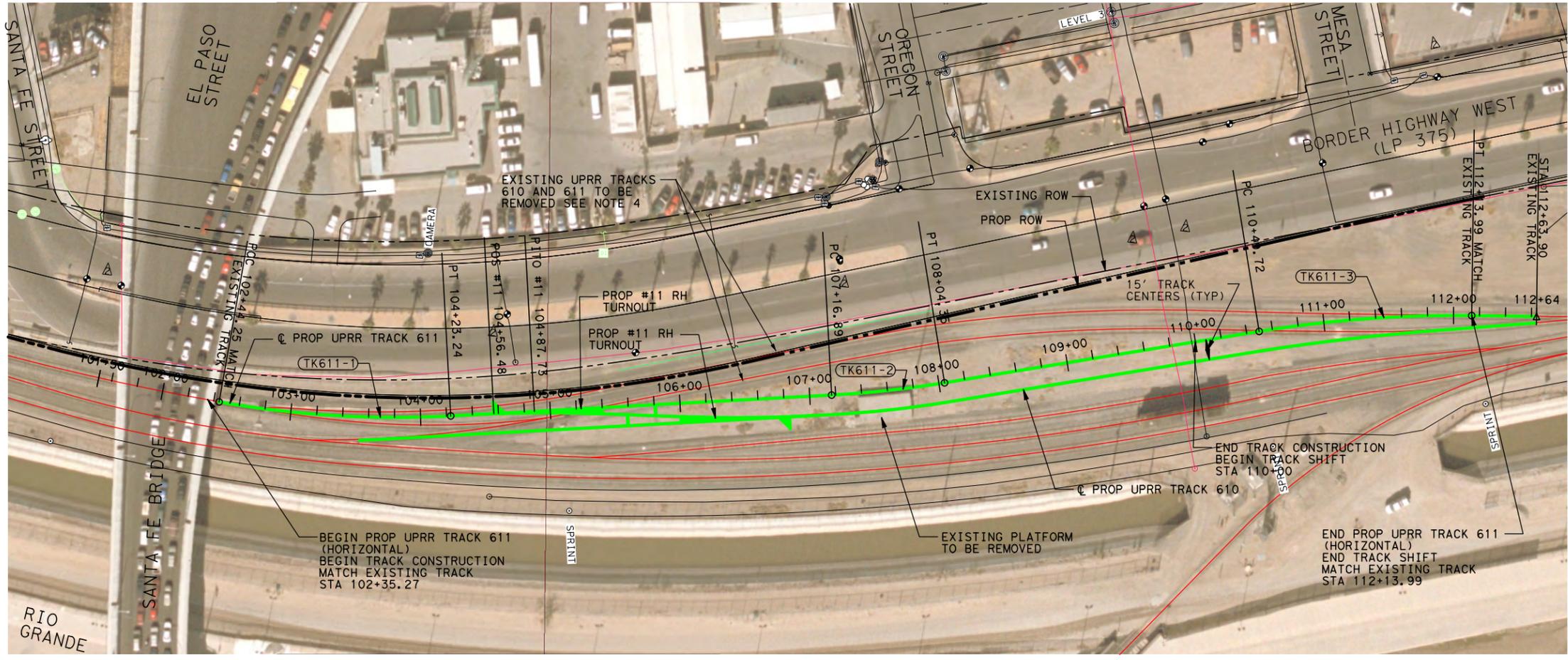
SHEET 1 OF 1

DGN:	RGN:	FED. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG:	RGN	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
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DWG:	JAM	ELP	EL PASO	2552	04
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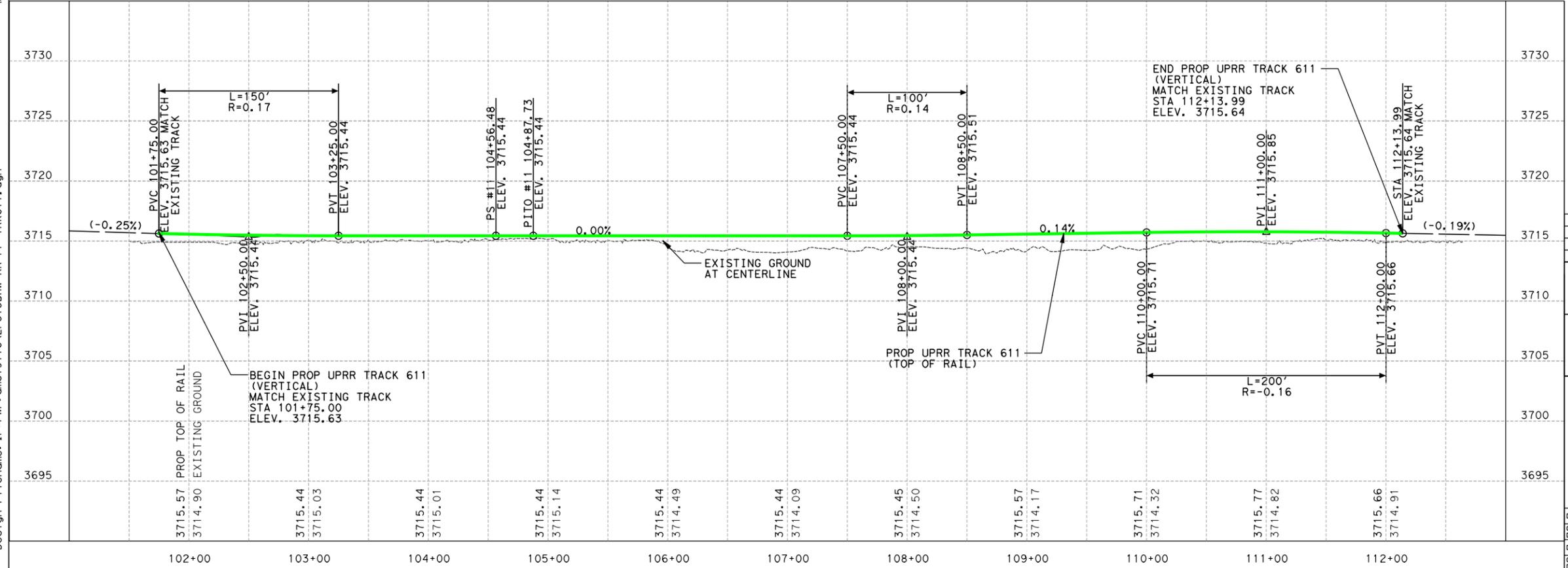
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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-TRK611.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:
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SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR TRACK 611

STA 102+35.27 TO STA 112+13.99

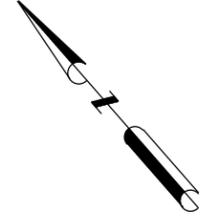
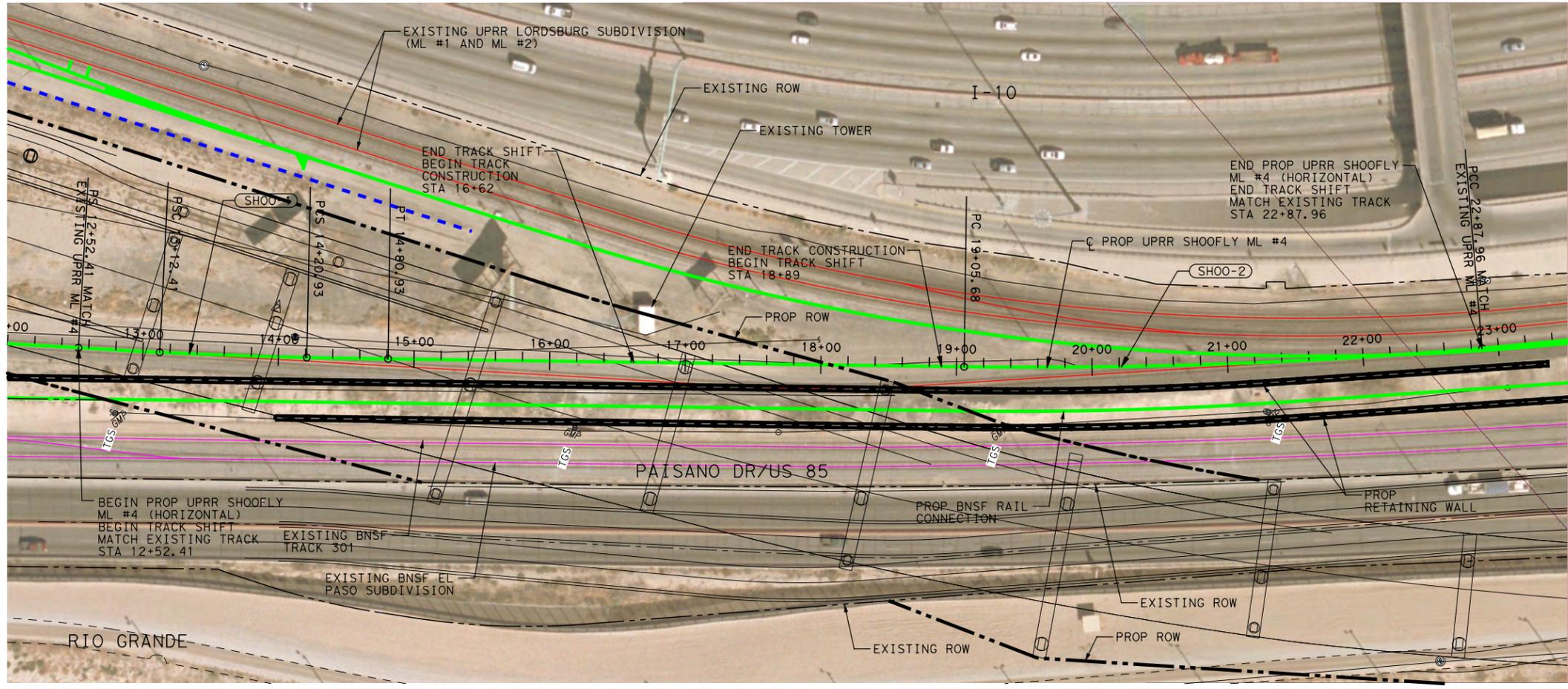
SHEET 1 OF 1

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
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Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-UPSH01.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - - - FUTURE TRACK (NIC)

- NOTES:
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

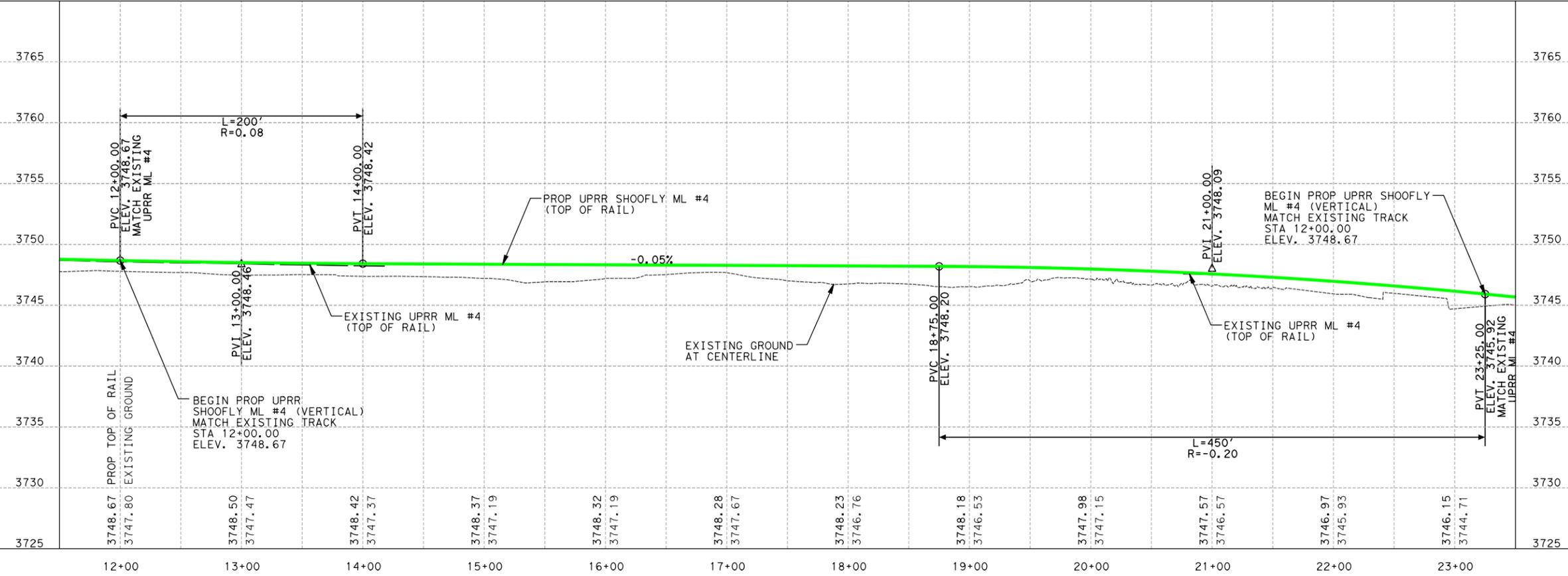
REV. NO.	DATE	DESCRIPTION	BY



**BORDER HIGHWAY WEST (LP 375)
 TRACK PLAN & PROFILE
 PROP UPRR SHOOFLY
 ML #4
 STA 12+52.41 TO STA 22+87.96**

SHEET 1 OF 1

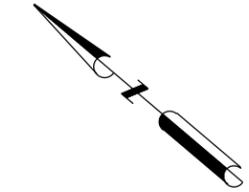
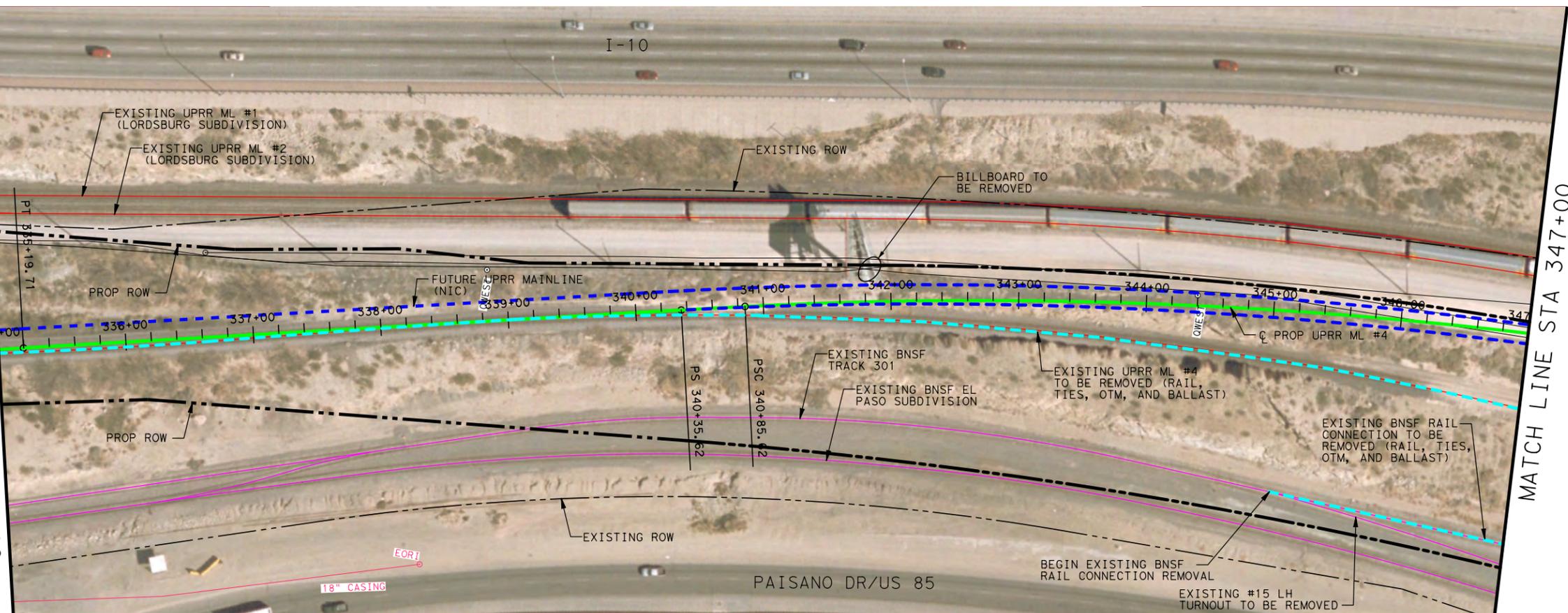
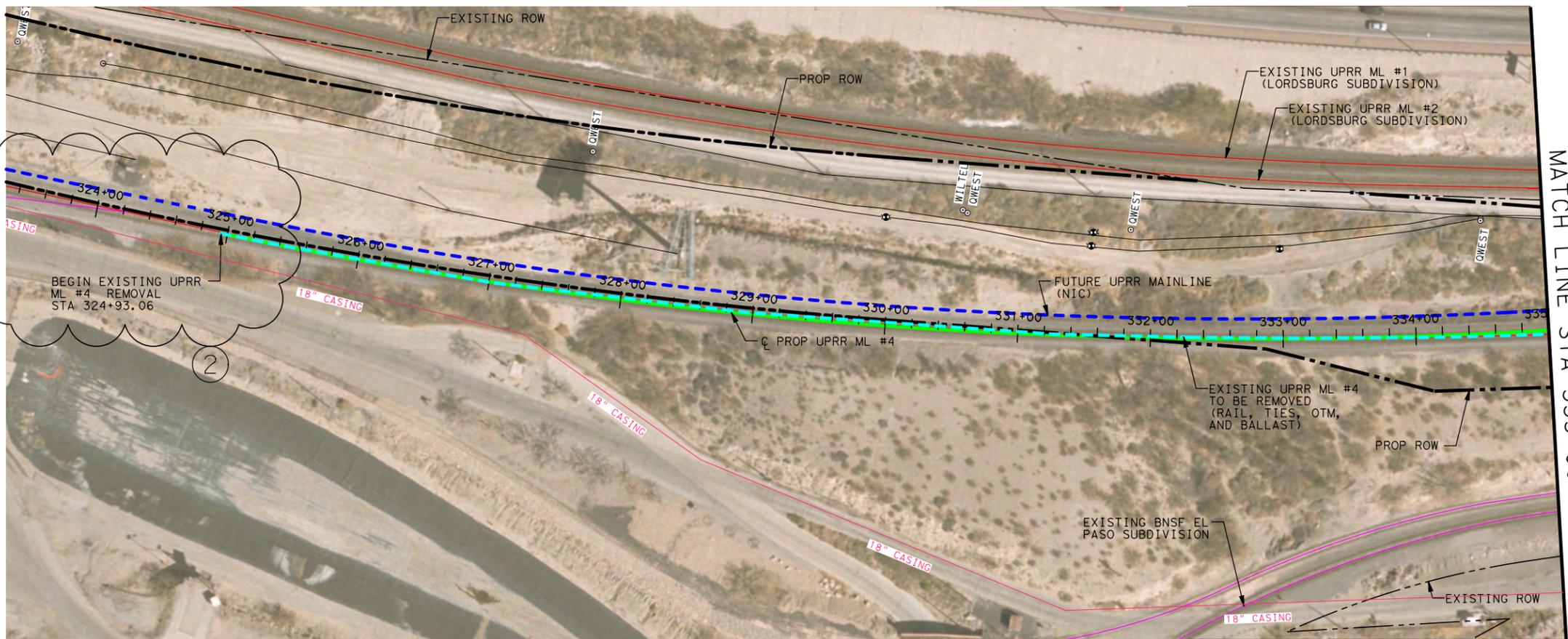
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CHK:	JAM	DWG:	RGJ	DIST.:	EL PASO	CONT. NO.:	2552	SECT. NO.:	04	JOB NO.:	027	SHEET NO.:	35
CHK:	JAM	DWG:	JAM	DIST.:	ELP	CONT. NO.:	2552	SECT. NO.:	04	JOB NO.:	027	SHEET NO.:	35



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Model Name:

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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PP-REM001.dgn



LEGEND:

- EXISTING UPRR TRACK
- EXISTING BNSF TRACK
- PROP TRACK
- PROP TURNOUT (POWERED)
- - - FUTURE TRACK (NIC)
- - - REMOVAL

NOTES:

1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
3. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 REMOVAL PLAN
 UPRR ML #4/
 BNSF RAIL CONNECTION
 STA 324+93.06 TO STA 347+00

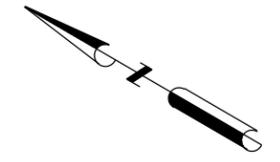
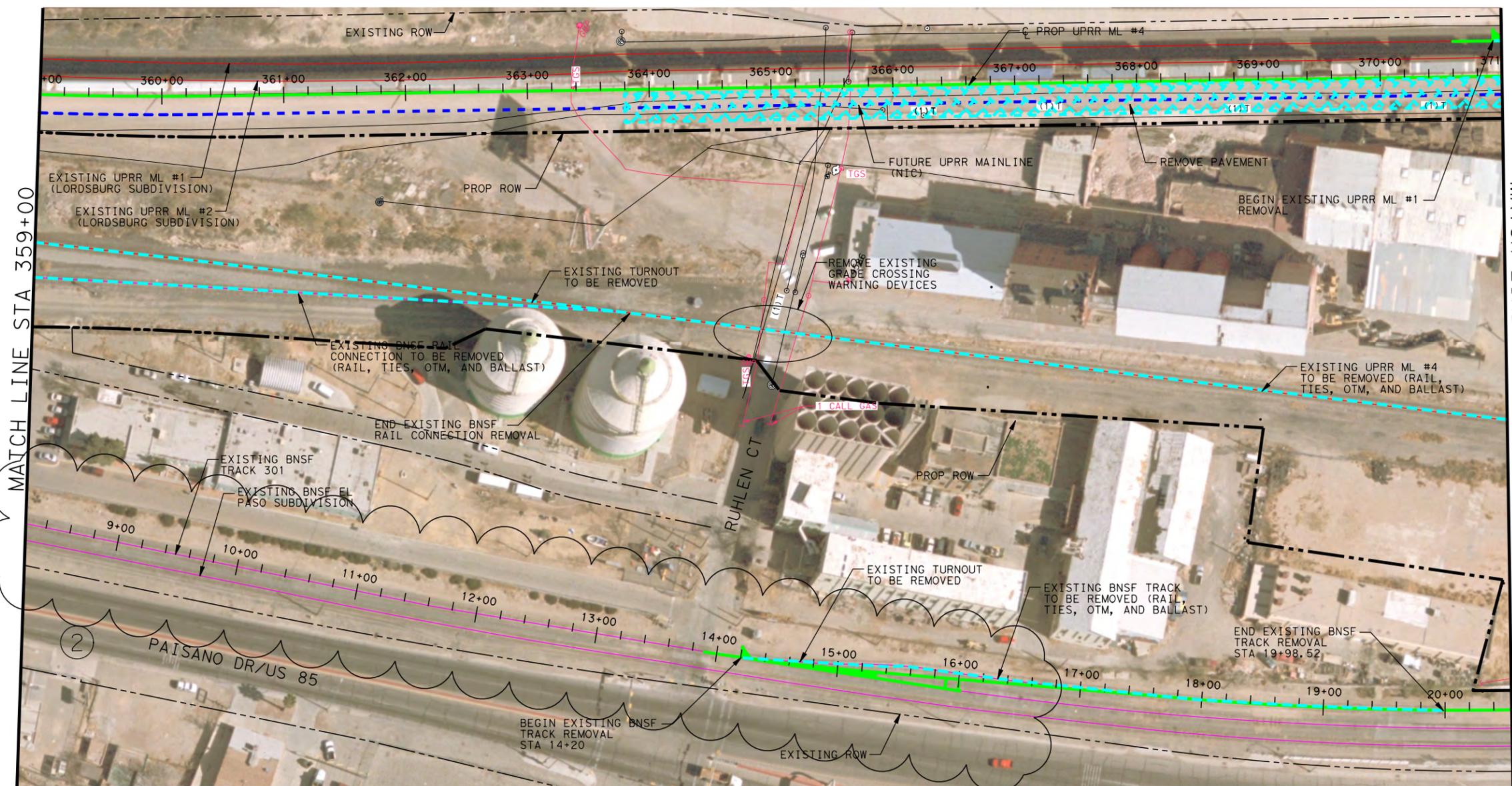
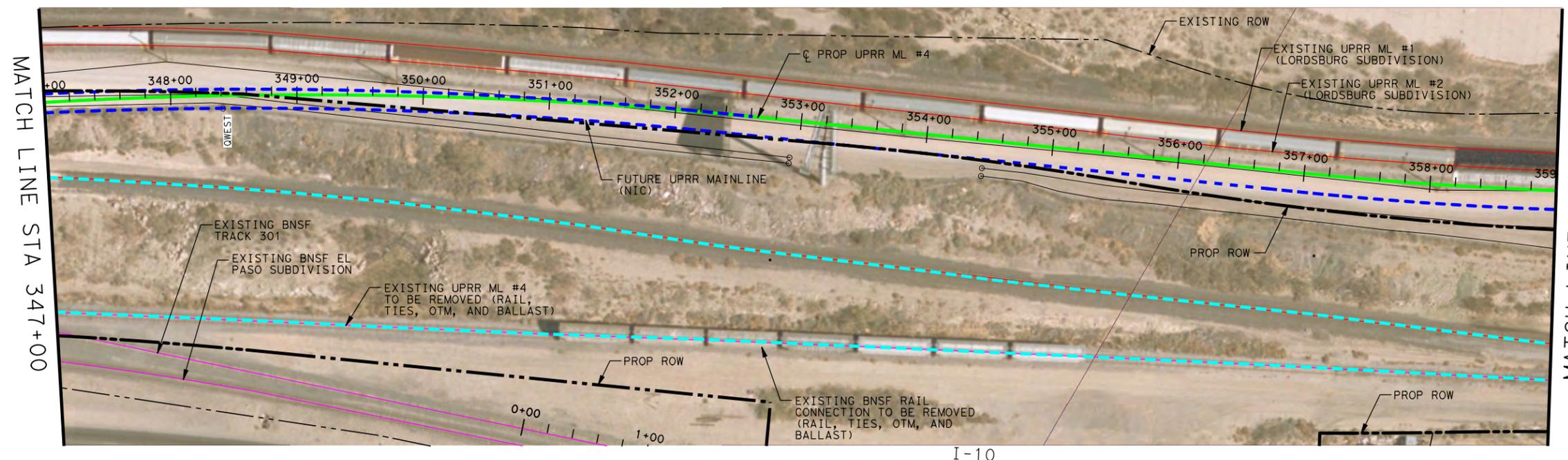
SHEET 1 OF 4

DGN:	RGD	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGD	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	36

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 Plotted on: 18-DEC-2013 2:01

Model Name:

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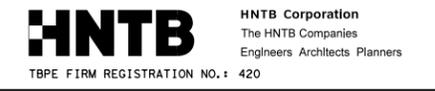
- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - - - FUTURE TRACK (NIC)
 - - - REMOVAL

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 REMOVAL PLAN
 UPRR ML #4/
 BNSF RAIL CONNECTION
 STA 347+00 TO STA 371+00

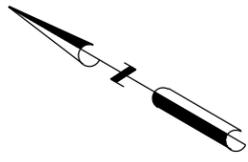
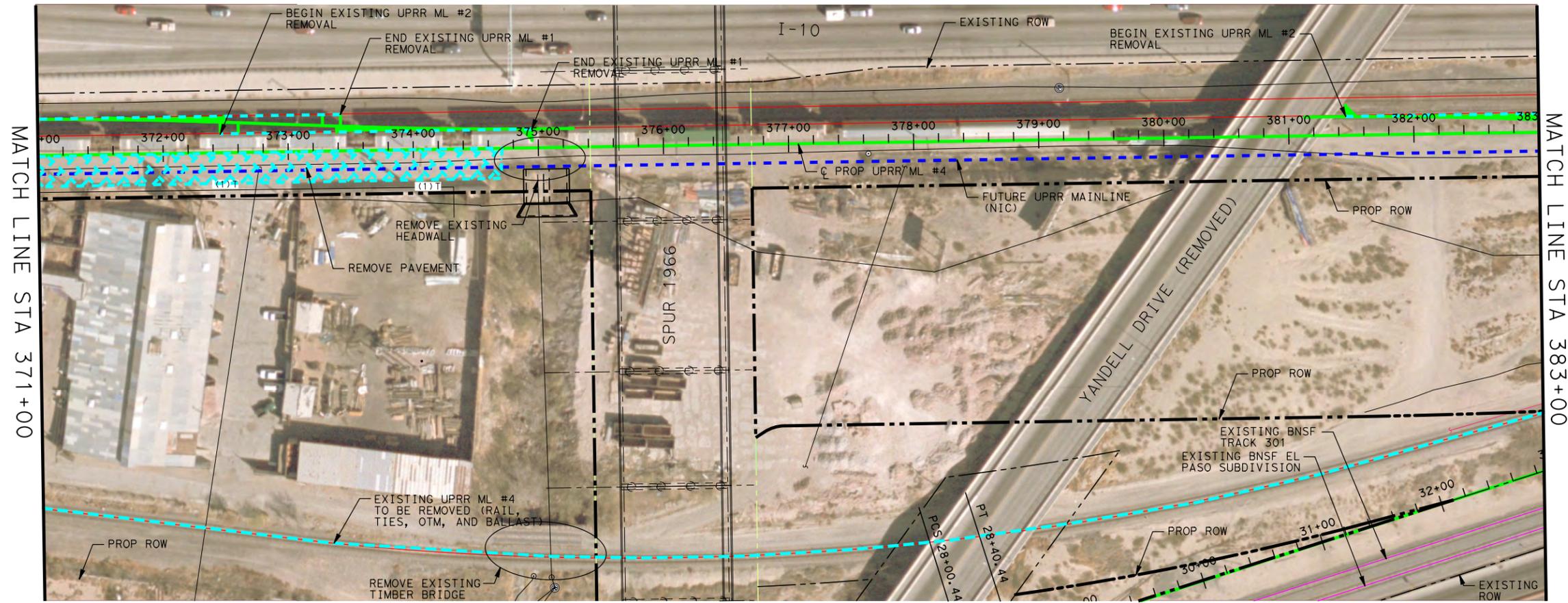
SHEET 2 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	37

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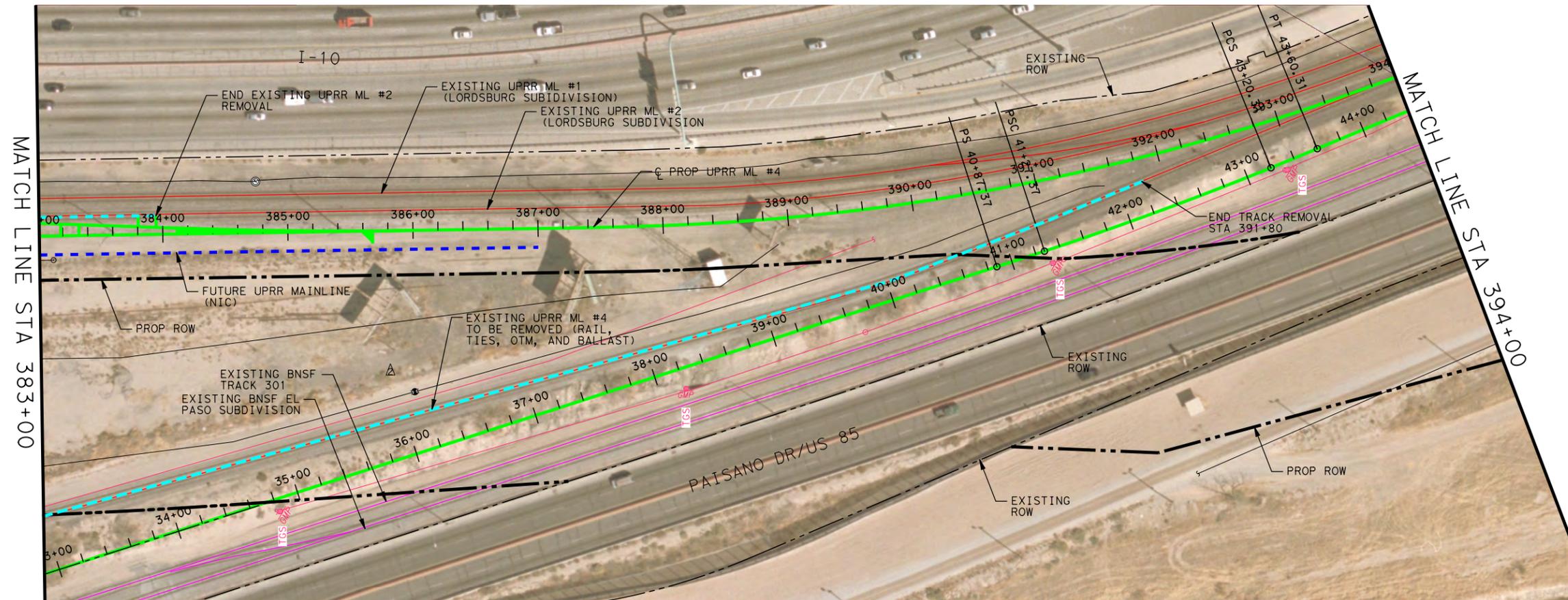
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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-REM003.dgn



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - - - FUTURE TRACK (NIC)
 - - - REMOVAL

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.



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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 REMOVAL PLAN
 UPRR ML #4/
 BNSF RAIL CONNECTION
 STA 371+00 TO STA 394+00

SHEET 3 OF 4

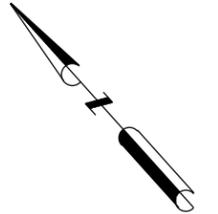
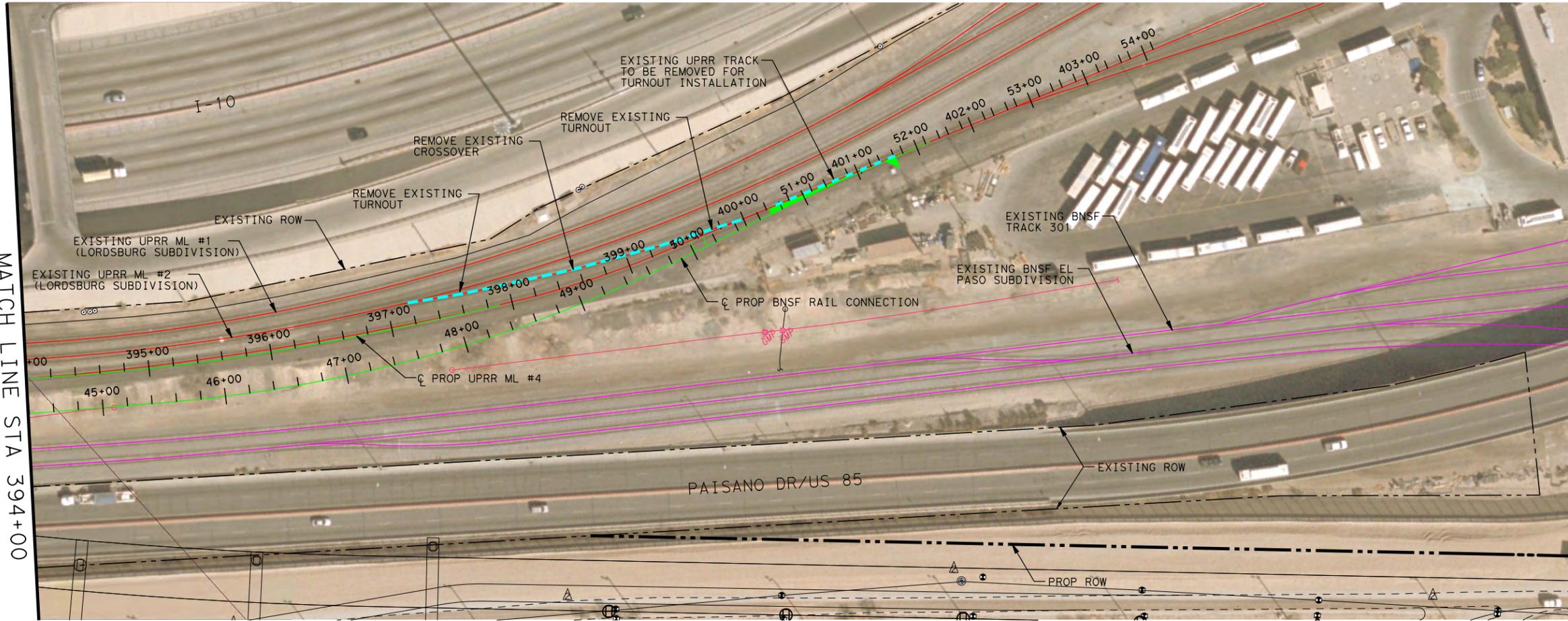
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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG:	RGN	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	JAM	ELP	EL PASO	2552	04
DWG:					027
					38

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 Plotted on: 18-DEC-2013 2:03

Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PP-REM004.dgn

MATCH LINE STA 394+00



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - - - FUTURE TRACK (NIC)
 - - - REMOVAL

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
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 3. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 100'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

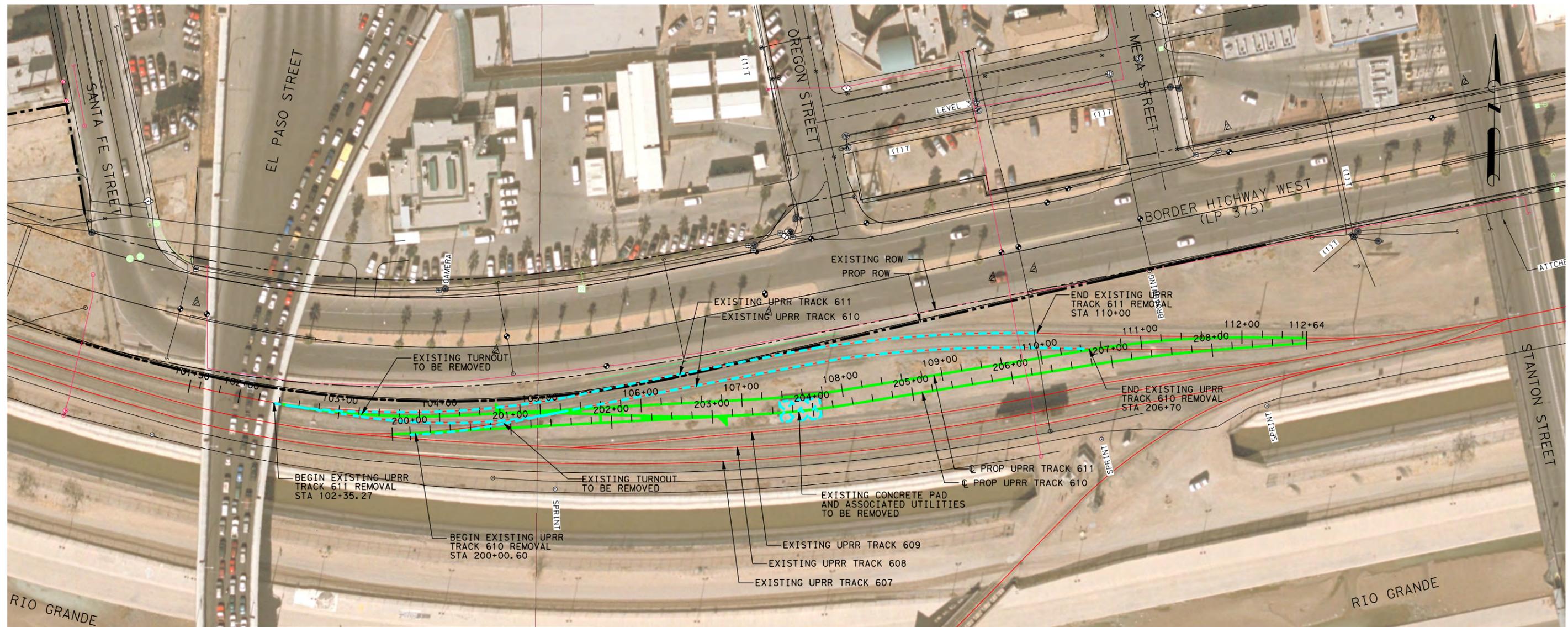
BORDER HIGHWAY WEST (LP 375)
 REMOVAL PLAN
 UPRR ML #4/
 BNSF RAIL CONNECTION
 STA 394+00 TO END PROJECT
 STA 44+40 TO END PROJECT
 SHEET 4 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	39

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 Plotted on: 18-DEC-2013 2:04

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.dgn
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PP-REMO05.dgn



LEGEND:

- EXISTING UPRR TRACK
- EXISTING BNSF TRACK
- PROP TRACK
- PROP TURNOUT (POWERED)
- - - FUTURE TRACK (NIC)
- - - REMOVAL

NOTES:

1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
3. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 100'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 REMOVAL PLAN
 UPRR TRACKS 610/611

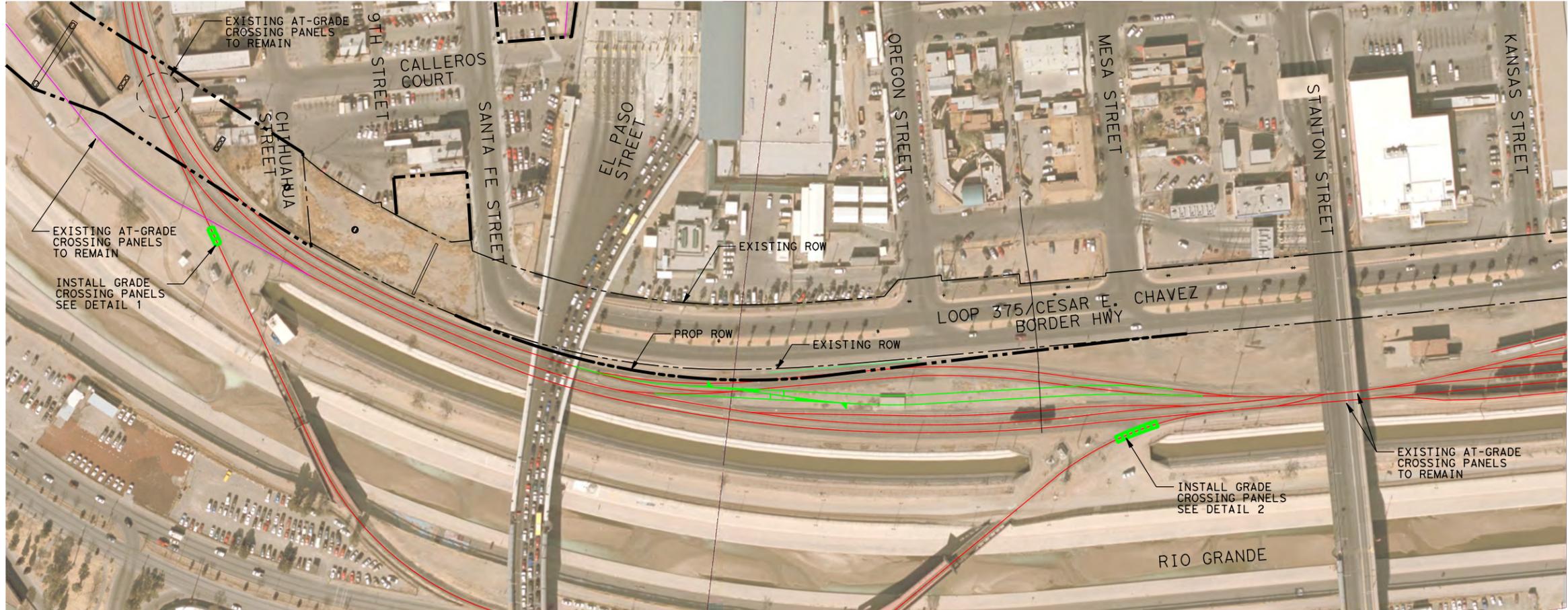
SHEET 1 OF 1

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	40

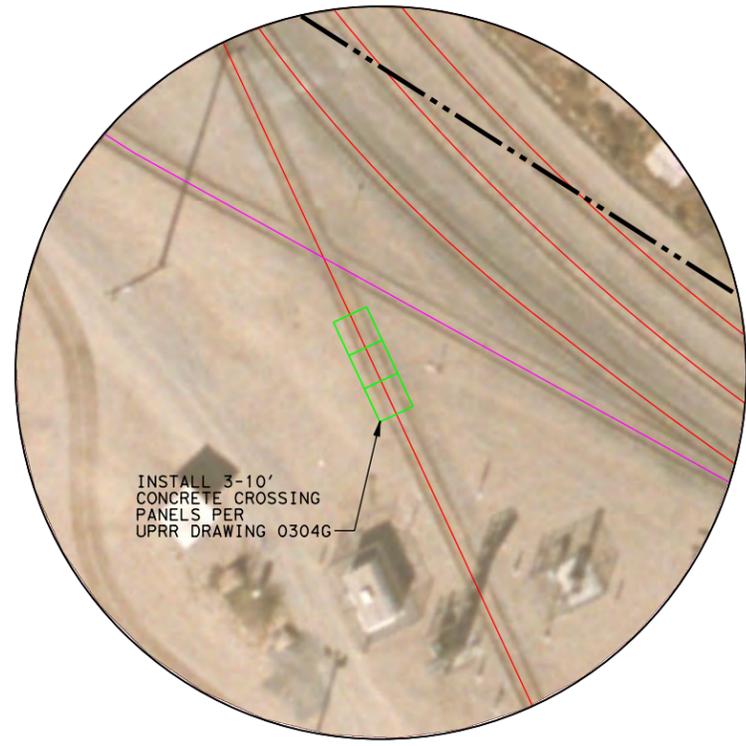
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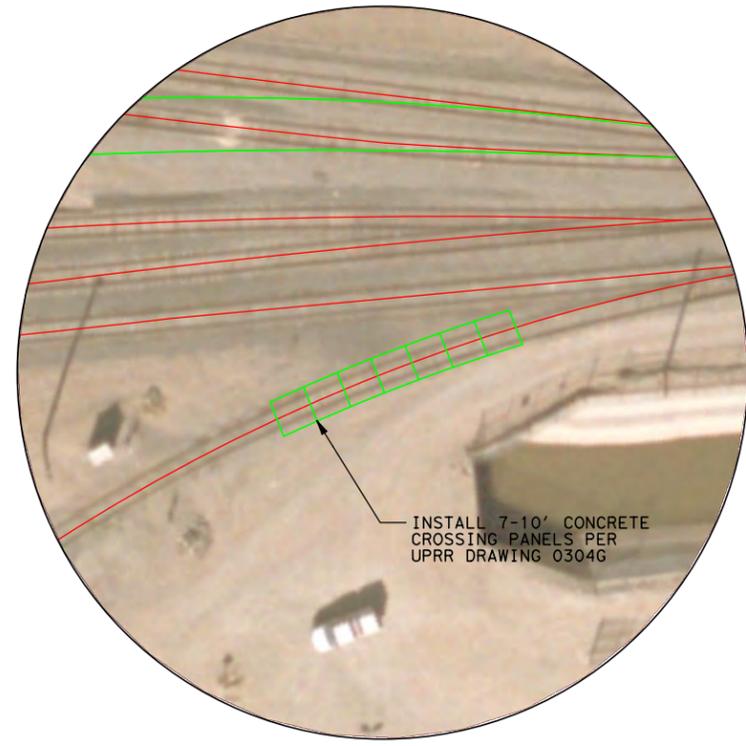
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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-GC01.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/CONC PANEL
 - ▭ PROP TURNOUT (POWERED)
 - ▭ PROP CONCRETE PANELS



DETAIL 1



DETAIL 2

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 200' TOP
 PLAN 1" = 50' BOTTOM

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 ACCESS ROAD
 AT-GRADE CROSSING
 PLAN
 (PROPOSED AND EXISTING LOCATIONS)

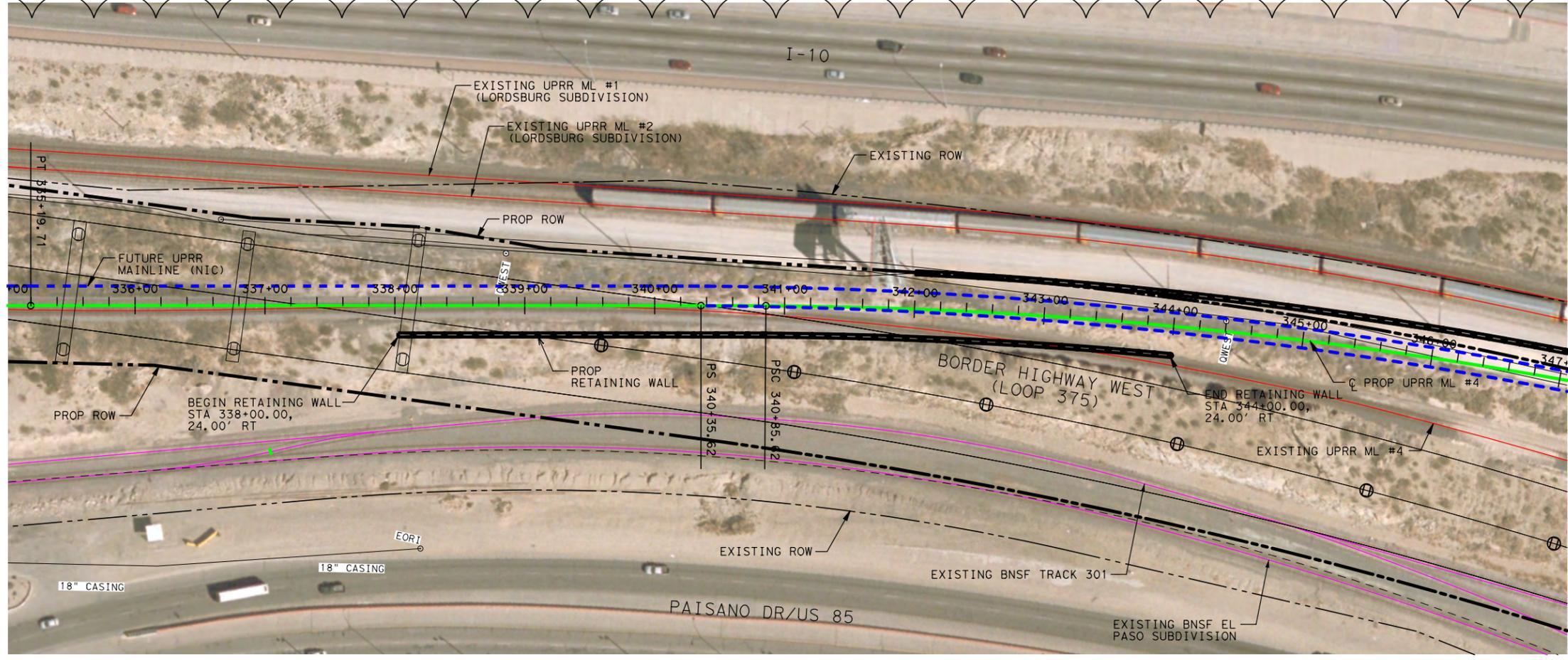
SHEET 1 OF 1

DGN:	RGN	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG:	RGN	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04
					JOB NO.:
					027
					SHEET NO.:
					41

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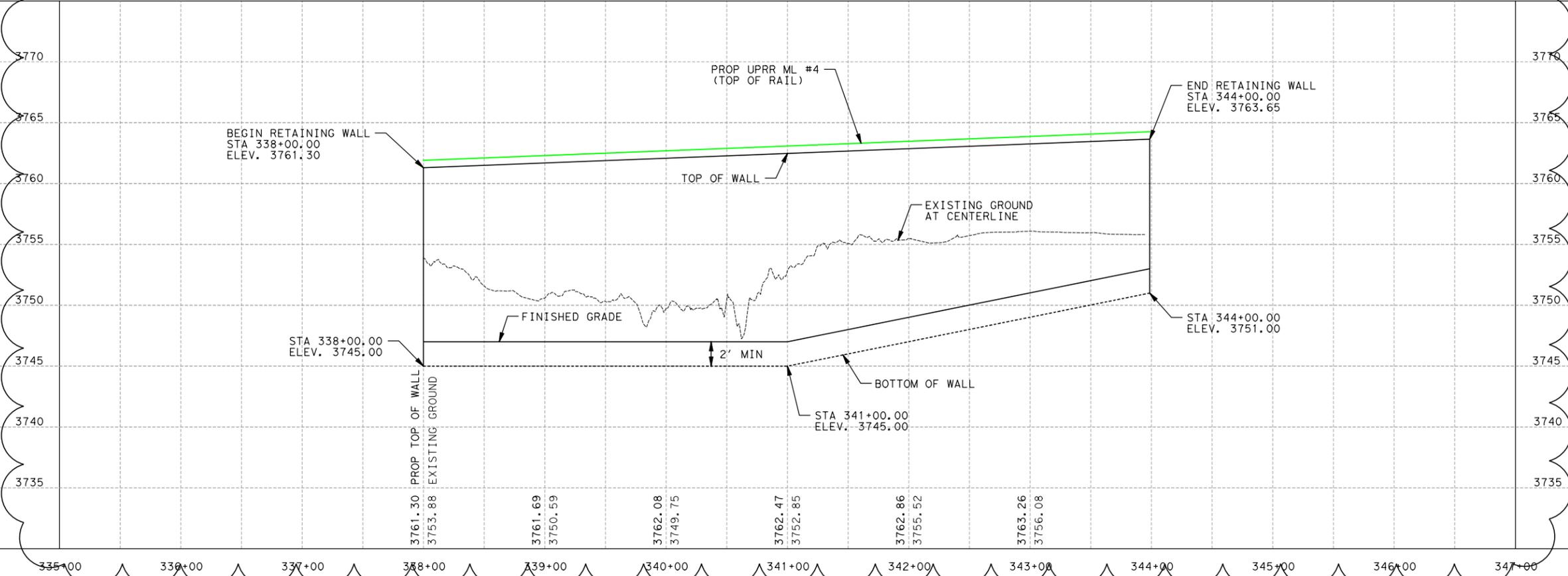
Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.p
 Design File name: IP*PWP: dms79716\LP375BHW-RR-RET-UPRR01.dgn



- LEGEND:**
- EXISTING TRACK
 - - - PROP TRACK
 - / - PROP TURNOUT (POWERED)
 - | | | RETAINING WALL
 - - - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.
 5. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.



INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 RETAINING WALL
 PLAN & PROFILE
 PROP UPRR ML #4
 STA 338+00 TO STA 344+00

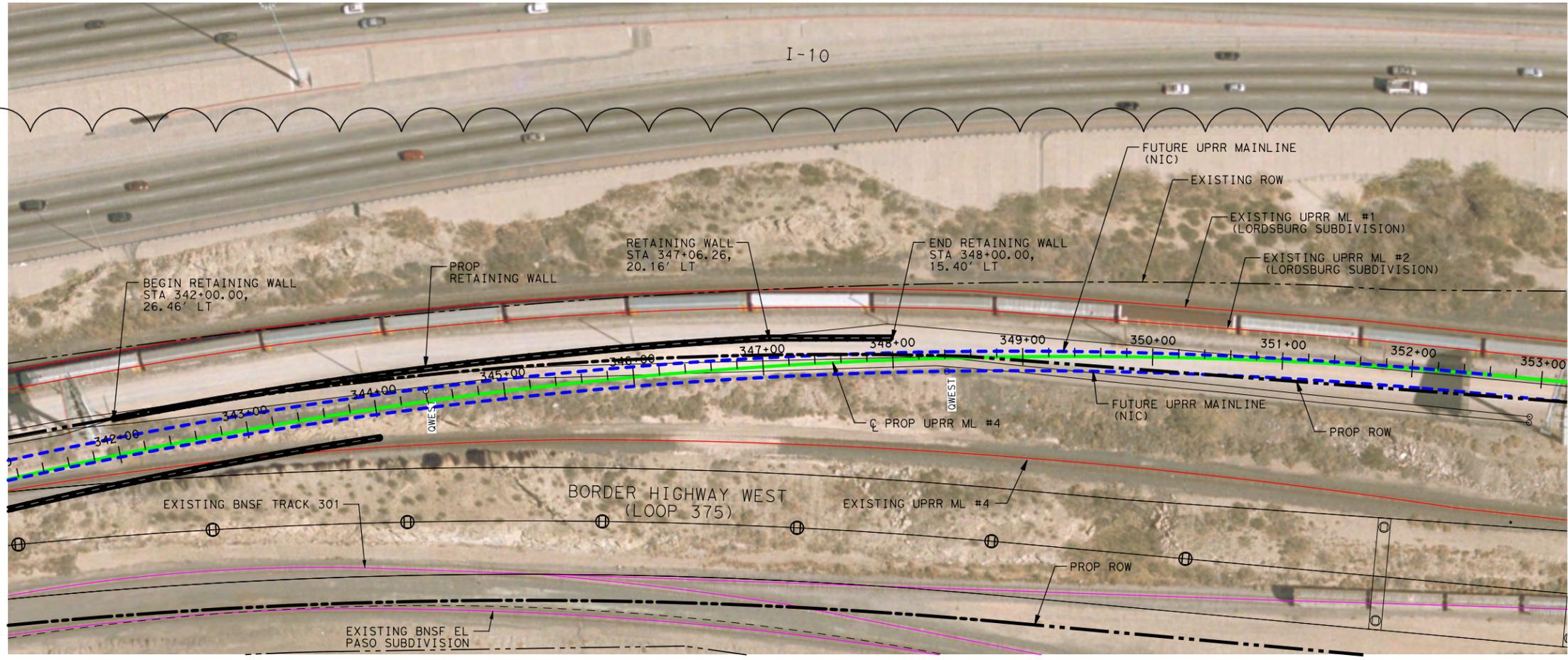
SHEET 1 OF 1

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK:	JAM	ELP	EL PASO	2552	04	027	42

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 Plotted on: 18-DEC-2013 2:07

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i .pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-RET-UPRR02.dgn



1

- LEGEND:**
- EXISTING TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
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 4. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.
 5. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

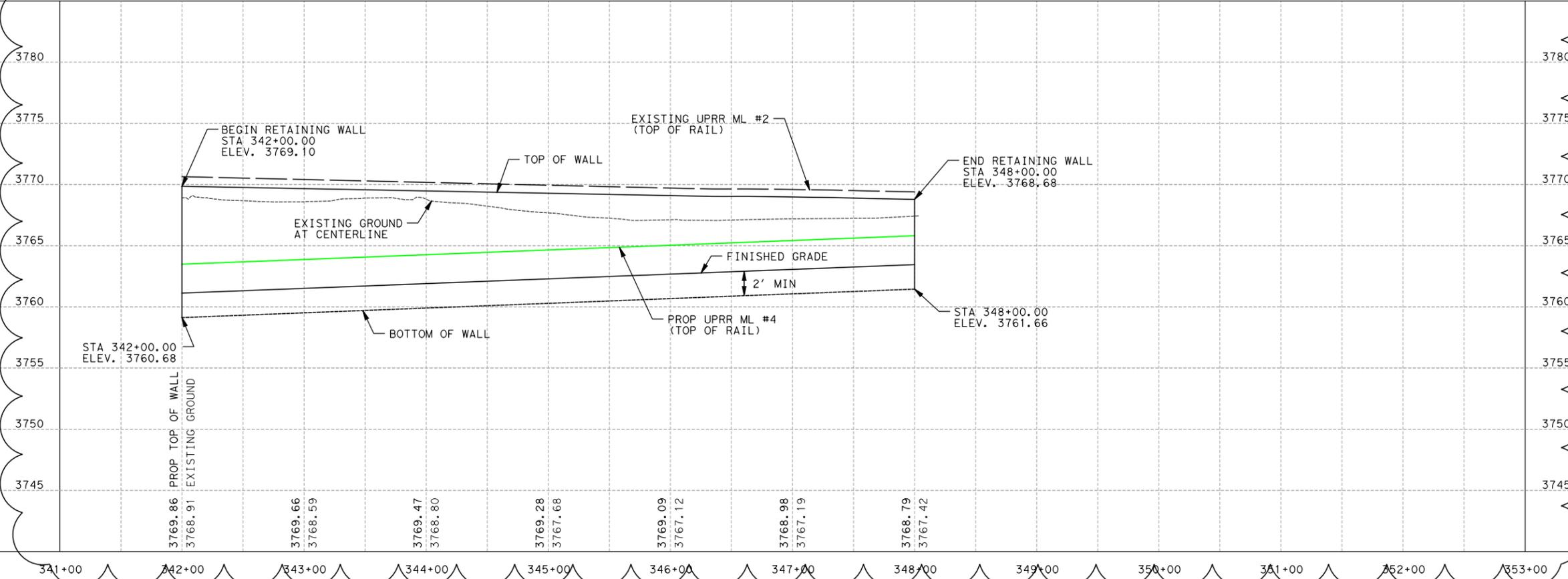
REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 RETAINING WALL
 PLAN & PROFILE
 PROP UPRR ML #4
 STA 342+00 TO STA 348+00

SHEET 1 OF 1

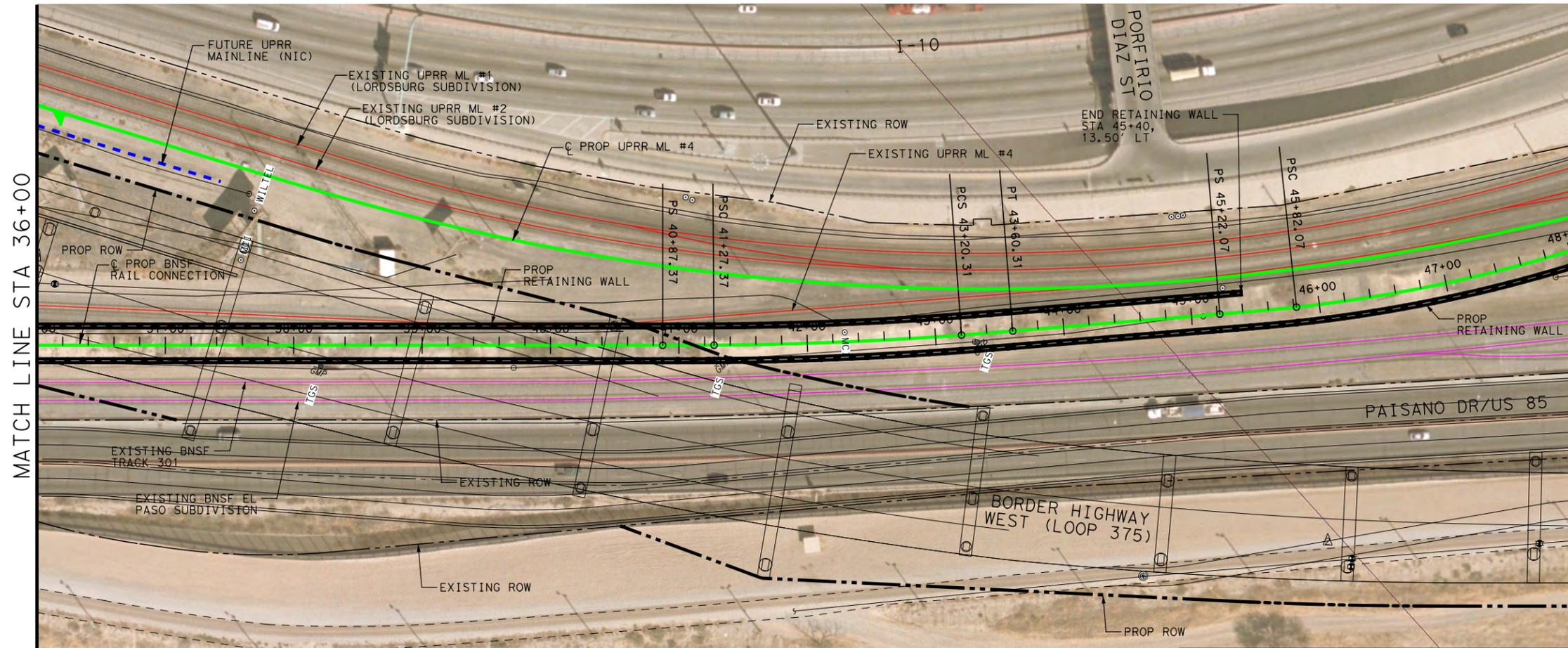
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CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	43



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 Plotted on: 18-DEC-2013 2:09

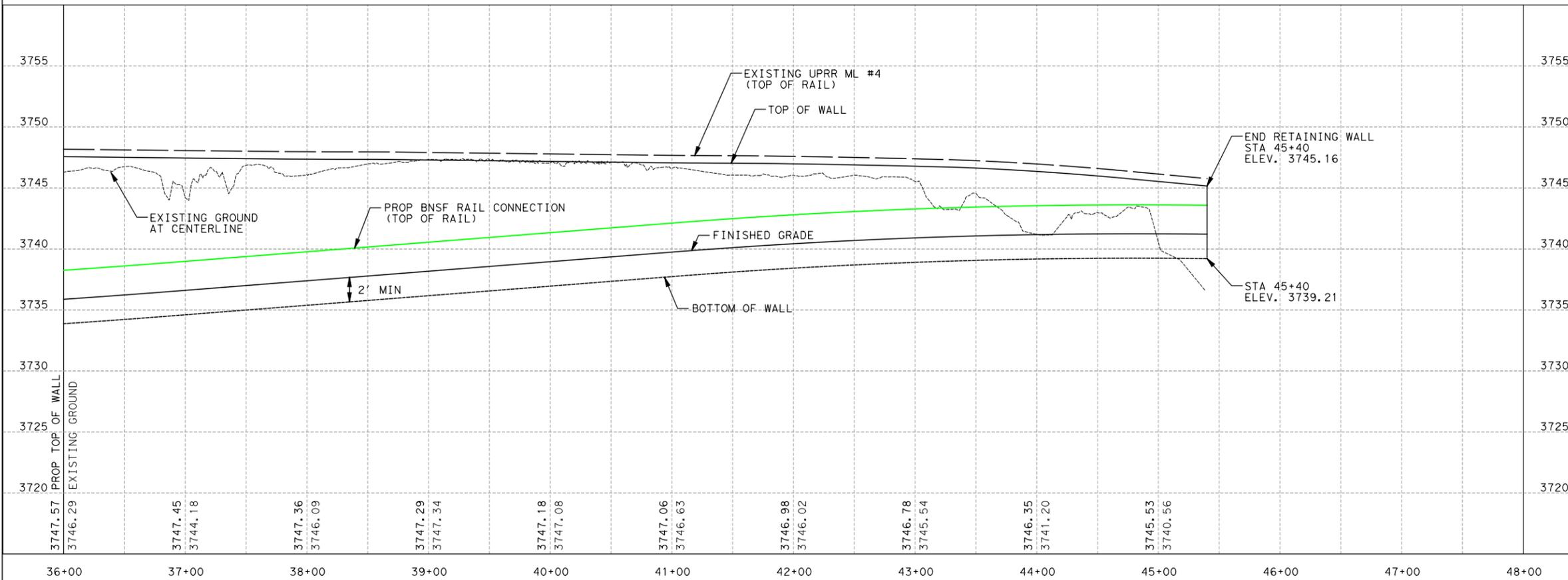
Model Name:

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- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
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 4. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.
 5. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.



INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 RETAINING WALL
 PLAN & PROFILE
 BNSF RAIL CONNECTION
 STA 36+00 TO STA 45+40

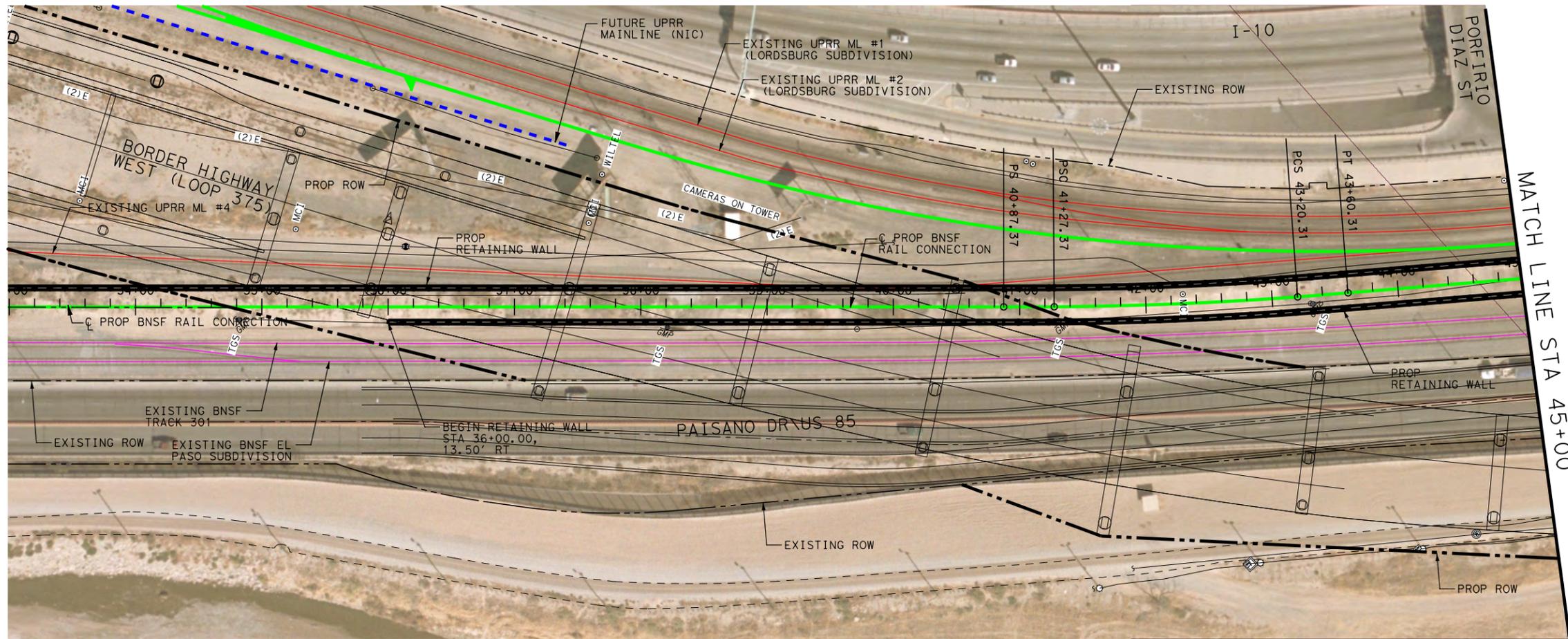
SHEET 2 OF 2

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK:	JAM	ELP	EL PASO	2552	04	027	45

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 Plotted on: 18-DEC-2013 2:09

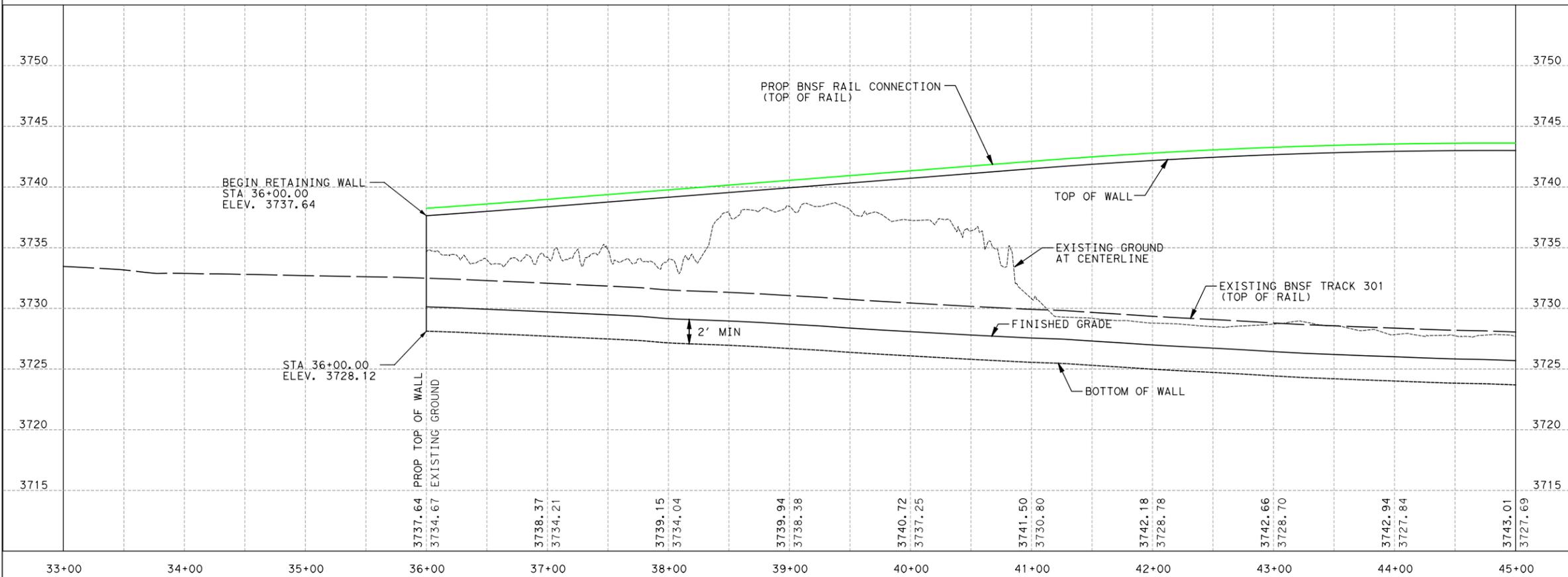
Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-RET-BNSF03.dgn



- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
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INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY



**BORDER HIGHWAY WEST (LP 375)
 RETAINING WALL
 PLAN & PROFILE
 BNSF RAIL CONNECTION
 STA 36+00 TO STA 45+00**

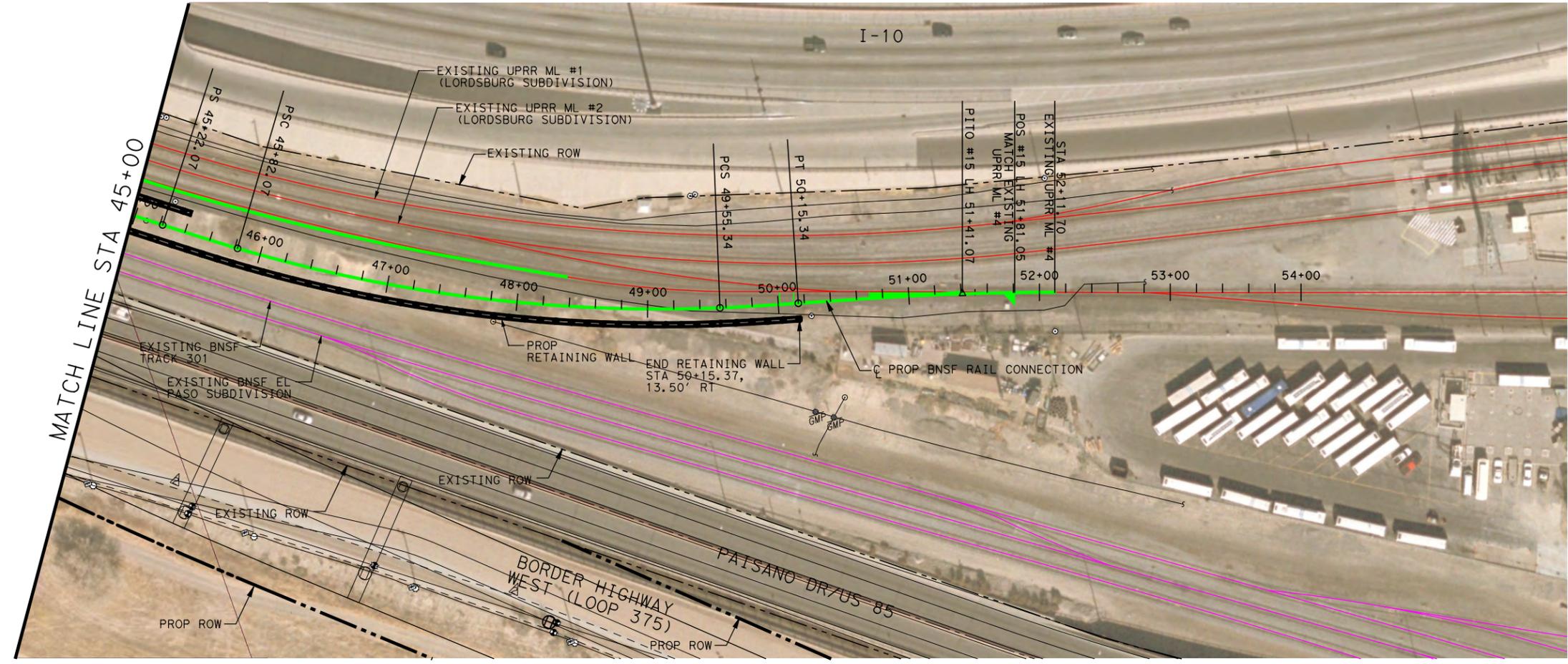
SHEET 1 OF 2

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	46

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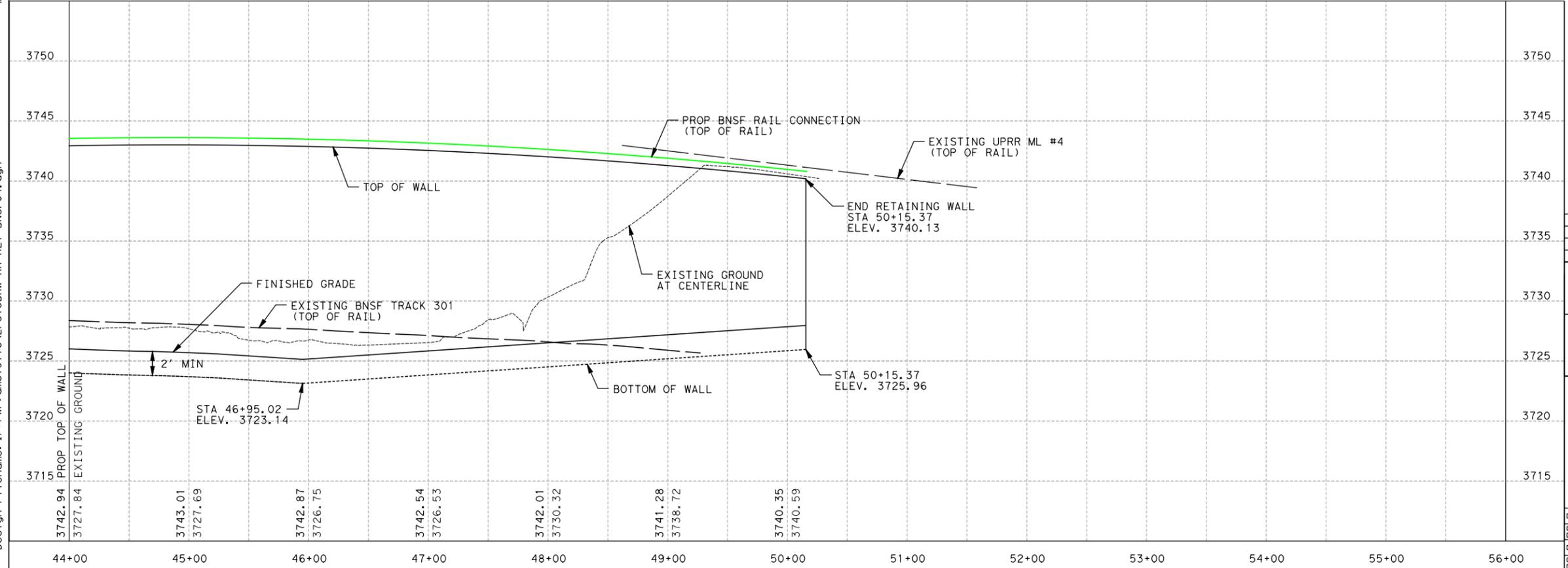
Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.dgn
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- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - RETAINING WALL
 - - - FUTURE TRACK (NIC)

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.
 5. SEE CONSTRUCTION SEQUENCE PLAN FOR PHASING OF CONSTRUCTION ACTIVITIES.



INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE 1"=10'

REV. NO.	DATE	DESCRIPTION	BY

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 TBPE FIRM REGISTRATION NO.: 420

**BORDER HIGHWAY WEST (LP 375)
 RETAINING WALL
 PLAN & PROFILE
 BNSF RAIL CONNECTION
 STA 45+00 TO STA 50+15.37**

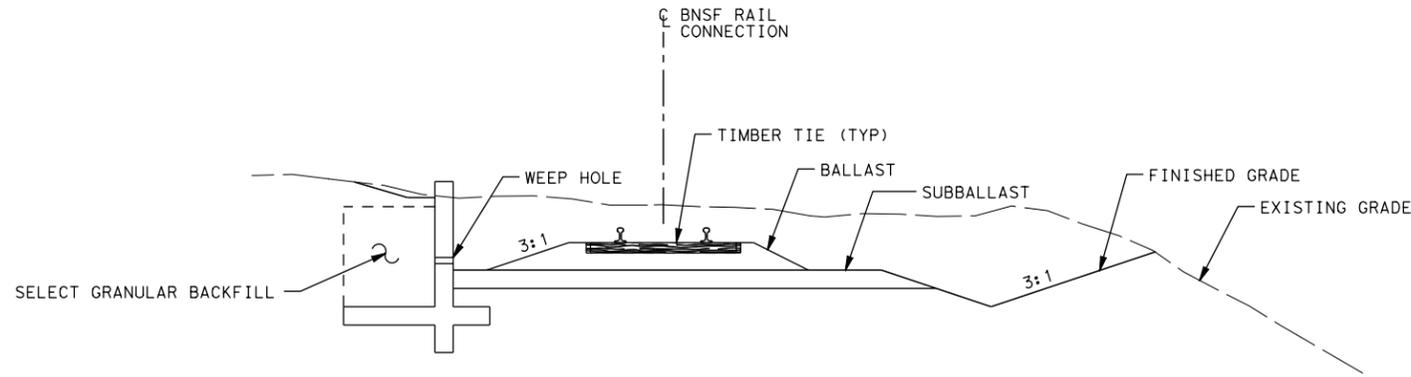
SHEET 2 OF 2

DGN: RGN	FED. RD. DIV. NO.: 6	STATE: TEXAS	PROJECT NO.: XX XXXX (XXX)	HIGHWAY NO.: BHW RAIL
CHK: JAM				
DWG: RGN	DIST.: ELP	COUNTY: EL PASO	CONT. NO.: 2552	SECT. NO.: 04
CHK: JAM			JOB NO.: 027	SHEET NO.: 47

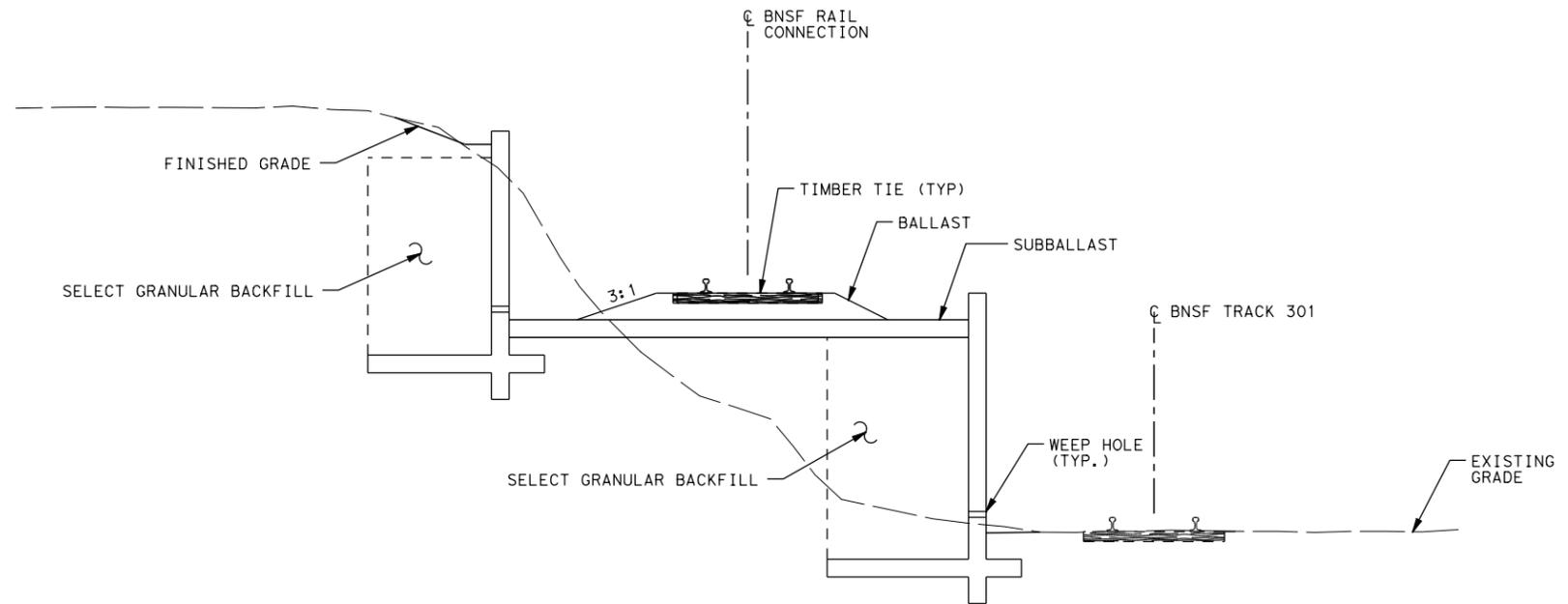
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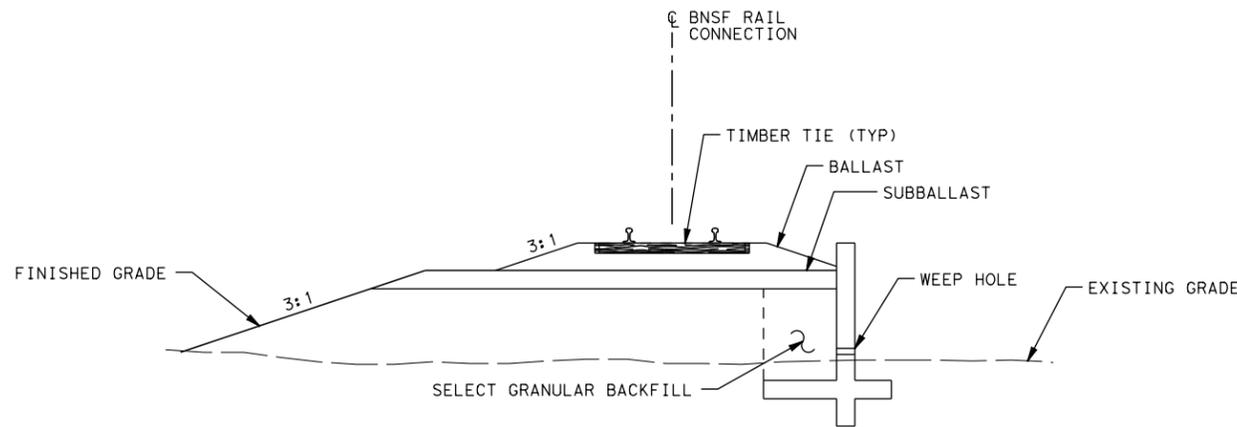
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CAST-IN-PLACE CONCRETE WALL ALTERNATE
 TYPICAL SECTION
 STA 27+00.60 TO 36+00



CAST-IN-PLACE CONCRETE WALL ALTERNATE
 TYPICAL SECTION
 STA 36+00 TO 45+37.97



CAST-IN-PLACE CONCRETE WALL ALTERNATE
 TYPICAL SECTION
 STA 45+37.97 TO 50+15.37

- NOTES:
1. SEE TRACK TYPICAL SECTIONS AND CROSS SECTIONS FOR RETAINING WALL LOCATIONS AND HEIGHTS.
 2. SEE RETAINING WALL TYPICAL DETAILS FOR WALL ALTERNATES REQUIREMENTS.

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: KEVIN A. KUHL
 P.E. Serial No.: 91588
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



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 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CAST-IN-PLACE
 WALL ALTERNATE
 TYPICAL SECTIONS

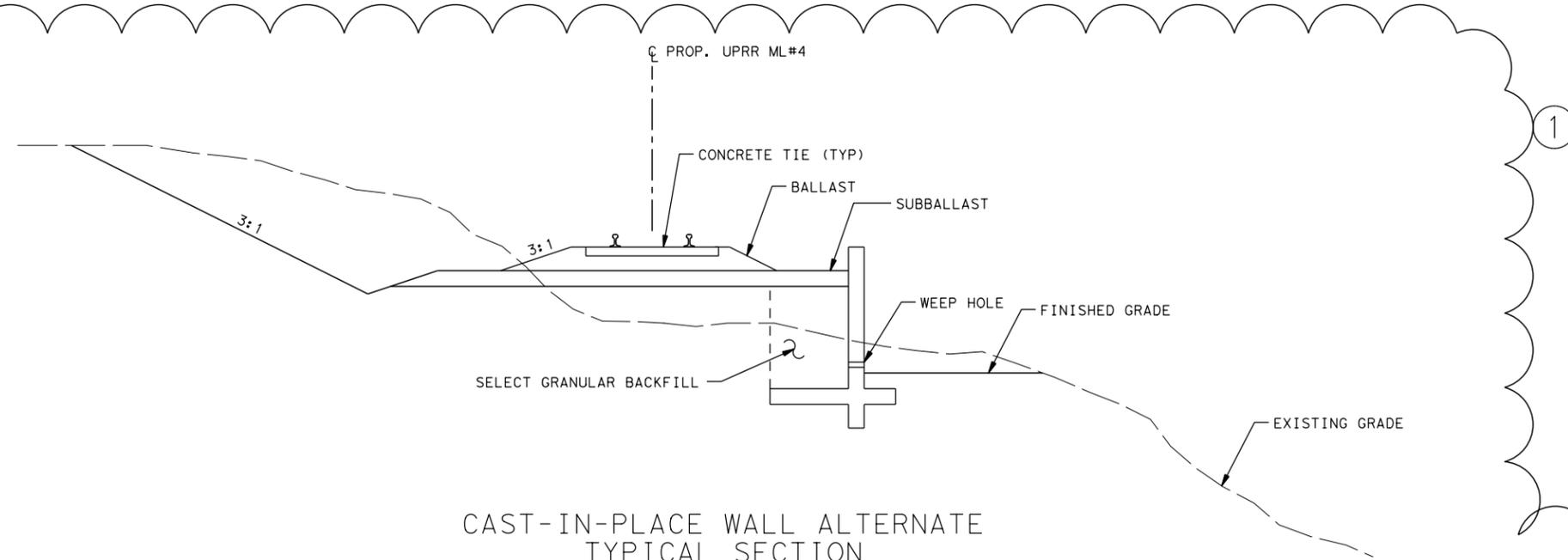
SHEET 1 OF 3

DGN:	XXX	FED. RD. DIV. NO.:	6	STATE:	TEXAS	PROJECT NO.:	XX XXXX (XXX)	HIGHWAY NO.:	BHW RAIL				
CHK DGN:	XXX	DIST.:	ELP	COUNTY:	EL PASO	CONT. NO.:	2552	SECT. NO.:	04	JOB NO.:	027	SHEET NO.:	48

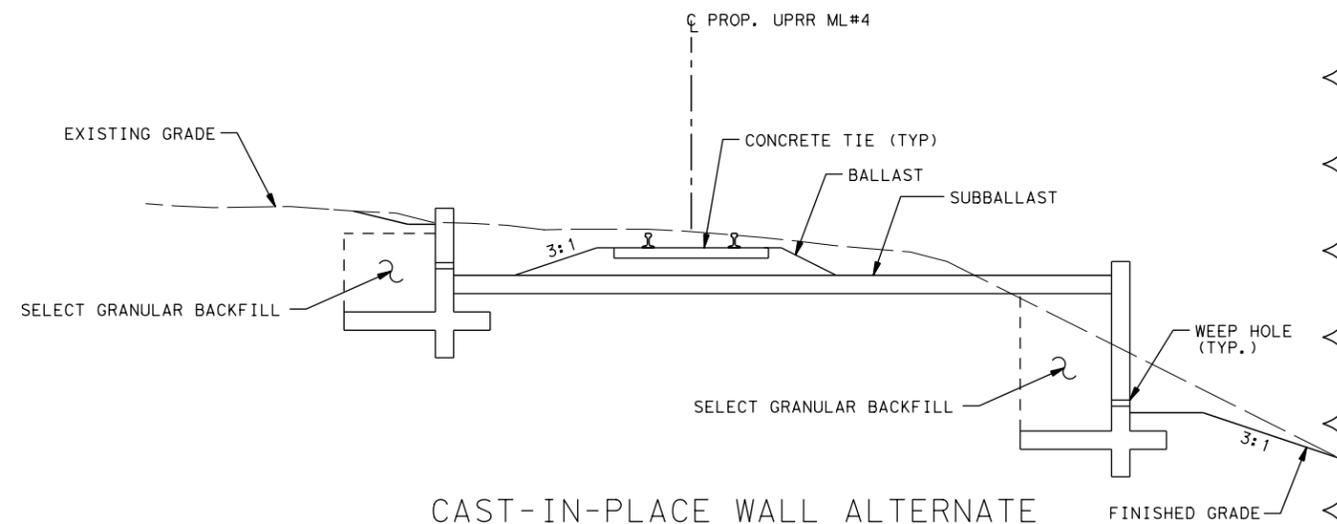
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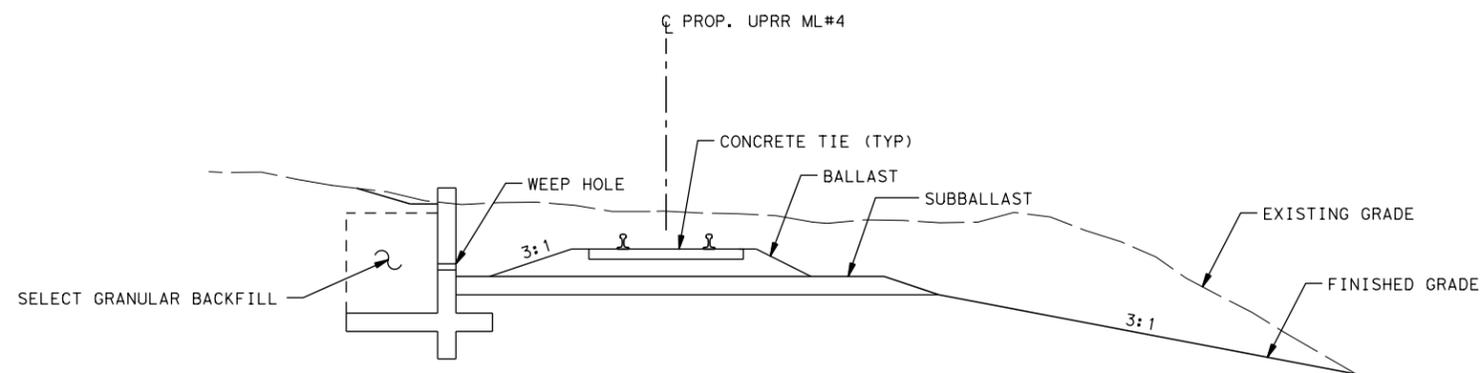
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 Design File Name: IP*PWP:dms79716\LP375BHW-RR-WLD-TYP02.dgn



CAST-IN-PLACE WALL ALTERNATE
 TYPICAL SECTION
 STA 338+00 TO 342+00



CAST-IN-PLACE WALL ALTERNATE
 TYPICAL SECTION
 STA 342+00 TO 344+00



CAST-IN-PLACE WALL ALTERNATE
 TYPICAL SECTION
 STA 344+00 TO 348+00

- NOTES:
1. SEE TRACK TYPICAL SECTIONS AND CROSS SECTIONS FOR RETAINING WALL LOCATIONS AND HEIGHTS.
 2. SEE RETAINING WALL TYPICAL DETAILS FOR WALL ALTERNATES REQUIREMENTS.

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: KEVIN A. KUHL
 P.E. Serial No.: 91588
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY


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BORDER HIGHWAY WEST (LP 375)
 CAST-IN-PLACE
 WALL ALTERNATE
 TYPICAL SECTIONS

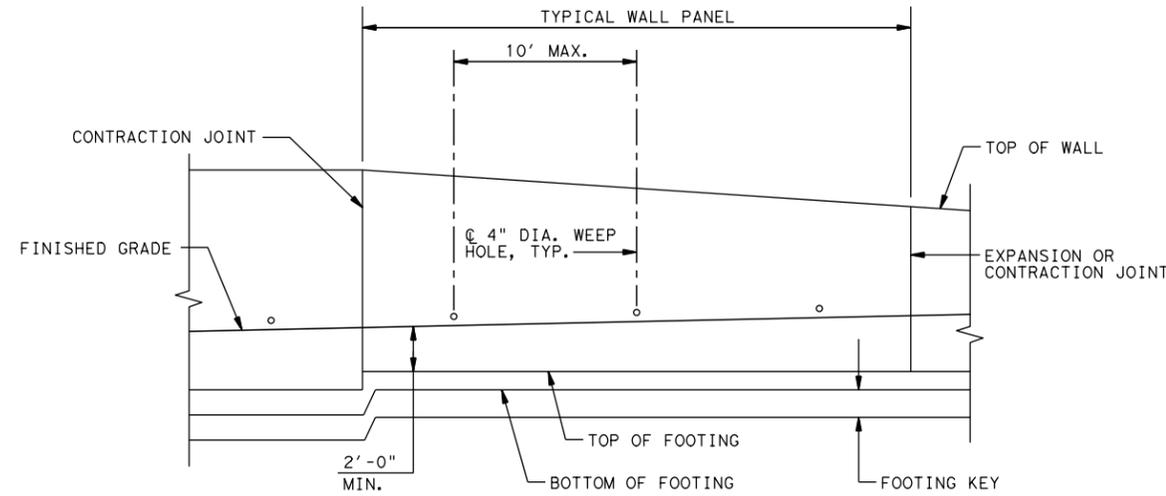
SHEET 2 OF 3

DGN:	XXX	FED. RD. DIV. NO.:	6	STATE:	TEXAS	PROJECT NO.:	XX XXXX (XXX)	HIGHWAY NO.:	BHW RAIL						
CHK DGN:	XXX	DWG:	CAT	DIST.:	ELP	COUNTY:	EL PASO	CONT. NO.:	2552	SECT. NO.:	04	JOB NO.:	027	SHEET NO.:	49

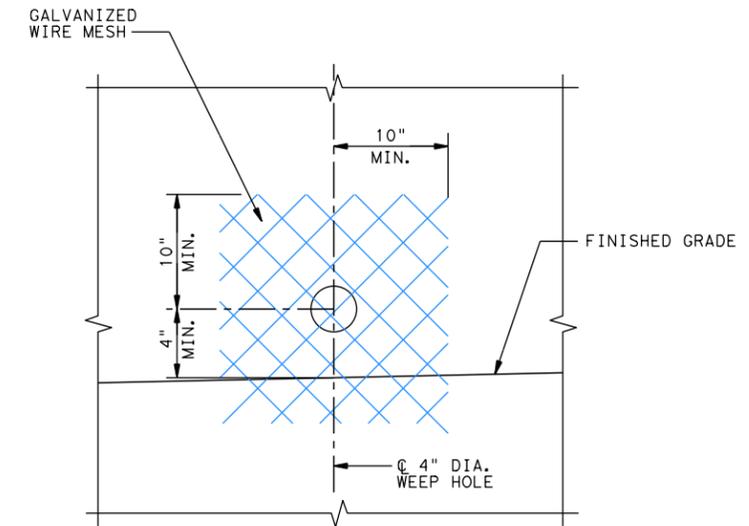
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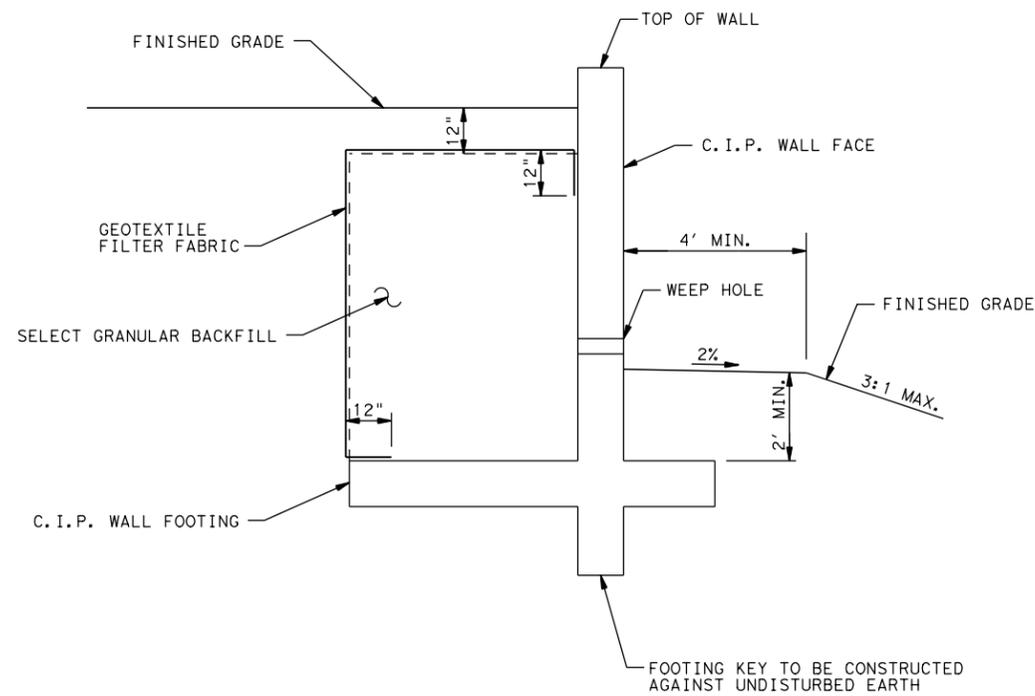
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CAST-IN-PLACE WALL ALTERNATE
 PART ELEVATION



WEEP HOLE DETAIL
 LOOKING AT BACK FACE OF WALL



CAST-IN-PLACE (C.I.P.) WALL ALTERNATE
 TYPICAL DETAILS

- NOTES:
1. SEE TRACK TYPICAL SECTIONS AND CROSS SECTIONS FOR RETAINING WALL LOCATIONS AND HEIGHTS.
 2. CAST-IN-PLACE WALL ALTERNATE SHALL BE A REINFORCED CONCRETE CANTILEVER WALL.

INTERIM REVIEW ONLY
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 Engineer: KEVIN A. KUHL
 P.E. Serial No.: 91588
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY


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BORDER HIGHWAY WEST (LP 375)
 CAST-IN-PLACE
 WALL ALTERNATE
 TYPICAL DETAILS

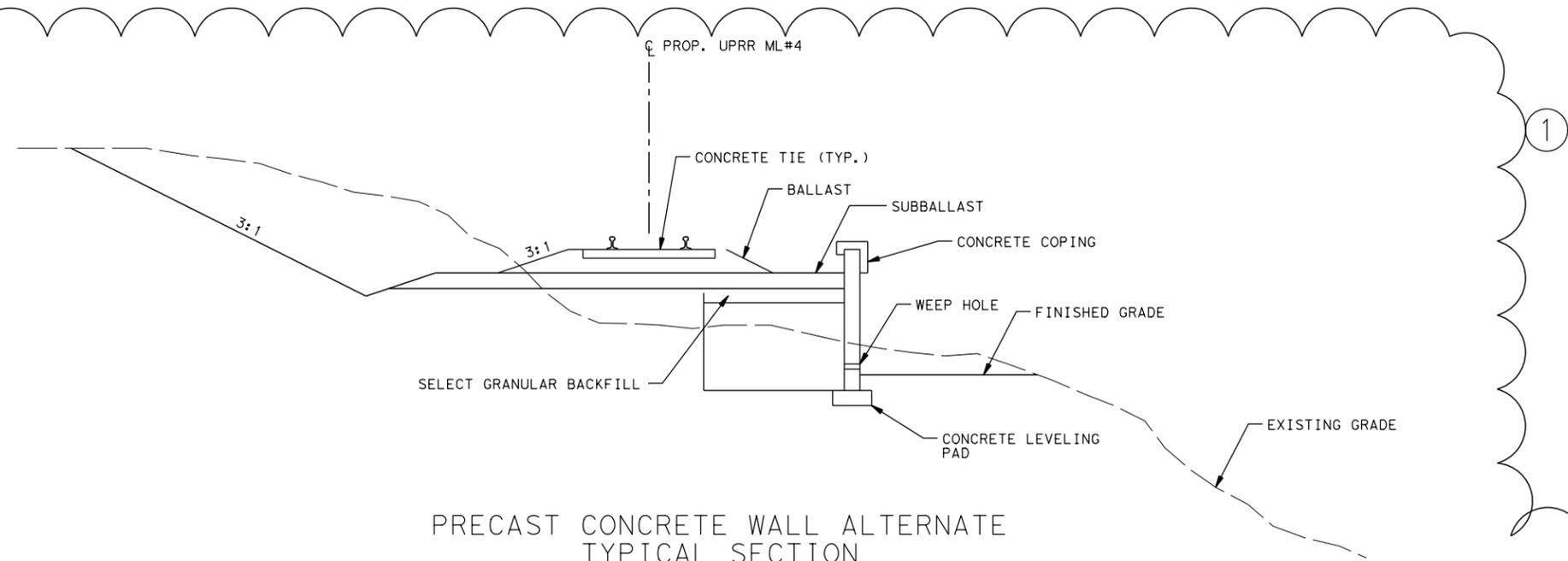
SHEET 3 OF 3

DGN:	XXX	FED. RD. DIV. NO.:	6	STATE:	TEXAS	PROJECT NO.:	XX XXXX (XXX)	HIGHWAY NO.:	BHW RAIL				
DWG:	CAT	DIST.:	ELP	COUNTY:	EL PASO	CONT. NO.:	2552	SECT. NO.:	04	JOB NO.:	027	SHEET NO.:	50

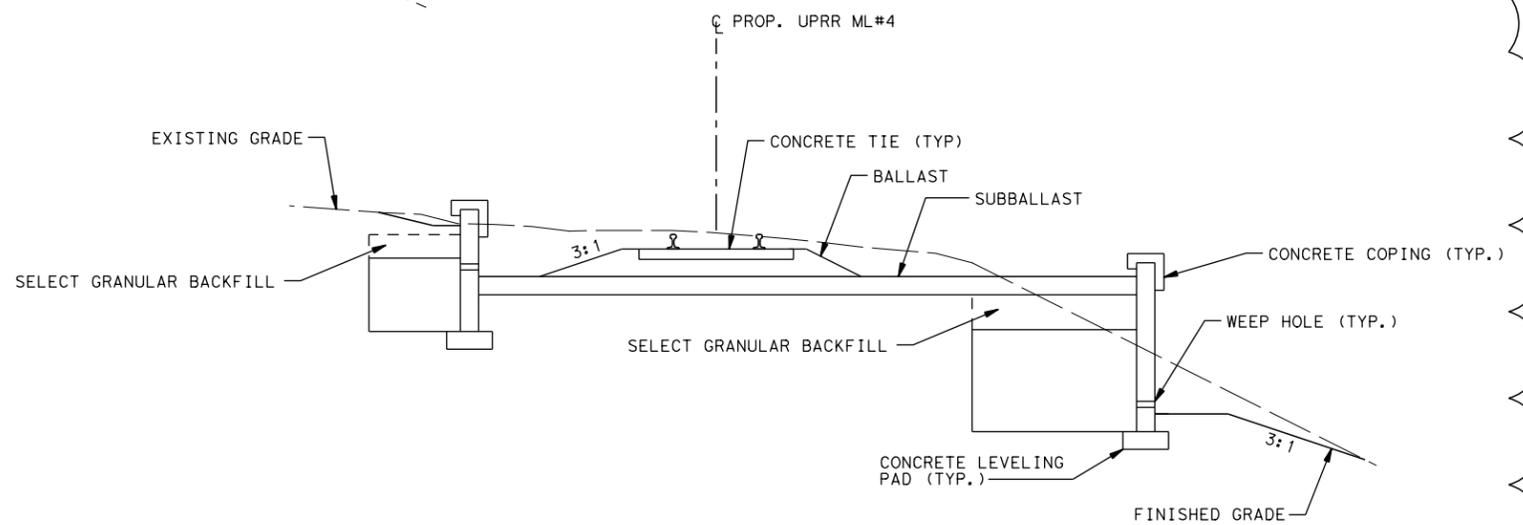
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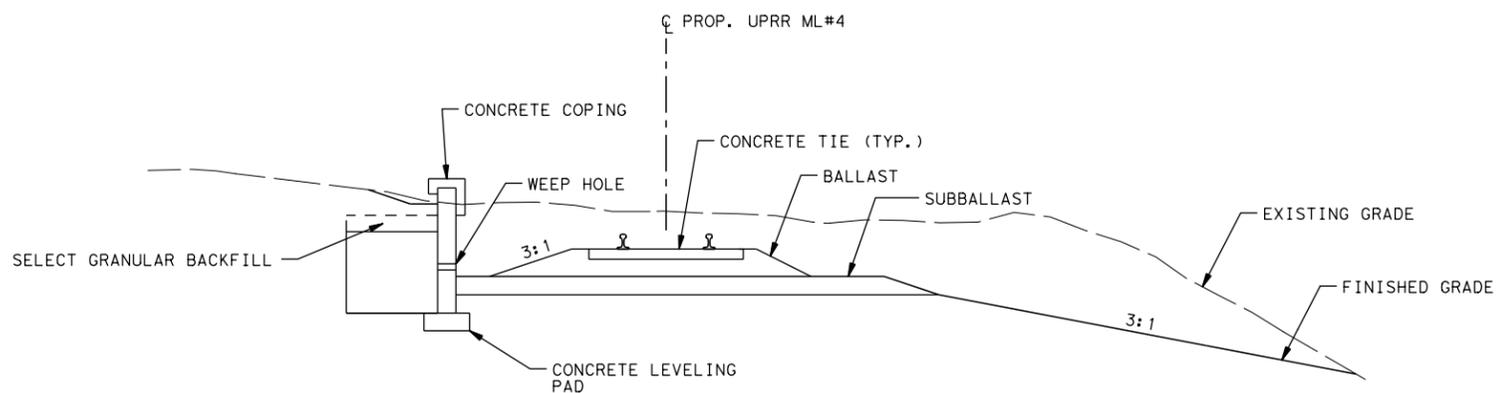
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PRECAST CONCRETE WALL ALTERNATE
 TYPICAL SECTION
 STA 338+00 TO 342+00



PRECAST CONCRETE WALL ALTERNATE
 TYPICAL SECTION
 STA 342+00 TO 344+00



PRECAST CONCRETE WALL ALTERNATE
 TYPICAL SECTION
 STA 344+00 TO 348+00

- NOTES:
1. SEE TRACK TYPICAL SECTIONS AND CROSS SECTIONS FOR RETAINING WALL LOCATIONS AND HEIGHTS.
 2. SEE RETAINING WALL TYPICAL DETAILS FOR WALL ALTERNATES REQUIREMENTS.

INTERIM REVIEW ONLY
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 Engineer: KEVIN A. KUHL
 P.E. Serial No.: 91588
 Date: 18-DEC-2013

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BORDER HIGHWAY WEST (LP 375)
 PRECAST CONCRETE
 WALL ALTERNATE
 TYPICAL SECTIONS

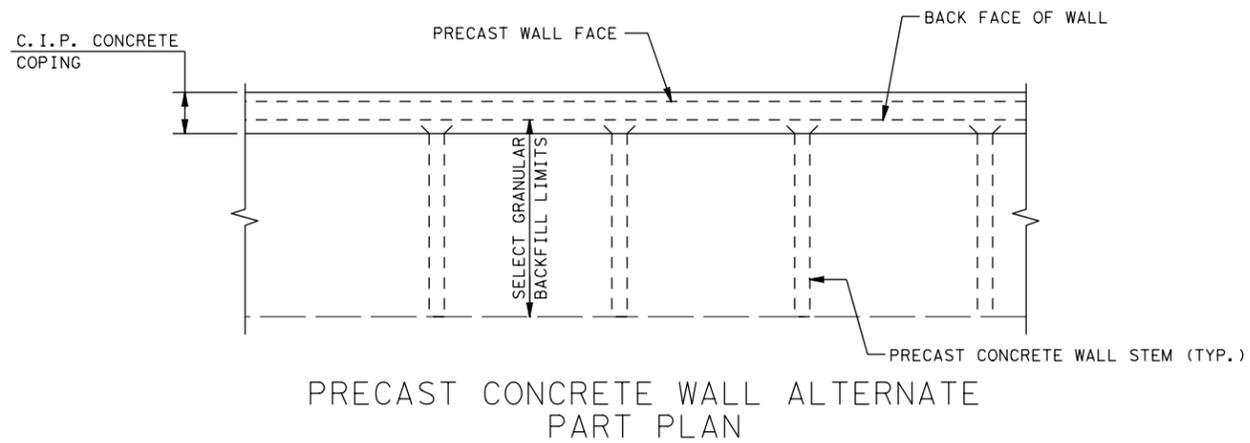
SHEET 2 OF 3

DGN:	XXX	FED. RD. DIV. NO.:	6	STATE:	TEXAS	PROJECT NO.:	XX XXXX (XXX)	HIGHWAY NO.:	BHW RAIL
CHK DGN:	XXX	DIST.:	ELP	COUNTY:	EL PASO	CONT. NO.:	2552	SECT. NO.:	04
DWG:	CAT	JOB NO.:	027	SHEET NO.:	52				

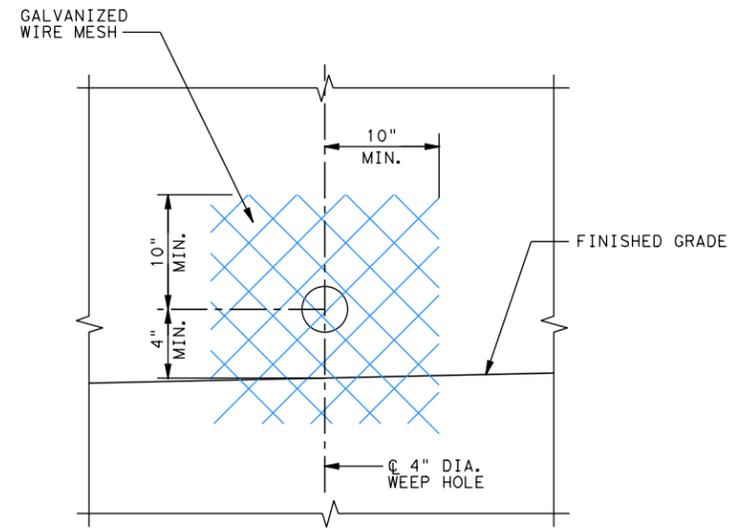
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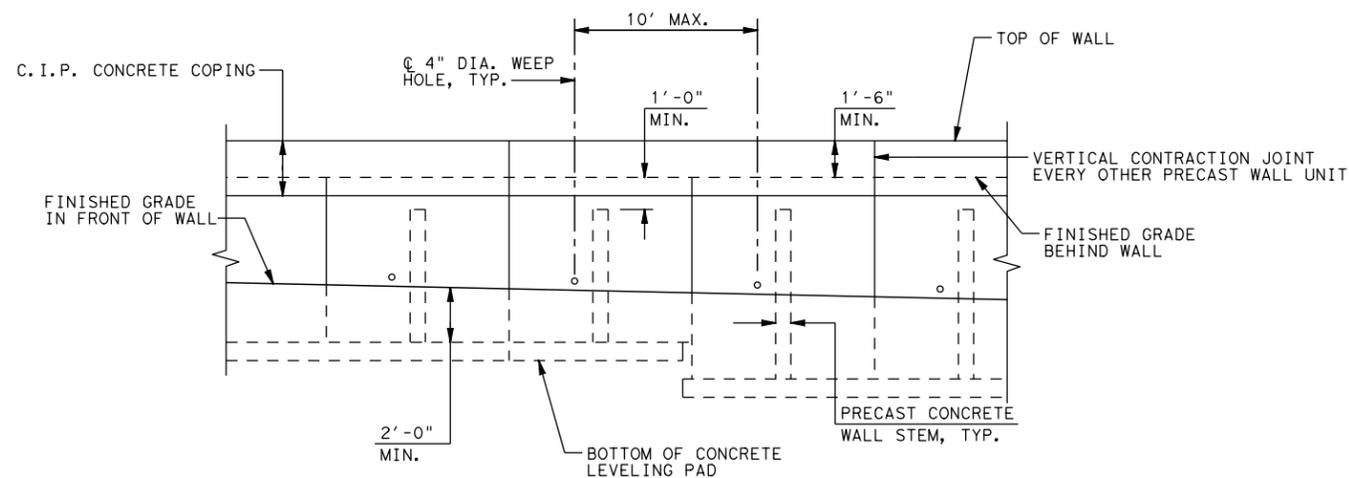
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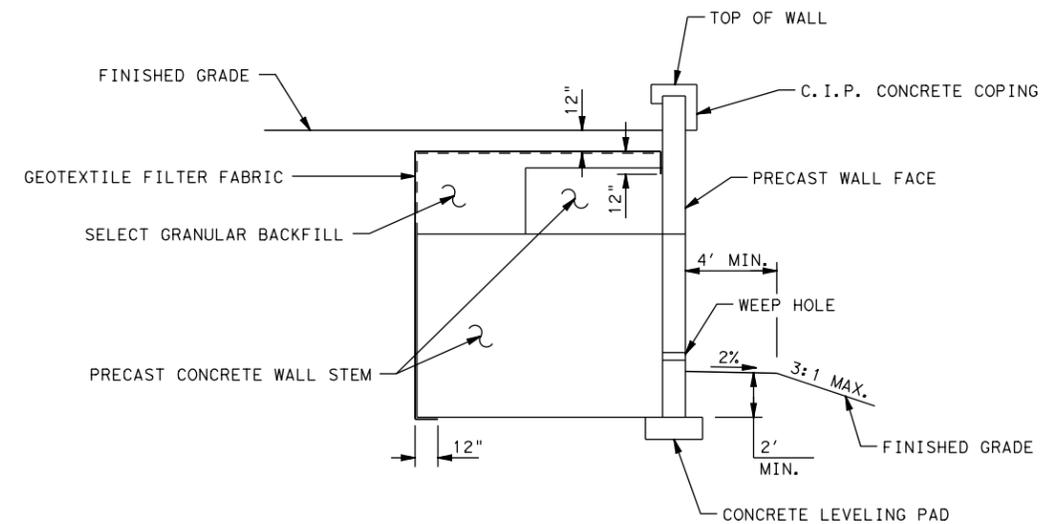
PRECAST CONCRETE WALL ALTERNATE
 PART PLAN



WEEP HOLE DETAIL
 LOOKING AT BACK FACE OF WALL



PRECAST CONCRETE WALL ALTERNATE
 PART ELEVATION



PRECAST CONCRETE WALL ALTERNATE
 TYPICAL DETAILS

- NOTES:
- SEE TRACK TYPICAL SECTIONS AND CROSS SECTIONS FOR RETAINING WALL LOCATIONS AND HEIGHTS.
 - PRECAST CONCRETE WALL ALTERNATE SHALL BE SELECTED FROM ONE OF TWO PRECAST SYSTEMS, "T-WALL" OR "DOUBLEWAL".

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 Engineer: KEVIN A. KUHL
 P.E. Serial No.: 91588
 Date: 18-DEC-2013

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BORDER HIGHWAY WEST (LP 375)
 PRECAST CONCRETE
 WALL ALTERNATE
 TYPICAL DETAILS

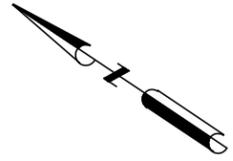
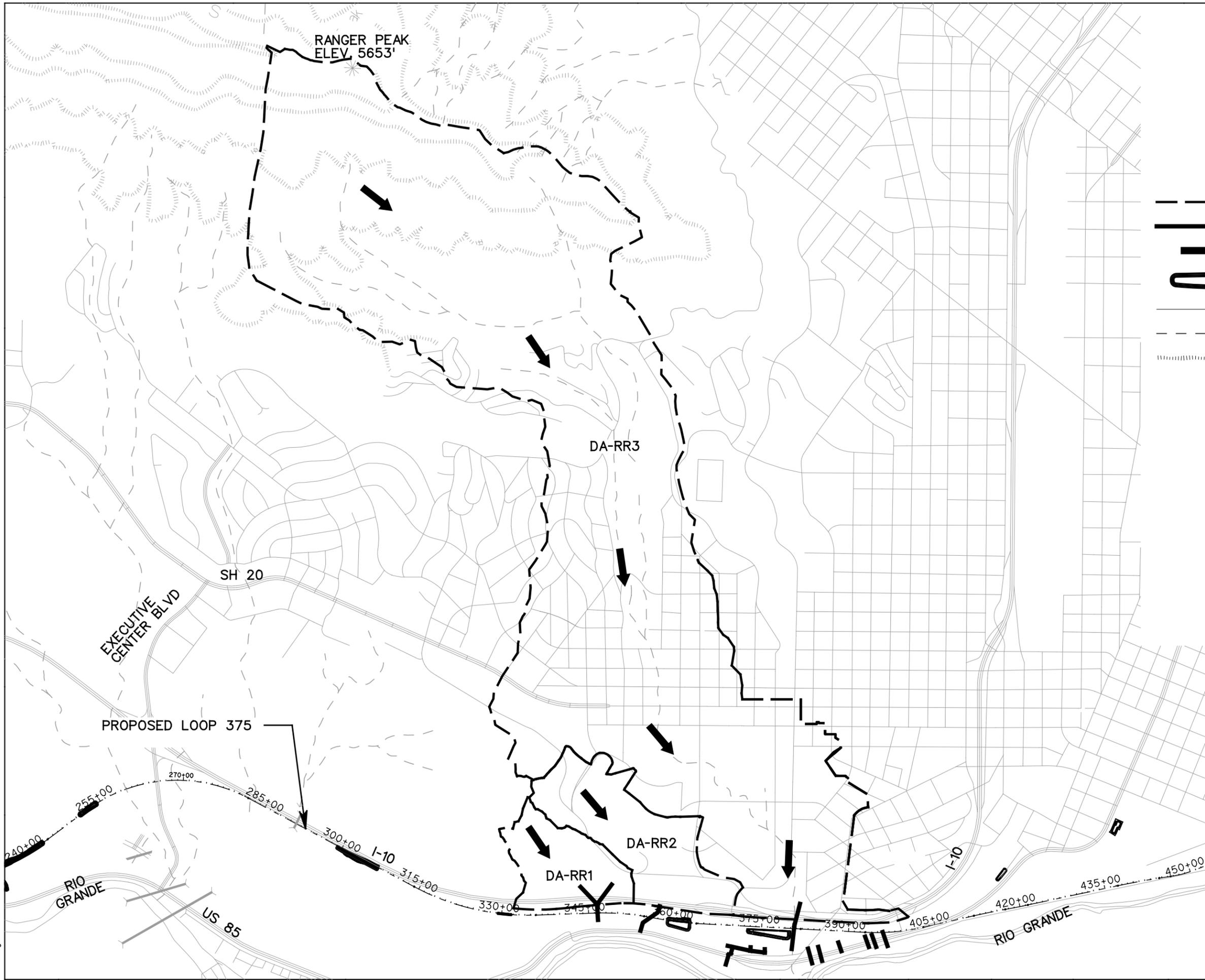
SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
XXX	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
XXX	ELP	EL PASO	2552	04	027	53

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Model Name: \$MODEL\$

Pen Table: \$PENTBL\$
Design Filename: \$FILENAME\$



-  DRAINAGE AREA
-  EXISTING CULVERTS
-  FLOW ARROWS
-  PROPOSED DETENTION/RETENTION BASIN
-  ROADS
-  STREAMS
-  TOPOGRAPHICAL RELIEF

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Engineer: MARK D. CORBITT
P.E. Serial No.: 101980
Date: 12-2-2013

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TBPE FIRM REGISTRATION NO.: 420

 **TEDSI INFRASTRUCTURE GROUP**
Consulting Engineers
1201 E. Expressway 83
Mission, Texas 78372
(936) 424-7898
TBPE F-1640

BORDER HIGHWAY WEST (LP 375)

OFF SITE DRAINAGE AREA MAP

SCALE: 1"=1500' SHEET 1 OF 1

DGN:	JV	FED. RD. DIV. NO.	STATE	FEDERAL AD PROJECT NO.	HIGHWAY NO.
CHK DGN:	MDC	6	TEXAS	XX XXXX(XXX)	BHW RAIL
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
CHK DWG:	ELP	EL PASO	2552	04	027
					54

OFF-SITE DRAINAGE AREA CALCULATIONS

BHW - RR RELOCATION - Preliminary T_c Calculations (Velocity Method)

Analysis Method	Drainage Area	Area (sqft)	Area (ac)	Area (mi ²)	Elevation Change (ft)	Slope (ft/ft)	Longest Flowpath (ft)	SHEET FLOW			SHALLOW CONCENTRATED FLOW				CHANNEL FLOW LENGTH					TRAVEL TIMES				
								L (ft)	S (ft/ft)	n	L (ft)	K	S (ft/ft)	V (ft/s)	L (ft)	R (ft)	S (ft/ft)	n (%)	V (ft/s)	T _s (min)	T _{sc} (min)	T _{ch} (min)	T _c (min)	TL (min)
RATIONAL	DA-1	2868452	66	0.103	275.0	0.1058	2600	50	0.1058	0.150	990	0.457	0.1058	4.90	1560	1.40	0.1058	0.0300	20.21	2.36	3.36	1.29	7	-
RATIONAL	DA-2	4560422	105	0.164	220.0	0.0579	3800	50	0.0579	0.150	1470	0.457	0.0579	3.63	2280	1.40	0.0579	0.0300	14.96	3.00	6.75	2.54	12	-
HYDROGRAPH	DA-3	56325839	1293	2.020	1880.0	0.0935	20100	50	0.0935	0.150	7990	0.457	0.0935	4.61	12060	1.40	0.0935	0.0300	19.01	2.48	28.87	10.57	42	25

BHW - RR RELOCATI				INTENSITY							PEAK FLOWS						
AREA ID	AREA (ac)	AREA (mi ²)	C	T _c (min)	TL (min)	2 year (in/hr)	5 year (in/hr)	10 year (in/hr)	25 year (in/hr)	50 year (in/hr)	100 year (in/hr)	2 year (cfs)	5 year (cfs)	10 year (cfs)	25 year (cfs)	50 year (cfs)	100 year (cfs)
DA-1	66	0.103	0.48	15	-	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	69.54	63.22	113.79	154.25	164.36	177.01
DA-2	105	0.164	0.48	15	-	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	110.56	100.51	180.91	245.23	261.31	281.41
DA-3	1293	2.020	-	42	25	REFER TO HEC-HMS OUTPUT											

Data from "Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"						
T _c = 15 min						
Pd =	0.55	0.5	0.9	1.22	1.3	1.4
Pd/Tc =	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000

NOTES:

- FOR ALL WATERSHEDS UNDER 200 AC. THE RATIONAL METHOD WAS USED TO DETERMINE ALL PEAK FLOWS. FOR WATERSHEDS GREATER THAN 200 AC THE SCS DIMENSIONLESS UNIT HYDROGRAPH METHOD WAS USED ALONG WITH THE SCS LOSS METHOD.
- MIN. TIME OF CONCENTRATION = 15 MINUTES.
- DEPTH DURATION FREQUENCY DATA WAS OBTAINED FROM THE REPORT TITLED "ATLAS OF DEPTH-DURATION FREQUENCY OF PRECIPITATION ANNUAL MAXIMA FOR TEXAS".

BHW - RR RELOCATION - Preliminary T_c Calculations (Velocity Method)

Analysis Method	Drainage Area	Area (sqft)	Area (ac)	Elevation Change (ft)	Slope (ft/ft)	Longest Flowpath (ft)	SHEET FLOW			SHALLOW CONCENTRATED FLOW				CHANNEL FLOW LENGTH					TRAVEL TIMES			T _c	
							L (ft)	S (ft/ft)	n	L (ft)	K	S (ft/ft)	V (ft/s)	L (ft)	R (ft)	S (ft/ft)	n (%)	V (ft/s)	T _s (min)	T _{sc} (min)	T _{ch} (min)	T _c (calculated) (min)	T _c (minimum) (min)
RATIONAL	SDA-1	79180	1.8	8	0.0186	430	50	0.0186	0.150	122	0.457	0.0186	2.06	258	1.40	0.0186	0.0300	8.48	4.73	0.99	0.51	6	15
RATIONAL	SDA-2	76958	1.8	4	0.0094	424	50	0.0094	0.150	120	0.457	0.0094	1.46	254	1.40	0.0094	0.0300	6.04	6.21	1.36	0.70	8	15
RATIONAL	SDA-3	22023	0.5	10	0.0351	285	50	0.0351	0.150	64	0.457	0.0351	2.82	171	1.40	0.0351	0.0300	11.64	3.67	0.38	0.24	4	15
RATIONAL	SDA-4	35557	0.8	14	0.0326	429	50	0.0326	0.150	122	0.457	0.0326	2.72	257	1.40	0.0326	0.0300	11.23	3.78	0.74	0.38	5	15
RATIONAL	SDA-5	23712	0.5	13	0.0406	320	50	0.0406	0.150	78	0.457	0.0406	3.04	192	1.40	0.0406	0.0300	12.53	3.46	0.43	0.26	4	15
RATIONAL	SDA-6	21673	0.5	16	0.0548	292	50	0.0548	0.150	67	0.457	0.0548	3.53	175	1.40	0.0548	0.0300	14.55	3.07	0.32	0.20	4	15
RATIONAL	SDA-7	26010	0.6	15	0.0630	238	50	0.0630	0.150	45	0.457	0.0630	3.79	143	1.40	0.0630	0.0300	15.60	2.90	0.20	0.15	3	15
RATIONAL	SDA-8	24693	0.6	13	0.0345	377	50	0.0345	0.150	101	0.457	0.0345	2.80	226	1.40	0.0345	0.0300	11.54	3.70	0.60	0.33	5	15

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: MARK D. CORBITT
 P.E. Serial No.: 101980
 Date: 12-2-2013

BHW - RR RELOCATION - Preliminary T _c Calculations (Velocity Method)				INTENSITY							PEAK FLOWS						
AREA ID	AREA (ac)	C	T _c (min)	2 year (in/hr)	5 year (in/hr)	10 year (in/hr)	25 year (in/hr)	50 year (in/hr)	100 year (in/hr)	2 year (cfs)	5 year (cfs)	10 year (cfs)	25 year (cfs)	50 year (cfs)	100 year (cfs)		
SDA-1	1.8	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	2.08	1.89	3.40	4.61	4.92	5.29		
SDA-2	1.8	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	2.02	1.84	3.31	4.48	4.78	5.14		
SDA-3	0.5	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	0.58	0.53	0.95	1.28	1.37	1.47		
SDA-4	0.8	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	0.93	0.85	1.53	2.07	2.21	2.38		
SDA-5	0.5	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	0.62	0.57	1.02	1.38	1.47	1.59		
SDA-6	0.5	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	0.57	0.52	0.93	1.26	1.35	1.45		
SDA-7	0.6	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	0.68	0.62	1.12	1.52	1.61	1.74		
SDA-8	0.6	0.52	15	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000	0.65	0.59	1.06	1.44	1.53	1.65		

Data from "Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"						
T _c = 15 min						
Pd =	0.55	0.5	0.9	1.22	1.3	1.4
Pd/Tc =	2.2000	2.0000	3.6000	4.8800	5.2000	5.6000

REV. NO.	DATE	DESCRIPTION	BY

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 TBPE FIRM REGISTRATION NO.: 420

TEDSI INFRASTRUCTURE GROUP
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 1201 E. Expressway 83
 Mission, Texas 78572
 (956) 424-7898

BORDER HIGHWAY WEST (LP 375)
 HYDROLOGIC & HYDRAULIC
 CALCULATIONS

SHEET 1 OF 1

DGN	JV	FED. RD. DIV. NO.	STATE	FEDERAL AD PROJECT NO.	HIGHWAY NO.	
CHK DGN	MDC	6	TEXAS	XX XXXX(XXX)	BHW RAIL	
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	ELP	EL PASO	2552	04	027	55

Scale: 1"=50'
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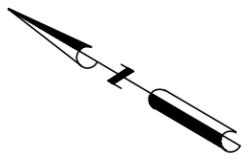
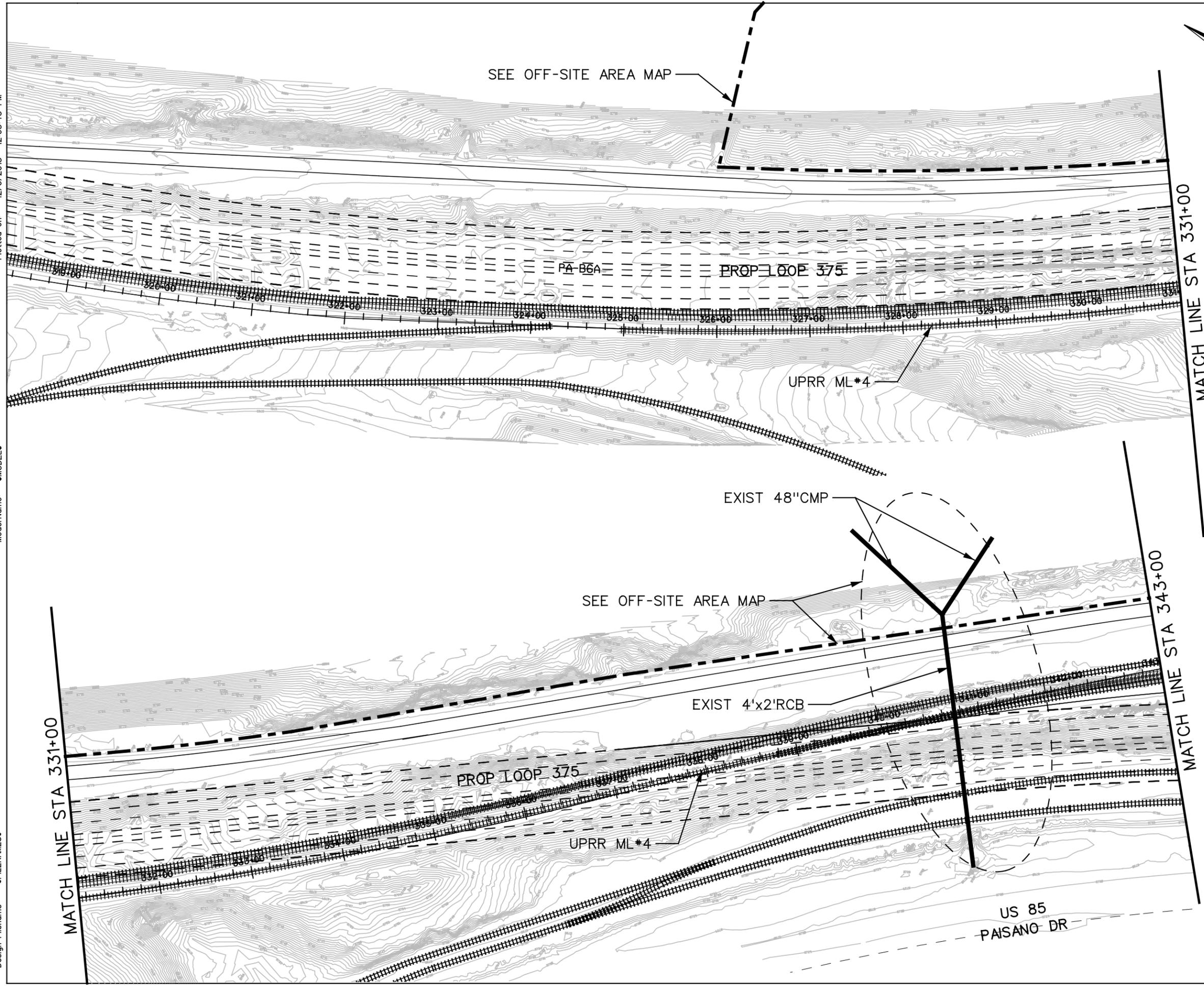
Model Name: \$MODEL\$

Pen Table: \$PENTBL\$
 Design Filename: \$FILENAME\$

Scale: 1"=100'
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Model Name: \$MODEL\$

Pen Table: \$PENTBL\$
 Design Filename: \$FILENAME\$



INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: MARK D. CORBITT
 P.E. Serial No.: 101980
 Date: 12-2-2013

REV. NO.	DATE	DESCRIPTION	BY



**BORDER HIGHWAY WEST (LP 375)
 SMALL DRAINAGE AREAS**

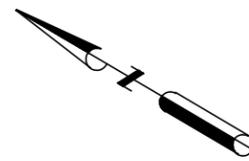
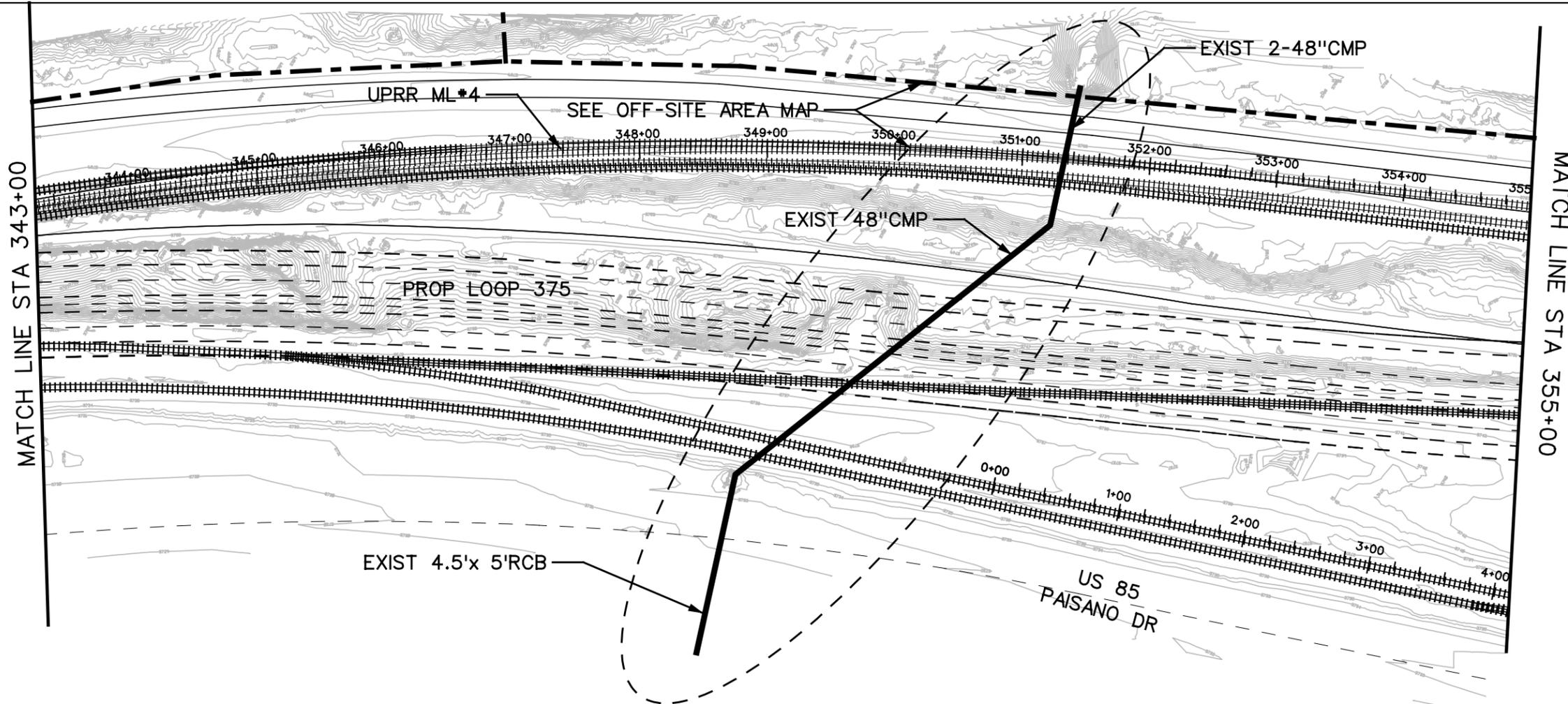
STA 319+00 TO STA 343+00
 SCALE 1" = 100' SHEET 1 OF 5

DWG	JV	FED. RD. DIV. NO.	STATE	FEDERAL AD PROJECT NO.	HIGHWAY NO.	
CHK	MDC	6	TEXAS	XX XXXX(XXX)	BHW RAIL	
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	ELP	EL PASO	2552	04	027	56

Scale: 1"=100'
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Model Name: \$MODEL\$

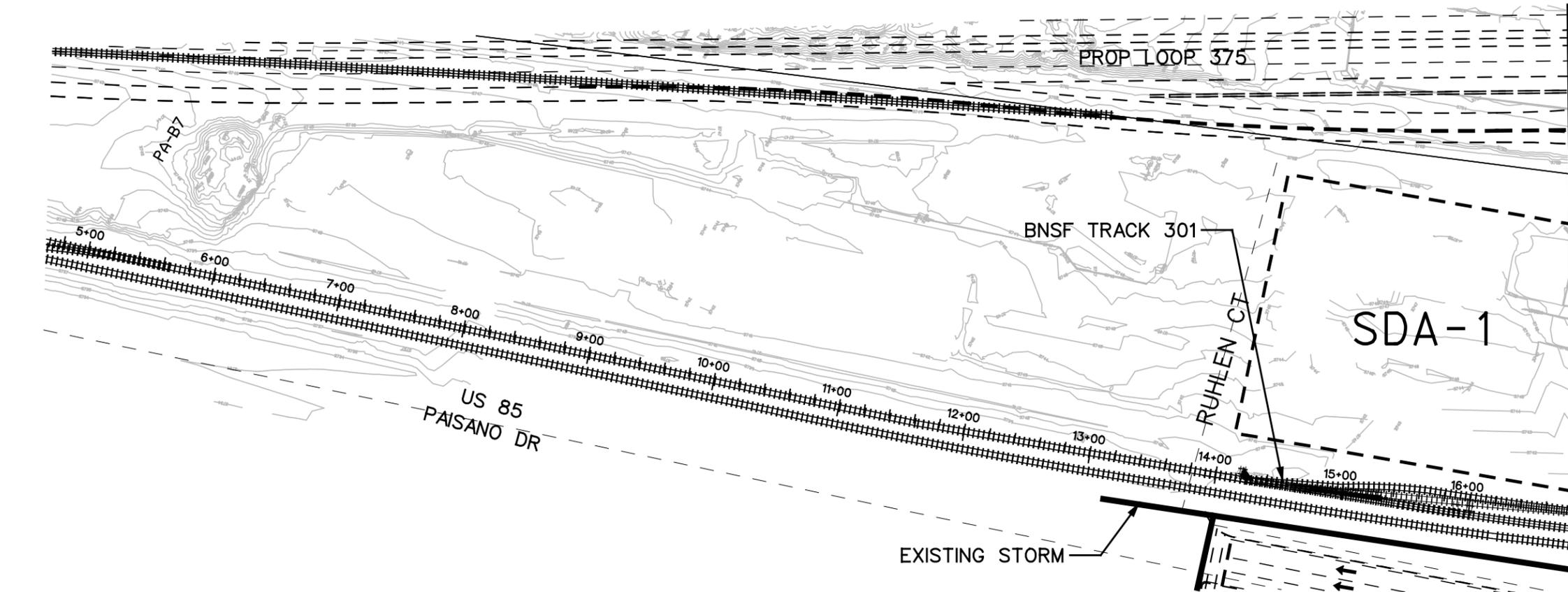
Pen Table: \$PENTBL\$
 Design Filename: \$FILENAME\$



MATCH LINE STA 343+00

MATCH LINE STA 355+00

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 permit, bidding or construction.
 Engineer: MARK D. CORBITT
 P.E. Serial No.: 101980
 Date: 12-2-2013



MATCH LINE STA 17+00

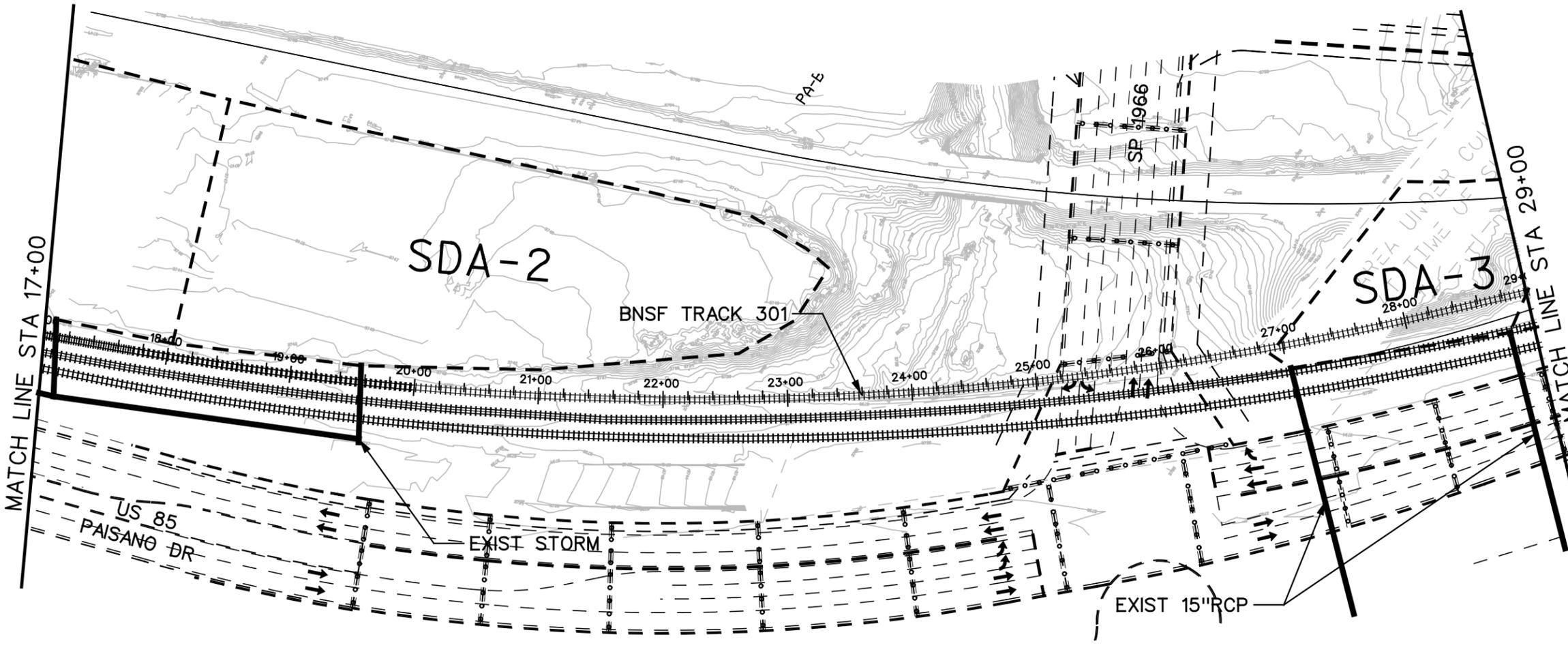
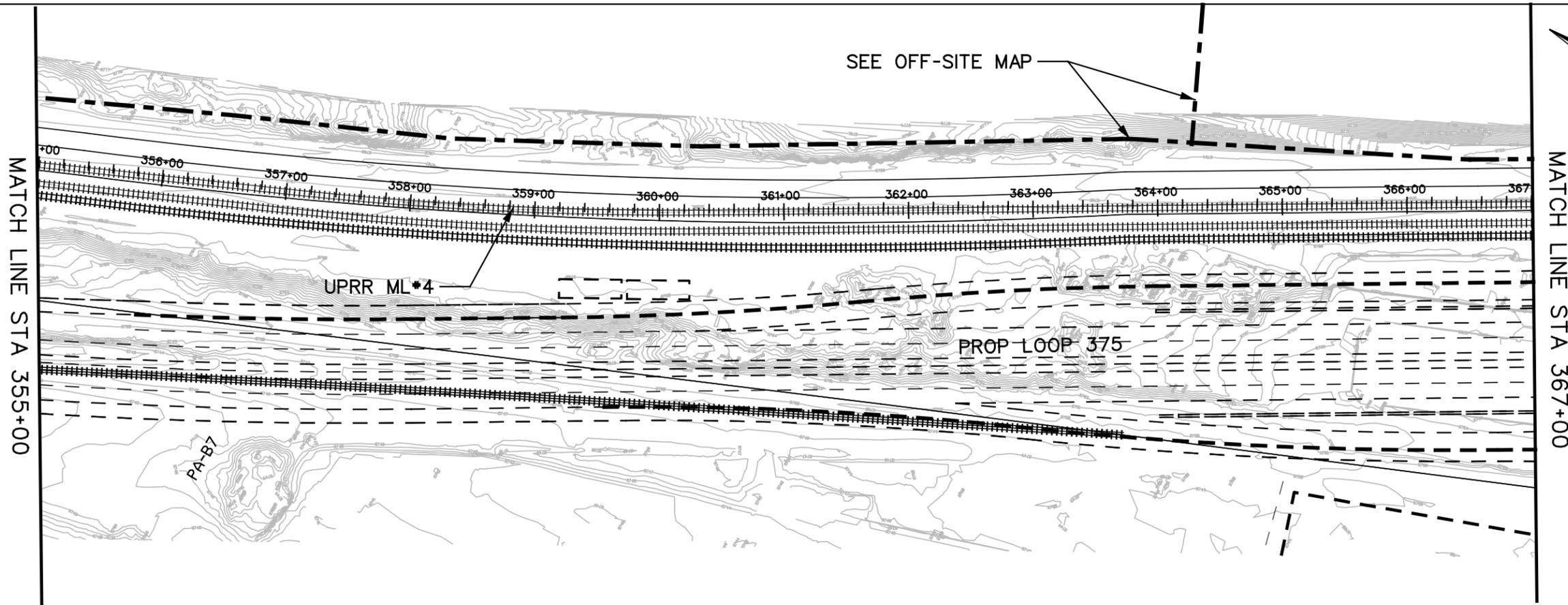
REV. NO.	DATE	DESCRIPTION	BY

© TxDOT 2013 Texas Department of Transportation		HNTB Corporation The HNTB Companies Engineers Architects Planners TBPE FIRM REGISTRATION NO.: 420	
		TEDSI INFRASTRUCTURE GROUP Consulting Engineers 1201 E. Expressway 83 Mission, Texas 78372 (956) 424-7898	
BORDER HIGHWAY WEST (LP 375) SMALL DRAINAGE AREAS			
STA 343+00 TO STA 355+00 UPRR ML#4 STA 5+00 TO STA 17+00 BNSF TRACK 301			
SCALE 1" = 100'		SHEET 2 OF 5	
DGN: JV	FED. RD. DIV. NO.: 6	STATE: TEXAS	FEDERAL AD PROJECT NO.: XX XXXX(XXX)
CHK DGN: MDC			HIGHWAY NO.: BHW RAIL
DWG:	DIST.:	COUNTY:	CONT. NO.:
CHK DWG:	ELP	EL PASO	2552
			SECT. NO.: 04
			JOB NO.: 027
			SHEET NO.: 57

Scale: 1"=100'
 Plotted on: 12/6/2013 12:03:56 PM

Model Name: \$MODEL\$

Pen Table: \$PENTBL\$
 Design Filename: \$FILENAME\$



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 Engineer: MARK D. CORBITT
 P.E. Serial No.: 101980
 Date: 12-2-2013

REV. NO.	DATE	DESCRIPTION	BY

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 TBPE FIRM REGISTRATION NO.: 420

TEDSI INFRASTRUCTURE GROUP
 Consulting Engineers
TEDSI
 TBPE F-1640
 1201 E. Expressway 83
 Mission, Texas 78372
 (936) 424-7898

**BORDER HIGHWAY WEST (LP 375)
 SMALL DRAINAGE AREAS**
 STA 355+00 TO STA 367+00 UPRR ML*4
 STA 17+00 TO STA 29+00 BNSF TRACK 301

SCALE 1" = 100' SHEET 3 OF 5

DGN:	JV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHK DGN:	MDC	6	TEXAS	XX XXXX(XXX)	BHW RAIL
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
CHK DWG:	ELP	EL PASO	2552	04	027

Scale: 1"=100'
Plotted on: 12/6/2013 12:04:03 PM

Model Name: \$MODEL\$

Pen Table: \$PENTBL\$
Design Filename: \$FILENAME\$

MATCH LINE STA 367+00

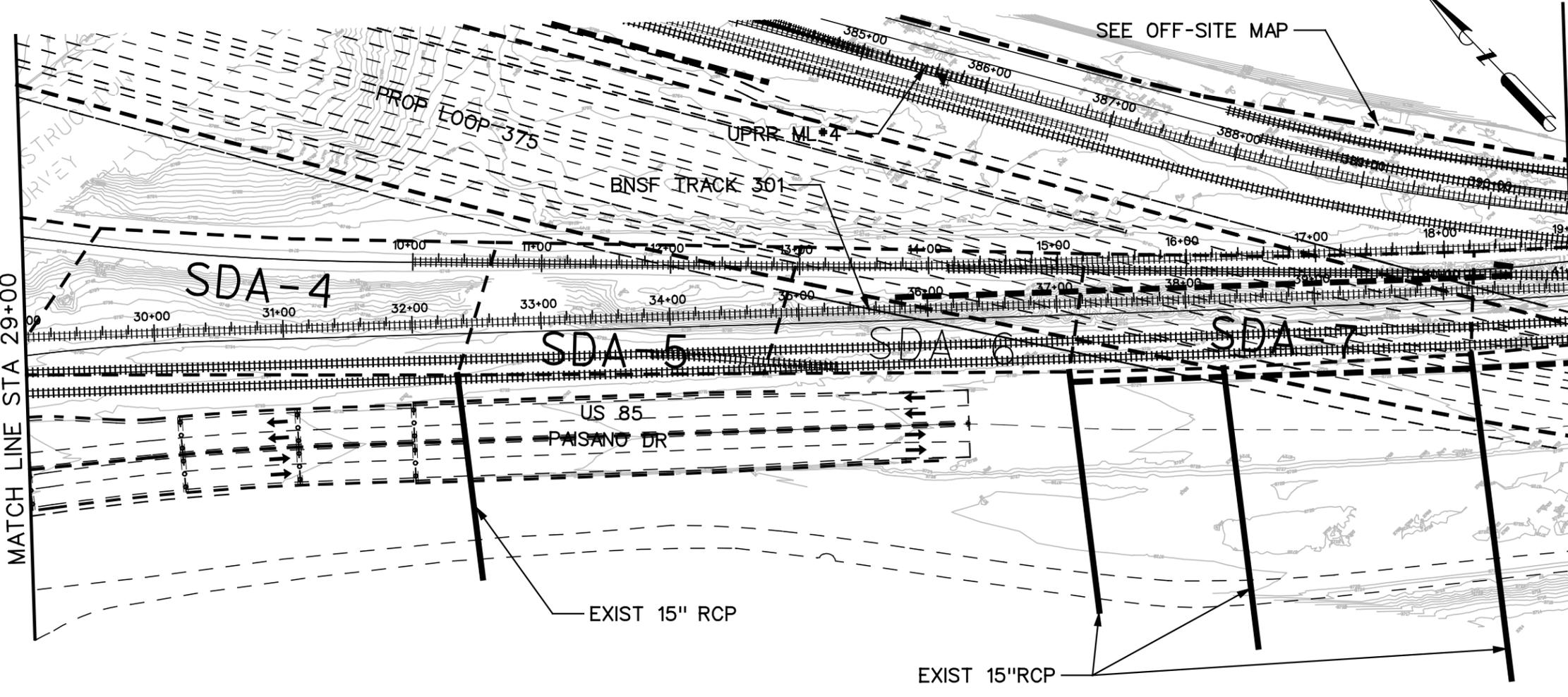
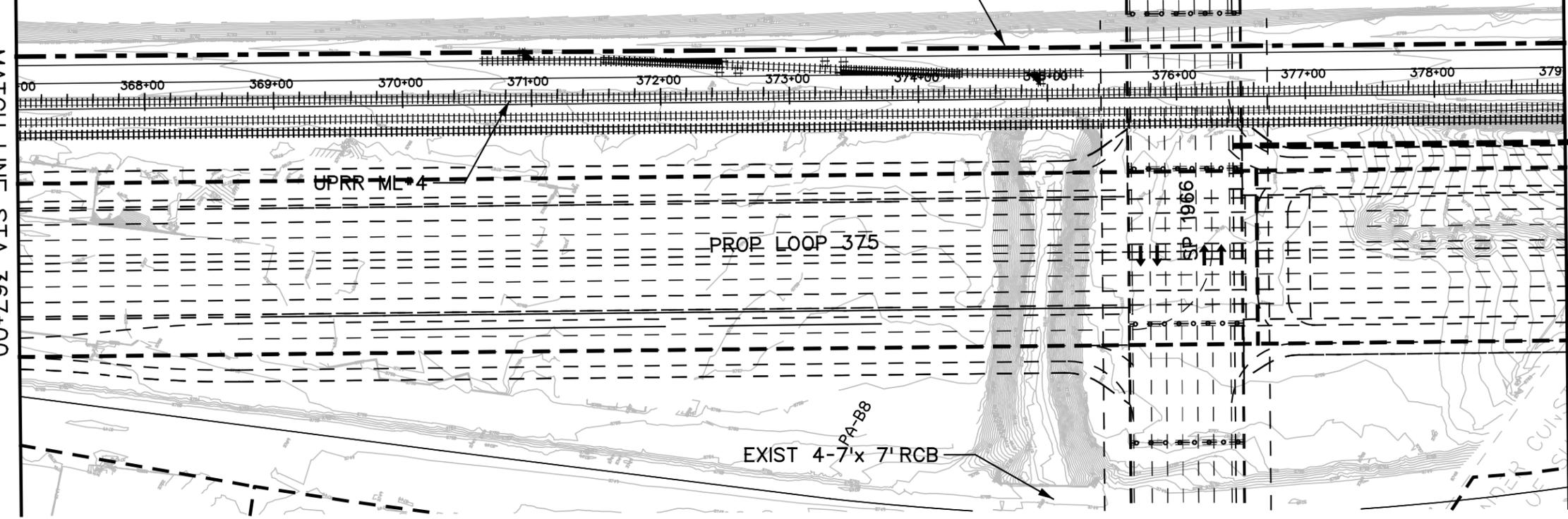
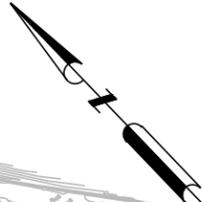
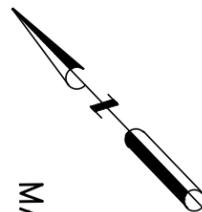
MATCH LINE STA 29+00

MATCH LINE STA 379+00

MATCH LINE STA 41+00

SEE OFF-SITE MAP

SEE OFF-SITE MAP



INTERIM REVIEW ONLY
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Engineer: MARK D. CORBITT
P.E. Serial No.: 101980
Date: 12-2-2013

REV. NO.	DATE	DESCRIPTION	BY



**BORDER HIGHWAY WEST (LP 375)
SMALL DRAINAGE AREAS**
STA 367+00 TO STA 379+00 UPRR ML#4
STA 29+00 TO STA 41+00 BNSF TRACK 301

SCALE 1" = 100' SHEET 4 OF 5

CHK	DWG	JV	FED. RD. DIV. NO.	STATE	FEDERAL AD PROJECT NO.	HIGHWAY NO.	
CHK	DWG	MDC	6	TEXAS	XX XXXX(XXX)	BHW RAIL	
DWG		DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	DWG	ELP	EL PASO	2552	04	027	59

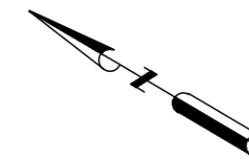
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Model Name: \$MODEL\$

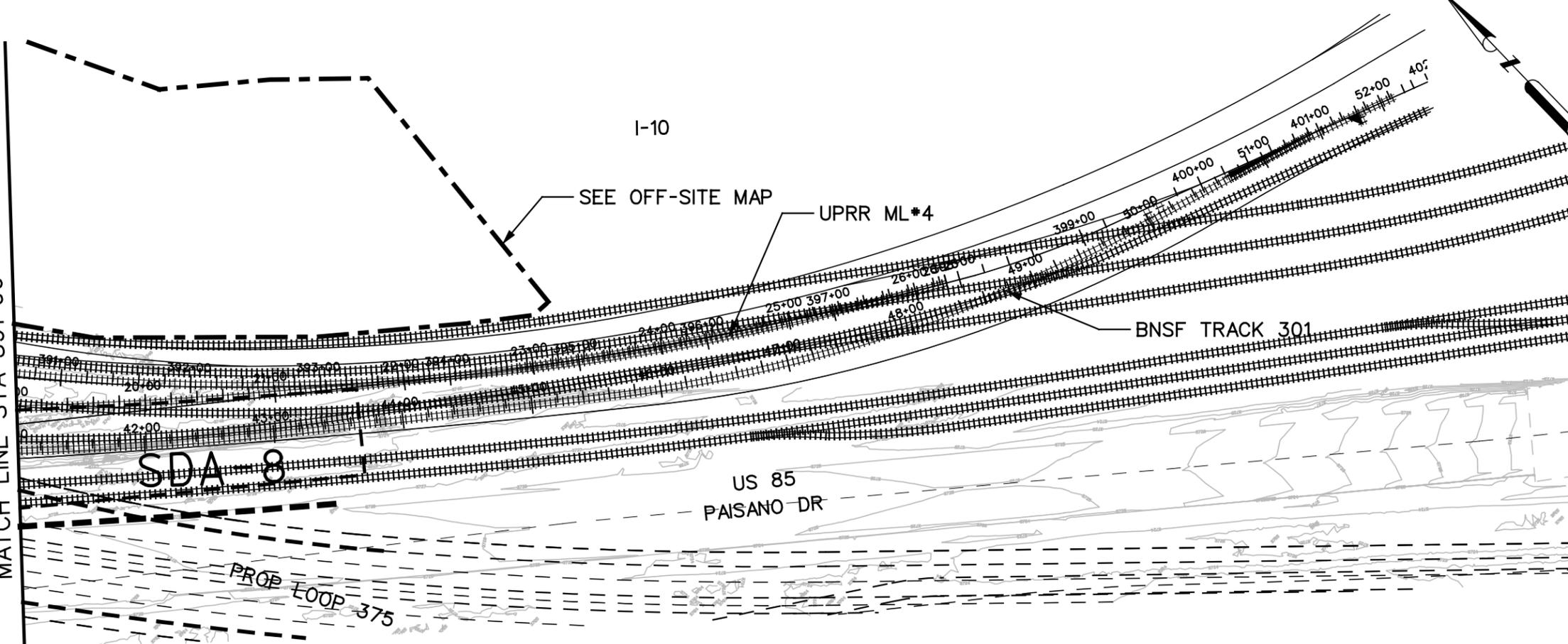
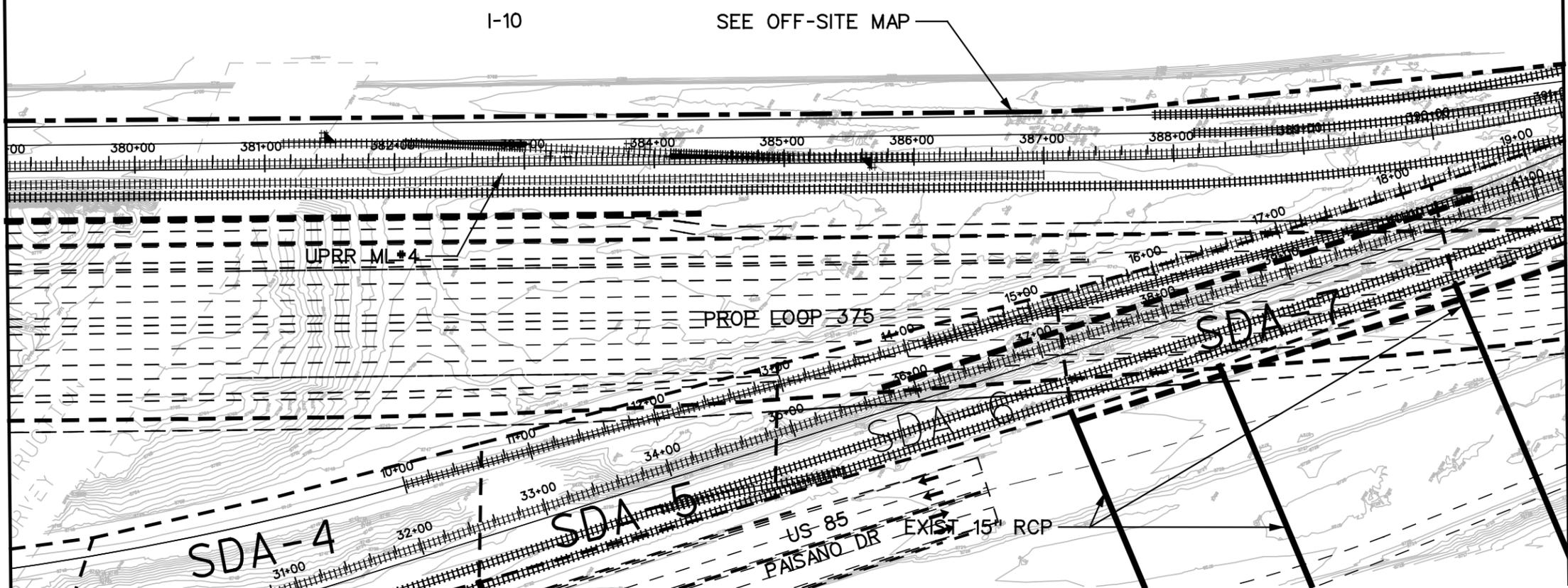
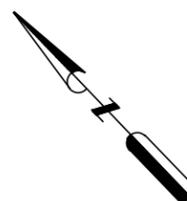
Pen Table: \$PENTBL\$
Design Filename: \$FILENAME\$

MATCH LINE STA 379+00

MATCH LINE STA 391+00



MATCH LINE STA 41+00
MATCH LINE STA 391+00



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Engineer: MARK D. CORBITT
P.E. Serial No.: 101980
Date: 12-2-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
SMALL DRAINAGE AREAS
STA 379+00 TO END UPRR ML#4
STA 41+00 TO END BNSF TRACK 301

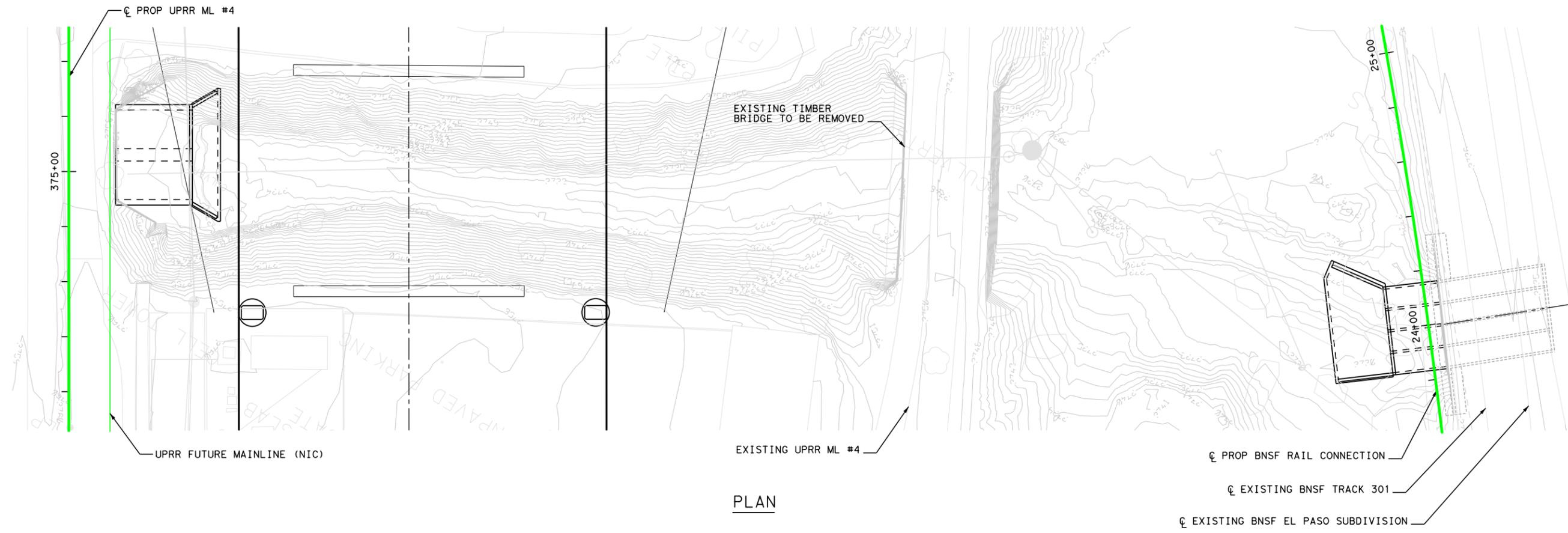
SCALE 1" = 100' SHEET 5 OF 5

DGN#	JV	FED. RD. DIV. NO.	STATE	FEDERAL AD PROJECT NO.	HIGHWAY NO.		
CHK	MDC	6	TEXAS	XX XXXX(XXX)	BHW RAIL		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.	
CHK	DWG	ELP	EL PASO	2552	04	027	60

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Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i . pen
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PLAN

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: STEVEN T. HAGUE
 P.E. Serial No.: 63430
 Date: 17-DEC-2013

SCALE: PLAN 1":40'
 PROFILE 1":40'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 BNSF & UPRR
 CULVERT EXTENSION
 LOCATION PLAN

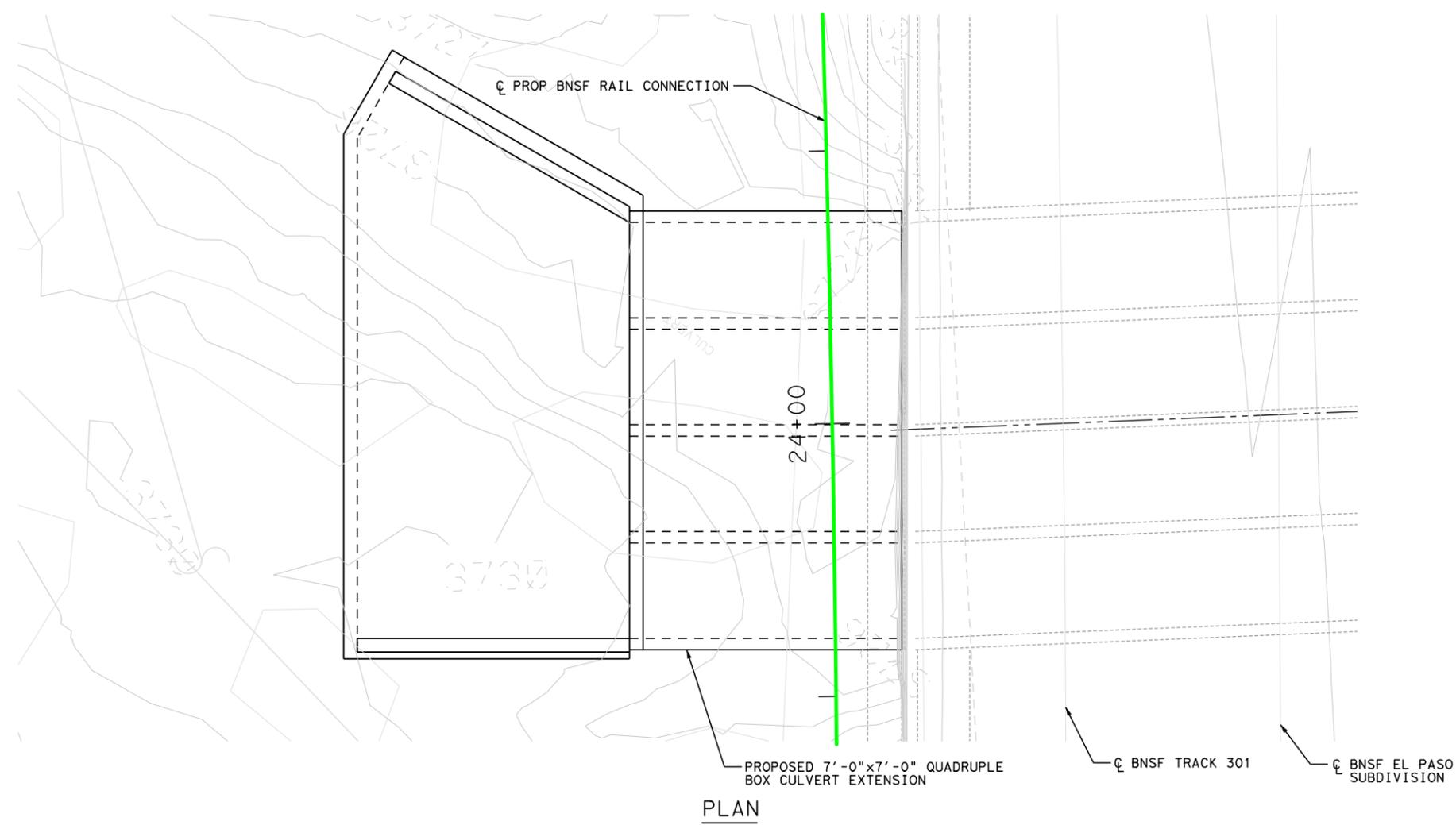
SHEET 1 OF 1

DGN: AEC	FED. RD. DIV. NO.: 6	STATE: TEXAS	PROJECT NO.: XX XXXX (XXX)	HIGHWAY NO.: BHW RAIL
CHK DGN: JWH	DIST.: SWS	COUNTY: ELP	CONT. NO.: 2552	SECT. NO.: 04
DWG: SWS	DIST.: ELP	COUNTY: EL PASO	CONT. NO.: 2552	SECT. NO.: 04
CHK DWG: AEC	DIST.: ELP	COUNTY: EL PASO	CONT. NO.: 2552	SECT. NO.: 04
			JOB NO.: 027	SHEET NO.: 61

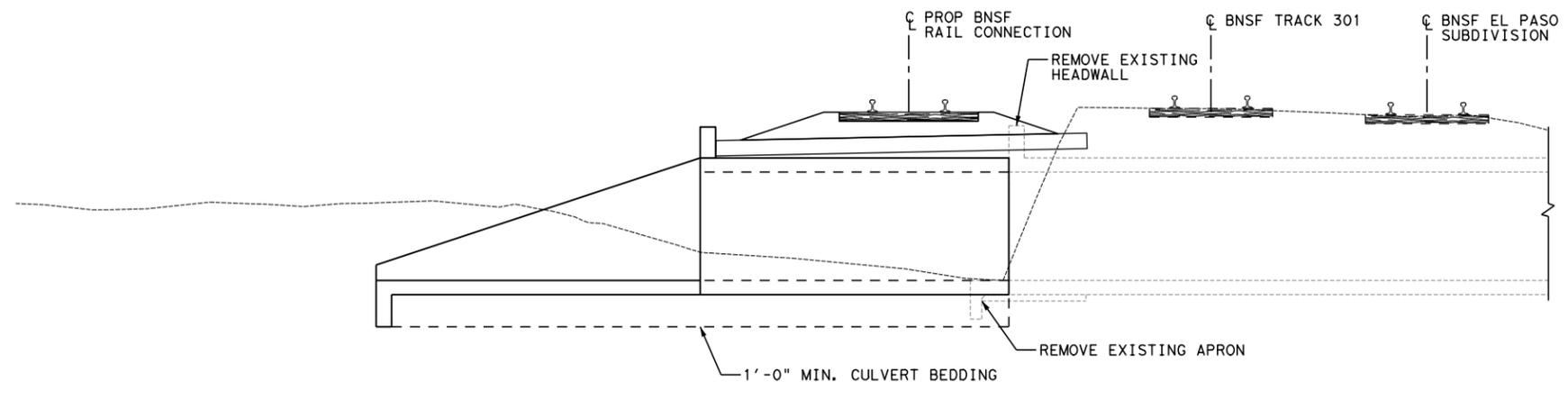
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Model Name:

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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-CVD-BNSF01.dgn



PLAN



ELEVATION

INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: STEVEN T. HAGUE
 P.E. Serial No.: 63430
 Date: 17-DEC-2013

SCALE: PLAN 3/32" = 1'-0"
 PROFILE 3/32" = 1'-0"

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 BNSF RAIL CONNECTION
 CULVERT EXTENSION
 PLAN & ELEVATION
 STA 24+00

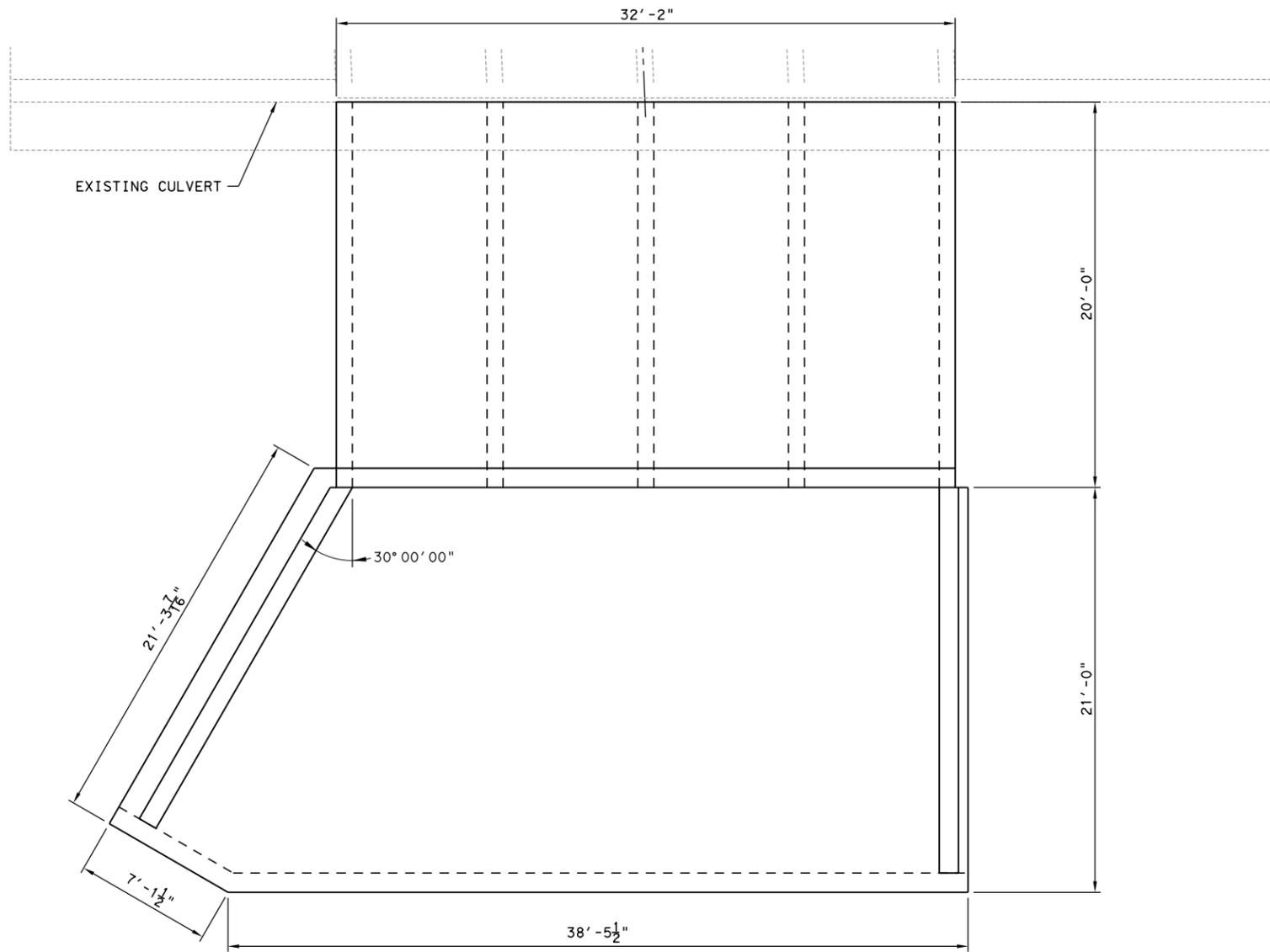
SHEET 1 OF 1

DGN:	AEC	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JWH	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	SWS	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	AEC	ELP	EL PASO	2552	04	027	63

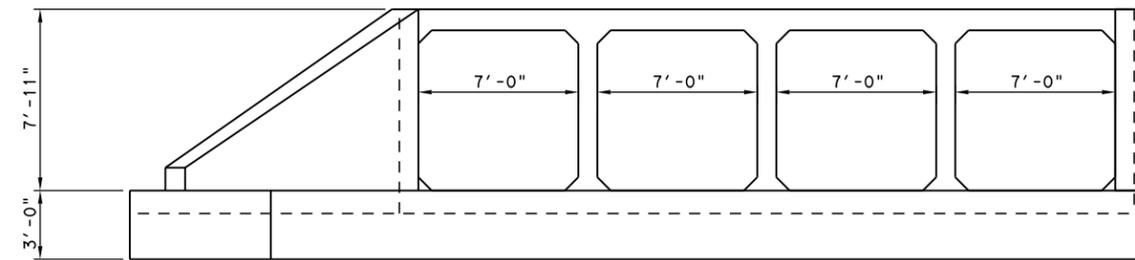
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Model Name:

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FRAMING PLAN



FRAMING ELEVATION

INTERIM REVIEW ONLY
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 permit, bidding or construction.
 Engineer: STEVEN T. HAGUE
 P.E. Serial No.: 63430
 Date: 17-DEC-2013

SCALE: PLAN 1/8" = 1'-0"
 PROFILE 1/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 BNSF RAIL CONNECTION
 CULVERT EXTENSION
 FRAMING DETAILS

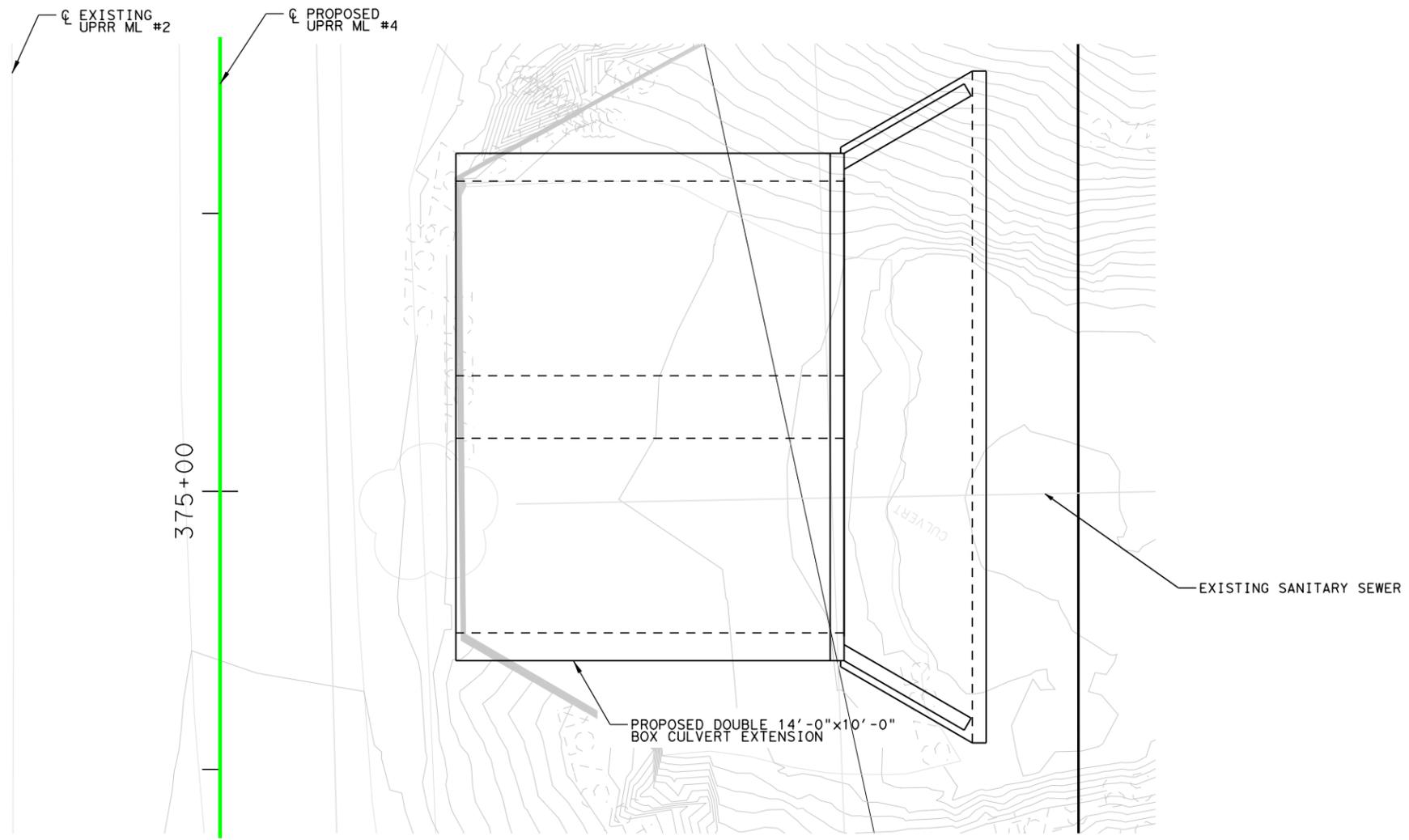
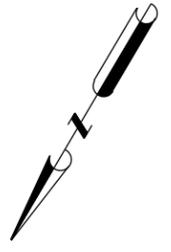
SHEET 1 OF 1

DGN: AEC	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CHK: JWH	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG: SWS	DIST.:	COUNTY:	CONT. NO. SECT. NO.:	JOB NO. SHEET NO.:
CHK: AEC	ELP	EL PASO	2552 04	027 65

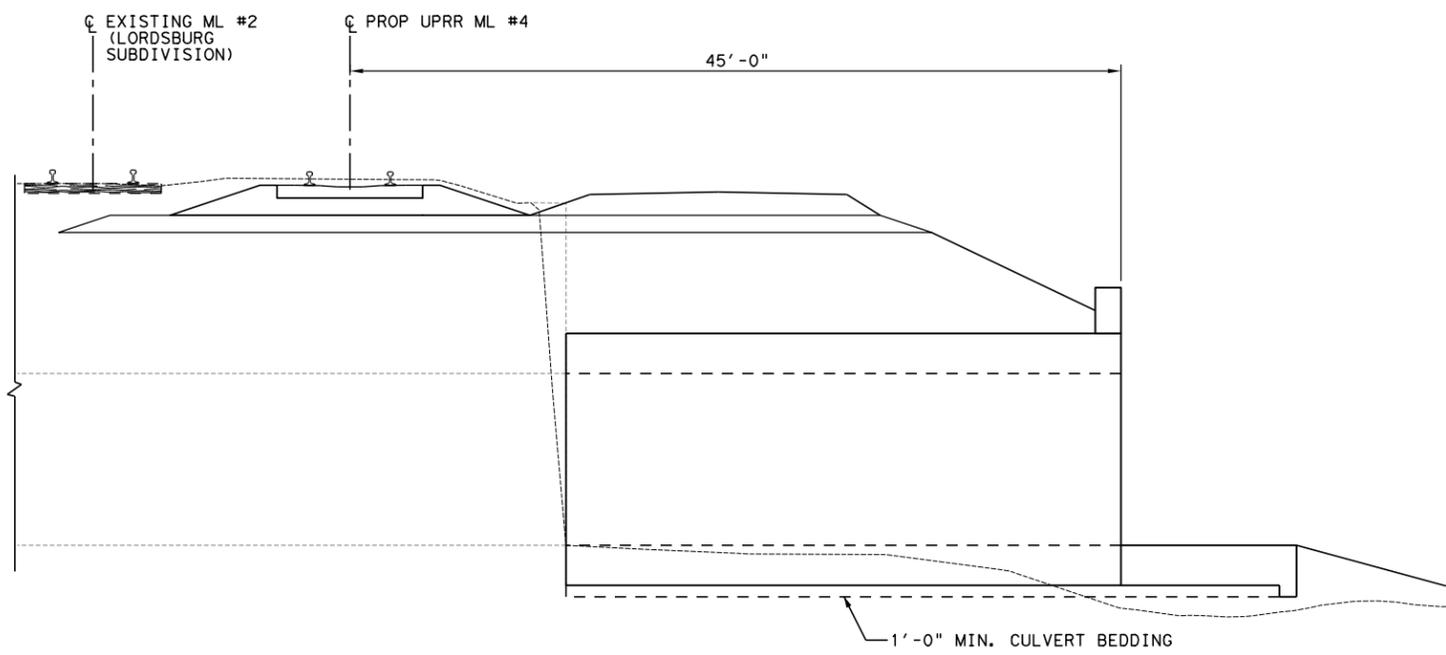
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Model Name:

Pen Tablet: IP*PWP: dms79715\BHWRA11.dgn
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-CVD-UPRR01.dgn



PLAN



ELEVATION

INTERIM REVIEW ONLY
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 Engineer: STEVEN T. HAGUE
 P.E. Serial No.: 63430
 Date: 17-DEC-2013

SCALE: PLAN 3/32" = 1'-0"
 PROFILE 3/32" = 1'-0"

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 PROPOSED UPRR ML #4
 CULVERT EXTENSION
 PLAN & ELEVATION
 STA 374+90

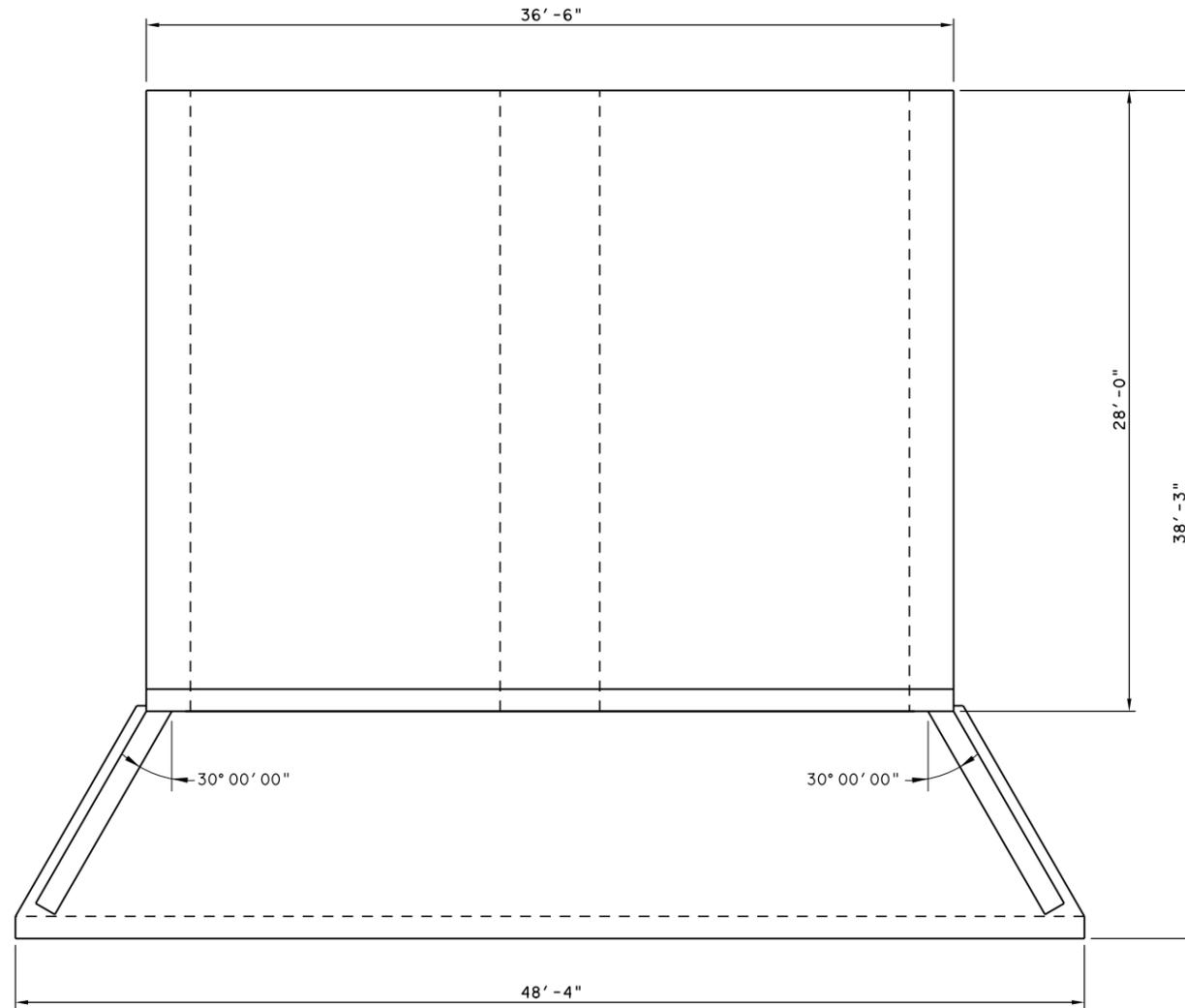
SHEET 1 OF 1

DGN: AEC	FED. RD. DIV. NO. 6	STATE TEXAS	PROJECT NO. XX XXXX (XXX)	HIGHWAY NO. BHW RAIL
CHK DGN: JWH				
DWG: SWS	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK DWG: AEC	ELP	EL PASO	2552	04
				JOB NO. 027
				SHEET NO. 66

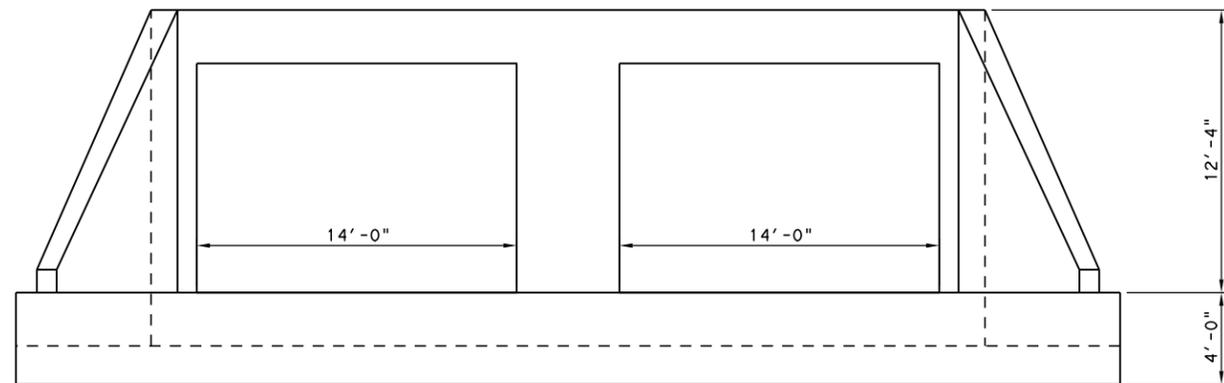
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Model Name:

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FRAMING PLAN



FRAMING ELEVATION

INTERIM REVIEW ONLY
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 permit, bidding or construction.
 Engineer: STEVEN T. HAGUE
 P.E. Serial No.: 63430
 Date: 17-DEC-2013

SCALE: PLAN 1/8" = 1'-0"
 PROFILE 1/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	BY



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 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 PROPOSED UPRR ML #4
 CULVERT EXTENSION
 FRAMING DETAILS

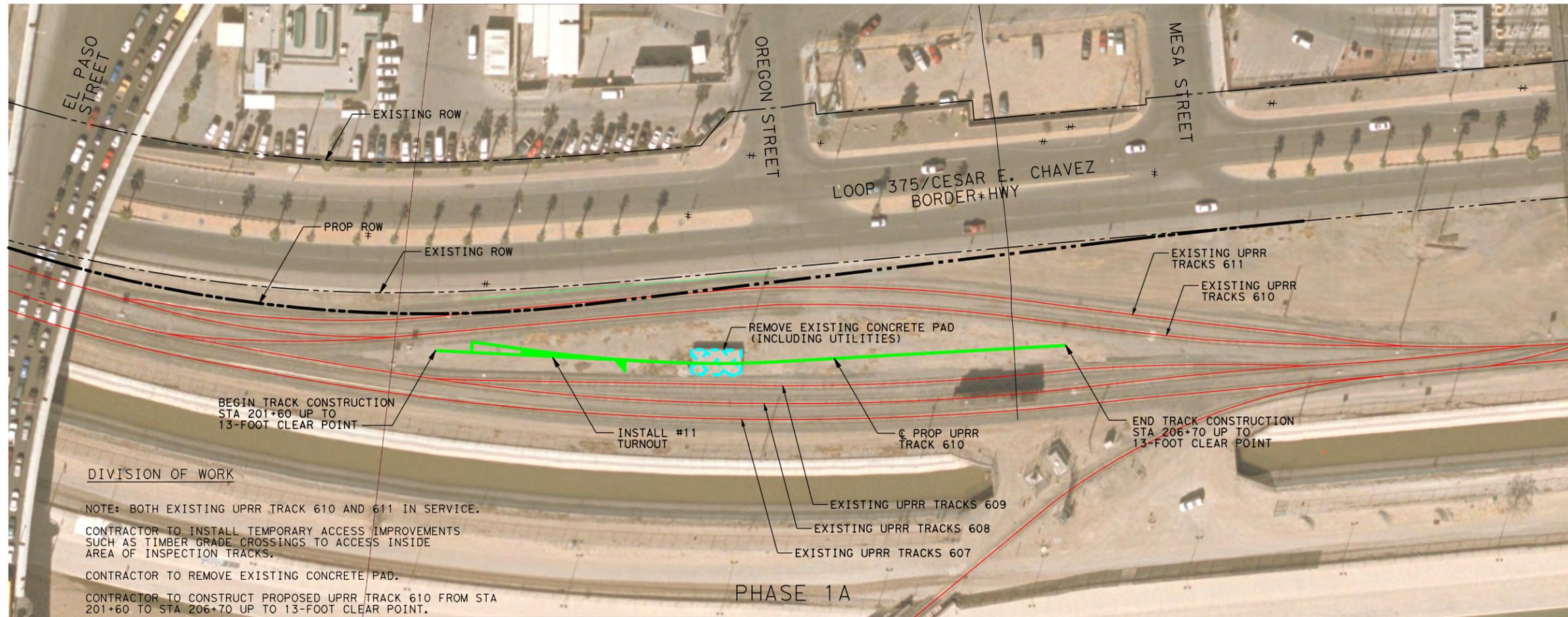
SHEET 1 OF 1

DGN:	AEC	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JWH	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	SWS	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	AEC	ELP	EL PASO	2552	04	027	68

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 Plotted on: 18-DEC-2013 2:12

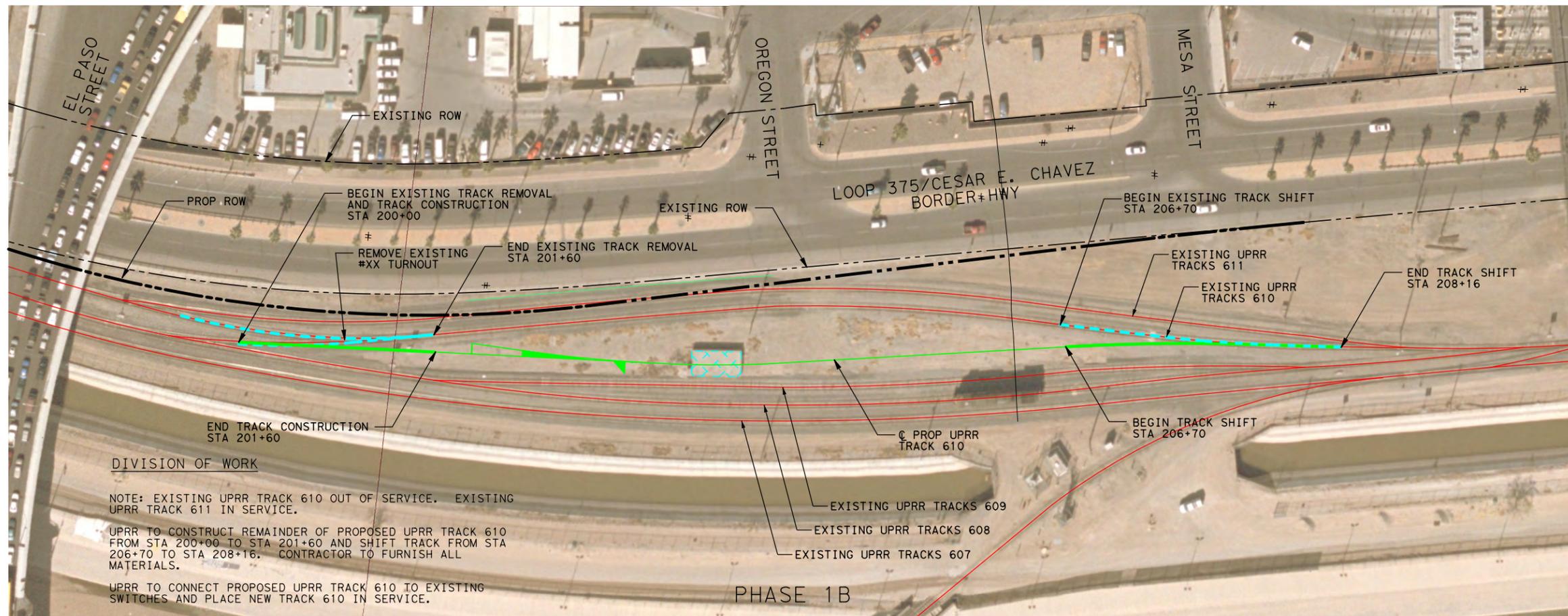
Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.dgn
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-CS01.dgn



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - - - REMOVAL

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



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 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



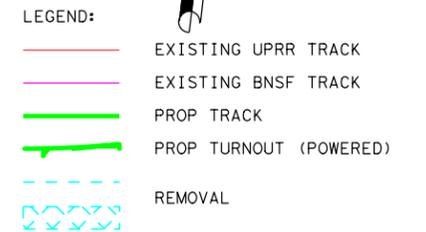
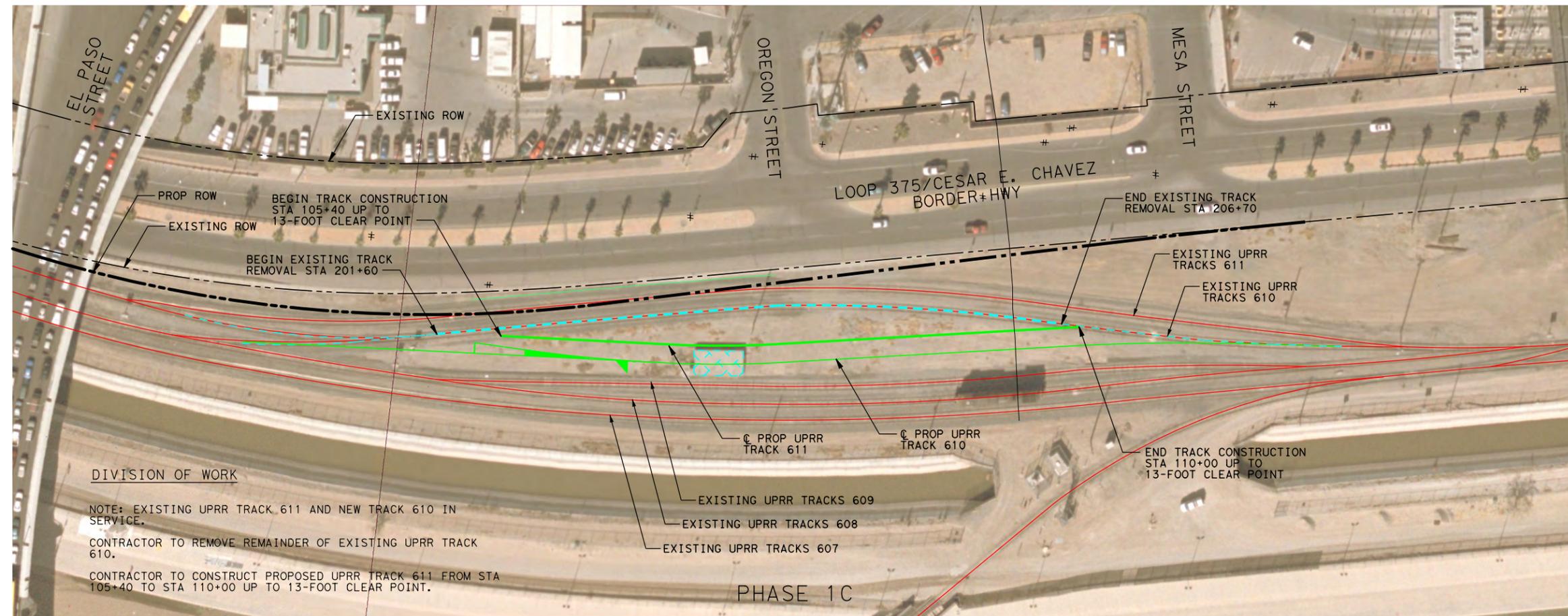
HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR TRACK 610/611
 PHASE 1
 (PHASE 1A AND PHASE 1B)

SHEET 1 OF 3

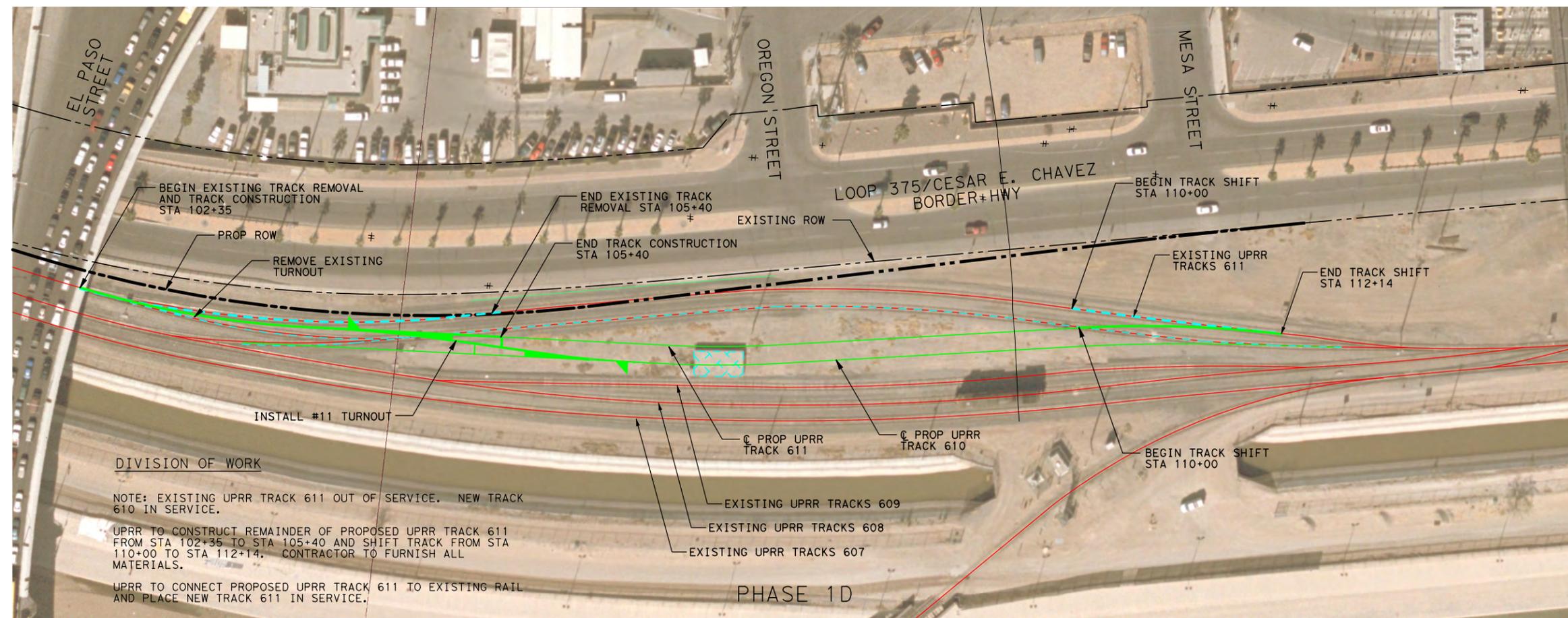
DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	69

Scale: 100.000000:1.000000
 Plotted on: 18-DEC-2013 2:14



- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.

Model Name:



INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



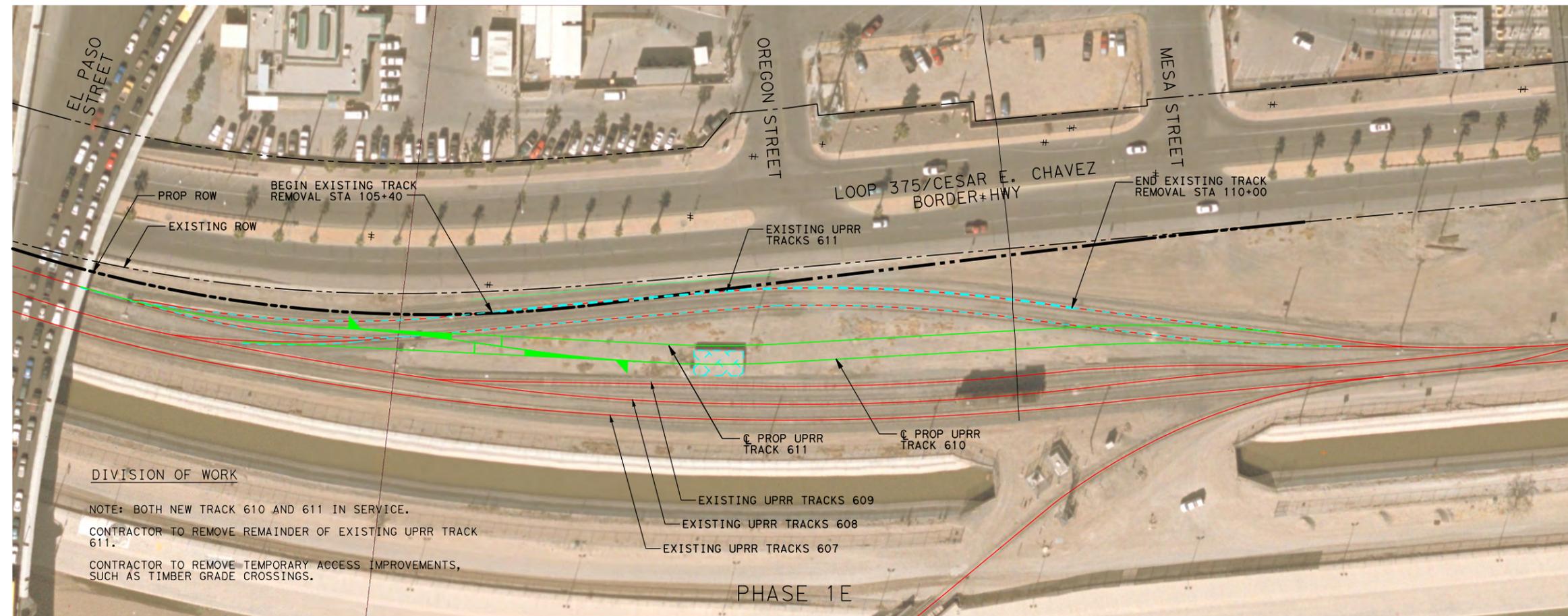
BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR TRACK 610/611
 PHASE 1
 (PHASE 1C AND PHASE 1D)

SHEET 2 OF 3

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	70

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PL-CS02.dgn

Scale: 100.000000:1.000000
 Plotted on: 18-DEC-2013 2:14



- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/CONC PANEL
 - PROP TURNOUT (POWERED)
 - - - REMOVAL

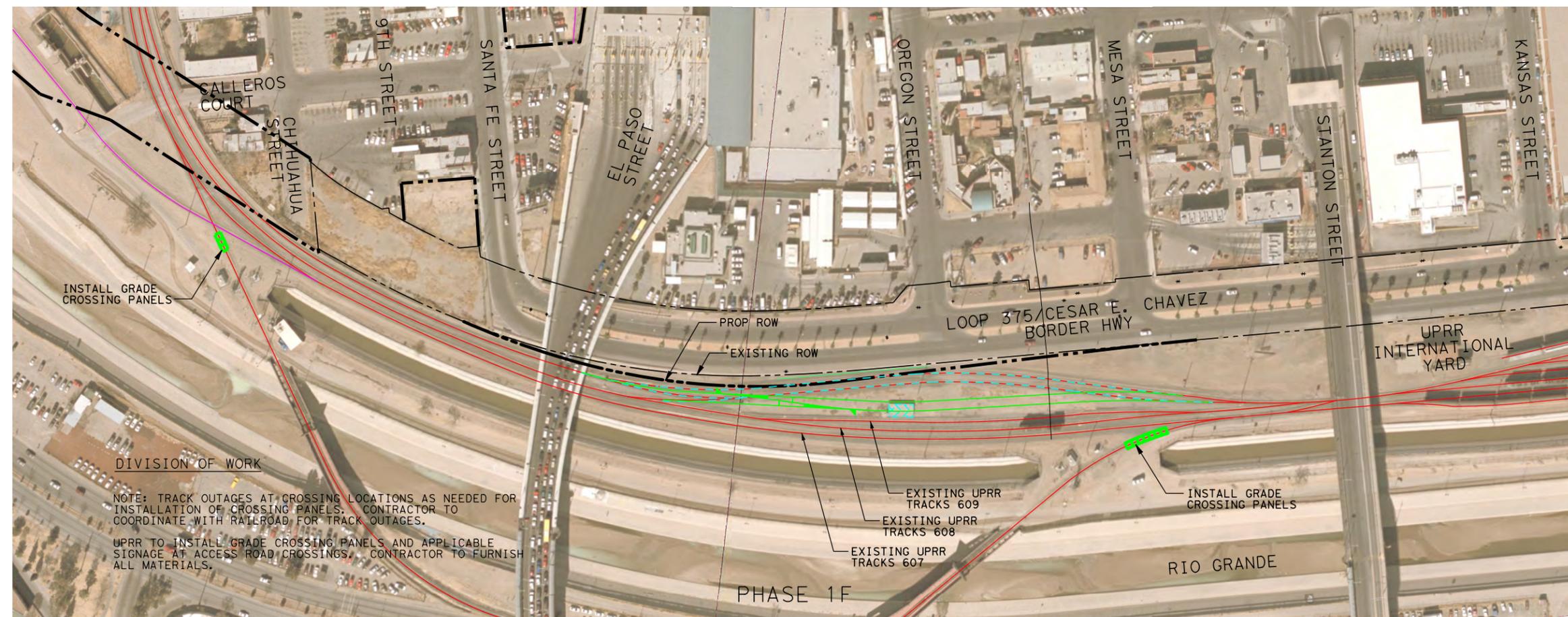
- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.

DIVISION OF WORK

NOTE: BOTH NEW TRACK 610 AND 611 IN SERVICE.
 CONTRACTOR TO REMOVE REMAINDER OF EXISTING UPRR TRACK 611.
 CONTRACTOR TO REMOVE TEMPORARY ACCESS IMPROVEMENTS, SUCH AS TIMBER GRADE CROSSINGS.

PHASE 1E

Model Name:



INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=100' PHASE 1E
 PLAN 1"=200' PHASE 1F

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR TRACK 610/611
 PHASE 1
 (PHASE 1E AND PHASE 1F)

SHEET 3 OF 3

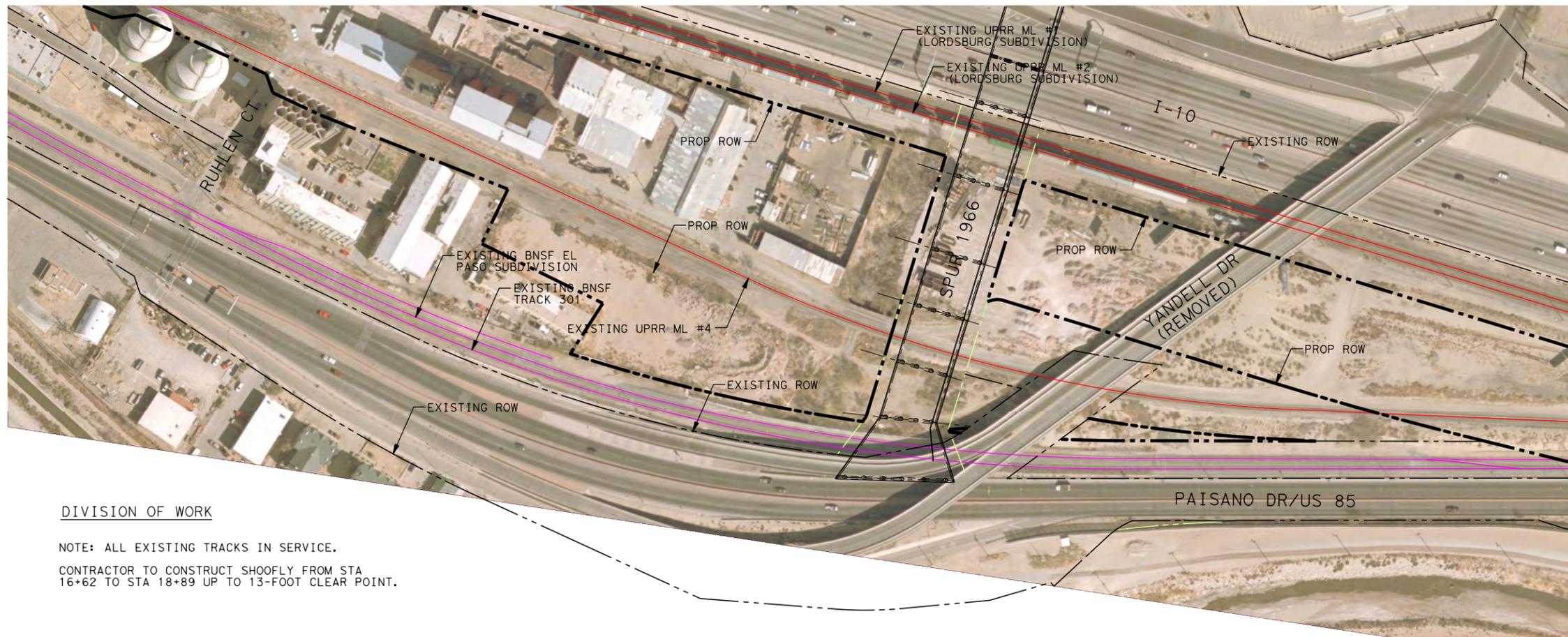
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CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	71

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Model Name:

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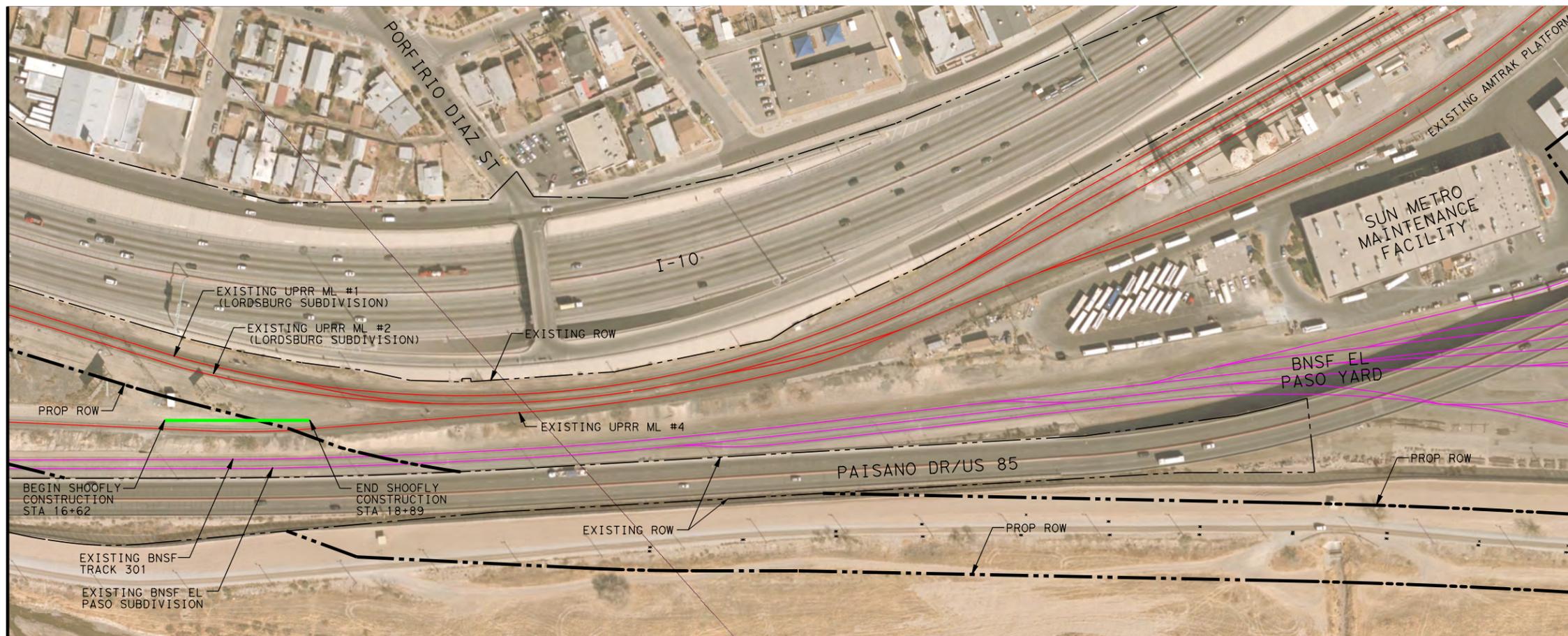
DIVISION OF WORK

NOTE: ALL EXISTING TRACKS IN SERVICE.
 CONTRACTOR TO CONSTRUCT SHOOFLY FROM STA 16+62 TO STA 18+89 UP TO 13-FOOT CLEAR POINT.

MATCH LINE A-A

- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK
 - PROP TURNOUT (POWERED)
 - - - REMOVAL

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



MATCH LINE A-A

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=200'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375) CONSTRUCTION SEQUENCE BNSF RAIL CONNECTION PHASE 2 (PHASE 2A)

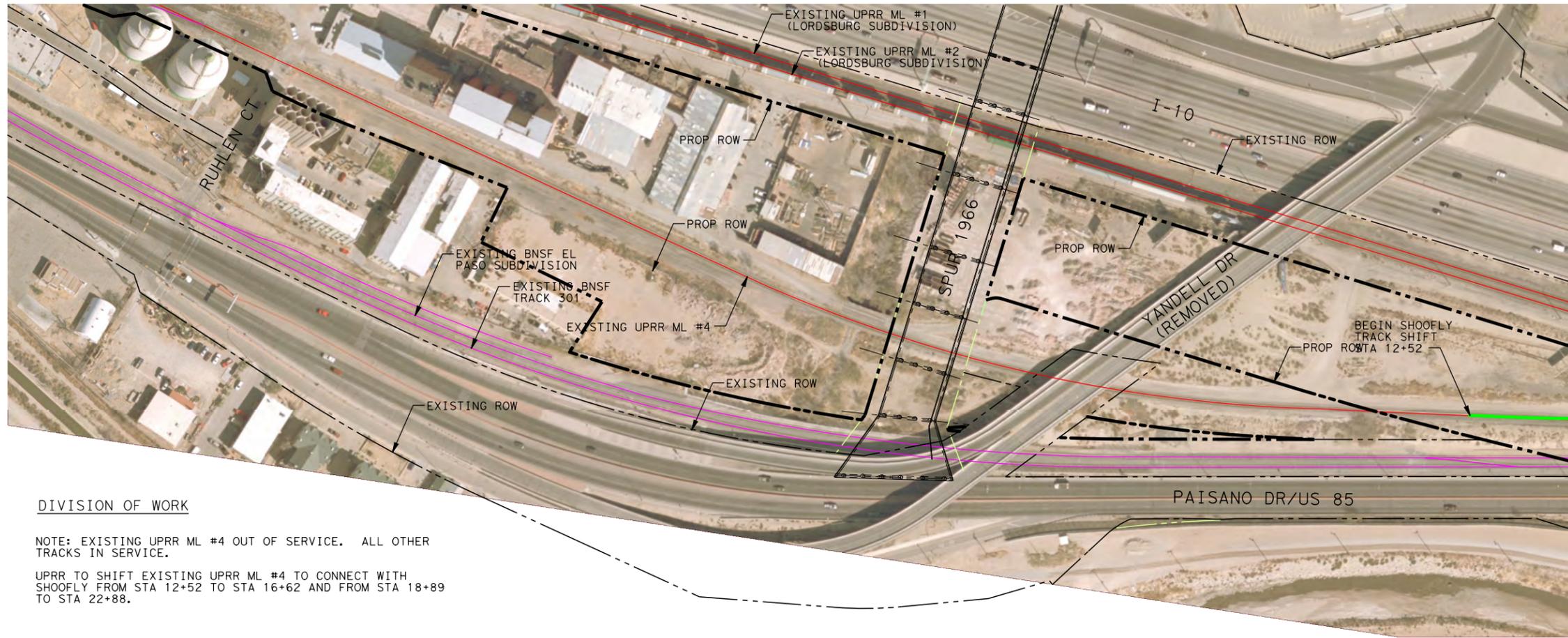
SHEET 1 OF 3

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	72

Scale: 200.000000:1.000000
 Plotted on: 18-DEC-2013 2:19

Model Name:

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DIVISION OF WORK

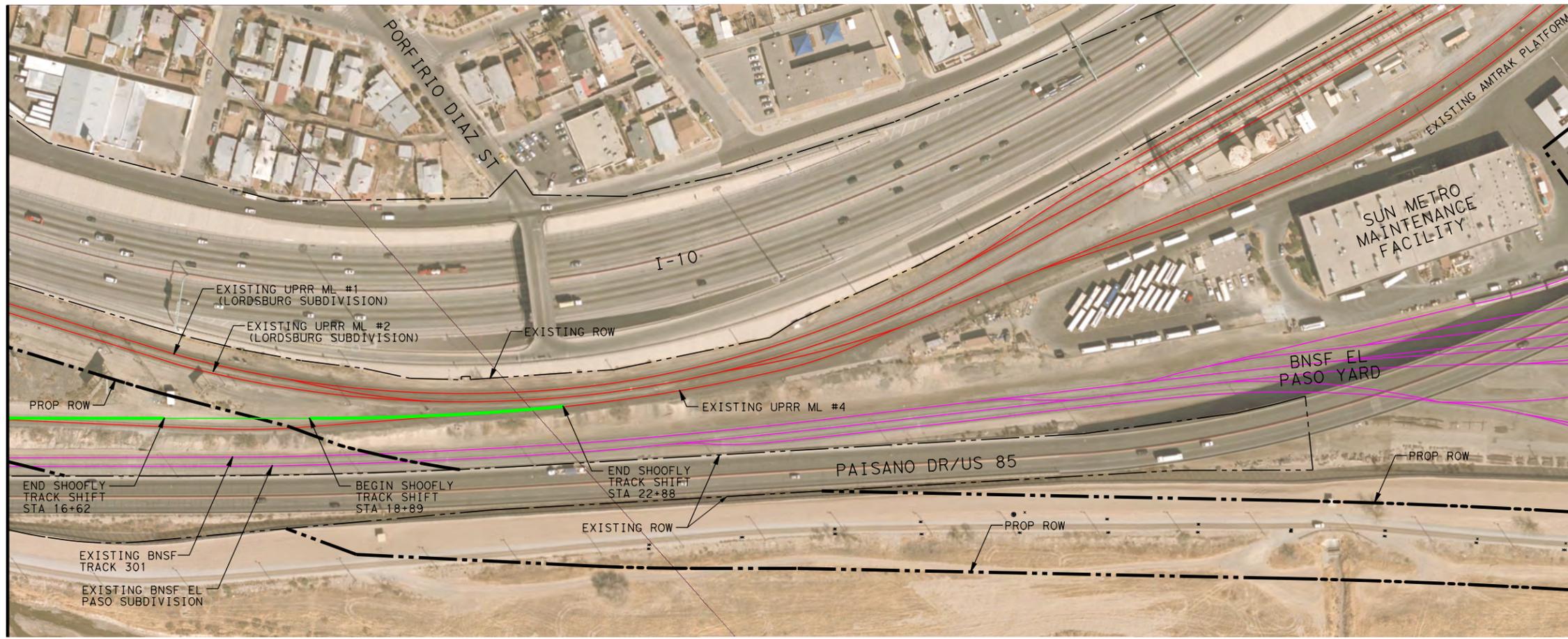
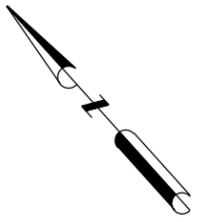
NOTE: EXISTING UPRR ML #4 OUT OF SERVICE. ALL OTHER TRACKS IN SERVICE.
 UPRR TO SHIFT EXISTING UPRR ML #4 TO CONNECT WITH SHOOFLY FROM STA 12+52 TO STA 16+62 AND FROM STA 18+89 TO STA 22+88.

MATCH LINE A-A

LEGEND:

- EXISTING UPRR TRACK
- EXISTING BNSF TRACK
- PROP TRACK
- PROP TURNOUT (POWERED)
- - - REMOVAL

- NOTES:**
- RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 - RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 - SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 - SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 - SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



MATCH LINE A-A

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=200'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



**BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 BNSF RAIL CONNECTION
 PHASE 2
 (PHASE 2B)**

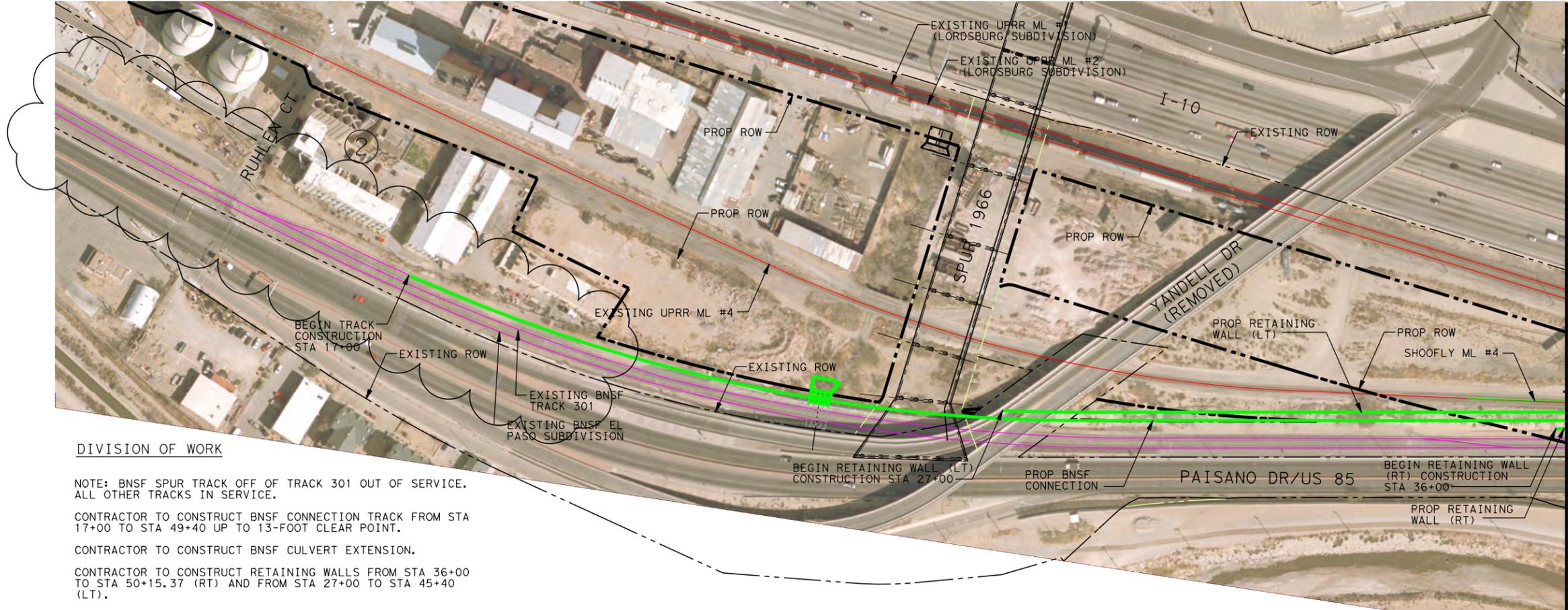
SHEET 2 OF 3

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	73

Scale: 200.000000:1.000000
 Plotted on: 18-DEC-2013 2:20

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i...pen
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-CS12.dgn



MATCH LINE A-A

- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/RET WALL
 - PROP TURNOUT (POWERED)
 - REMOVAL

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.

DIVISION OF WORK

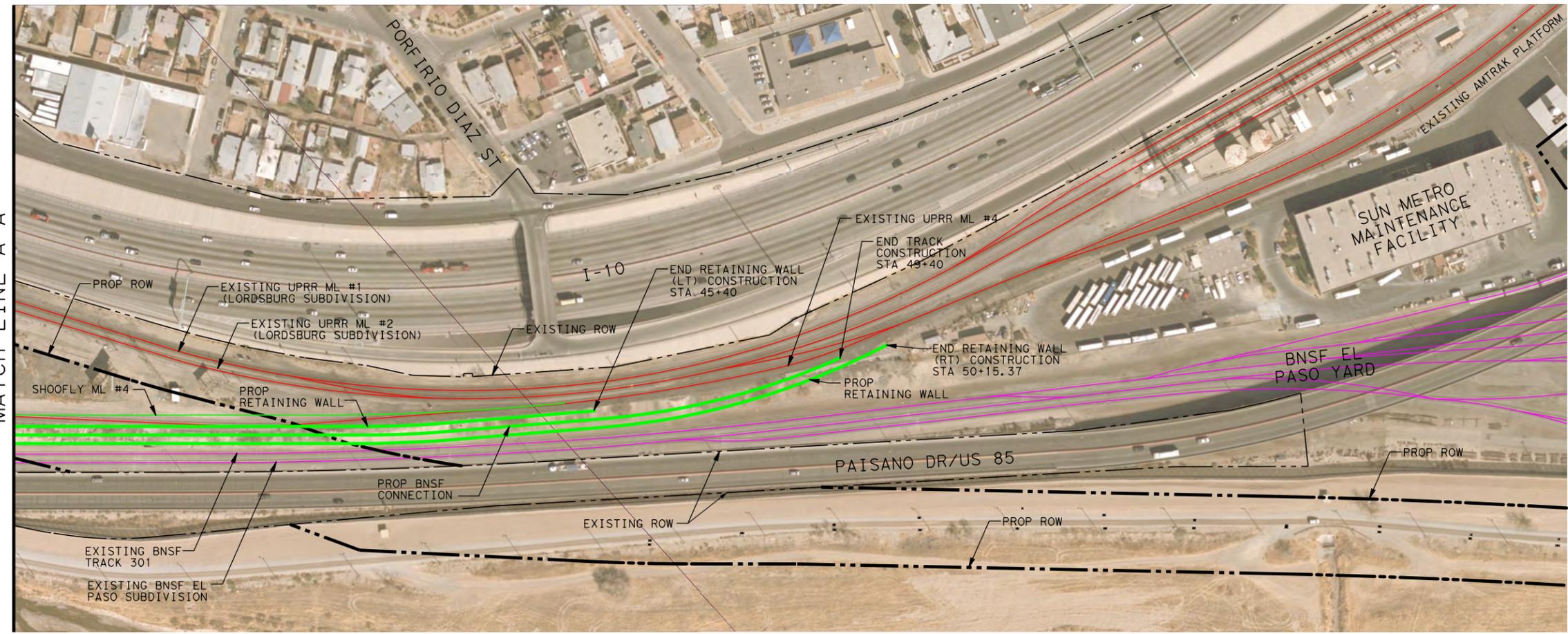
NOTE: BNSF SPUR TRACK OFF OF TRACK 301 OUT OF SERVICE. ALL OTHER TRACKS IN SERVICE.

CONTRACTOR TO CONSTRUCT BNSF CONNECTION TRACK FROM STA 17+00 TO STA 49+40 UP TO 13-FOOT CLEAR POINT.

CONTRACTOR TO CONSTRUCT BNSF CULVERT EXTENSION.

CONTRACTOR TO CONSTRUCT RETAINING WALLS FROM STA 36+00 TO STA 50+15.37 (RT) AND FROM STA 27+00 TO STA 45+40 (LT).

MATCH LINE A-A



INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=200'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY

Texas Department of Transportation

HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

**BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 BNSF RAIL CONNECTION
 PHASE 2
 (PHASE 2C)**

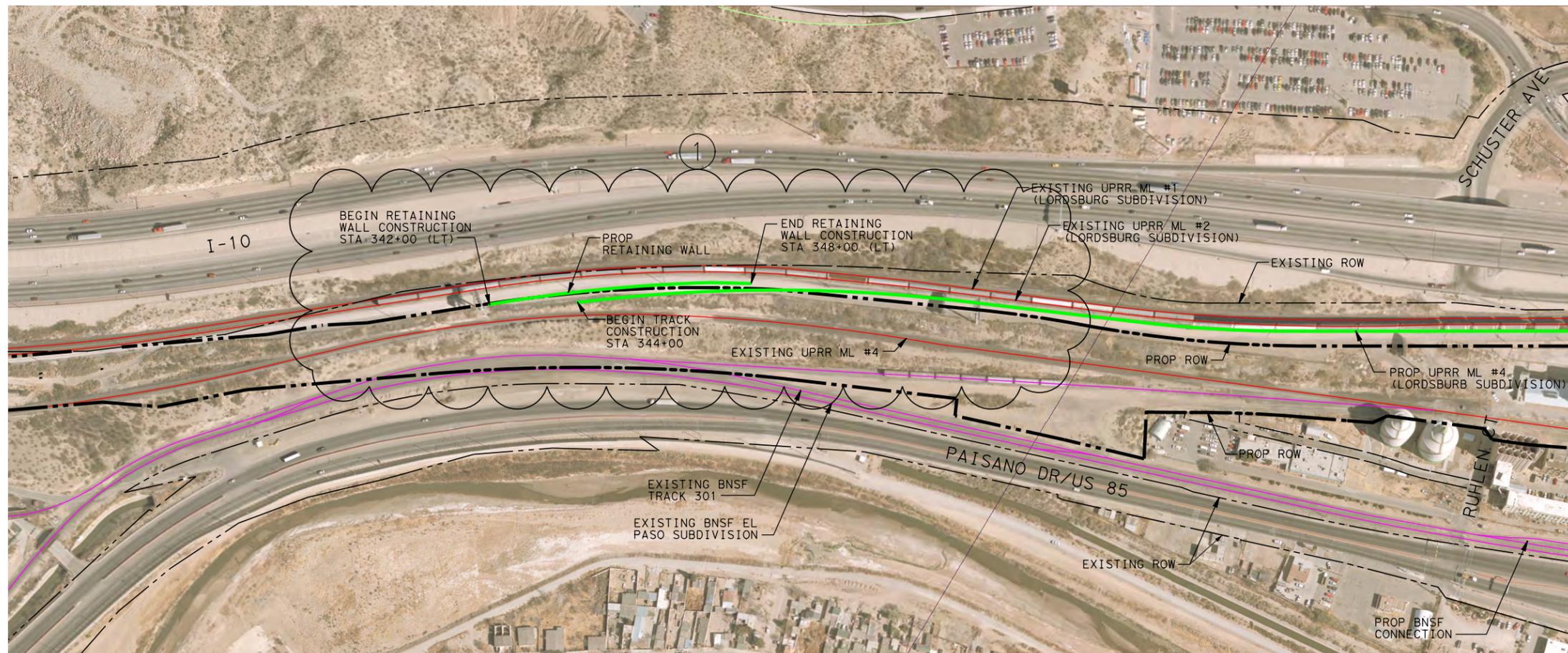
SHEET 3 OF 3

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	74

Scale: 300.000000: 1.000000
 Plotted on: 18-DEC-2013 2:20

Model Name:

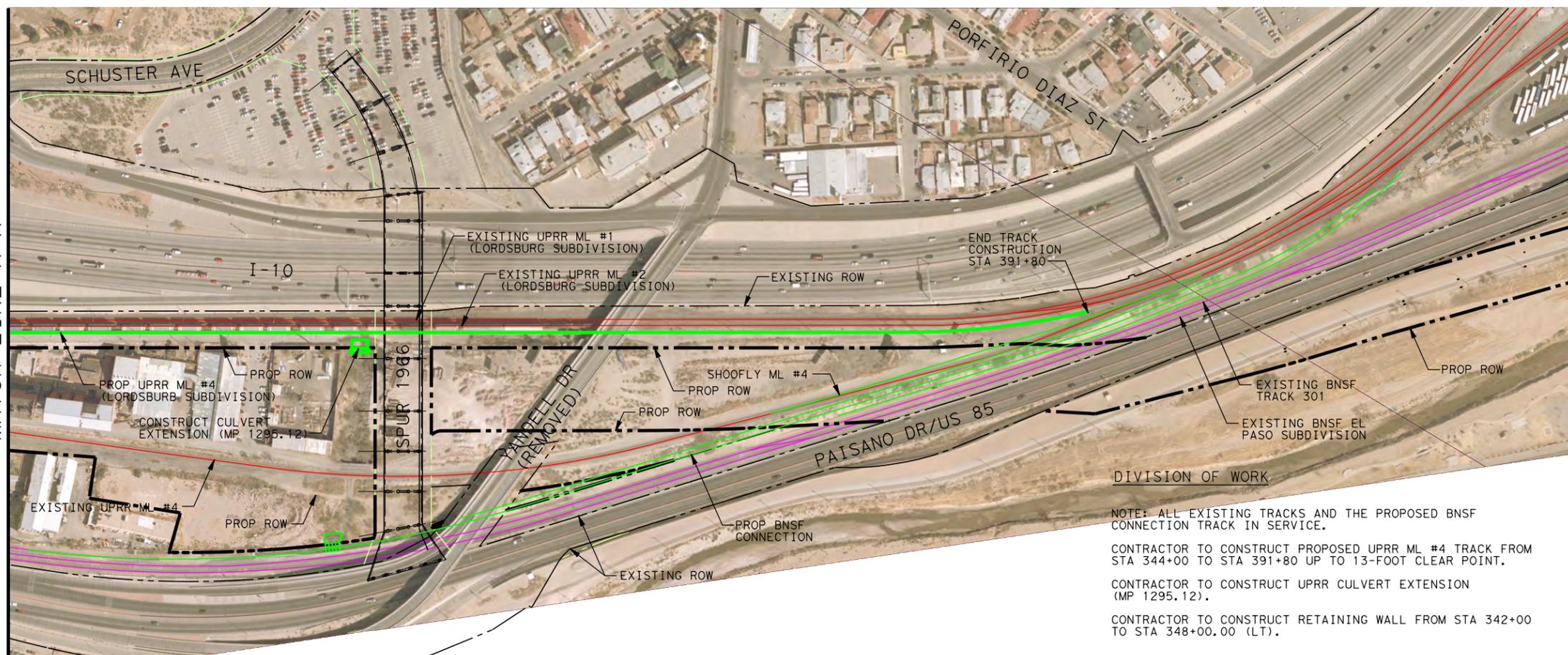
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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-CS20.dgn



MATCH LINE A-A

- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/RET WALL
 - PROP TURNOUT (POWERED)
 - REMOVAL

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



MATCH LINE A-A

INTERIM REVIEW ONLY
 Document incomplete; not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 300'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR ML #4
 PHASE 3
 (PHASE 3A)

SHEET 1 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG:	RGN	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	JAM	ELP	EL PASO	2552	04
DWG:					027
					75

DIVISION OF WORK

NOTE: ALL EXISTING TRACKS AND THE PROPOSED BNSF CONNECTION TRACK IN SERVICE.

CONTRACTOR TO CONSTRUCT PROPOSED UPRR ML #4 TRACK FROM STA 344+00 TO STA 391+80 UP TO 13-FOOT CLEAR POINT.

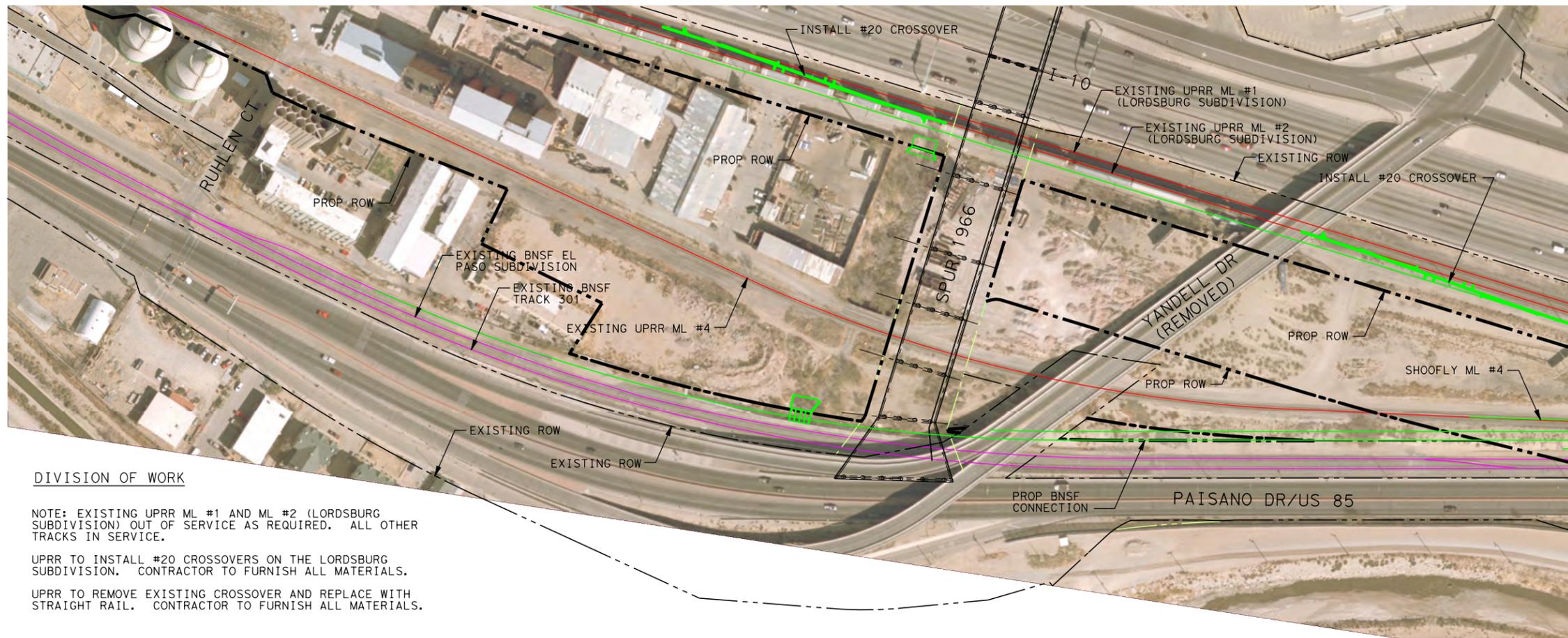
CONTRACTOR TO CONSTRUCT UPRR CULVERT EXTENSION (MP 1295.12).

CONTRACTOR TO CONSTRUCT RETAINING WALL FROM STA 342+00 TO STA 348+00.00 (LT).

Scale: 200.000000:1.000000
 Plotted on: 18-DEC-2013 2:23

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i .pen
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-CS21.dgn



MATCH LINE A-A

- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/RET WALL
 - PROP TURNOUT (POWERED)
 - - - REMOVAL

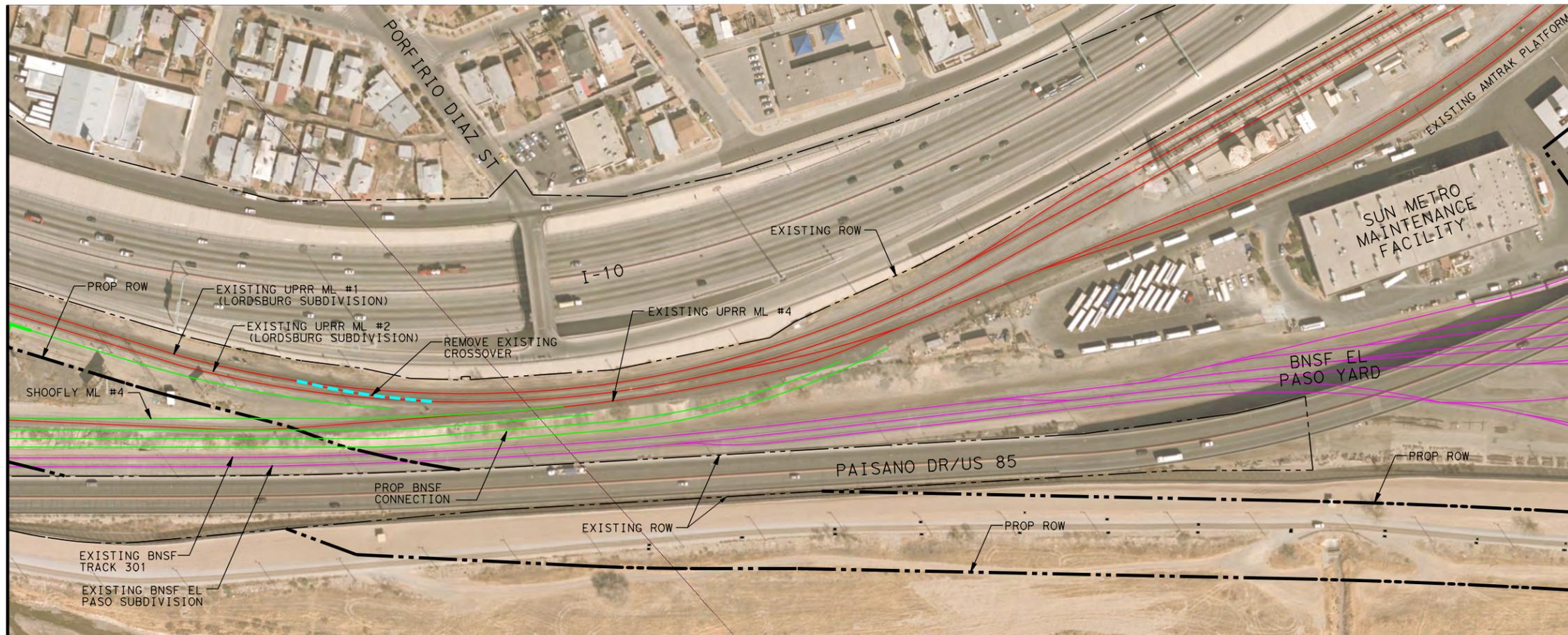
- NOTES:
- RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 - RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 - SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 - SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 - SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.

DIVISION OF WORK

NOTE: EXISTING UPRR ML #1 AND ML #2 (LORDSBURG SUBDIVISION) OUT OF SERVICE AS REQUIRED. ALL OTHER TRACKS IN SERVICE.

UPRR TO INSTALL #20 CROSSOVERS ON THE LORDSBURG SUBDIVISION. CONTRACTOR TO FURNISH ALL MATERIALS.

UPRR TO REMOVE EXISTING CROSSOVER AND REPLACE WITH STRAIGHT RAIL. CONTRACTOR TO FURNISH ALL MATERIALS.



MATCH LINE A-A

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1"=200'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR ML #4
 PHASE 3
 (PHASE 3B)

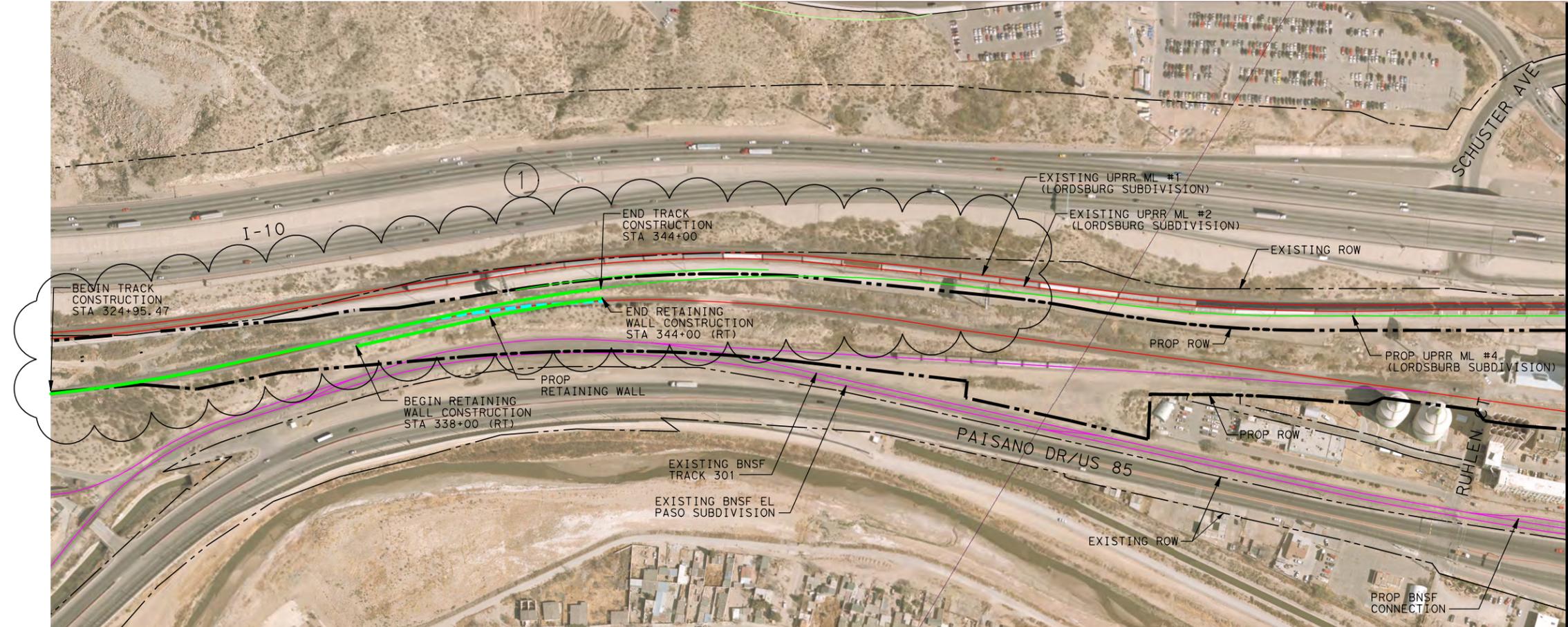
SHEET 2 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL
DWG:	RGN	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	JAM	ELP	EL PASO	2552	04
DWG:					027
					76

Scale: 300.000000: 1.000000
 Plotted on: 18-DEC-2013 2:23

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i...pen
 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-CS22.dgn



MATCH LINE A-A

- LEGEND:**
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/RET WALL
 - PROP TURNOUT (POWERED)
 - REMOVAL

- NOTES:**
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 300'
 PROFILE N/A

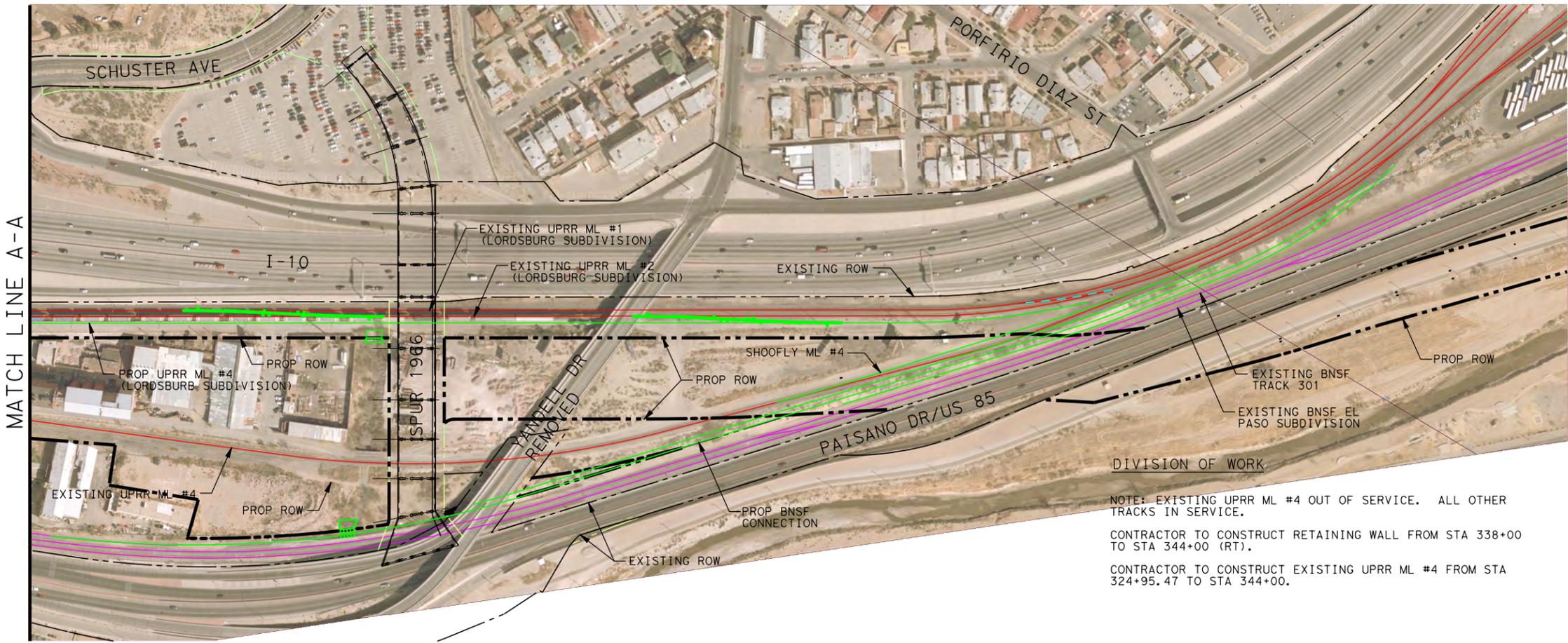
REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR ML #4
 PHASE 3
 (PHASE 3C)

SHEET 3 OF 4

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	77



MATCH LINE A-A

DIVISION OF WORK

NOTE: EXISTING UPRR ML #4 OUT OF SERVICE. ALL OTHER TRACKS IN SERVICE.

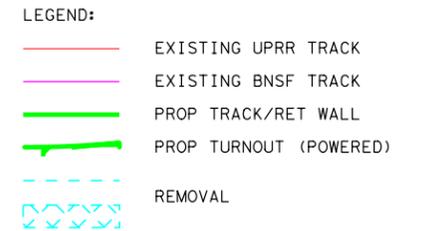
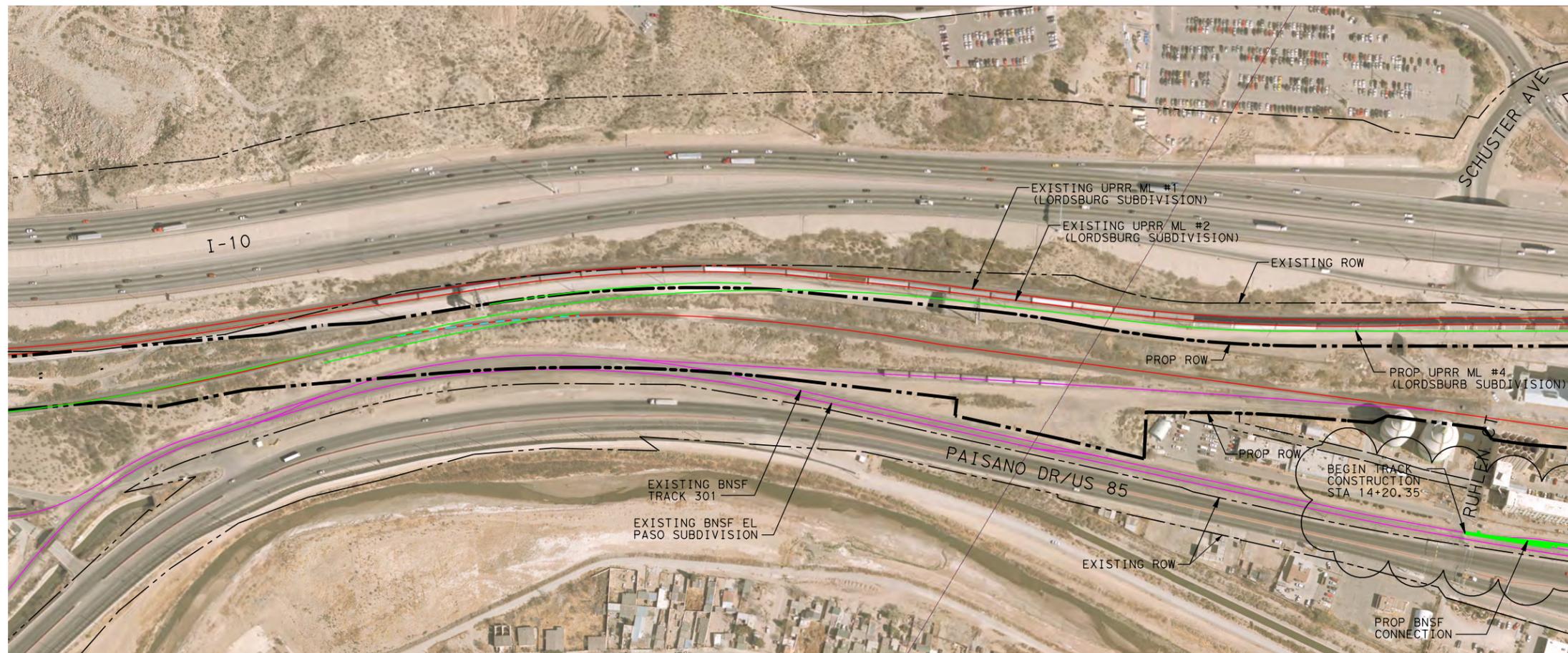
CONTRACTOR TO CONSTRUCT RETAINING WALL FROM STA 338+00 TO STA 344+00 (RT).

CONTRACTOR TO CONSTRUCT EXISTING UPRR ML #4 FROM STA 324+95.47 TO STA 344+00.

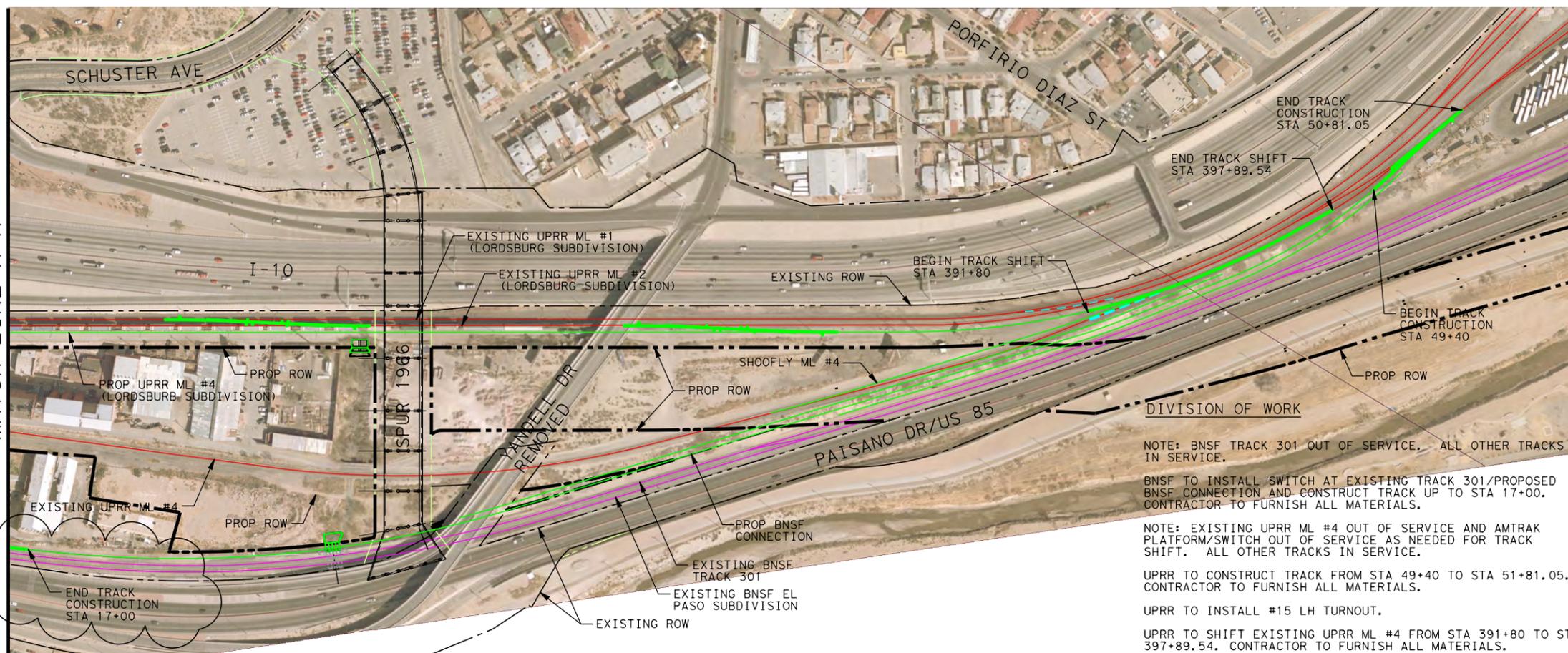
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Model Name:

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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-PL-CS23.dgn



- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 300'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 PROP UPRR ML #4
 PHASE 3
 (PHASE 3D)

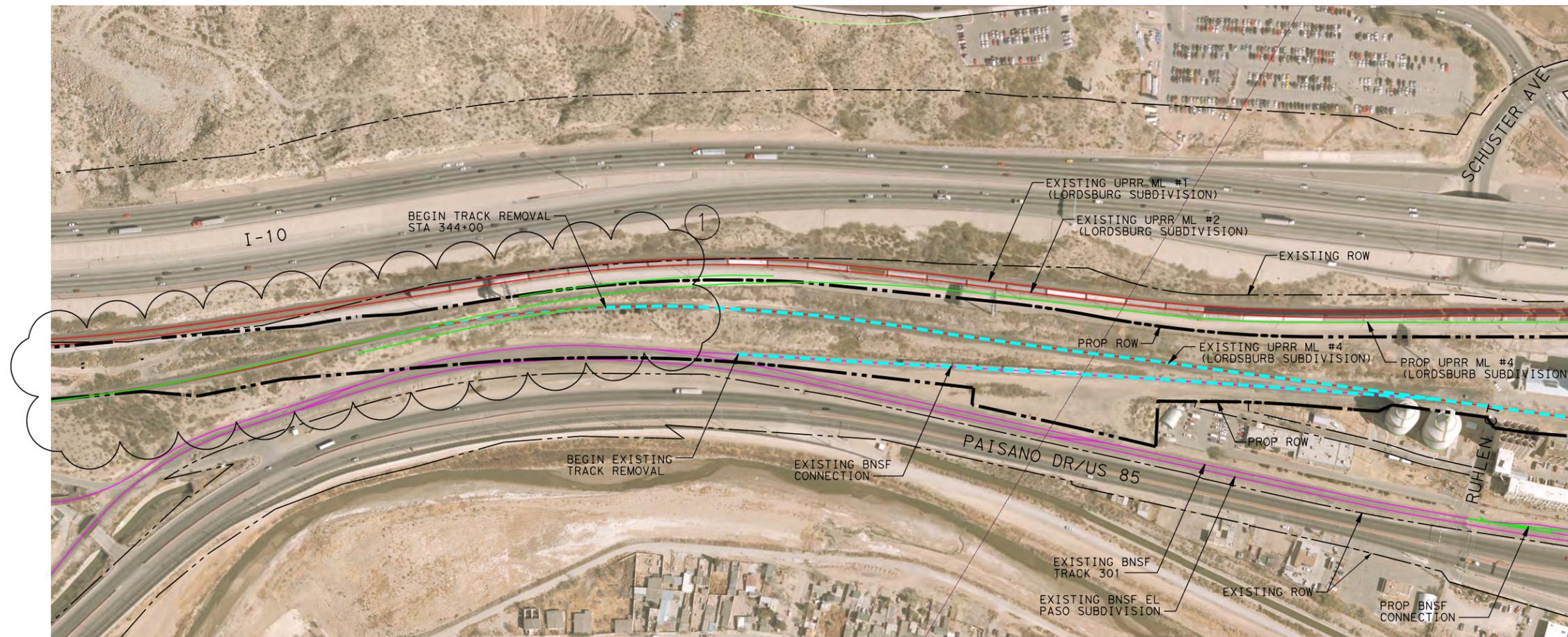
SHEET 4 OF 4

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	78

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 Plotted on: 18-DEC-2013 2:24

Model Name:

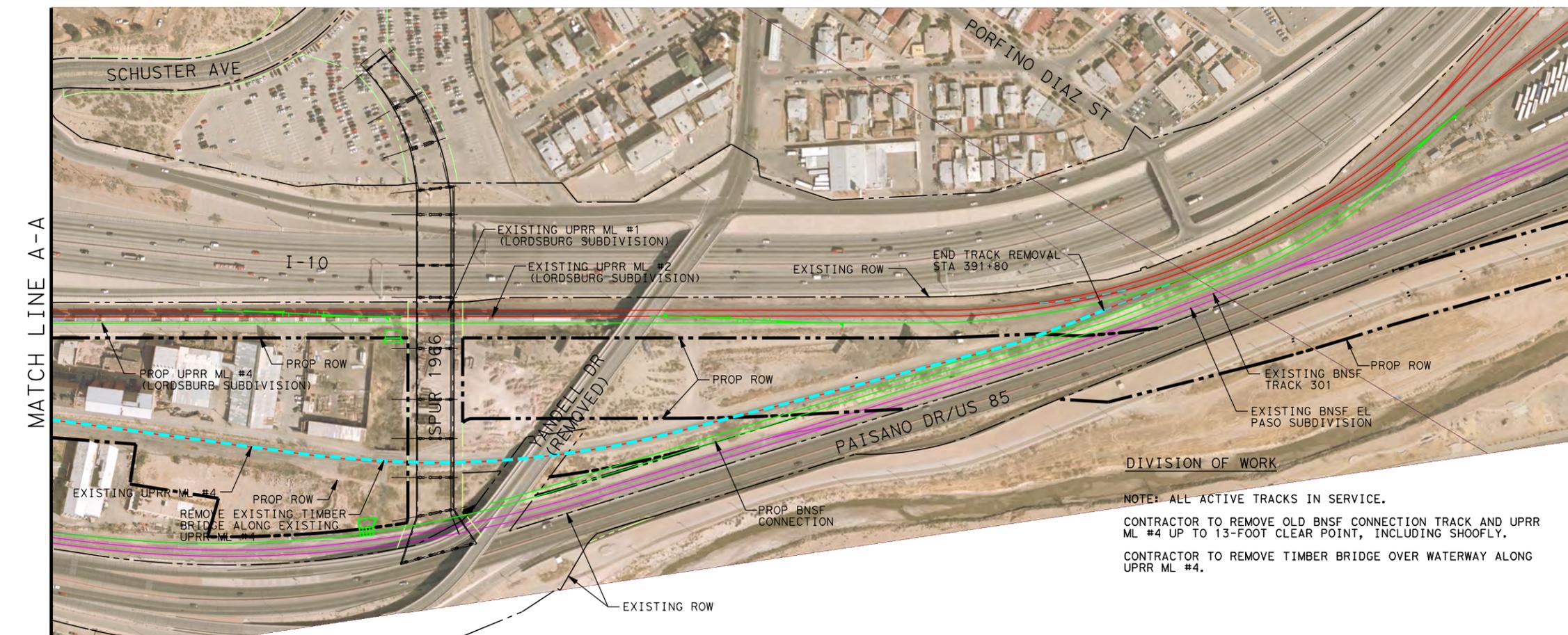
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MATCH LINE A-A

- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/RET WALL
 - PROP TURNOUT (POWERED)
 - - - REMOVAL

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
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 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



MATCH LINE A-A

INTERIM REVIEW ONLY
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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 300'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 EXIST UPRR ML #4
 PHASE 4
 (PHASE 4A)

SHEET 1 OF 2

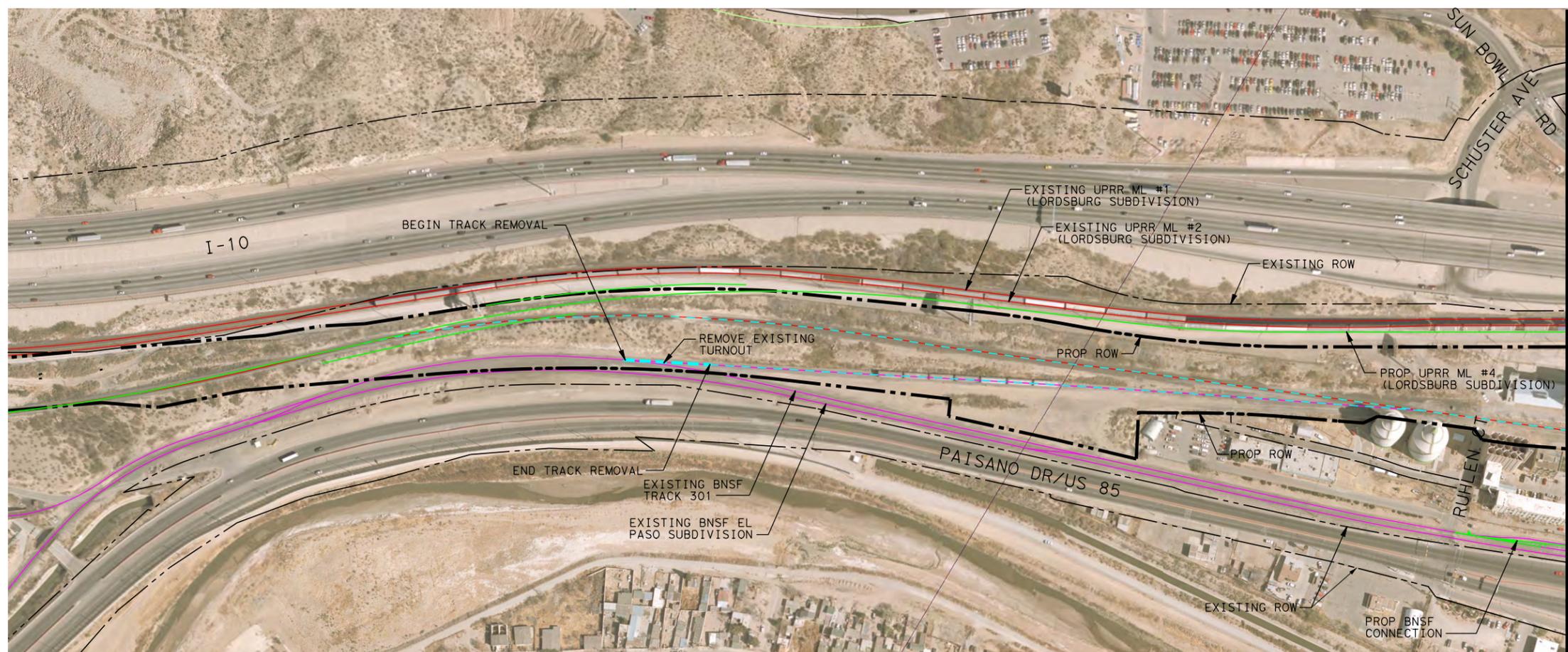
DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	79

DIVISION OF WORK
 NOTE: ALL ACTIVE TRACKS IN SERVICE.
 CONTRACTOR TO REMOVE OLD BNSF CONNECTION TRACK AND UPRR ML #4 UP TO 13-FOOT CLEAR POINT, INCLUDING SHOOFLY.
 CONTRACTOR TO REMOVE TIMBER BRIDGE OVER WATERWAY ALONG UPRR ML #4.

Scale: 300.000000: 1.000000
 Plotted on: 18-DEC-2013 2:25

Model Name:

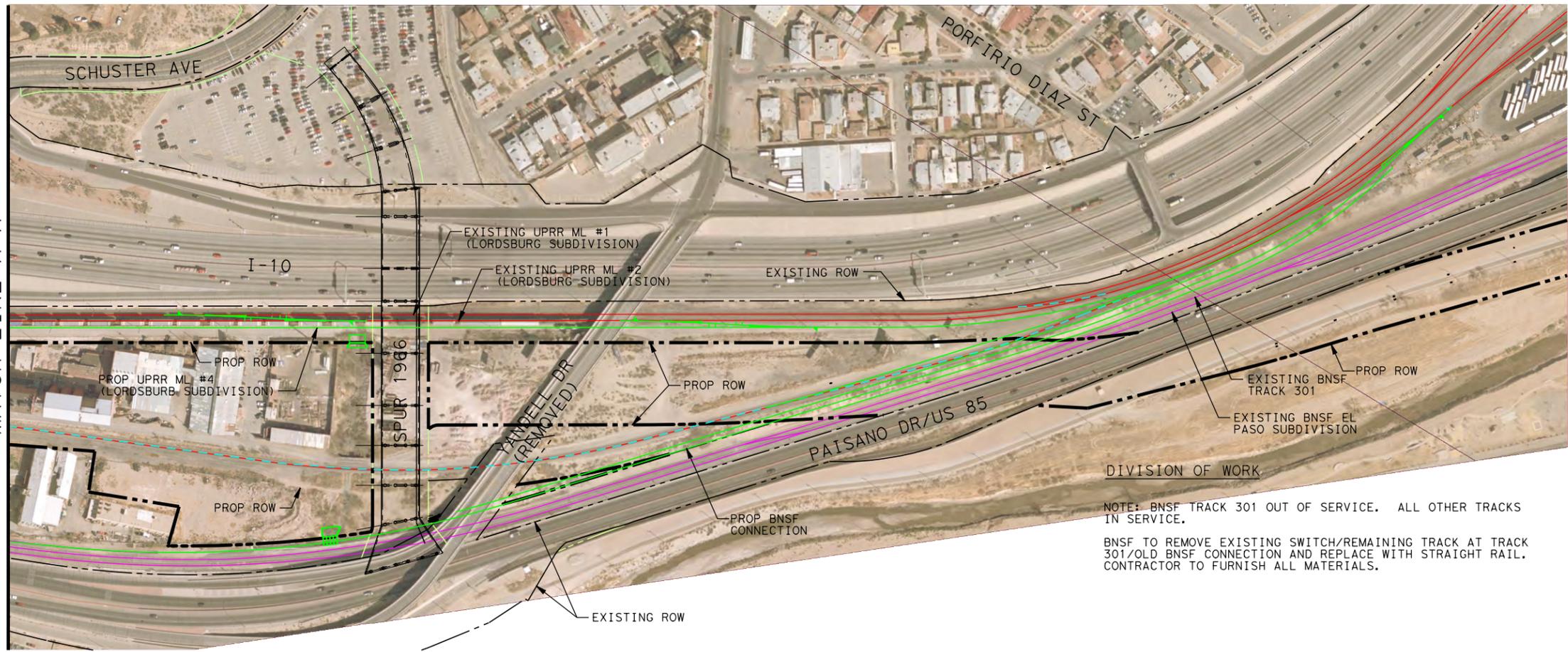
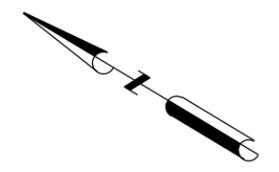
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 Design File name: IP*PWP: dms79716\LP375BHW-RR-PL-CS31.dgn



MATCH LINE A-A

- LEGEND:
- EXISTING UPRR TRACK
 - EXISTING BNSF TRACK
 - PROP TRACK/RET WALL
 - PROP TURNOUT (POWERED)
 - - - REMOVAL

- NOTES:
1. RAILROAD RIGHT OF ENTRY IS REQUIRED FOR ACCESS TO UPRR OR BNSF PROPERTY. CONTACT RAILROAD REPRESENTATIVES FOR RIGHT-OF-ENTRY REQUIREMENTS AND DOCUMENTS.
 2. RAILROAD FLAGGING IS REQUIRED FOR WORK WITHIN 25 FEET OF CENTERLINE OF TRACK. CONTACT RAILROAD REPRESENTATIVE FOR FLAGGING SERVICES.
 3. SEE TYPICAL SECTIONS FOR DETAILS ON RAIL, TIES, BALLAST, AND SUBBALLAST REQUIREMENTS.
 4. SEE REMOVAL LAYOUTS FOR DETAILS OF TRACK REMOVAL.
 5. SEE TRACK PLAN & PROFILE SHEETS FOR ALIGNMENT AND PROFILE DETAILS.



MATCH LINE A-A

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: PLAN 1" = 300'
 PROFILE N/A

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CONSTRUCTION SEQUENCE
 EXIST UPRR ML #4
 PHASE 4
 (PHASE 4B)

SHEET 2 OF 2

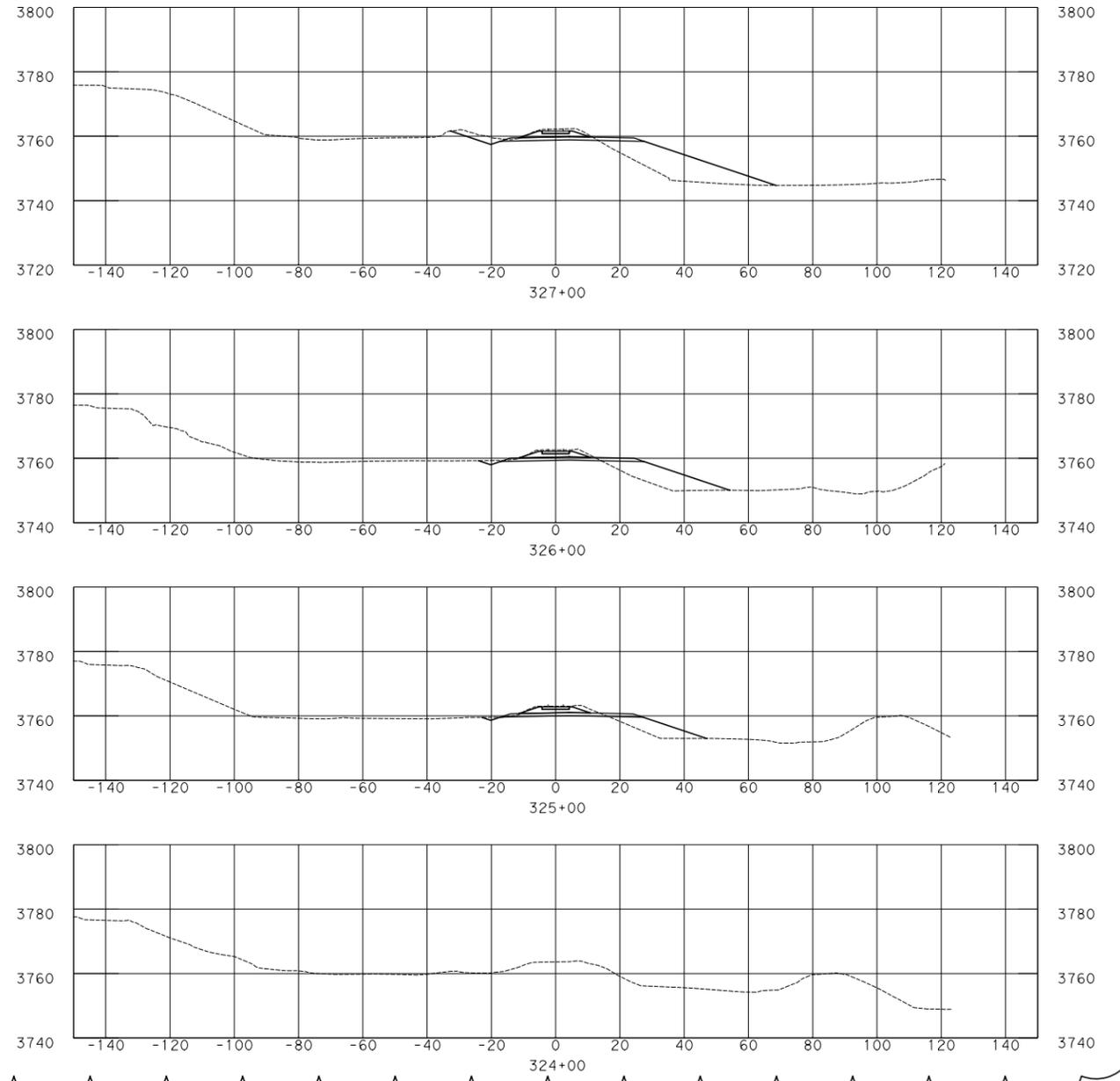
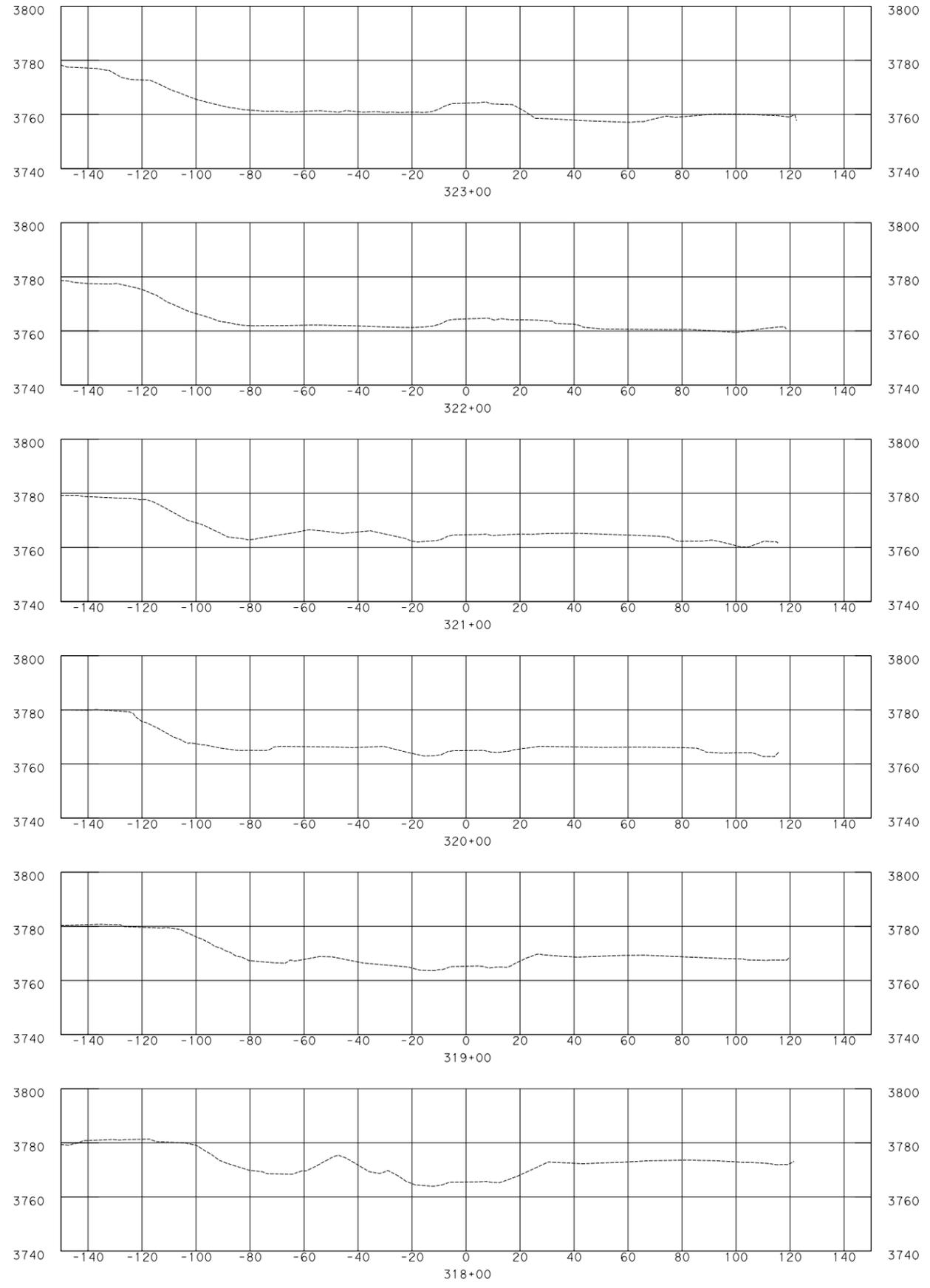
DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	JAM	ELP	EL PASO	2552	04	027	80

NOTE: BNSF TRACK 301 OUT OF SERVICE. ALL OTHER TRACKS IN SERVICE.
 BNSF TO REMOVE EXISTING SWITCH/REMAINING TRACK AT TRACK 301/OLD BNSF CONNECTION AND REPLACE WITH STRAIGHT RAIL. CONTRACTOR TO FURNISH ALL MATERIALS.

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Model Name:

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1

SCALE: HORIZ 1"=50'
 VERT 1"=50'

INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 325+00 TO STA 327+00

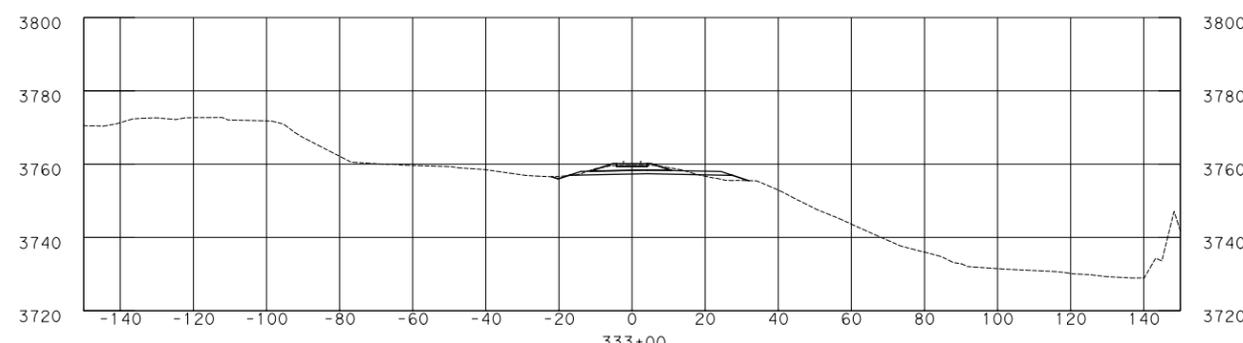
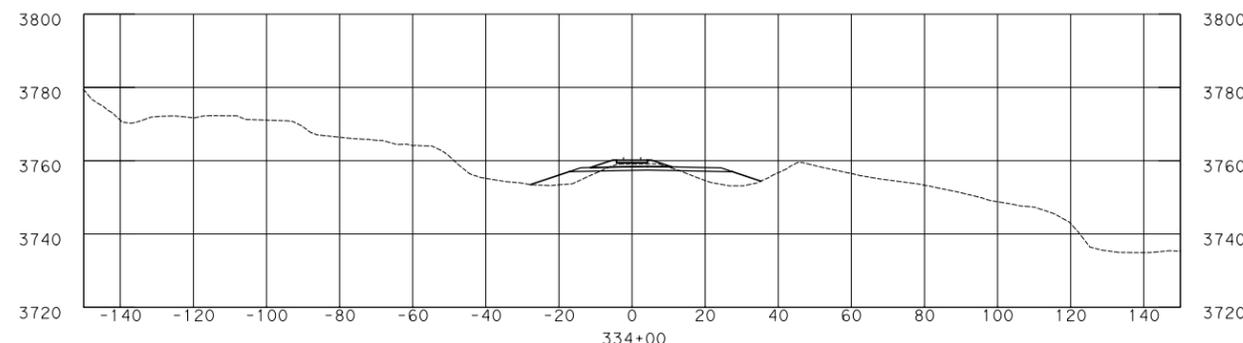
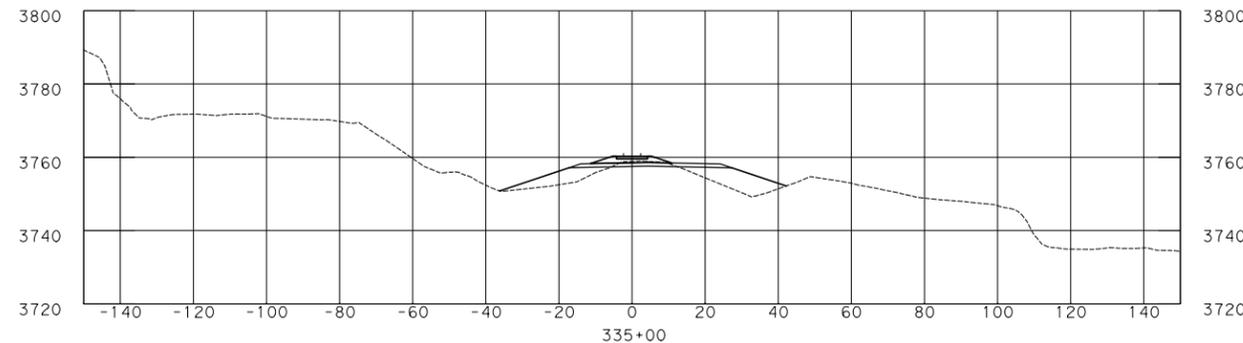
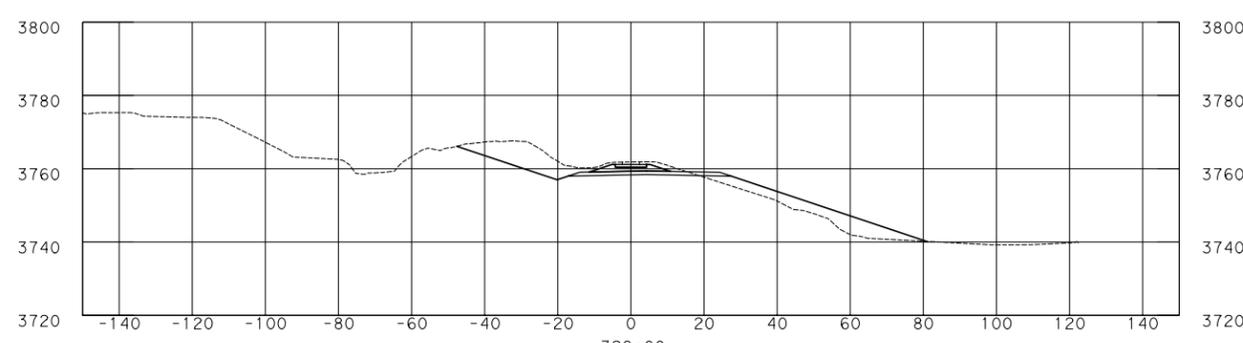
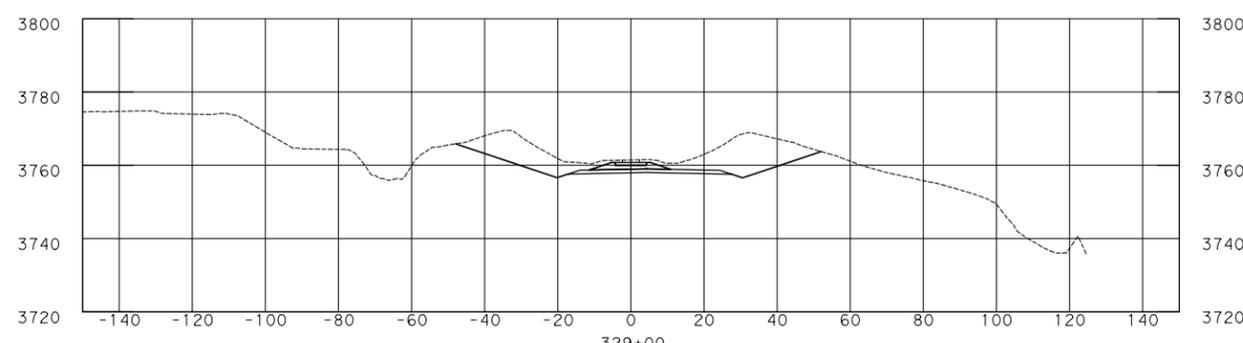
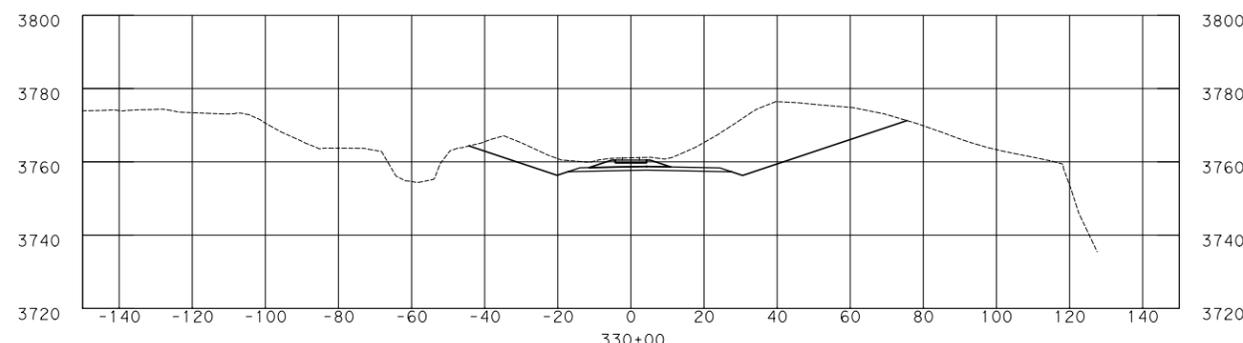
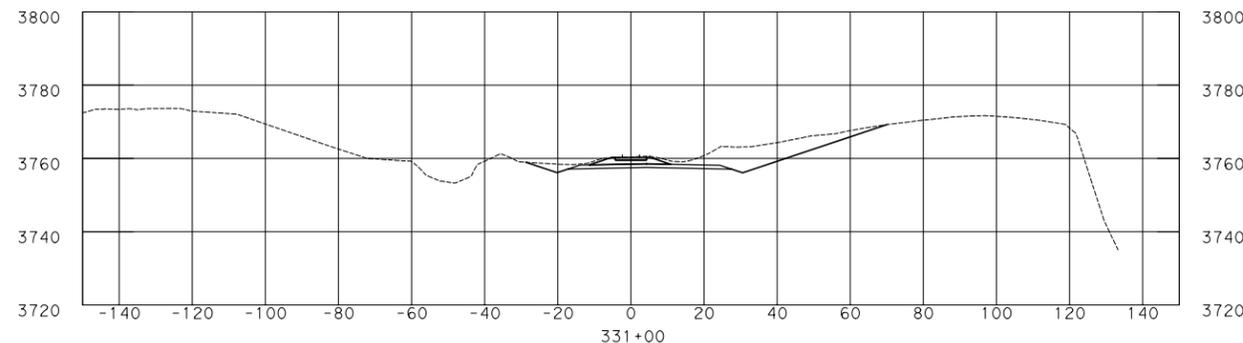
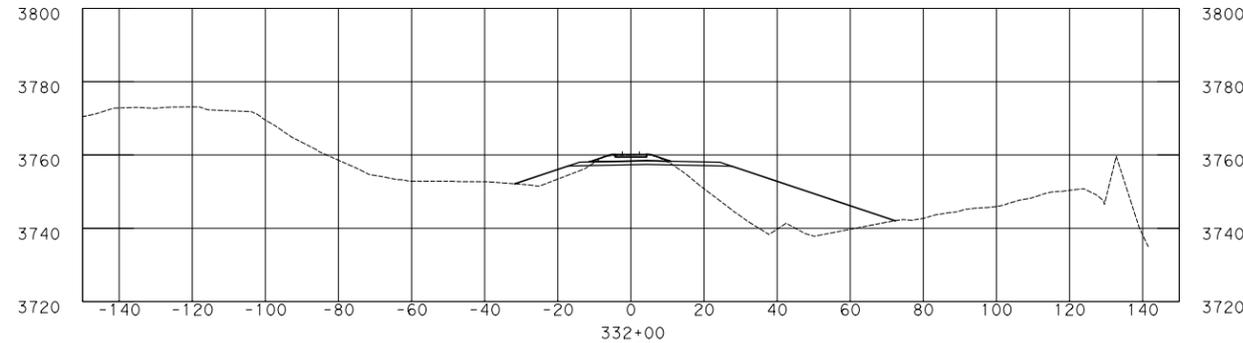
SHEET 1 OF 9

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	81

Scale: 50.000000:1.000000
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Model Name:

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1

SCALE: HORIZ 1":50'
 VERT 1":50'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 328+00 TO STA 335+00

SHEET 2 OF 9

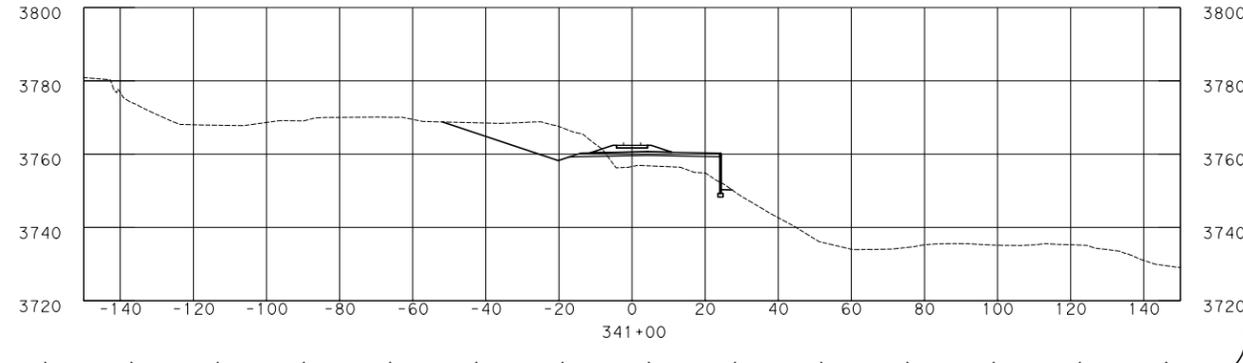
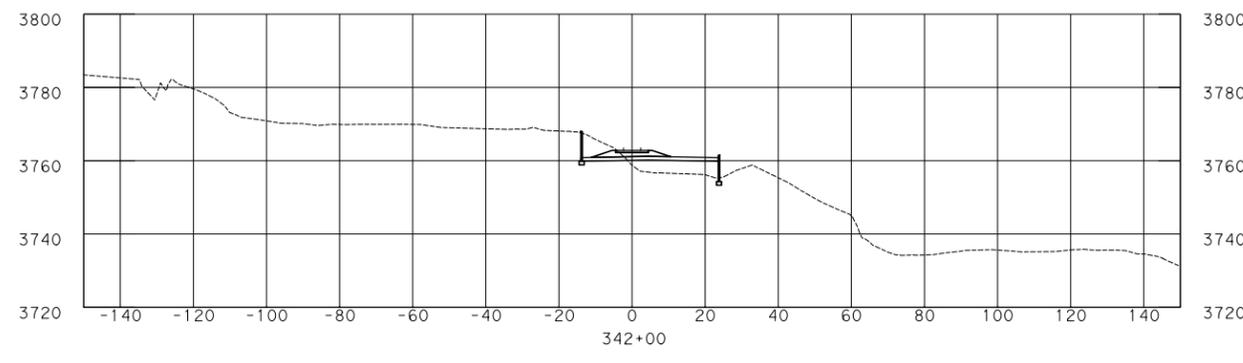
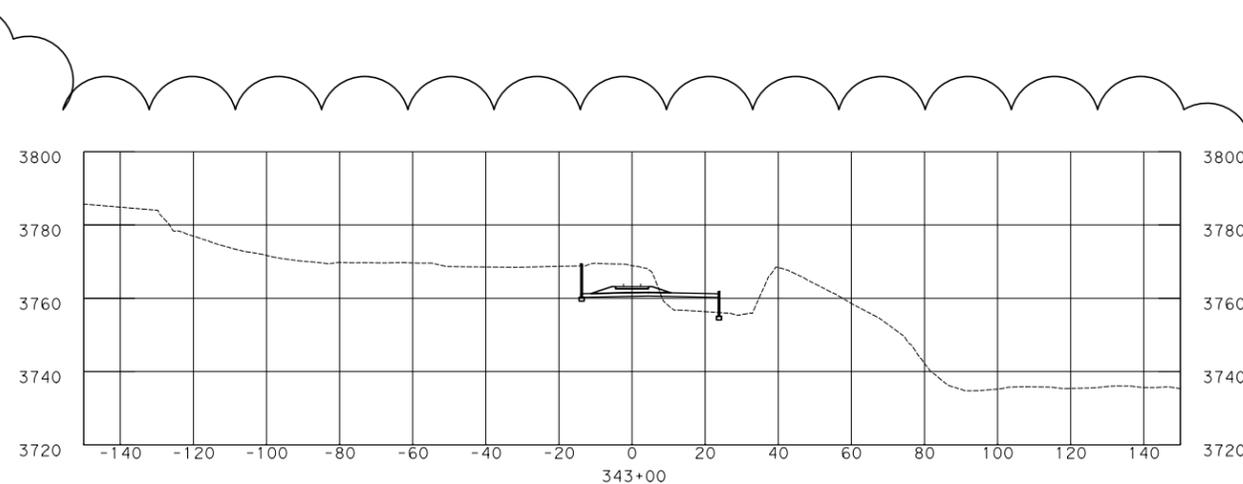
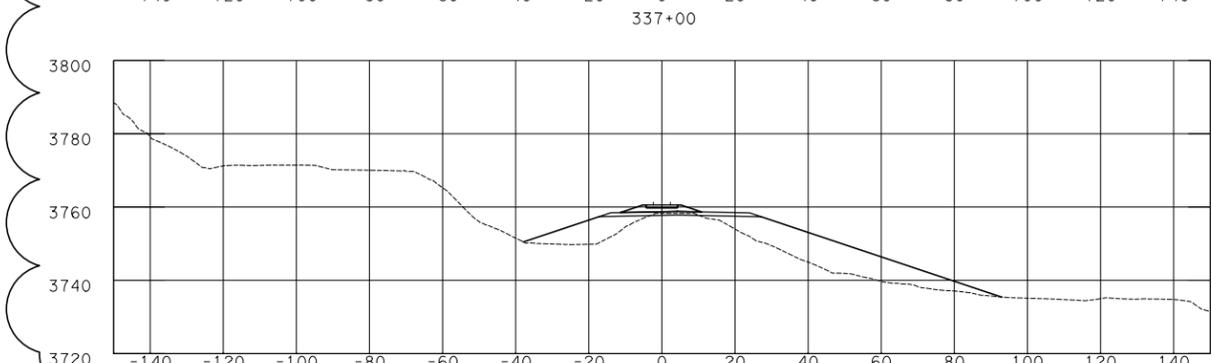
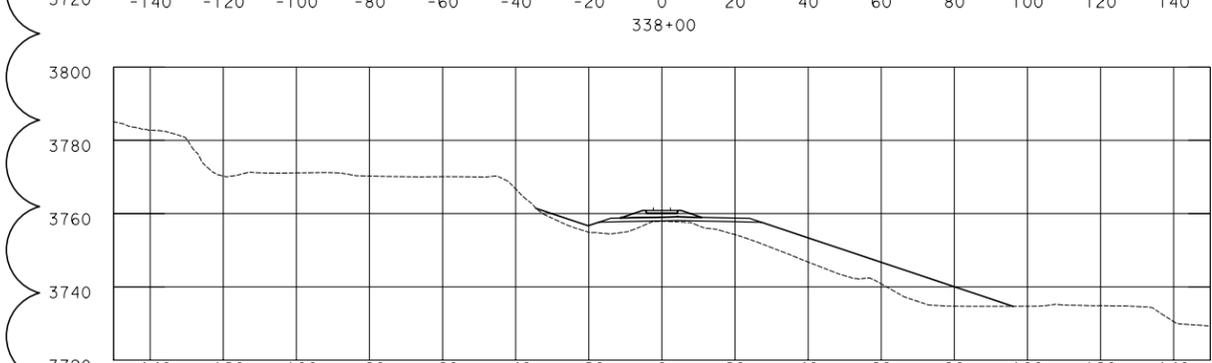
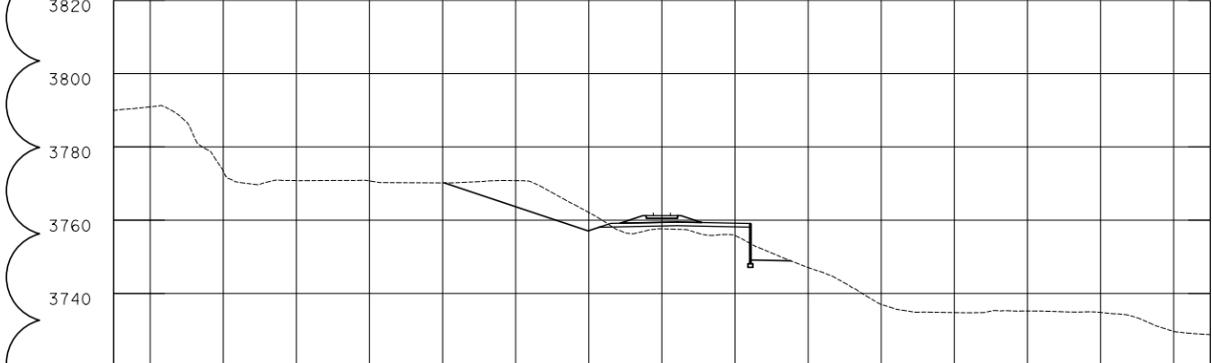
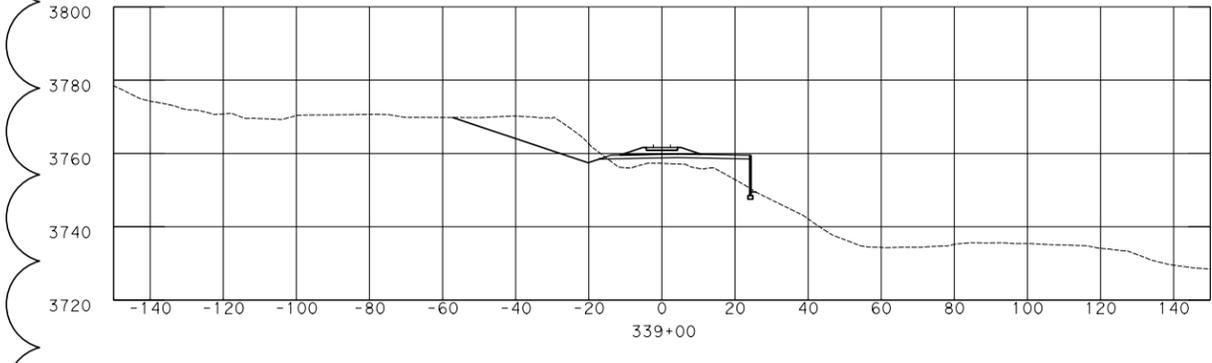
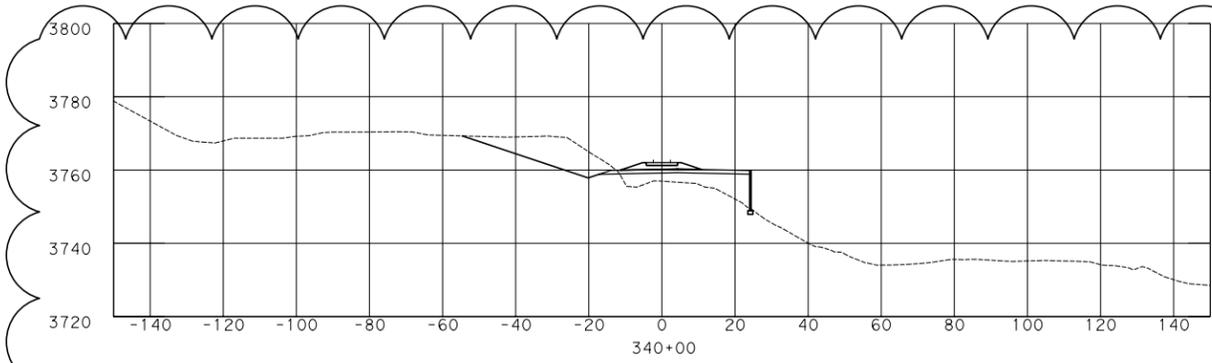
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	82

Scale: 50.000000:1.000000
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Model Name:

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1

SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 336+00 TO STA 343+00

SHEET 3 OF 9

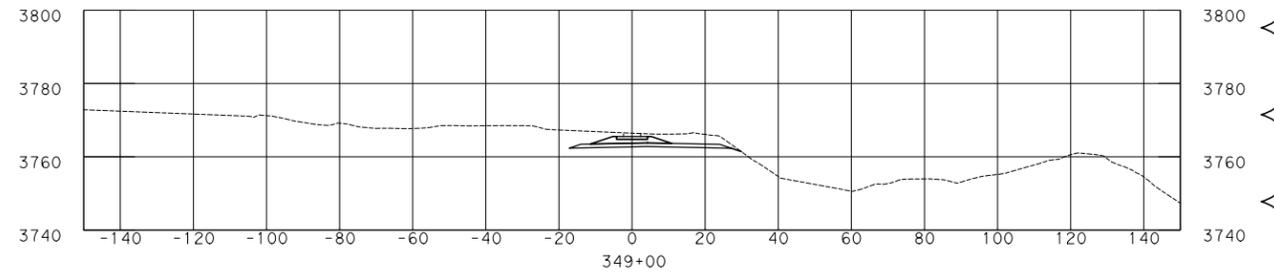
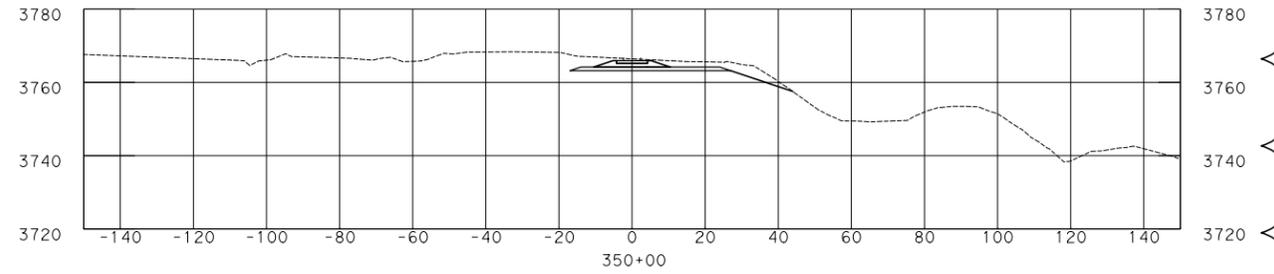
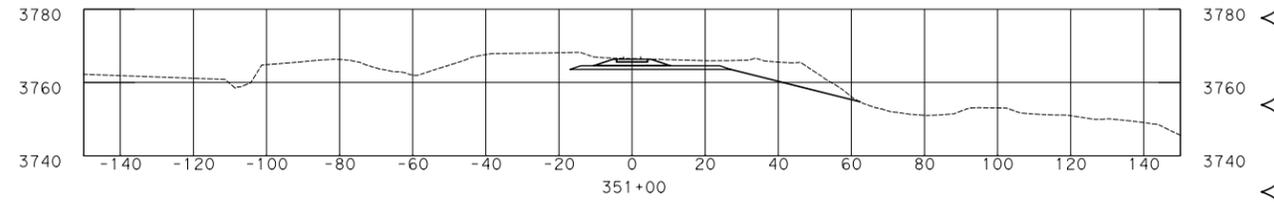
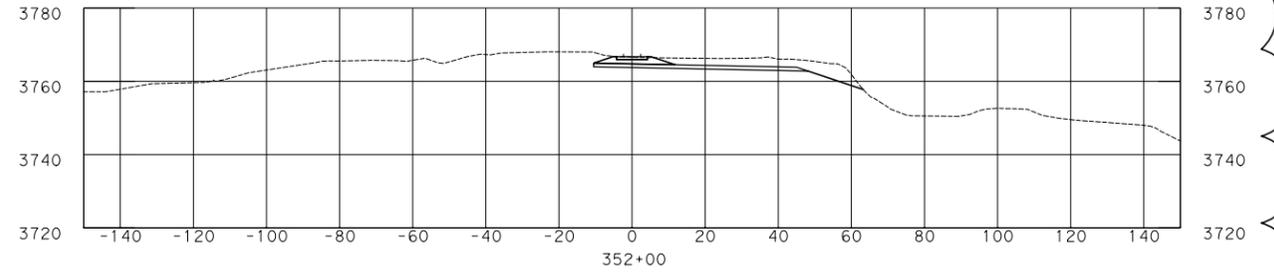
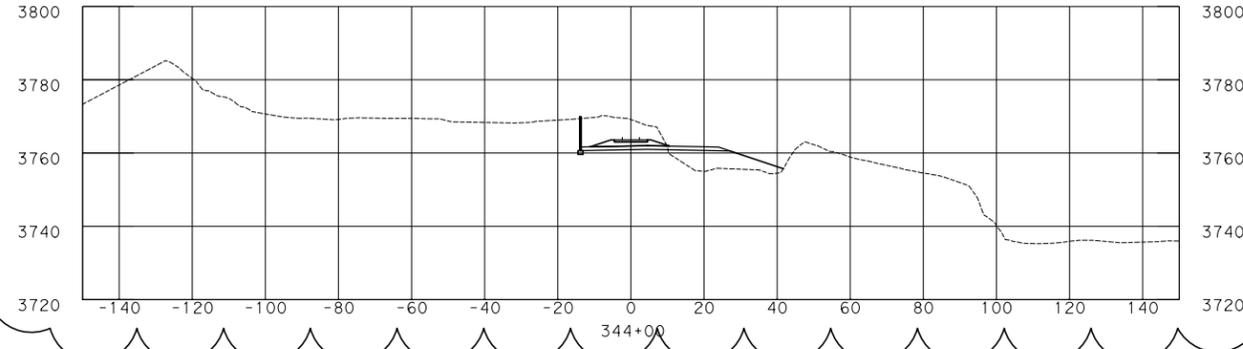
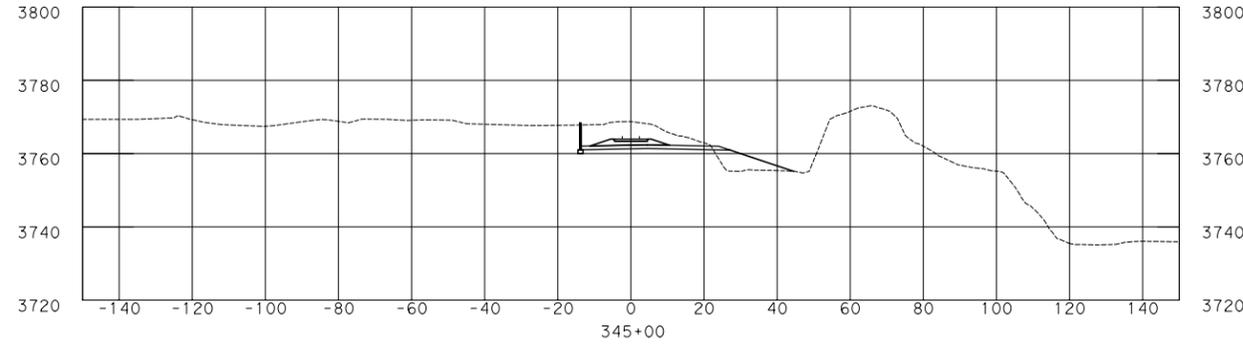
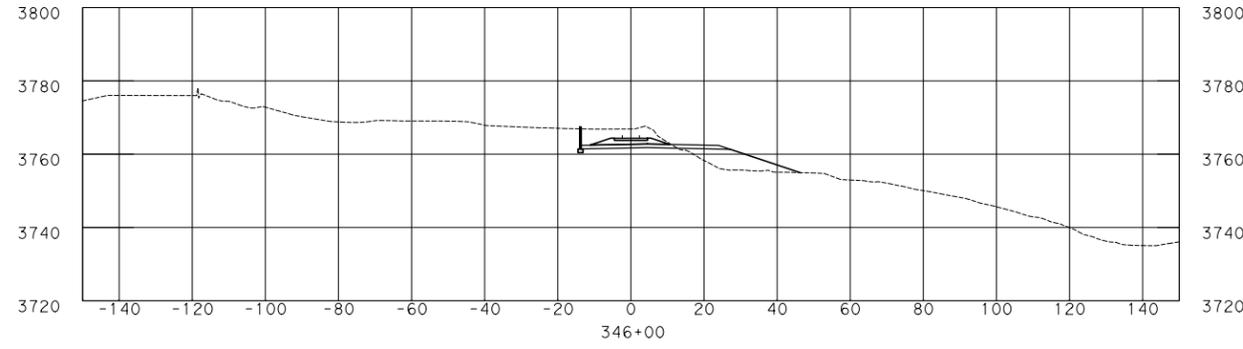
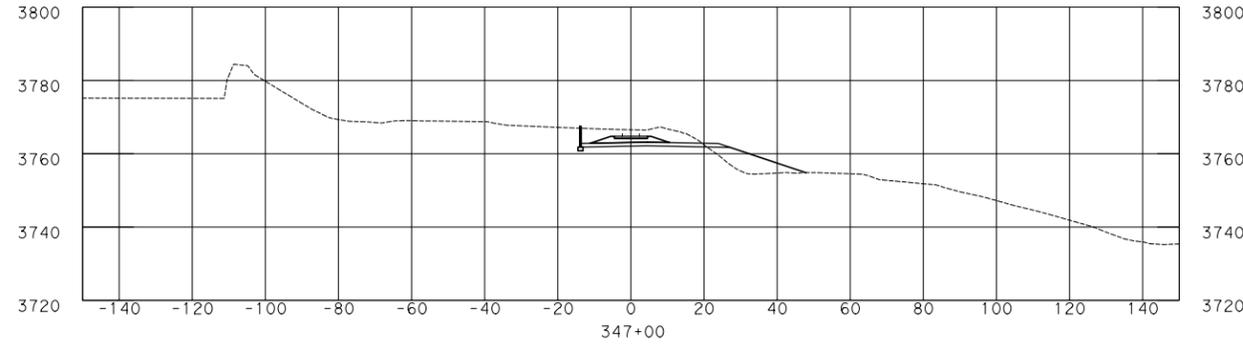
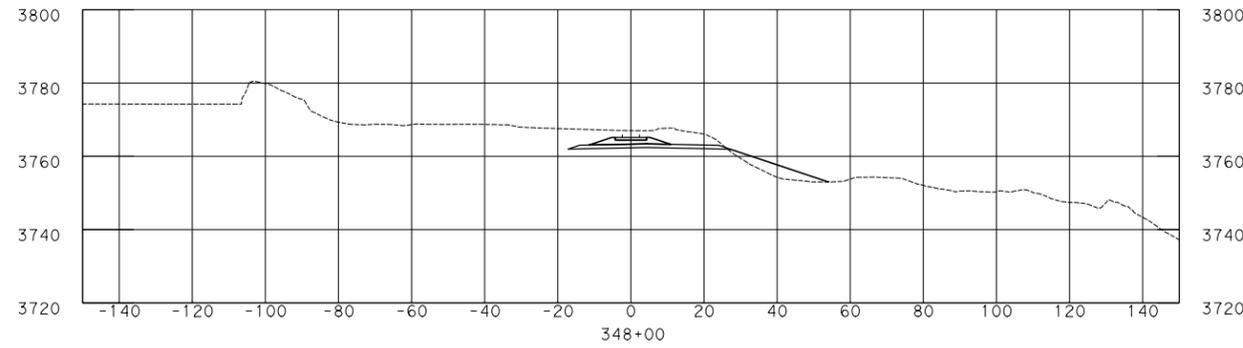
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	83

Scale: 50.000000:1.000000
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1

SCALE: HORIZ 1" = 50'
 VERT 1" = 50'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 344+00 TO STA 352+00

SHEET 4 OF 9

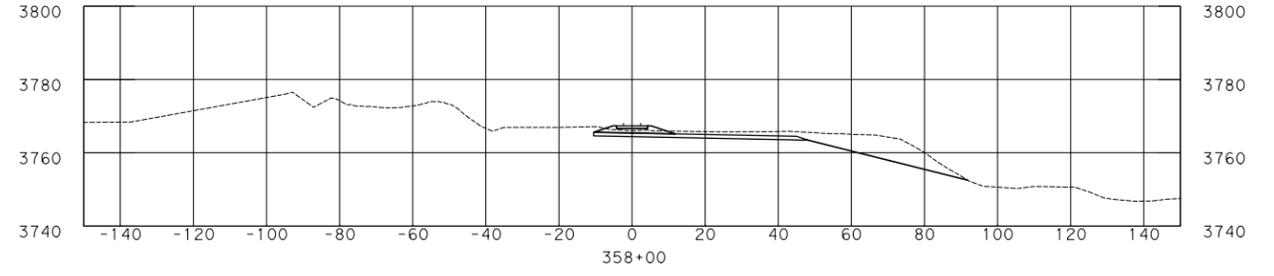
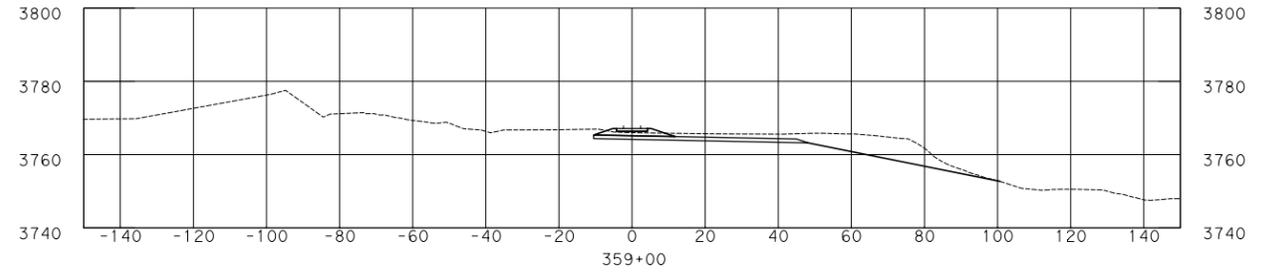
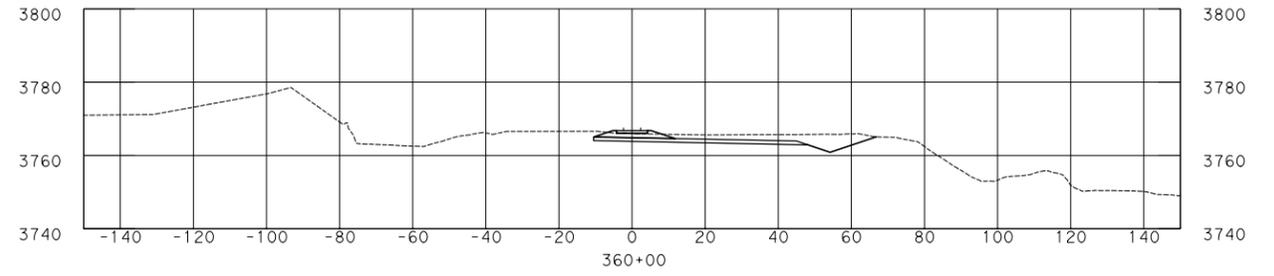
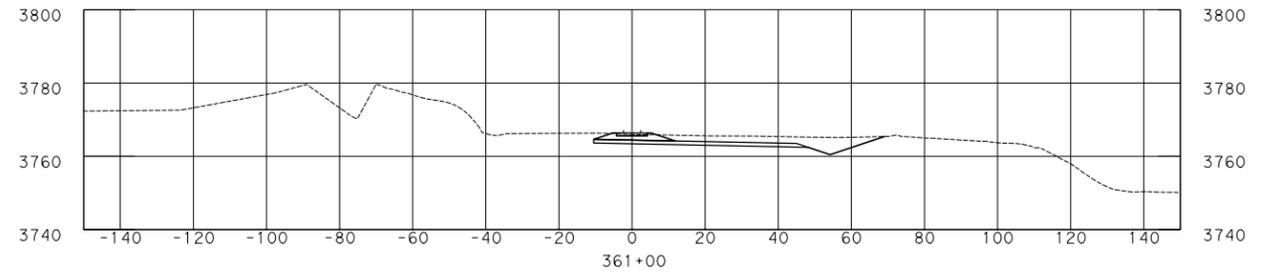
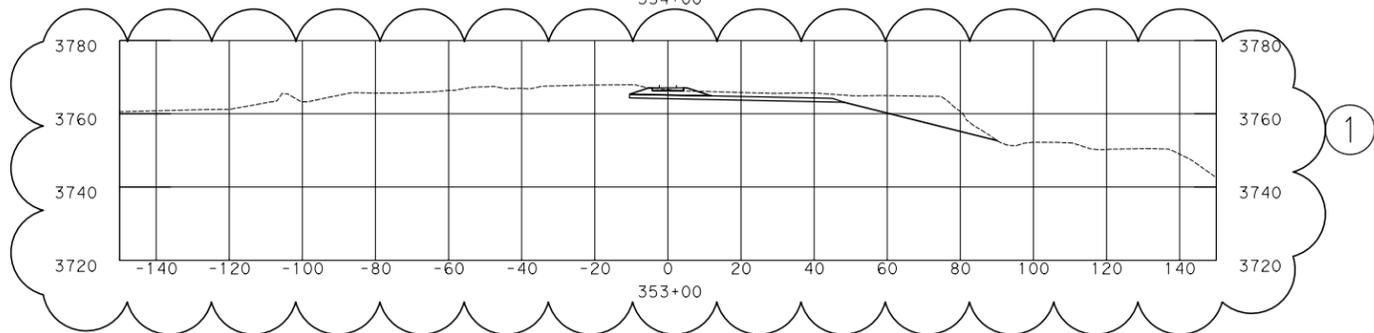
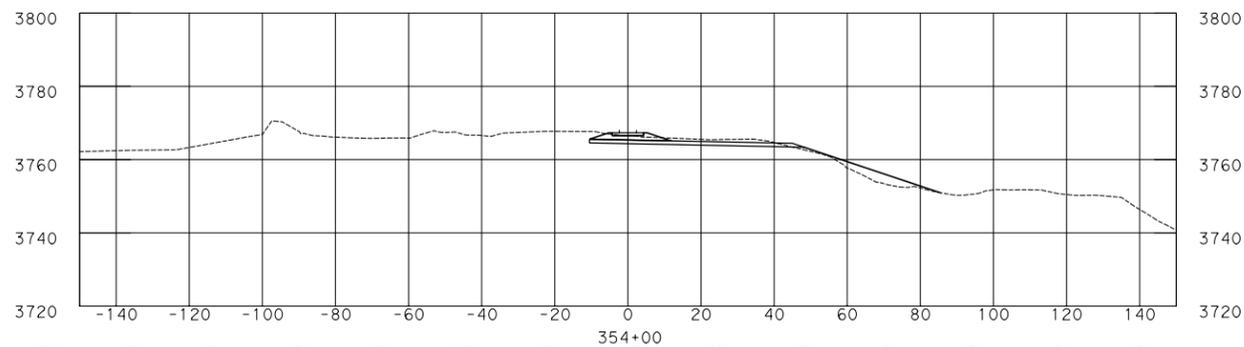
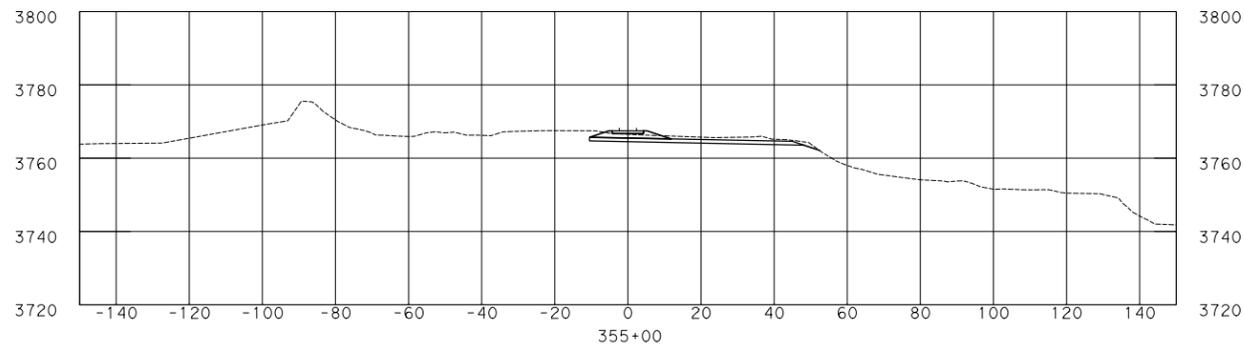
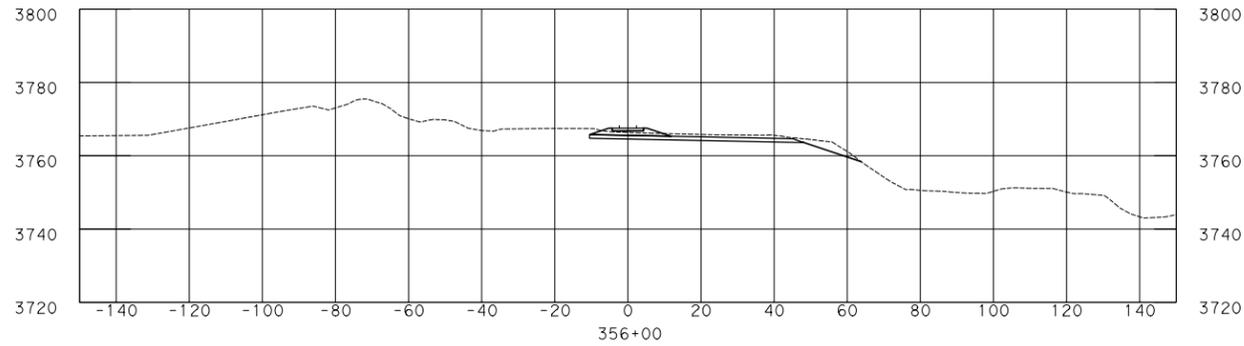
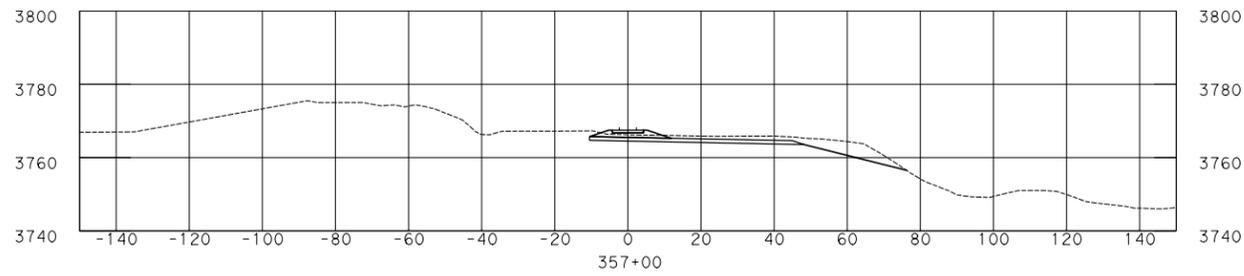
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	84

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SCALE: HORIZ 1"=50'
 VERT 1"=50'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
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 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 353+00 TO STA 361+00

SHEET 5 OF 9

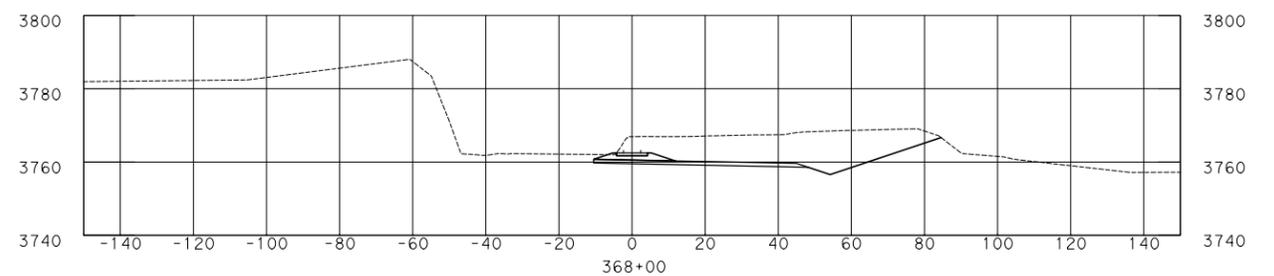
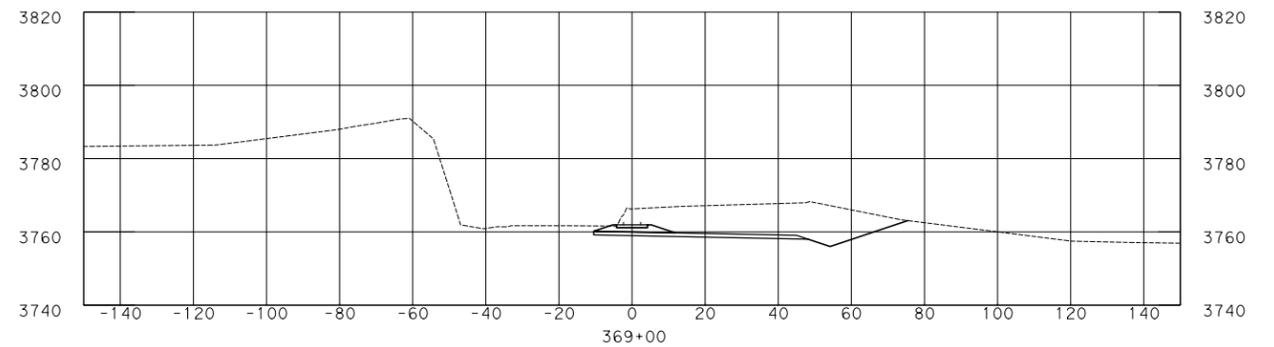
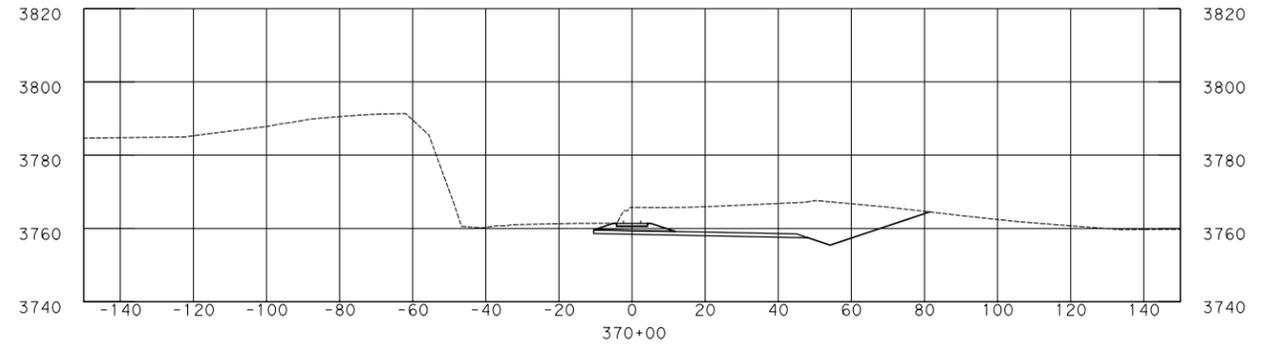
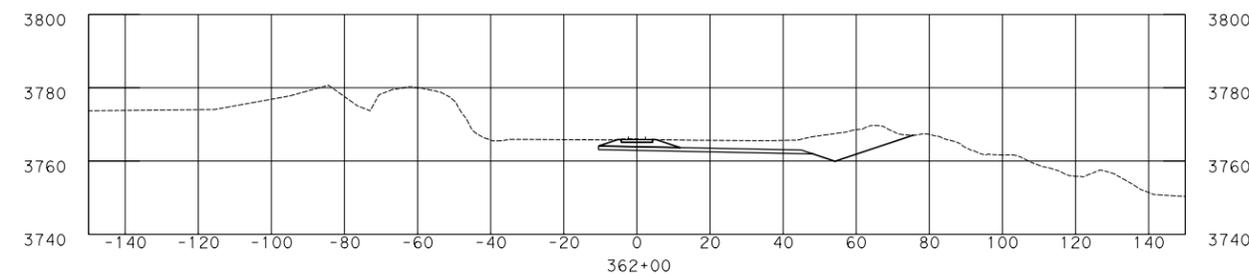
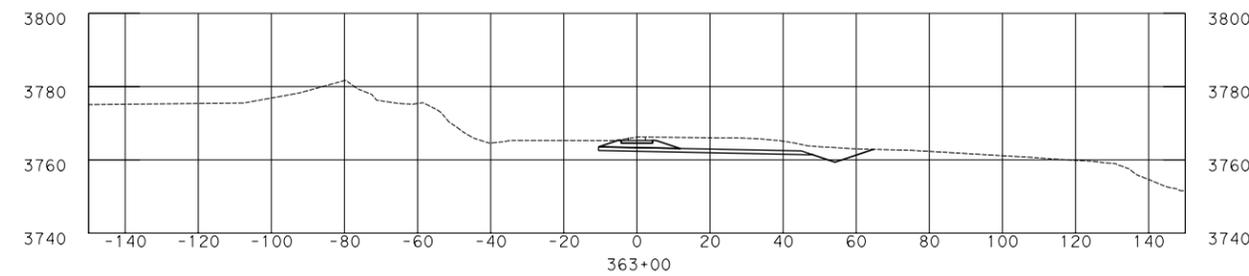
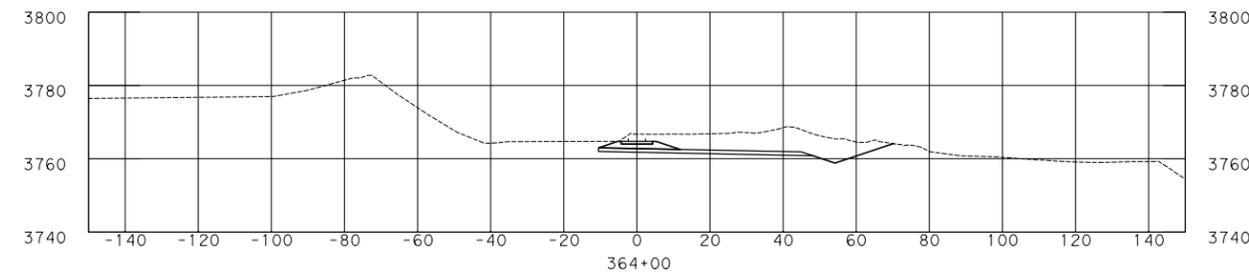
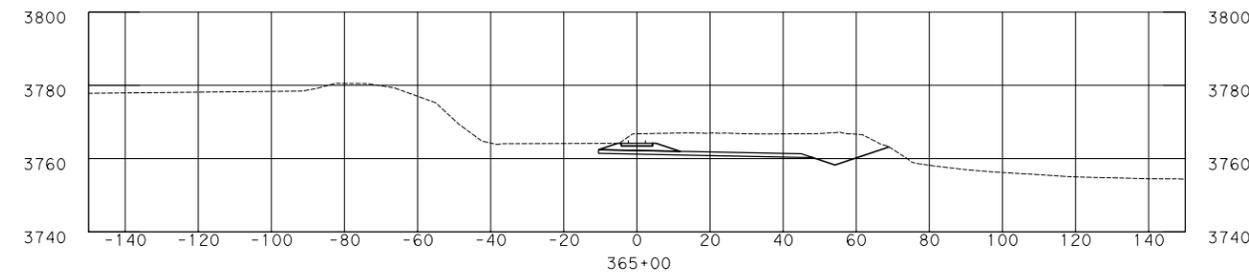
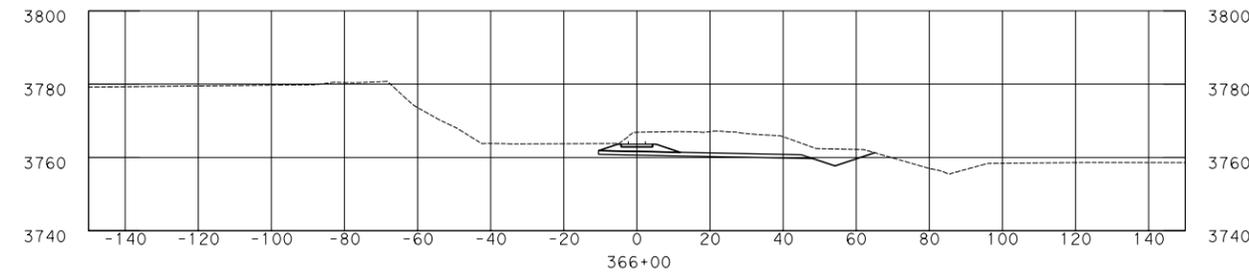
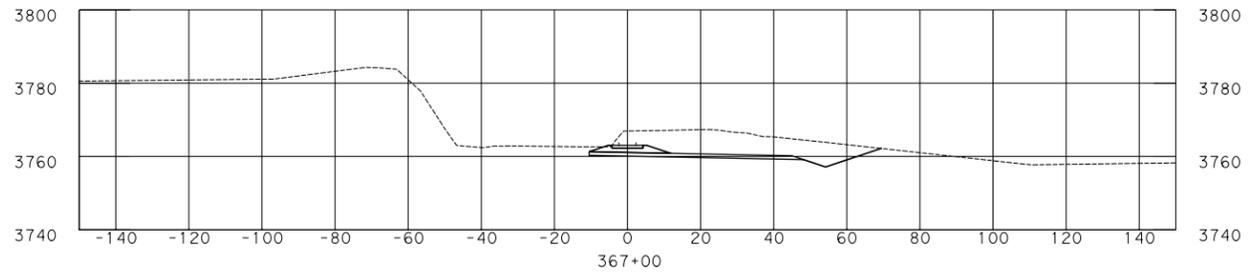
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 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	85

Scale: 50.000000:1.000000
 Plotted on: 18-DEC-2013 2:27

Model Name:

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SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 362+00 TO STA 370+00

SHEET 6 OF 9

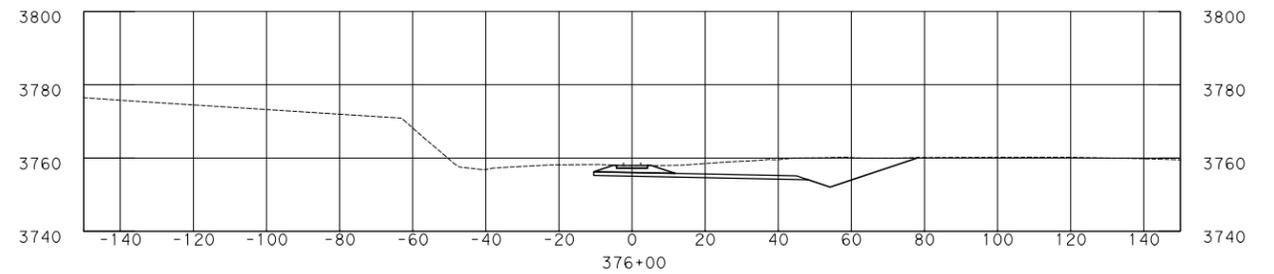
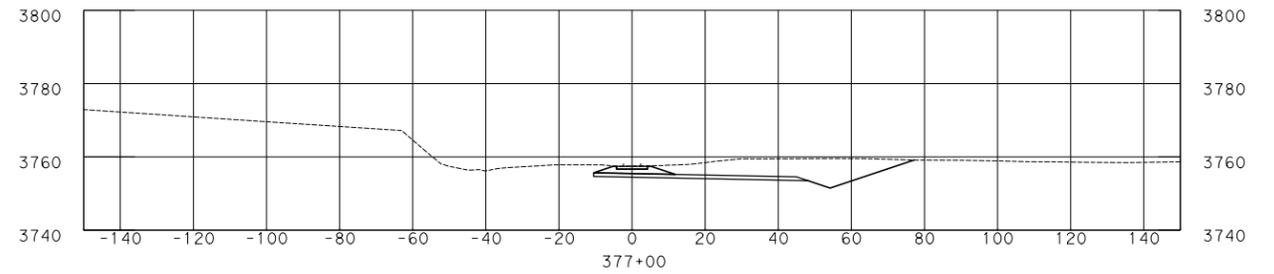
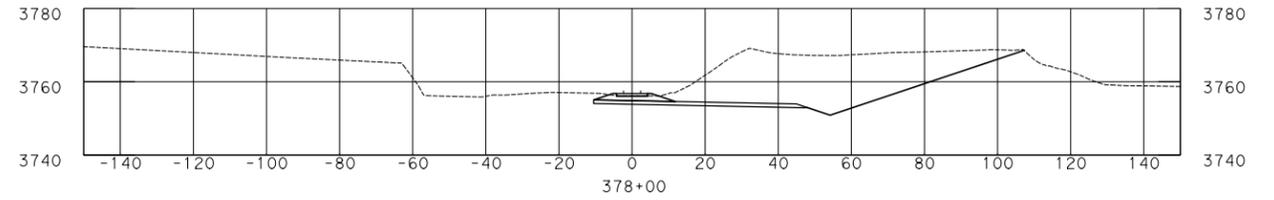
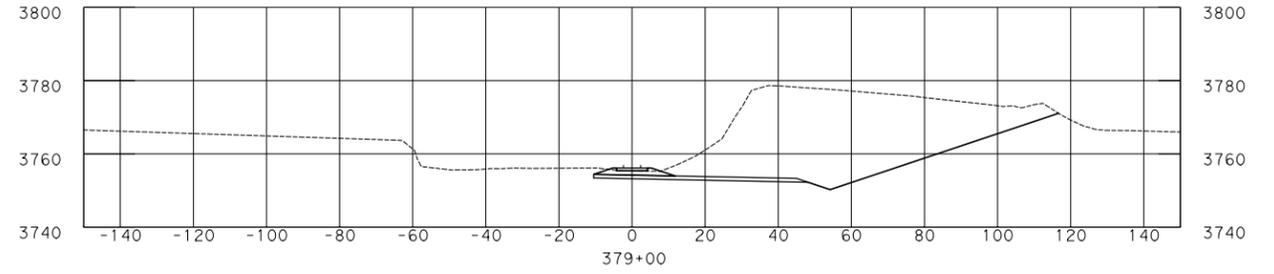
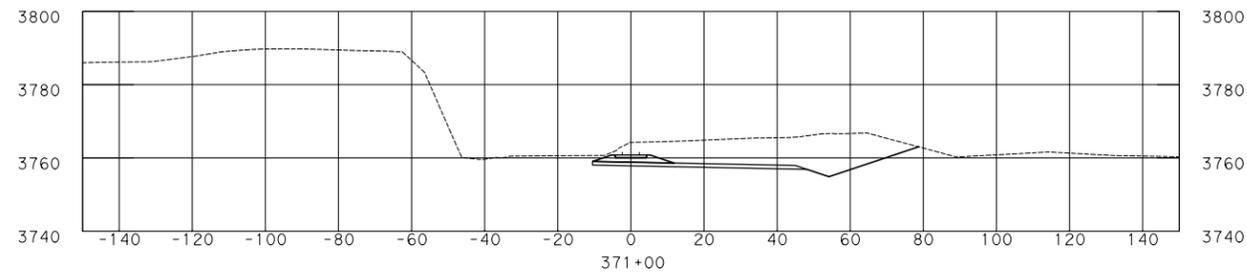
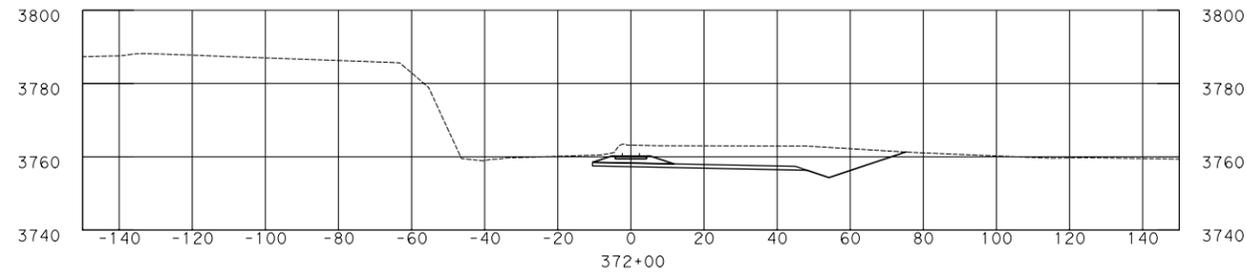
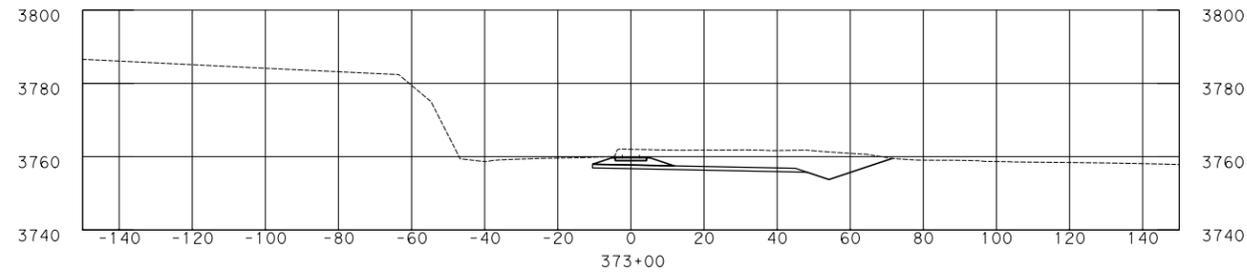
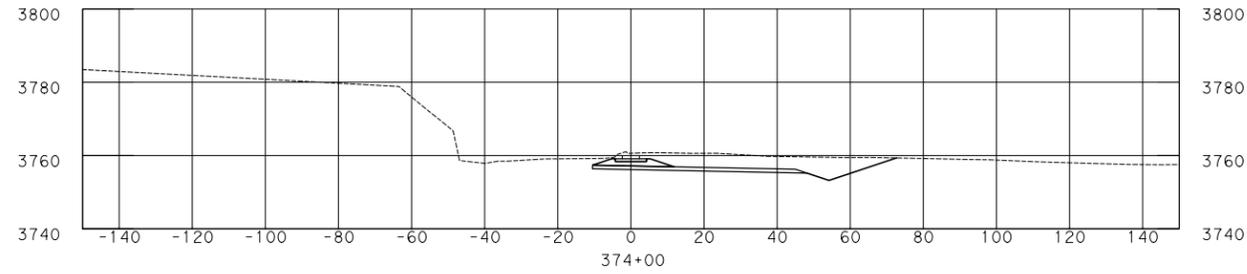
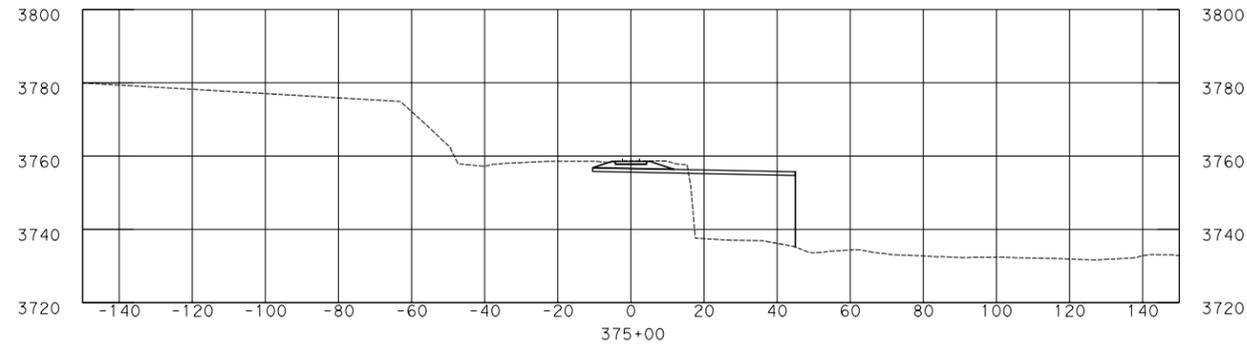
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	JAM	ELP	EL PASO	2552	04	027	86

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Model Name:

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SCALE: HORIZ 1":50'
 VERT 1":50'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
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 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 371+00 TO STA 379+00

SHEET 7 OF 9

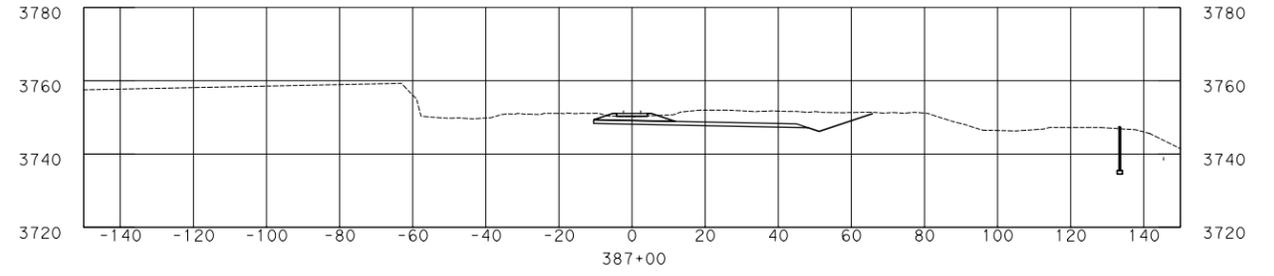
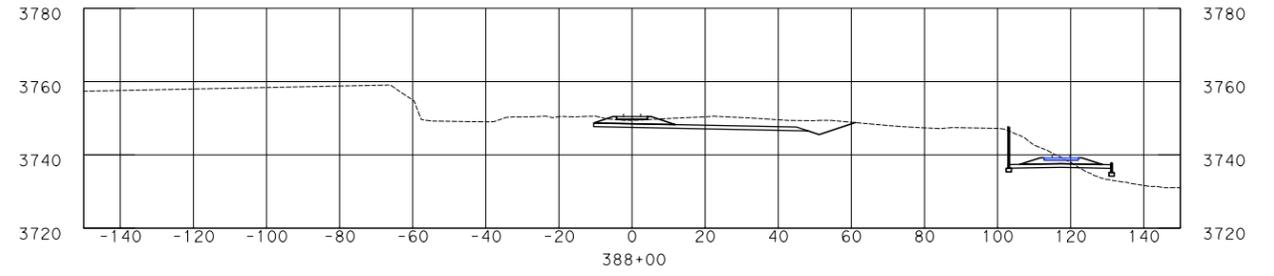
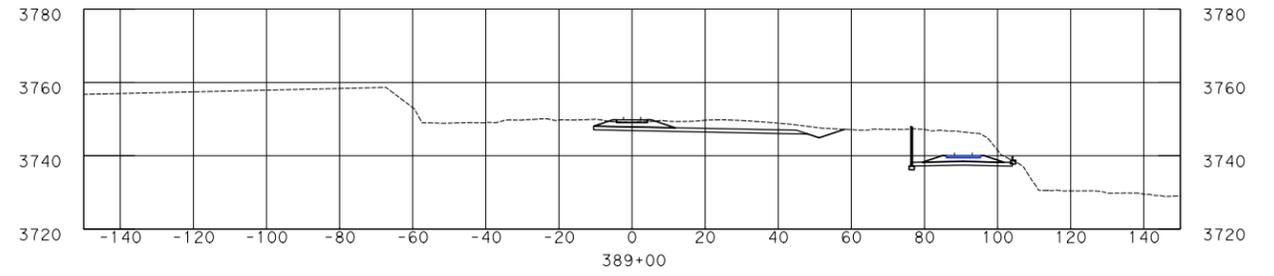
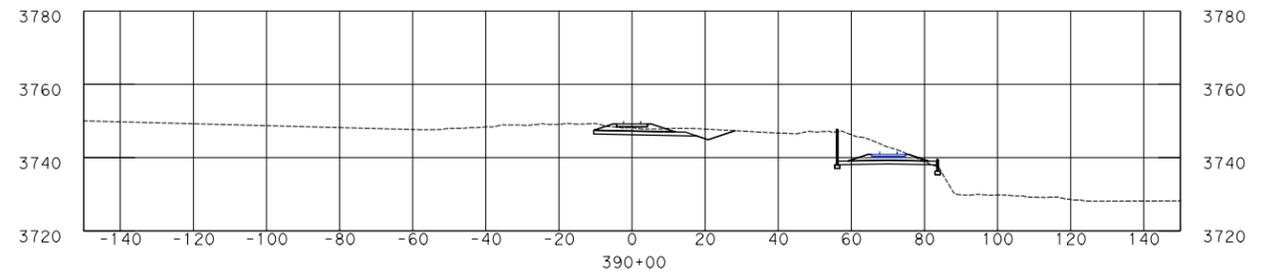
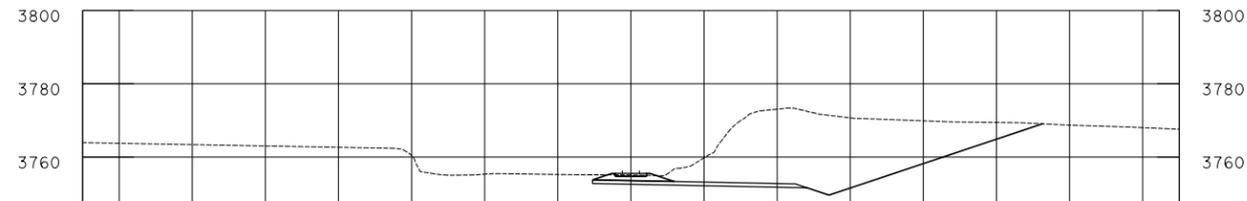
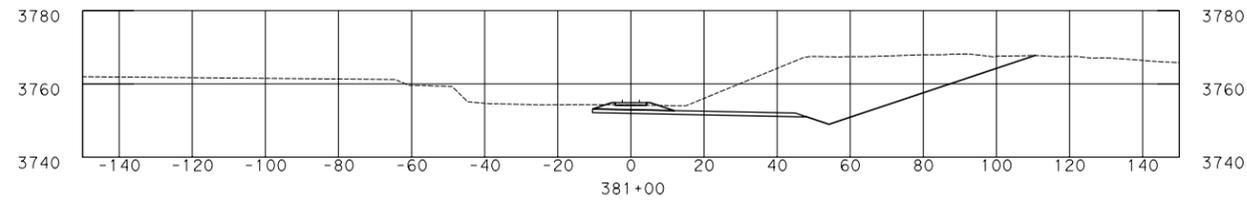
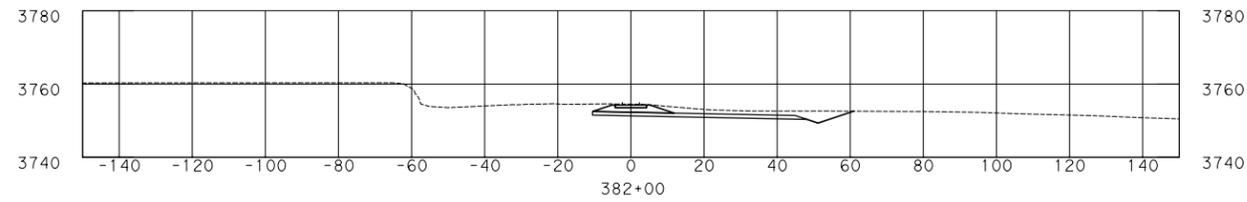
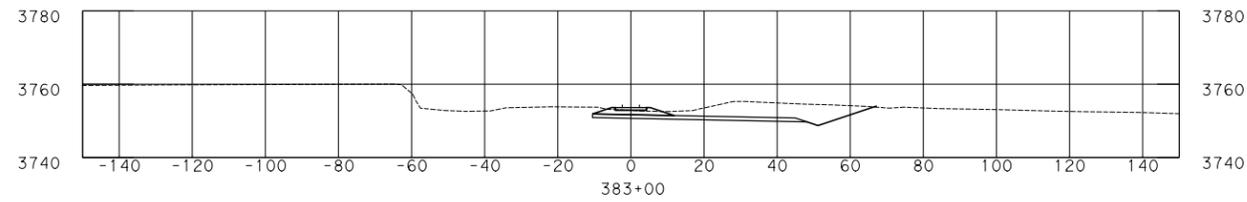
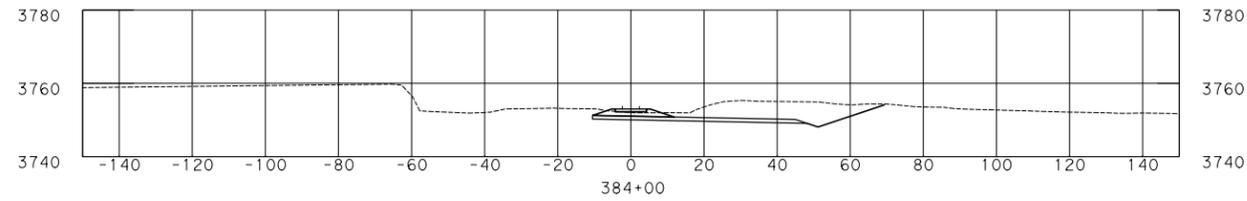
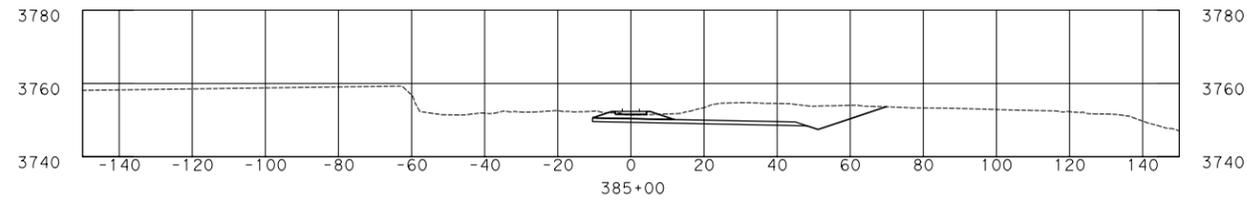
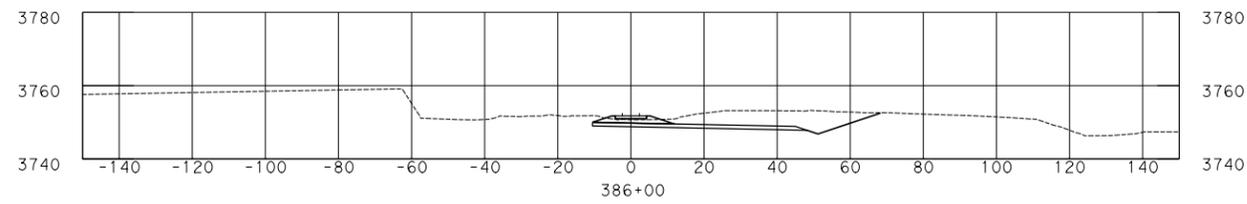
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	JAM	ELP	EL PASO	2552	04	027	87

Scale: 50.000000:1.000000
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Model Name:

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 Design File Name: IP*PWP: dms79716\LP375BHW-RR-XS08.dgn



SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4

STA 380+00 TO STA 390+00

SHEET 8 OF 9

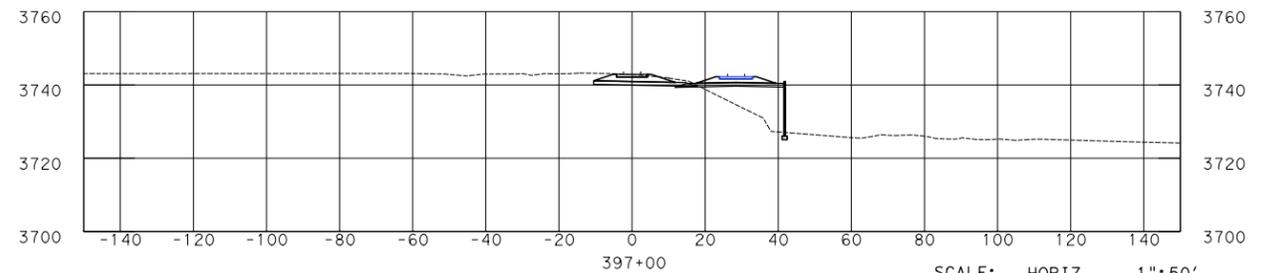
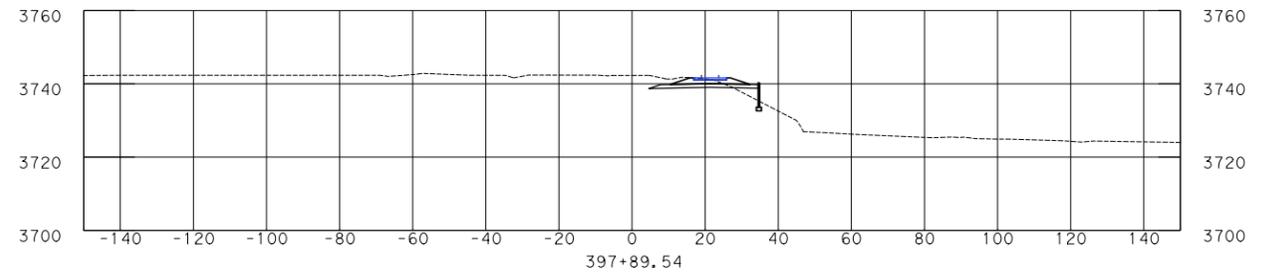
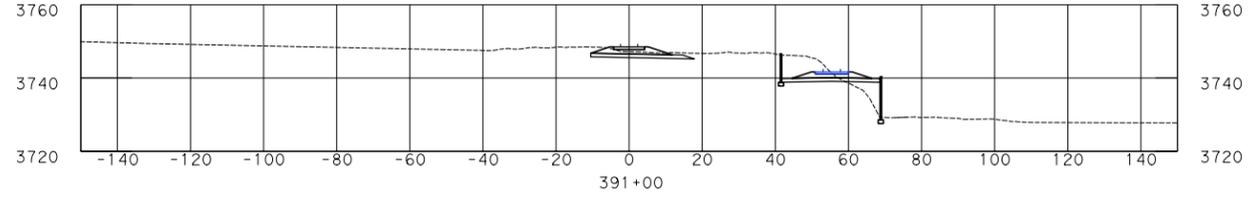
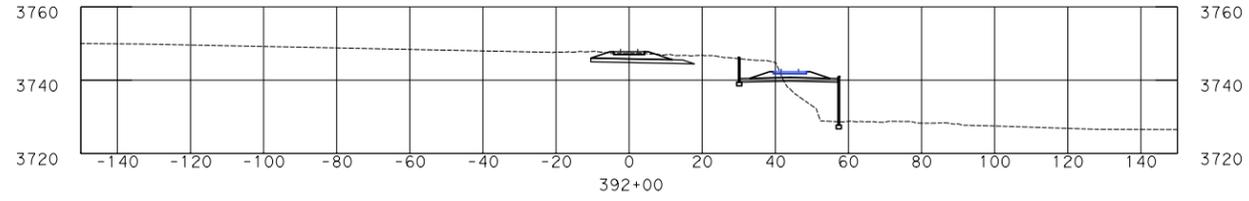
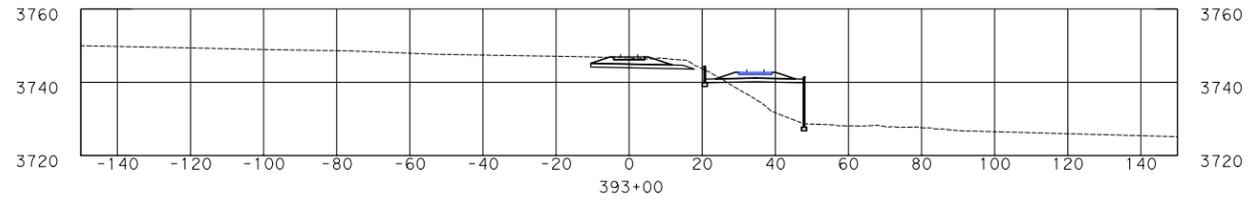
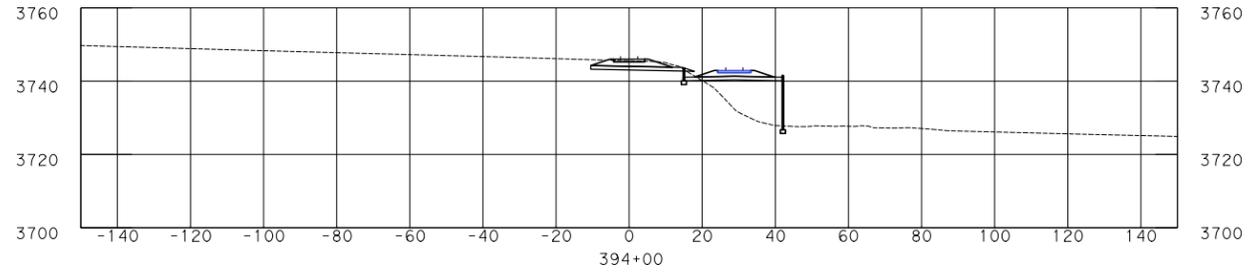
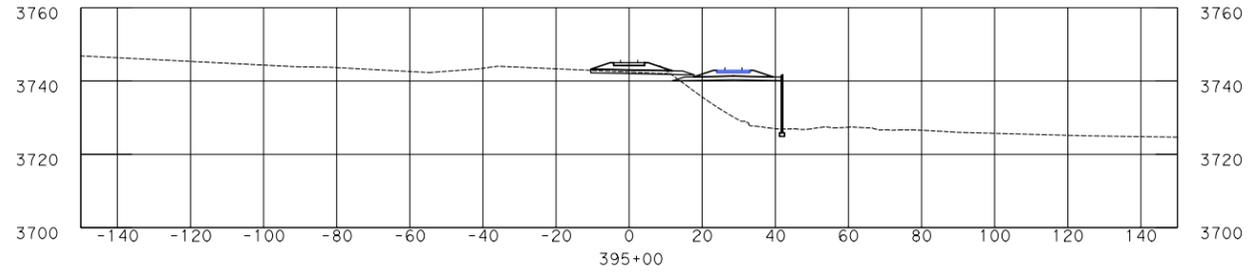
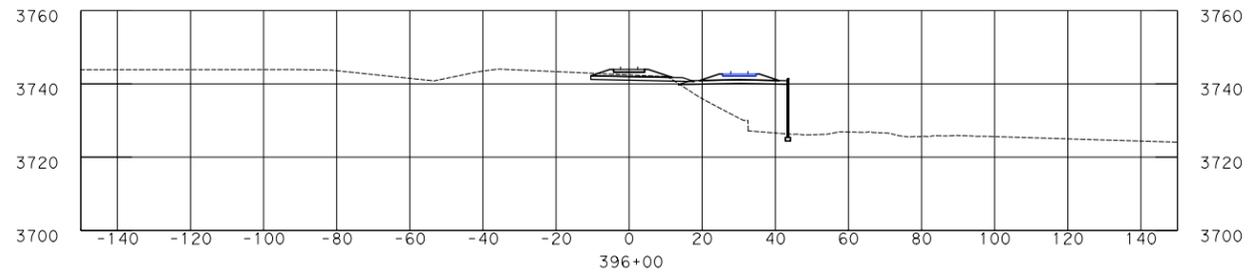
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	88

Scale: 50.000000:1.000000
 Plotted on: 18-DEC-2013 2:28

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA1.i .pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-XS09.dgn



SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

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 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR ML #4
 STA 391+00 TO STA 397+89.54

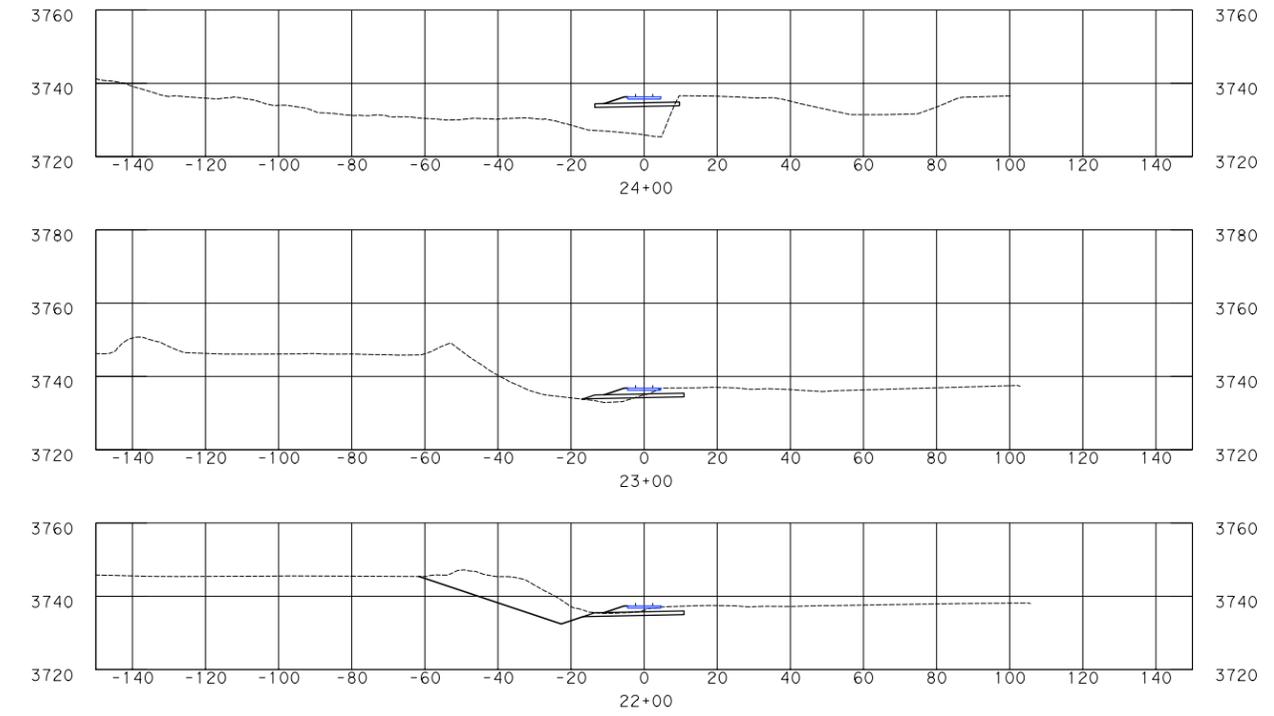
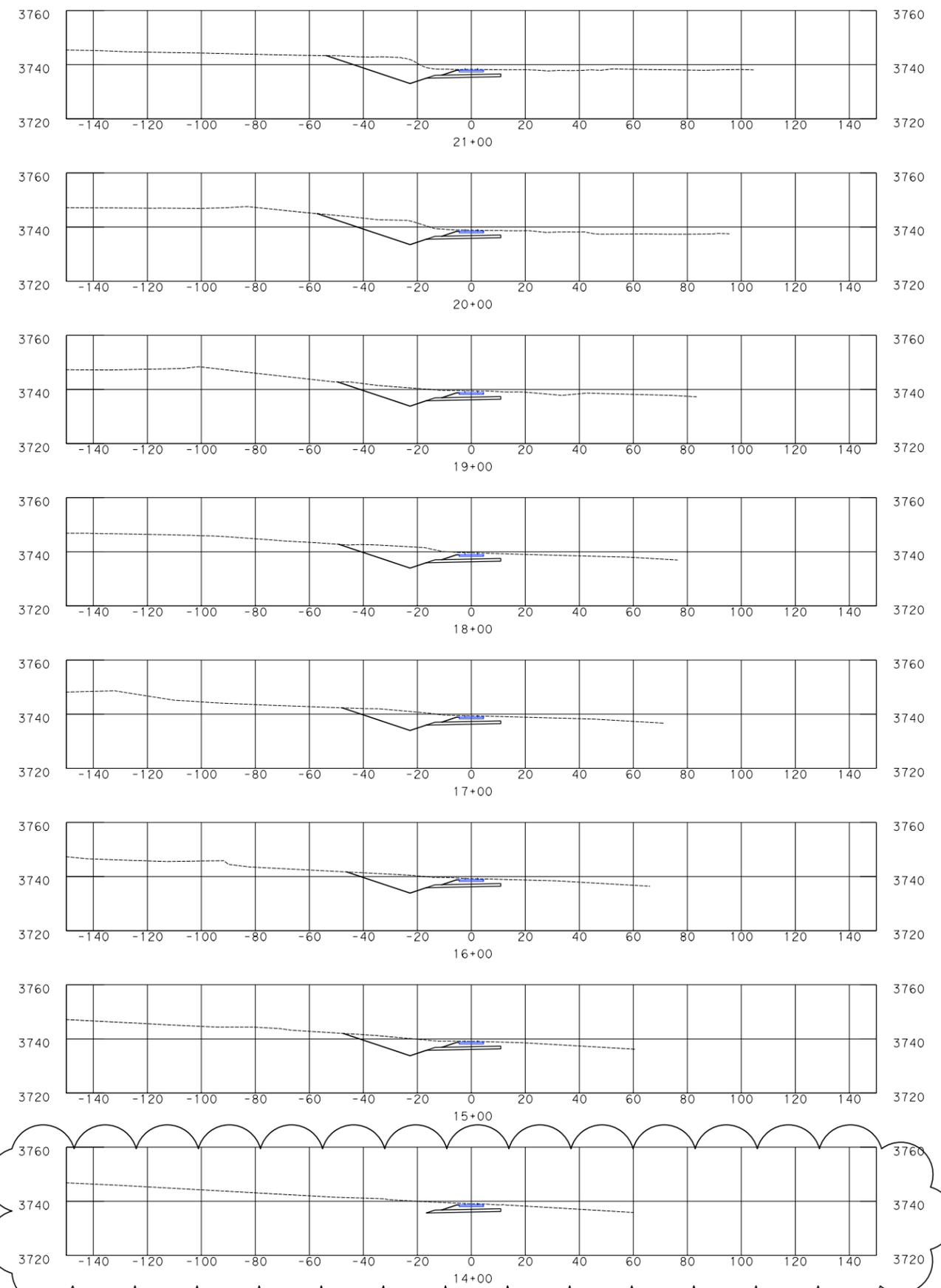
SHEET 9 OF 9

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	JAM	ELP	EL PASO	2552	04	027	89

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 Plotted on: 18-DEC-2013 2:28

Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-XS11.dgn



SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

REV. NO.	DATE	DESCRIPTION	BY



BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 BNSF RAIL CONNECTION

STA 14+00 TO STA 24+00

SHEET 1 OF 4

INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

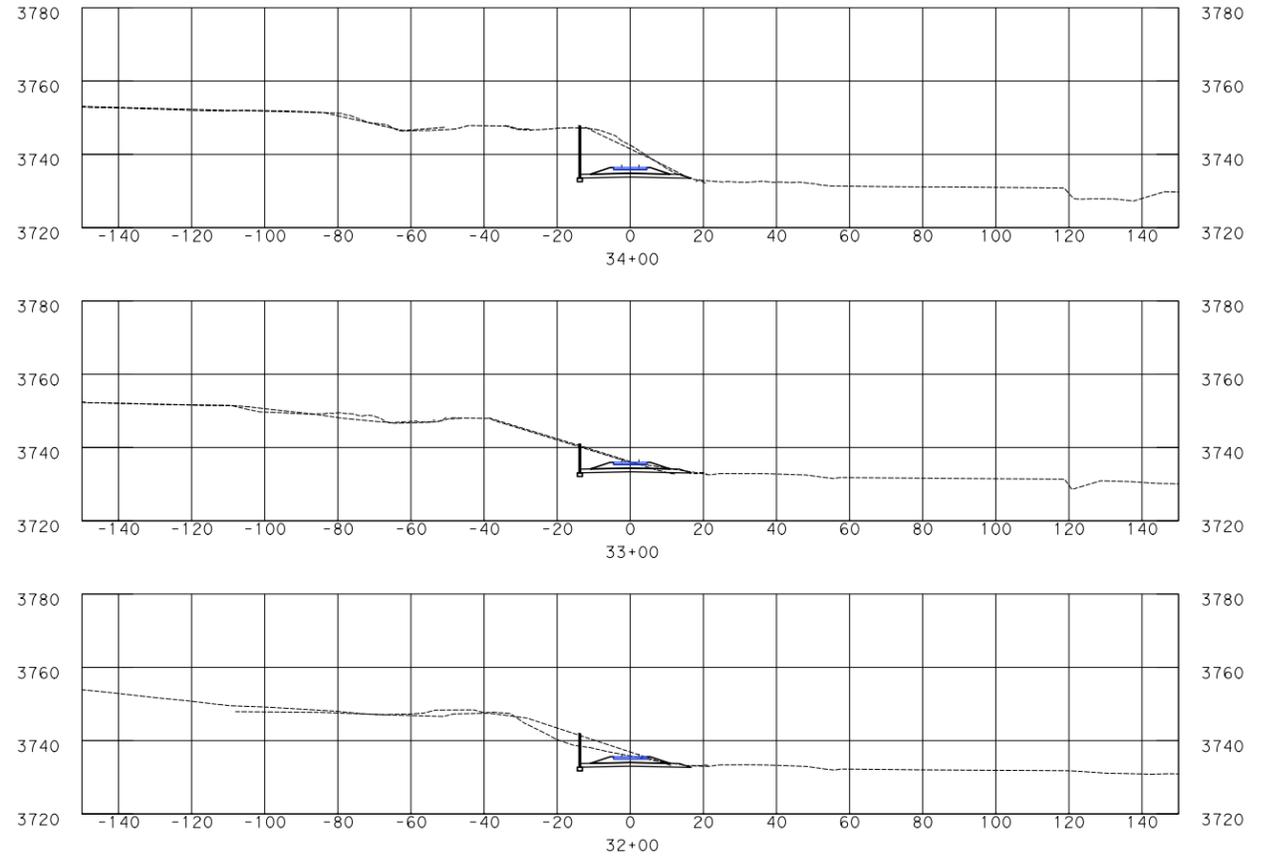
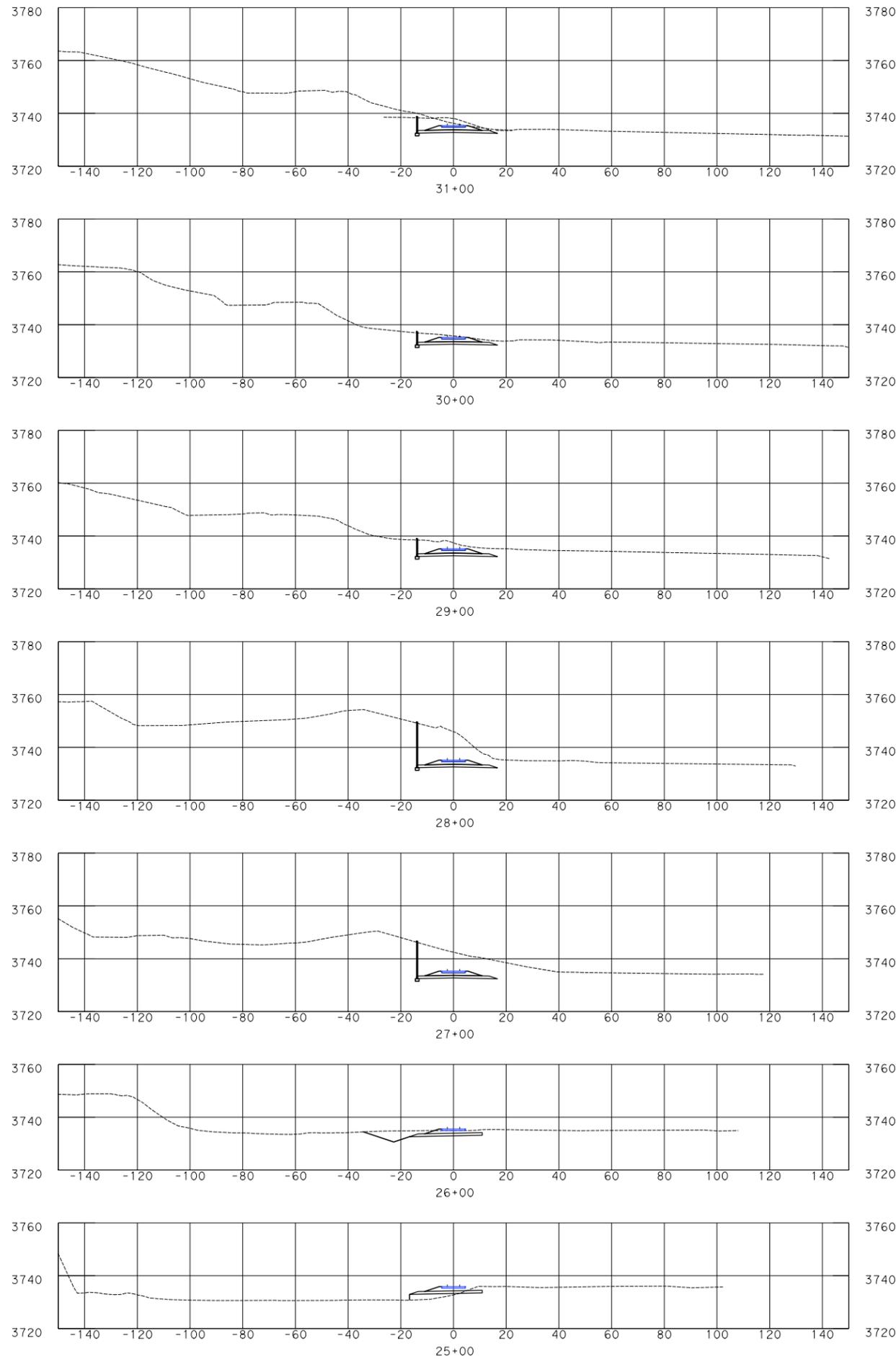
DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	JAM	ELP	EL PASO	2552	04	027	90

2

Scale: 50.000000:1.000000
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Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-XS12.dgn



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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

SCALE: HORIZ 1" = 50'
 VERT 1" = 50'

REV. NO.	DATE	DESCRIPTION	BY

HNTB HNTB Corporation
 The HNTB Companies
 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

**BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 BNSF RAIL CONNECTION**

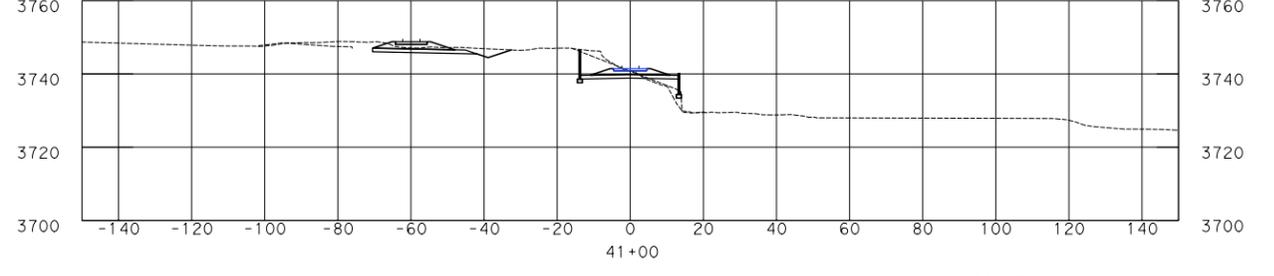
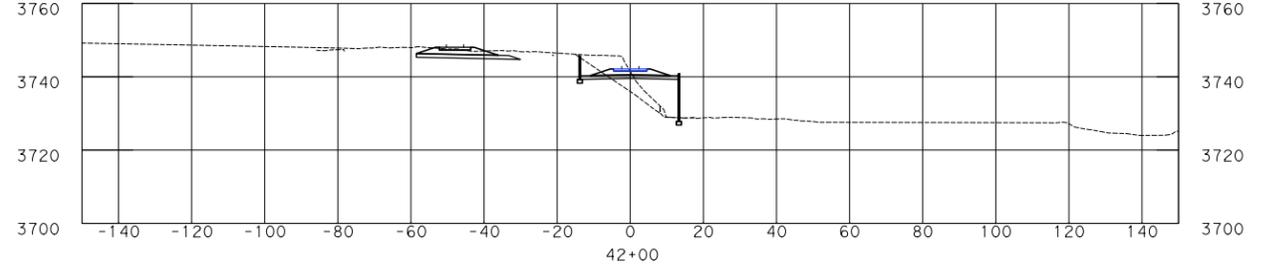
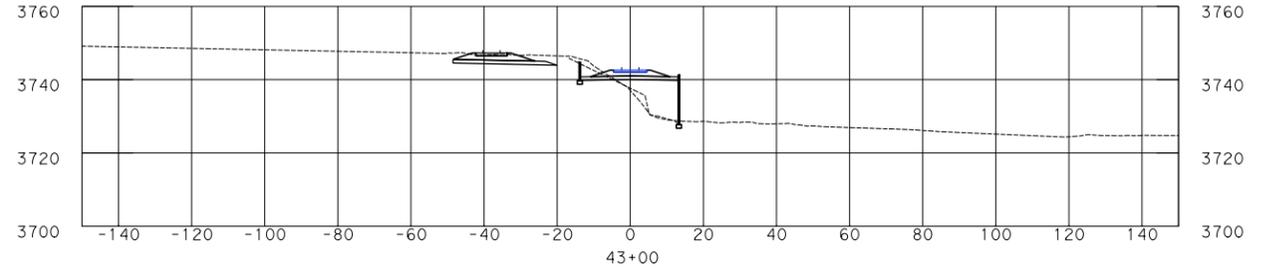
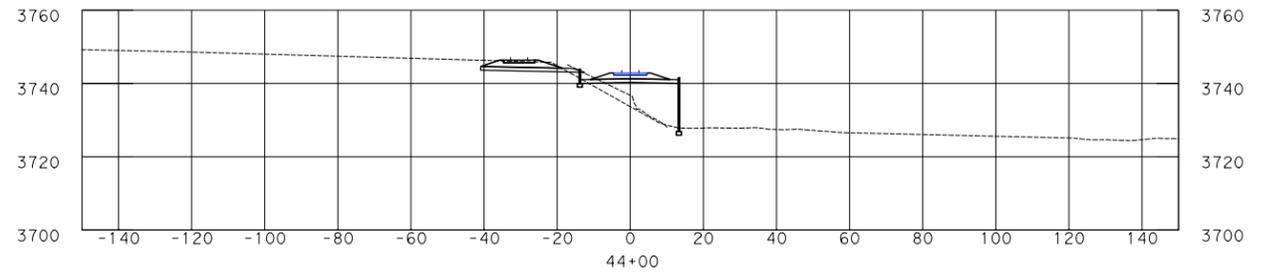
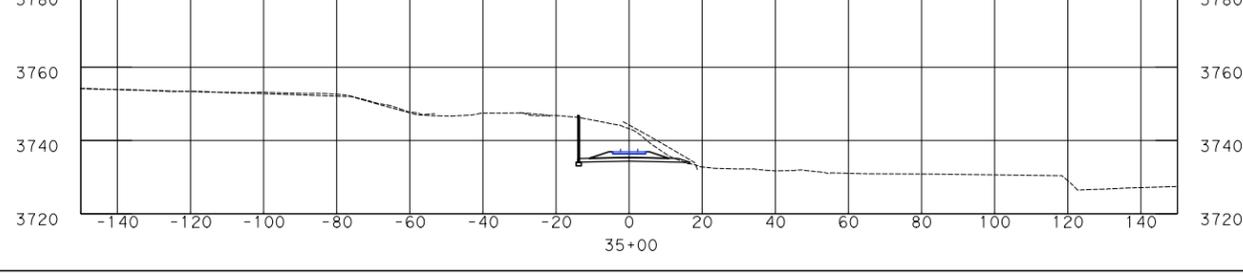
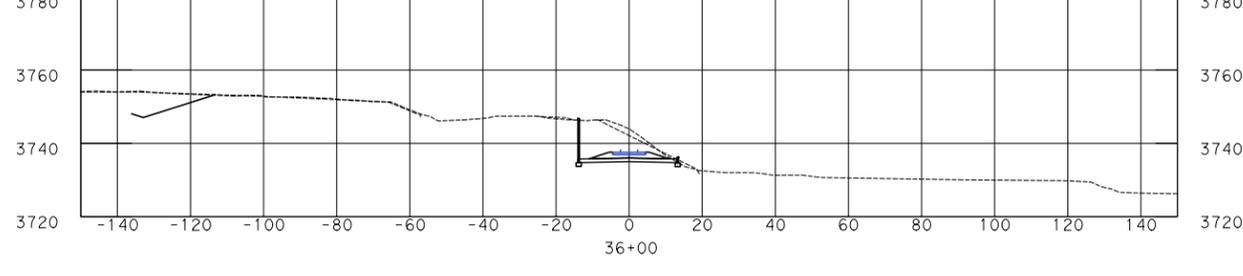
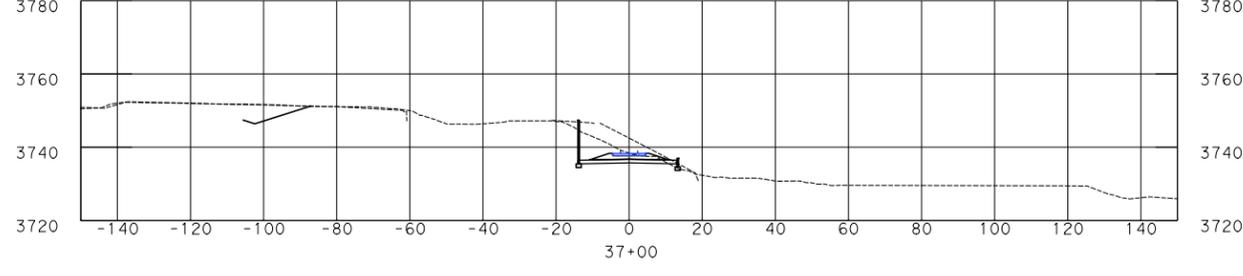
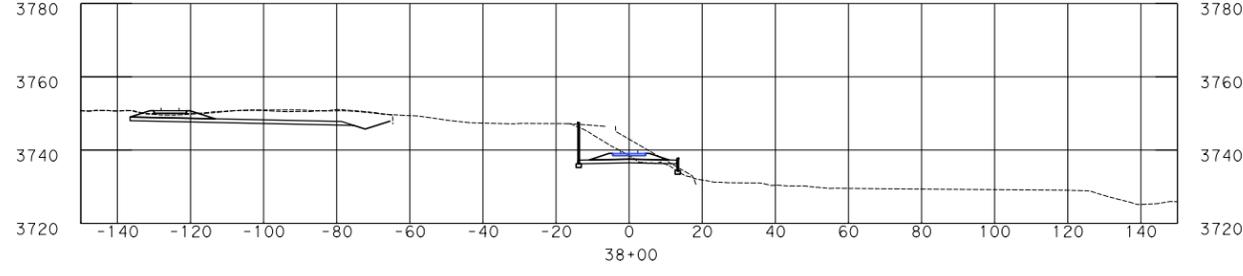
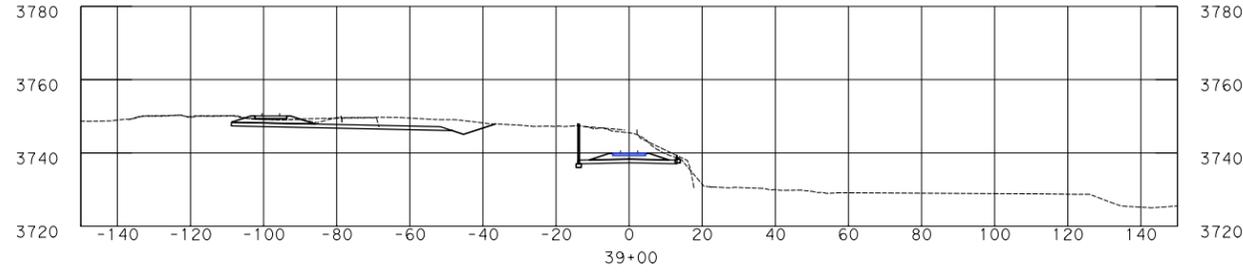
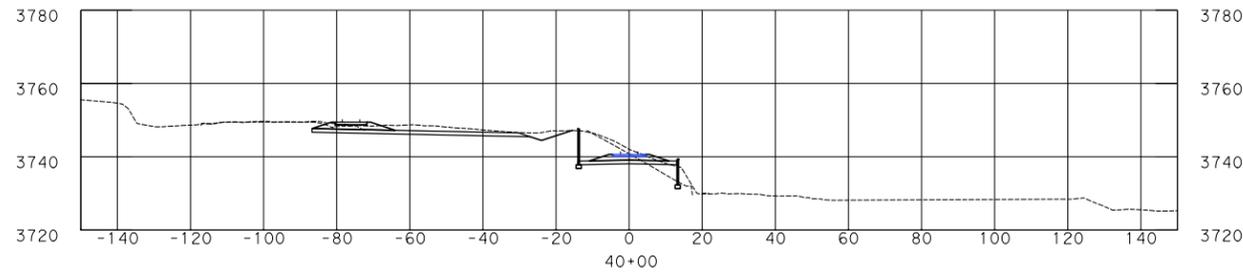
STA 25+00 TO STA 34+00
 SHEET 2 OF 4

DGN:	RGN:	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK:	JAM	ELP	EL PASO	2552	04	027	91

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 Plotted on: 18-DEC-2013 2:29

Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-XS13.dgn



SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

REV. NO.	DATE	DESCRIPTION	BY



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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO. : 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 BNSF RAIL CONNECTION

STA 35+00 TO STA 44+00

SHEET 3 OF 4

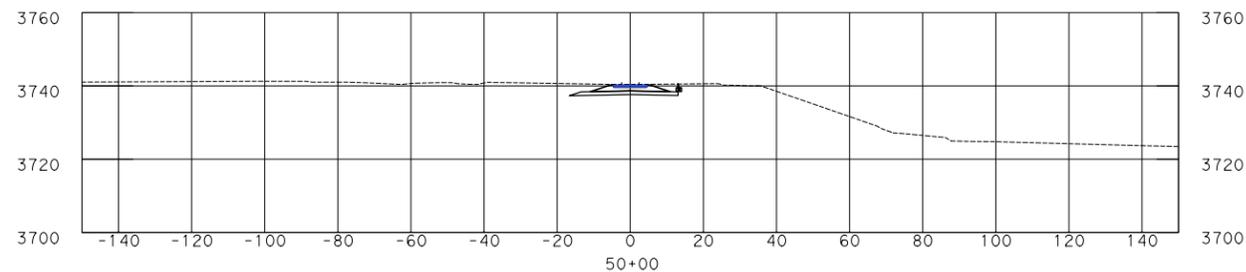
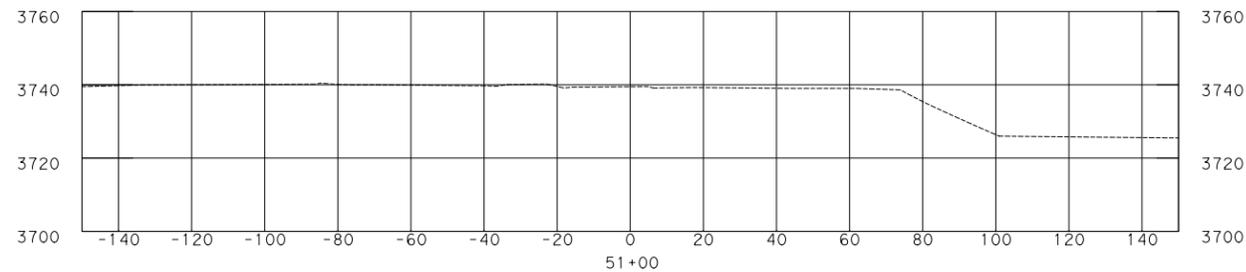
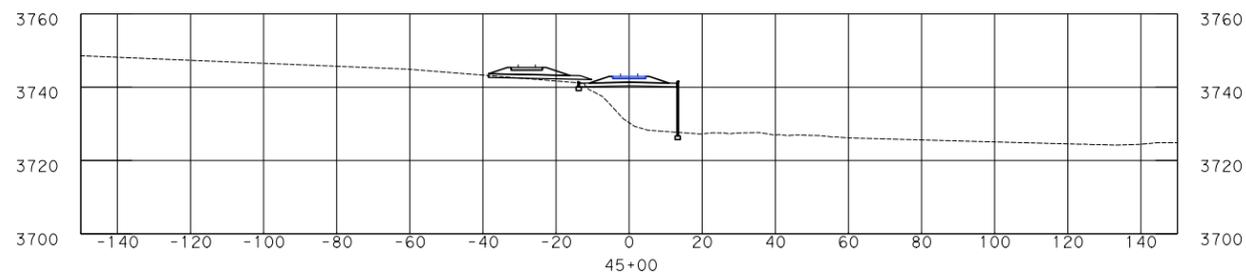
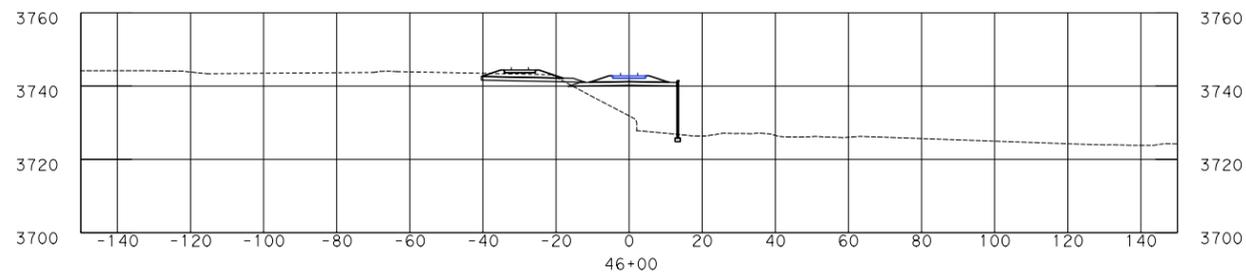
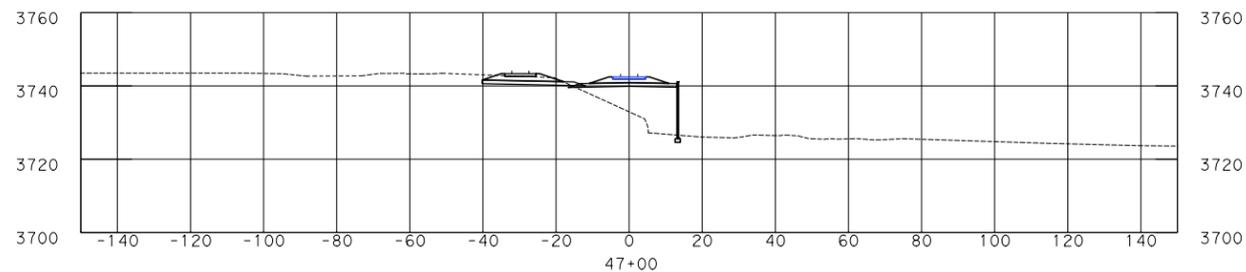
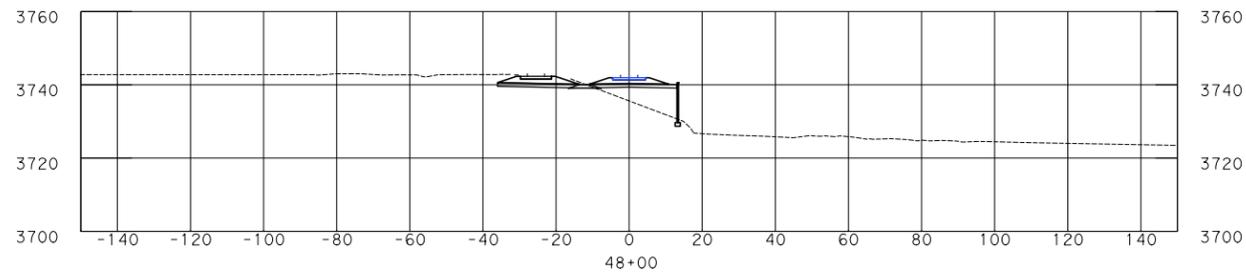
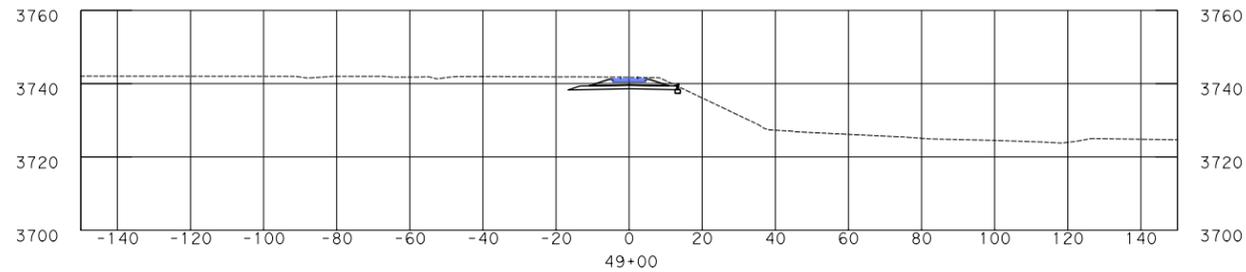
INTERIM REVIEW ONLY
 Document incomplete: not intended for
 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN:	FED. RD. DIV. NO.:	STATE:	PROJECT NO.:	HIGHWAY NO.:		
CHK:	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK:	JAM	ELP	EL PASO	2552	04	027	92

Scale: 50.000000:1.000000
 Plotted on: 18-DEC-2013 2:29

Model Name:

Pen Tab let: IP*PWP: dms79715\BHWRA11.i.pen
 Design File name: IP*PWP: dms79716\LP375BHW-RR-XS14.dgn



SCALE: HORIZ 1":50'
 VERT 1":50'

REV. NO.	DATE	DESCRIPTION	BY



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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 BNSF RAIL CONNECTION

STA 45+00 TO STA 51+00

SHEET 4 OF 4

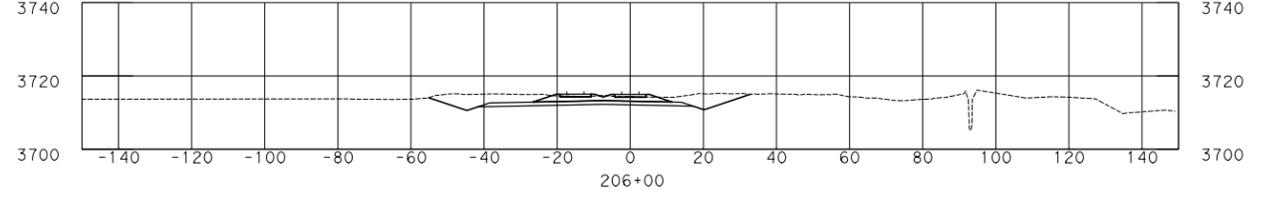
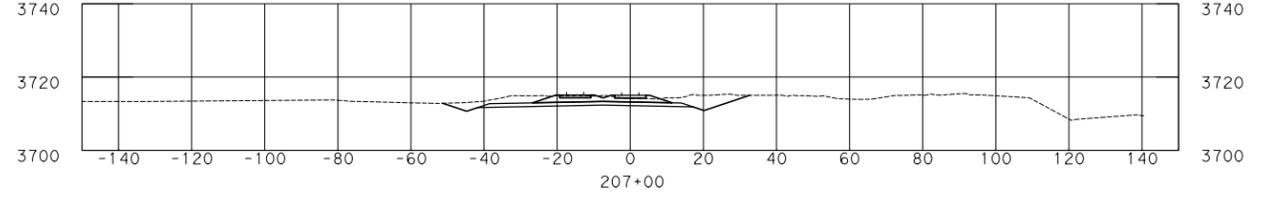
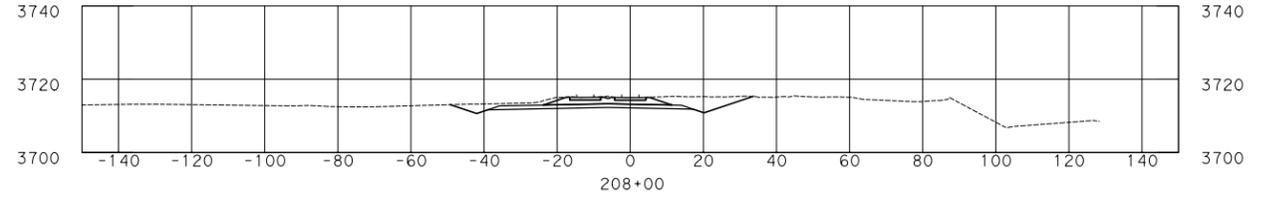
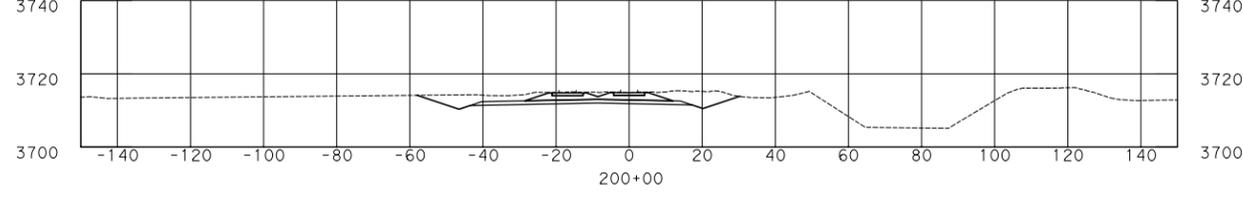
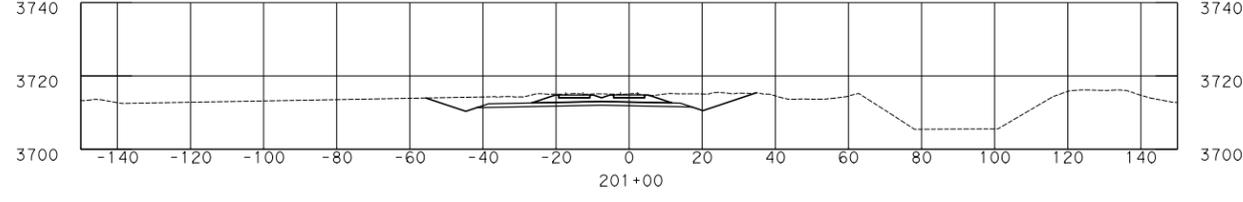
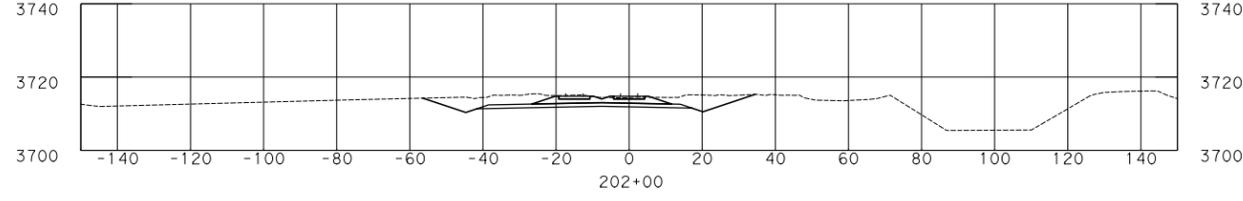
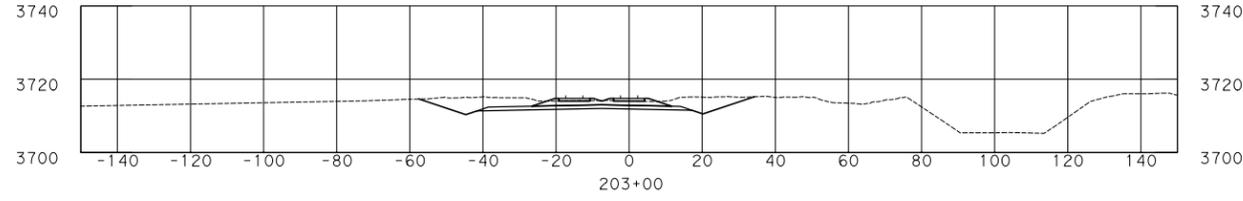
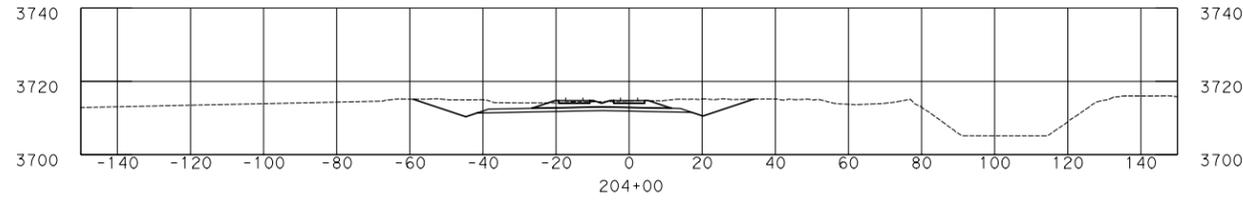
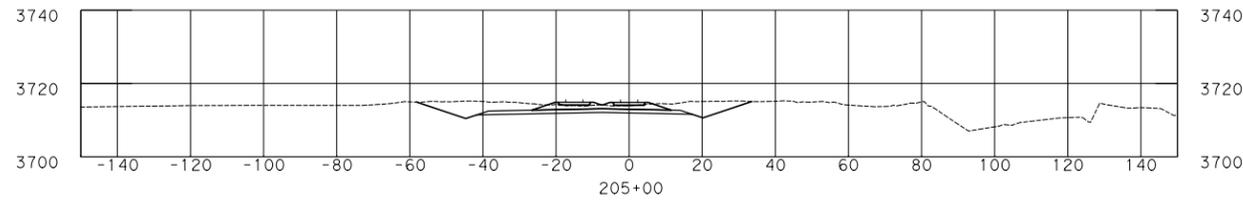
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 permit, bidding or construction.
 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	JAM	ELP	EL PASO	2552	04	027	93

Scale: 50.000000:1.000000
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Model Name:

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 Design File name: IP*PWP: dms79716\LP375BHW-RR-XS21.dgn



SCALE: HORIZ 1" : 50'
 VERT 1" : 50'

REV. NO.	DATE	DESCRIPTION	BY



HNTB HNTB Corporation
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 Engineers Architects Planners
 TBPE FIRM REGISTRATION NO.: 420

BORDER HIGHWAY WEST (LP 375)
 CROSS SECTIONS
 PROP UPRR TRACK
 610/611
 STA 200+00.63 TO STA 208+16.84

SHEET 1 OF 1

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 Engineer: JOSHUA A MIETH
 P.E. Serial No.: 97346
 Date: 18-DEC-2013

DGN:	RGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	JAM	6	TEXAS	XX XXXX (XXX)	BHW RAIL		
DWG:	RGN	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	JAM	ELP	EL PASO	2552	04	027	94