BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

No. TR-060456

Petitioner Port of Pasco

PETITION

Road Name ____________

vs.

W.U.T.C. Crossing No. ____________

Respondent

D.O.T. Crossing No. ____________

Application is hereby made to the Washington Utilities and Transportation Commission for an order (check one or more of the following)

X directing the **Construction** of a grade crossing;
(construction-reconstruction-relocation)

X directing installation of automatic grade crossing signal or other warning device (other than crossbucks) at a new crossing;

❑ directing ____________ of warning devices at an existing crossings;
(replacement-change-upgrade)

❑ allocating funds from the "grade crossing protective fund" for ____________ ____________ of active warning devices; (installation and/or maintenance)

❑ authorizing the construction of the project, funding to be pursuant to the Intermodal Surface Transportation Efficiency Act (ISTEA) in cooperation with the Washington State Department of Transportation Local Programs Division;

at the railroad grade crossing identified above and described in this petition. This application seeks the relief specified above by (check one of the following)

❑ hearing and order X order without hearing

[ ] Yes [X] No Has application for funding, pursuant to Intermodal Surface Transportation Efficiency Act been made to the Local Programs Division for this project?

[ ] Yes [ ] No If the answer is yes to the question above, has the funding requested under the Intermodal Surface Transportation Efficiency Act been denied?

I certify under penalty of perjury that the information provided in and with this petition is true and correct.

Randy Hayden

Petitioner

Randy Hayden P.E., Port Engineer

Print Name Title

904 E. Ainsworth Avenue

Street Address

Pasco, WA 99301-0769

City-State-Zip Code

UTC RR (3/00)
I:\TRAN\RAILROAD\FORMS\PETITION.DOC

INTERROGATORIES

Use additional paper as needed

[1]

State name of highway and railway at crossing intersection:

Existing or proposed highway SR ~~394~~ 397/Oregon Ave mile post 9.17

Existing or proposed railway BNSF mile post 0.82(on spur)

Located in NE 1/4 of the NE 1/4 of Sec. 32 Twp. 9N Range 30E W.M.

WUTC crossing number _____ DOT crossing number _____

Street SR397/Oregon Ave (if applicable) City Pasco, WA (if applicable) County Franklin Co.

[2]

Character of crossing (indicate with X or numbers where applicable):

(a) Common Carrier X Logging or Industrial ❑

(b) Main Line ❑ Branch Line ❑ Siding or Spur X

(c) Total number of tracks at crossing One
(Note: A track separated 100 feet or more from another track constitutes a separate crossing.)

(d) Operating maximum train speed: Legal maximum train speed:

Passenger N/A MPH Passenger N/A MPH
Freight 10 MPH Freight 10 MPH

(e) Actual or estimated train traffic in 24 hours:

Passenger Trains 0 Freight Trains 2
(Note: Round trip counted as two trains. Include switch movements.)

[3]

Character of Roadway:

(a) State Highway - Classification 1

(b) County Highway - Classification _____

(c) City Street - Classification _____

(d) Number of traffic lanes existing in each direction: 2
Number of additional traffic lanes proposed: 0

(e) Posted vehicle speed limit: Automobiles 45 MPH Trucks 45 MPH

(f) Estimated vehicle traffic in 24 hours: Current total 4400 (2004), including ____ trucks and _____ school bus trips. Projected traffic in _____ years: total _____, including _____ trucks and _____school bus trips.

[4]

(a) If temporary, state for what purpose crossing is to be used and for how long.

N/A

(b) If temporary grade crossing, will you remove the crossing at completion of the activity requiring the temporary crossing?

N/A

[5]

(a) State whether or not a safer location for a grade crossing exists within a reasonable distance in either direction from the proposed point of crossing, and if so, what reason, if any, why this safer location should not be adopted, even though in doing so, it may be necessary to relocate a portion of the highway or railway.

No.

(b) Are there any hillsides, earth, or other embankments, buildings, trees, orchards, side tracks (on which cars might be spotted), loading platforms, etc., in the vicinity not feasible to move, which may obstruct the view and which can be avoided by relocating the proposed crossing. Would it be practical to do so? Please describe.

No Sight Obstructions within 300' of crossing (measured along track) other than signal instrument house.

[6]

(a) Is it feasible to construct and use an over or under crossing at the intersection of said railway and highway? If not, state why.

No; Existing adjacent track would also have to be grade separated and the project budget could not afford a grade separation of any design.

(b) Does the railway line at any point in the vicinity of the proposed crossing pass over a fill or trestle or through a cut where it is feasible to construct an under or over crossing, even though it may be necessary to relocate a portion of the highway to reach that point?

No. The area is nearly flat.

(c) If a suitable place for an under - or over - crossing exists in the vicinity of the proposed crossing, state the distance and direction from the proposed crossing; the approximate cost of construction; and what, if any, reason exists why it should not be constructed.

N/A

[7]

(a) State approximate distance to nearest public or private crossing in each direction of railroad involved herein.

Sacajawea Rd. (City of Pasco) .8 miles south and east
"A" St. (City of Pasco) .2 miles north and east

(b) If there is an existing crossing in near vicinity, or if more than one crossing is proposed, is it feasible to divert highways served and to be served by existing and proposed crossings, thus eliminating the need for more than once crossing?

No.

(c) If so, state approximate cost of highway relocation to effect such changes.

N/A

(d) Will the proposed crossing eliminate the need for one or more existing crossings in the vicinity? If so, state direction and approximate distance to the crossing or crossings.

Yes; proposed crossing eliminates existing grade crossing on SR 379/Oregon Ave. at mile post 9.03.

(e) If this crossing is authorized, do you propose to close any existing crossing or crossings?

Yes (see above) existing crossing is a 2-track crossing.

[8]

State the lengths of views which are now available along the line of railway to travelers on the highway when approaching the crossing from either side of the railway and when at points on the highway as follows:

Approaching crossing from..**south**....(direction) an unobstructed view to
right when on highway 300 feet from crossing of ____**unobstructed**_____ feet
right when on highway 200 feet from crossing of ____**unobstructed**_____ feet
right when on highway 100 feet from crossing of ____**unobstructed**_____ feet
right when on highway 50 feet from crossing of _____**unobstructed**_____ feet
right when on highway 25 feet from crossing of _____**unobstructed**_____ feet
left when on highway 300 feet from crossing of _____**400**_____ feet
left when on highway 200 feet from crossing of _____**500**_____ feet
left when on highway 100 feet from crossing of _____**600**_____ feet
left when on highway 50 feet from crossing of _____**unobstructed**_____ feet
left when on highway 25 feet from crossing of _____**unobstructed**_____ feet
Approaching crossing from..... (opposite direction) an obstructed view to
right when on highway 300 feet from crossing of ____**unobstructed**_____ feet
right when on highway 200 feet from crossing of ____**unobstructed**_____ feet
right when on highway 100 feet from crossing of ____**unobstructed**_____ feet
right when on highway 50 feet from crossing of _____**unobstructed**_____ feet
right when on highway 25 feet from crossing of _____**unobstructed**_____ feet
left when on highway 300 feet from crossing of _____**unobstructed**_____ feet
left when on highway 200 feet from crossing of _____**unobstructed**_____ feet
left when on highway 100 feet from crossing of _____**unobstructed**_____ feet
left when on highway 50 feet from crossing of _____**unobstructed**_____ feet
left when on highway 25 feet from crossing of _____**unobstructed**_____ feet

[9]

Attach one or more prints showing a vicinity map and a layout of railway and highway, as well as profiles of each, also showing percent of grade, 500 feet of highway and railway when approaching crossing from all four directions. On the prints, spot and identify obstructions of view located in all four quadrants. Provide a traffic control layout showing the location of the existing and proposed signing of the intersection. **See attached prints 397-1 through 3, C-05, TR400-1 and 2, and SG1. See also Specifications Section 13200.**

[10]

(a) Is it feasible to provide a 25 foot level grade crossing on both sides from center line of railway at point of crossing?

No.

(b) If not, state in feet the length of level grade it is feasible to obtain.

Minimal. See plan. Maximum approach transition grade is 1.6%.

(c) Is it feasible to obtain an approach grade, prior to the level grade of five percent or less? If not, state why, and state the percent approach grade possible.

N/A

[11]

Do you know of any reason not appearing in any of the answers to these interrogatories why the proposed crossing should not be made at grade or at the point proposed by you? If so, please state same fully.

N/A

Interrogatories 12 and 13 are to be completed only if this petition involves installation, replacement or changing of automatic grade signal or other warning device, other than sawbucks.

[12]

(a) State in detail, the number and type of automatic signals or other warning devices (other than sawbucks) proposed to be installed. (This portion should be filled in only after conference between the railroad and the petitioning local governmental agency.)

(b) State an estimate of the cost for installing the signals or other devices proposed, as obtained from the respondent railroad company. . . $ **N/A**
(Construction estimate is $250,000 to be installed as part of Hub Development Project by contractor)

(c) State a cost estimate for maintaining the signals or devices for 12 months, as obtained from the respondent railroad company . . . $ **N/A**
Like signals at existing crossing (being replaced), new signals will be maintained by Port of Pasco, at Port expense

(d) If this is an existing crossing, what will the proposed warning devices replace in the way of existing devices?

N/A

(e) As the petitioner, are you prepared to pay or will you promise to pay to the respondent railroad company, your share of the cost of installing the warning devices proposed as provided by law?

❑ Yes ❑ No **N/A**

[13]

Provide any additional information supporting the proposal (i.e. what public benefits would be derived from its implementation?)

RESPONDENT'S WAIVER OF HEARING

Docket No. _____

Petition of _____

for _____

I have investigated the conditions existing at and in the vicinity of the proposed crossing changes. As a result, [check one or more of the following, as appropriate:]

[ ] I am satisfied that conditions are as represented in the petition and the interrogatories and that the petition should be granted.

[ ] The cost of installation (estimated at $ _____)

[ ] subject to approval and apportionment pursuant to the Intermodal Surface Transportation Act by the Washington State Department of Transportation Local Programs Division.

[ ] as apportioned between the parties.

[ ] to be paid by petitioner.

Other conditions to waiver of hearing:

_____
_____
_____
_____
_____

The undersigned hereby waives hearing and further notice. The Washington Utilities and Transportation Commission may enter a final order without further notice of hearing.

Date at _____, Washington, on this _____ day of _____, 20 _____.

Respondent _____

by _____

Print Name _____

Title _____

INSTRUCTIONS

General

Petition forms with the Interrogatories fully and correctly answered should be filed with the Washington Utilities and Transportation Commission, Chandler Plaza, 1300 S. Evergreen Park Drive SW, PO Box 47250, Olympia, Washington, 98504. Blank forms may be obtained from the same address. All pleadings herein shall conform with WAC 480-09-420 and 425 of the Commission's Rules and Practice and Procedure.

Number of Copies

File the original and one copy if the "Waiver of Hearing by Respondent" is filled out. If petitioner intends that the Commission serve the respondent, the original and two copies should be filed. If the petitioner serves the respondent, a certificate of service in conformity with the requirements of WAC 480-09-120 of the Commission's Rules of Practice and Procedure must be filed.

Parties Who May Petition or Respond

In general, the following persons may file or respond to a petition: highway authorities (city, county, or state), railroad companies, and state agencies with lawful authority to construct and maintain public highways (RCW 81.53.030 and 060). In situations where there may be more than one party of interest as either a petitioner or a respondent, all parties should be joined.

Waiver of Hearing by Respondent

The proceeding can usually be expedited by submitting the application to the respondent and securing the execution of the "Waiver of Hearing by Respondent." As an alternative, respondent may file a separate "Answer." If the pleadings show that the respondent has no objection, an order may be entered without hearing at the discretion of the Commission, unless the public interest appears to require hearing and unless hearing is required under the terms of RCW 81.53.030 or 060. In all other cases, the petition will be set for hearing.

Crossing Construction

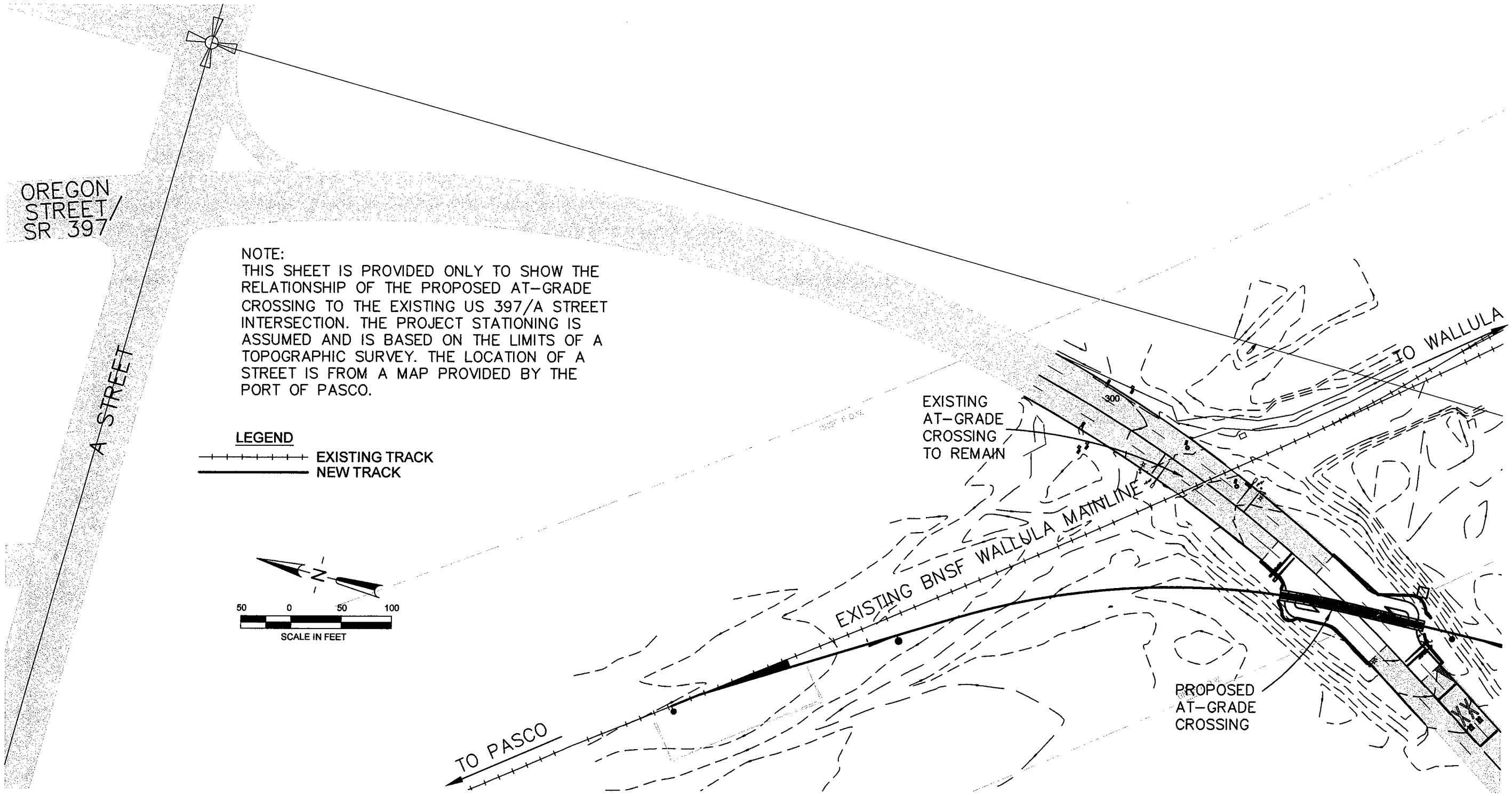
Applications for crossing state highways should be submitted in duplicate to the District Highway Engineer in the locality for his recommendation to be attached and forwarded to the State Department of Transportation Secretary, Olympia.

A party, after having been granted authority by the Commission to construct a crossing, must acquire right of way or easement because the order of the Commission merely relates to public safety and grants only the right to cross, subject to acquiring a right of way easement.

Time for Replying to a Petition

A petition not answered within 20 days of the date of service, shall be deemed denied and may be set for hearing. If a qualified or conditional answer is filed by the respondent, the petitioner may file a "Reply" within 10 days of the date the "Answer" is served.

(PLEASE REMOVE THIS SHEET BEFORE FILING PETITION)



DATE	REVISION	BY

WAYNE GORDON SIMMS STATE OF WASHINGTON 35940 REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 04/11/06

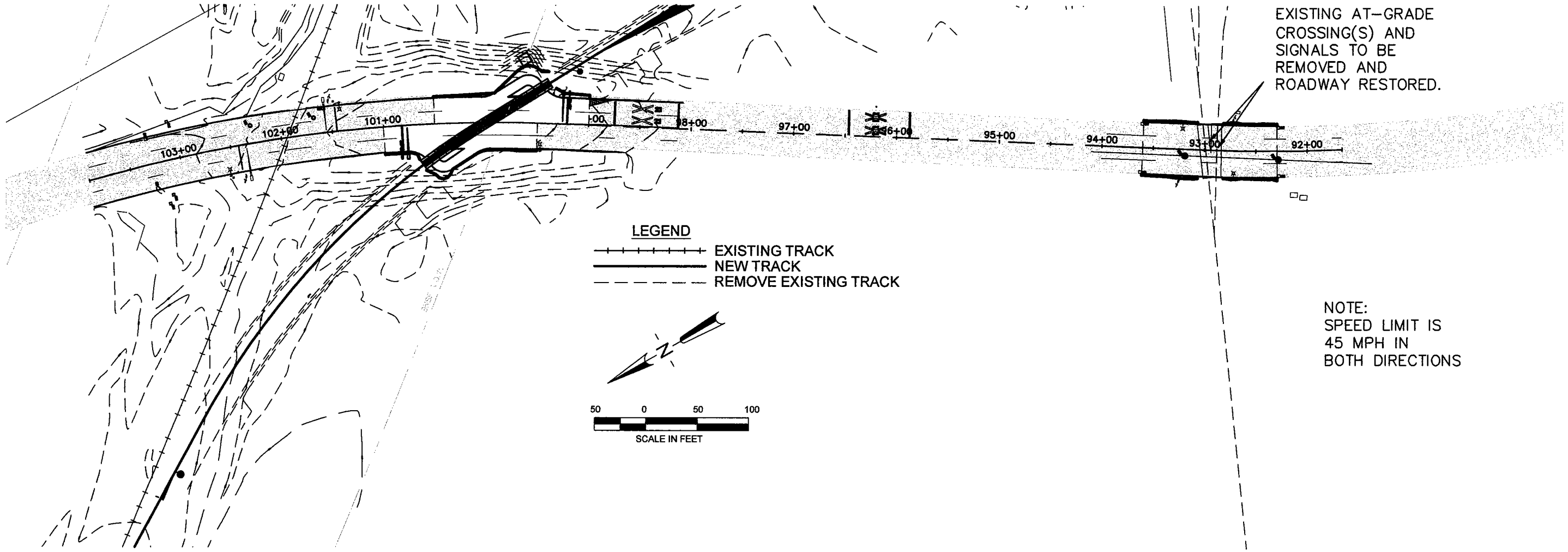
DESIGNED BY	PJW/RAH
DRAWN BY	RAH
CHECKED BY	PJW
APPROVED BY	WGS

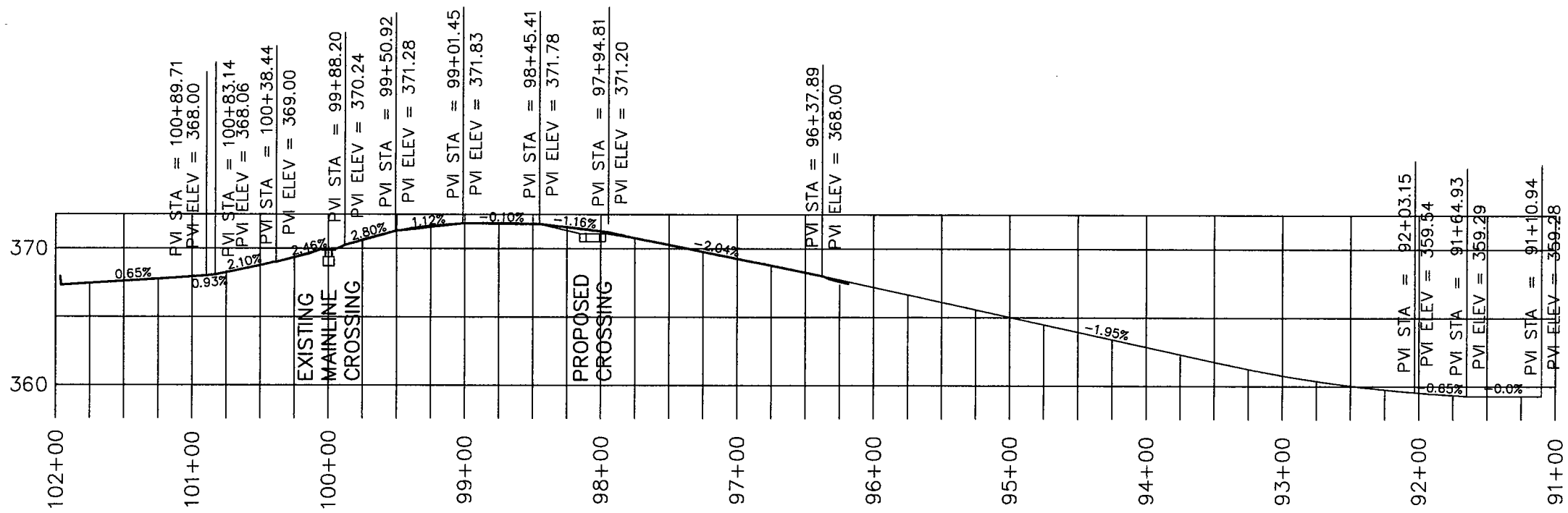
PORT OF PASCO
Economic Development and Transportation

HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
US 397
ROAD PLAN
90% SUBMITTAL – NOT FOR CONSTRUCTION

CONTRACT NO.	
DRAWING NO.	
REVISION	SHEET NO. 397-1
	2/10/2006





DATE	REVISION	BY

WAYNE GORDON GRAVES — STATE OF WASHINGTON — 20640 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 04/01/08

DESIGNED BY	PJW/RAH
DRAWN BY	RAH
CHECKED BY	PJW
APPROVED BY	WGS

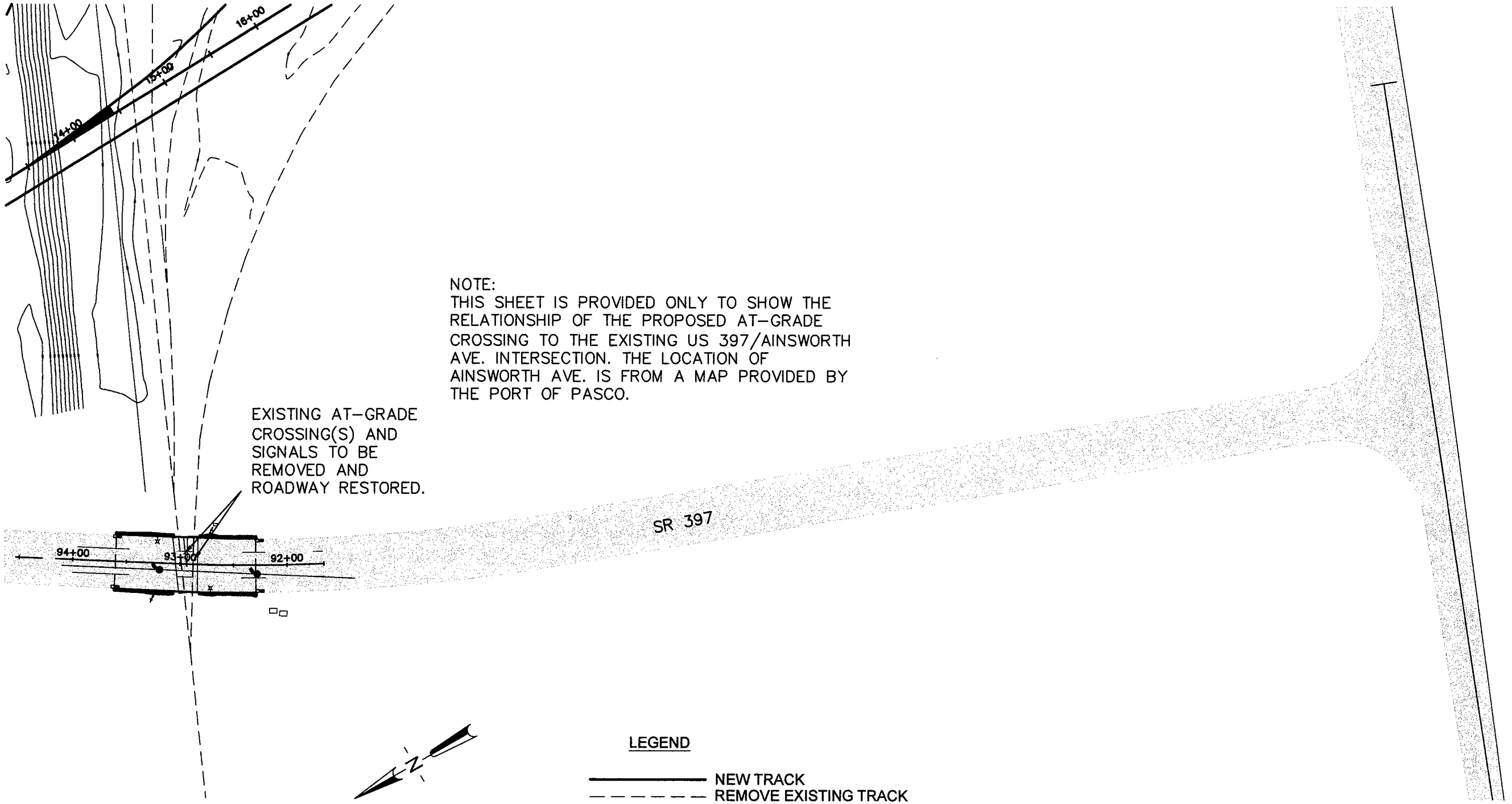
PORT OF PASCO — Economic Development and Transportation

HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
US 397
ROAD PLAN
90% SUBMITTAL – NOT FOR CONSTRUCTION

CONTRACT NO.	
DRAWING NO.	
REVISION	SHEET NO. 397-2
	2/10/2006

NOTE:
THIS SHEET IS PROVIDED ONLY TO SHOW THE RELATIONSHIP OF THE PROPOSED AT-GRADE CROSSING TO THE EXISTING US 397/AINSWORTH AVE. INTERSECTION. THE LOCATION OF AINSWORTH AVE. IS FROM A MAP PROVIDED BY THE PORT OF PASCO.



LEGEND

NEW TRACK

REMOVE EXISTING TRACK

50 0 50 100
SCALE IN FEET

DATE	REVISION	BY

WAYNE GORDON SIMMONS — STATE OF WASHINGTON — 20940 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 04/01/06

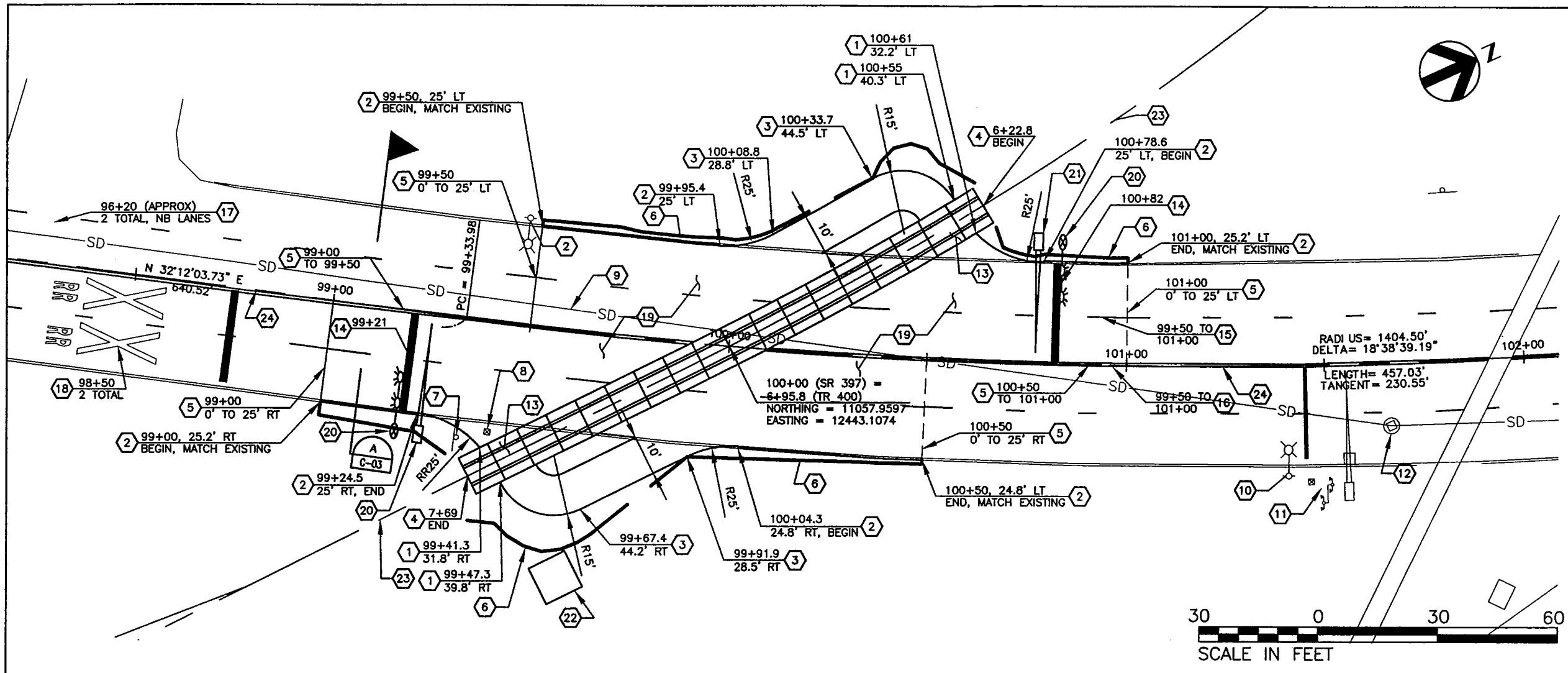
DESIGNED BY	PJW/RAH
DRAWN BY	RAH
CHECKED BY	PJW
APPROVED BY	WGS

PORT OF PASCO — Economic Development and Transportation

HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
US 397
ROAD PLAN
90% SUBMITTAL – NOT FOR CONSTRUCTION

CONTRACT NO.	
DRAWING NO.	
REVISION	SHEET NO. 397-3
2/10/2006	



KEYNOTES

1. CORNER HMA PAVEMENT & CONCRETE PANEL CROSSING
2. CONCRETE TRAFFIC CURB (F-1 WSDOT)
3. EDGE HMA PAVEMENT (A C-03)
4. CONCRETE PANEL CROSSING TR 400 STATIONING (F TTS-2)
5. SAWCUT EXISTING PAVEMENT, MATCH EXISTING PAVEMENT
6. GRADING LIMITS (CUT/FILL LINE)
7. REMOVE EXISTING SIGN, RELOCATE TO 97+30, 2' BEHIND RIGHT CURB
8. RELOCATE EXISTING ELECTRICAL BOX, SEE SIGNAL PLANS
9. EXISTING 48" STORM DRAIN, CMP, TO REMAIN (10' MINIMUM DEPTH UNDER NEW TRACK)
10. EXISTING STREET LIGHT, TO REMAIN
11. EXISTING SIGNAL/ELECTRICAL BOX/GATE FOR CROSSING AT 101+96, TO REMAIN
12. EXISTING SDMH2 STA 101+66.39, 15.7' RT RIM = 370.33 (ADJUST TO FG) FLOWLINE ELEV = 358.58
13. 90° BICYCLE CROSSING
14. PLASTIC STOP LINE
15. PLASTIC SKIP WIDE LINE
16. PLASTIC LINE, DOUBLE YELLOW
17. PLASTIC RAILROAD SYMBOL
18. REMOVE RAILROAD SYMBOL
19. REMOVE EXISTING ASPHALT CONCRETE PAVEMENT
20. RAILROAD SIGNALS – CANTILEVER BRIDGE POST, SEE SIGNAL PLANS
21. RAILROAD CROSSING GATE, SEE SIGNAL PLANS
22. RAILROAD SIGNAL BUNGALOW, SEE SIGNAL PLANS
23. CENTERLINE TRACK 400
24. CENTERLINE SR 397
25. CENTERLINE SR 397/EDGE CONCRETE PANEL CROSSING
26. LEFT EDGE OF PAVEMENT
27. LEFT EDGE OF PAVEMENT/ EDGE CONCRETE PANEL CROSSING
28. RIGHT EDGE OF PAVEMENT
29. RIGHT EDGE OF PAVEMENT/ EDGE CONCRETE PANEL CROSSING
30. EXISTING SR 397 CENTERLINE
31. EXISTING LEFT EDGE OF PAVEMENT
32. EXISTING RIGHT EDGE OF PAVEMENT
33. EXISTING SDMH2 STA 101+66.39, 15.7' RT RIM = 370.33 (ADJUST TO FG) FLOWLINE ELEV = 358.58
34. EXISTING 48" CORRUGATED METAL PIPE

DATE	REVISION	BY

DESIGNED BY: BMC
DRAWN BY: BMC
CHECKED BY:
APPROVED BY:

PORT OF PASCO
Economic Development and Transportation

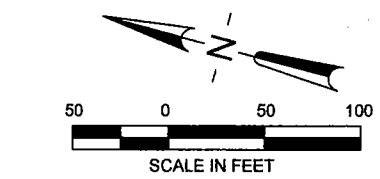
HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
STATE ROUTE 397 AND TRACK 400 CROSSING
PLAN AND PROFILE
** NOT FOR CONSTRUCTION **

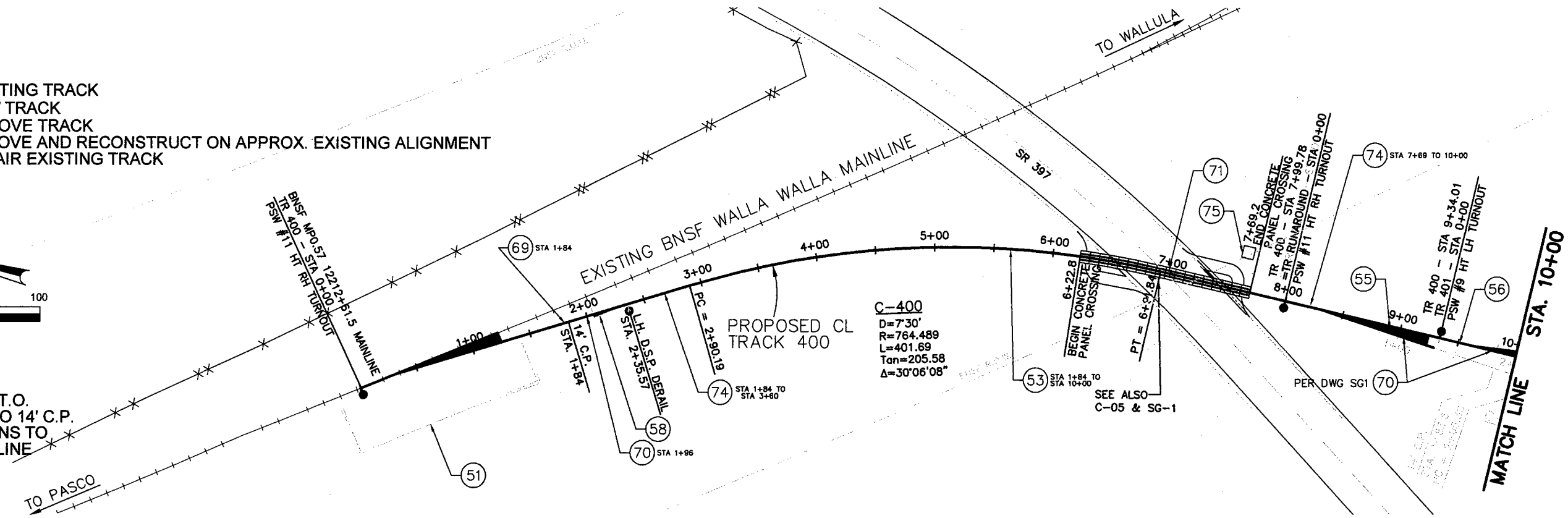
CONTRACT NO. ?
DRAWING NO. C-05
REVISION: –
SHEET NO.:
02/22/06

LEGEND

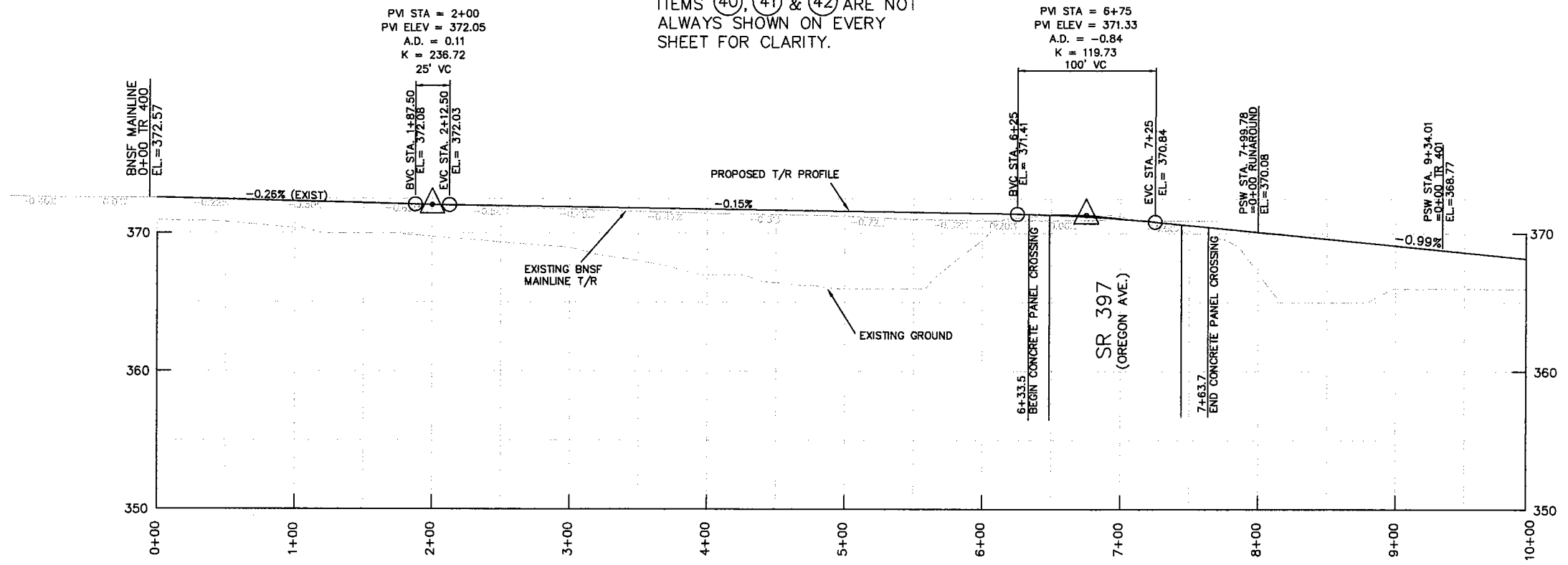
- EXISTING TRACK
- NEW TRACK
- REMOVE TRACK
- REMOVE AND RECONSTRUCT ON APPROX. EXISTING ALIGNMENT
- REPAIR EXISTING TRACK



BNSF WORK:
CONSTRUCT #11 R.H.T.O.
CONSTRUCT 59 T.F. TO 14' C.P.
SIGNAL MODIFICATIONS TO
EXISTING BNSF MAINLINE



NOTE:
ITEMS (40), (41) & (42) ARE NOT ALWAYS SHOWN ON EVERY SHEET FOR CLARITY.



CONSTRUCTION NOTES:

(51) FURNISH AND INSTALL NEW BNSF TURNOUT CONSTRUCTION PAD PER SPEC SECTION 02451.

(53) FURNISH AND INSTALL NEW TRACK – SECTION A & B – PER SPEC SECTION 02541 UNLESS OTHERWISE NOTED.

(55) FURNISH AND INSTALL NEW #11 TURNOUT PER SPEC SECTION 02451.

(56) FURNISH AND INSTALL NEW #9 TURNOUT PER SPEC SECTION 02541.

(58) FURNISH AND INSTALL NEW DSP DERAIL PER SPEC SECTION 02451.

(69) FURNISH AND INSTALL COMPROMISE ARRANGEMENT PER SPEC SECTION 02541.

(70) FURNISH AND INSTALL INSULATED JOINTS PER SPEC SECTION 02451.

(71) FURNISH AND INSTALL CONCRETE PANEL CROSSING PER SPEC SECTION 02459.

(74) FURNISH AND INSTALL WALKWAY ROCK PER SPEC SECTION 02720.

(75) FURNISH AND INSTALL CROSSING SIGNAL SYSTEM SR 397 PER SPEC SECTION 13200.

DATE	REVISION	BY

MAINE GORDON SMITH STATE OF WASHINGTON 20640 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 04/01/08

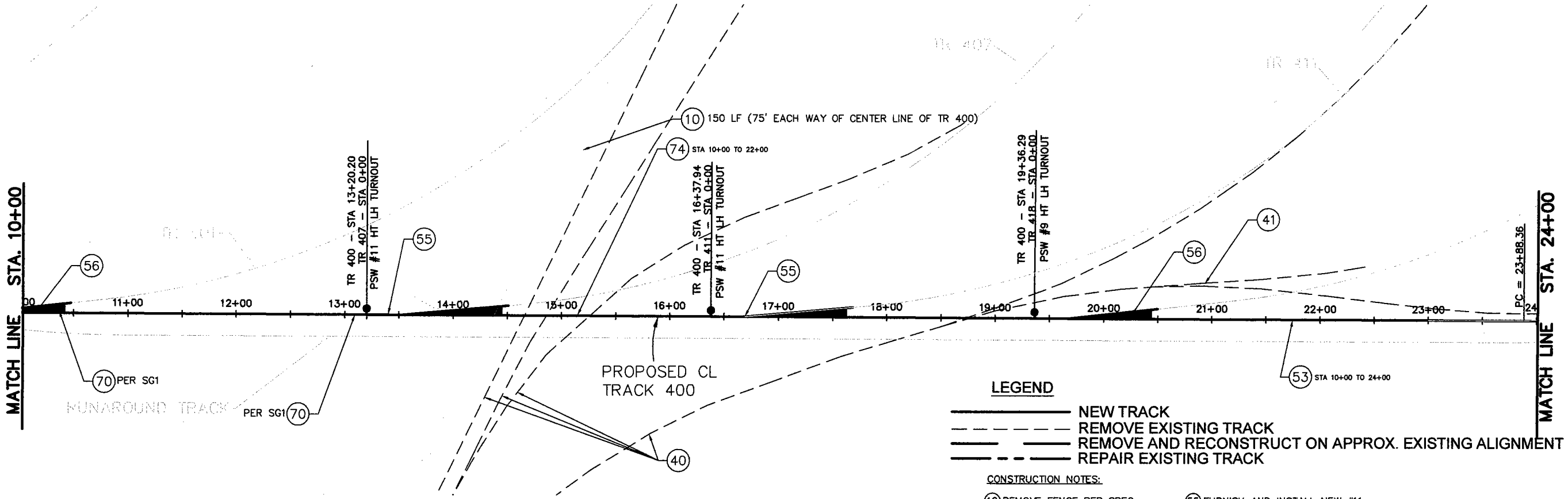
DESIGNED BY	PJW/RAH
DRAWN BY	RAH
CHECKED BY	PJW
APPROVED BY	WGS

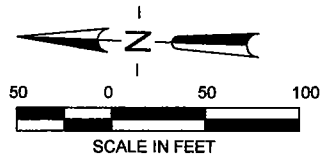
PORT OF PASCO
Economic Development and Transportation

HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
TRACK 400
SHEET LAYOUT

CONTRACT NO.	
DRAWING NO.	
REVISION	SHEET NO. 400-1
3/27/2006	





NOTE:
ITEMS (40), (41) & (42) ARE NOT ALWAYS SHOWN ON EVERY SHEET FOR CLARITY.

LEGEND

- NEW TRACK
- REMOVE EXISTING TRACK
- REMOVE AND RECONSTRUCT ON APPROX. EXISTING ALIGNMENT
- REPAIR EXISTING TRACK

CONSTRUCTION NOTES:

(10) REMOVE FENCE PER SPEC SECTION 00900.

(53) FURNISH AND INSTALL NEW TRACK – SECTION A & B – PER SPEC SECTION 02541 UNLESS OTHERWISE NOTED.

(40) REMOVE AND DISPOSE OF TRACK PER SPEC SECTION 02225.

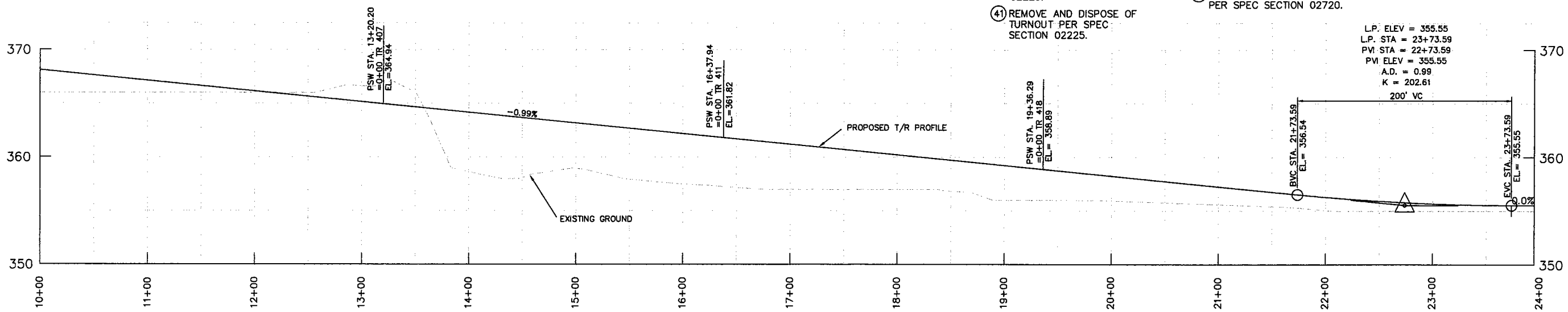
(41) REMOVE AND DISPOSE OF TURNOUT PER SPEC SECTION 02225.

(55) FURNISH AND INSTALL NEW #11 TURNOUT PER SPEC SECTION 02451.

(56) FURNISH AND INSTALL NEW #9 TURNOUT PER SPEC SECTION 02541.

(70) FURNISH AND INSTALL INSULATED JOINTS PER SPEC SECTION 02451.

(74) FURNISH AND INSTALL WALKWAY ROCK PER SPEC SECTION 02720.



DATE	REVISION	BY

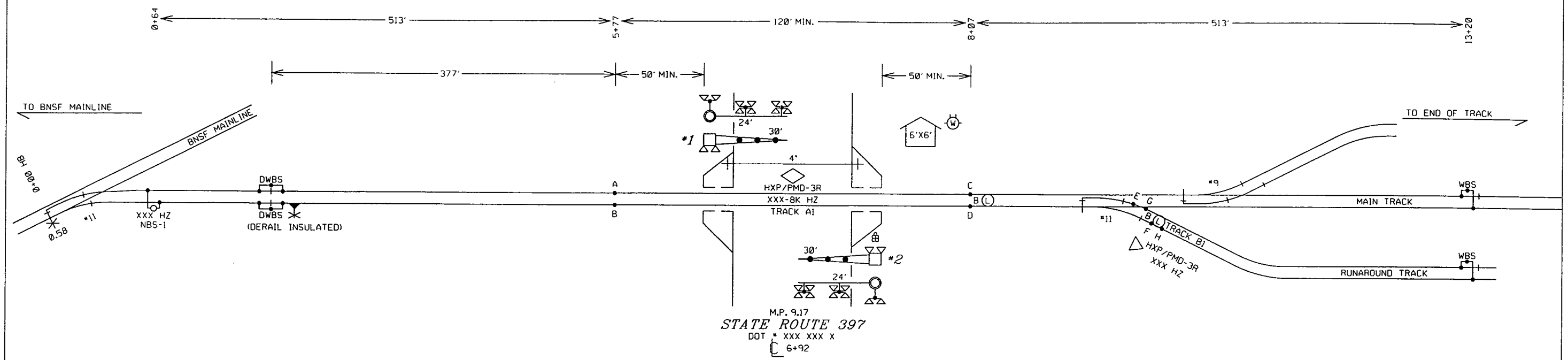
DESIGNED BY PJW/RAH
DRAWN BY RAH
CHECKED BY PJW
APPROVED BY WGS

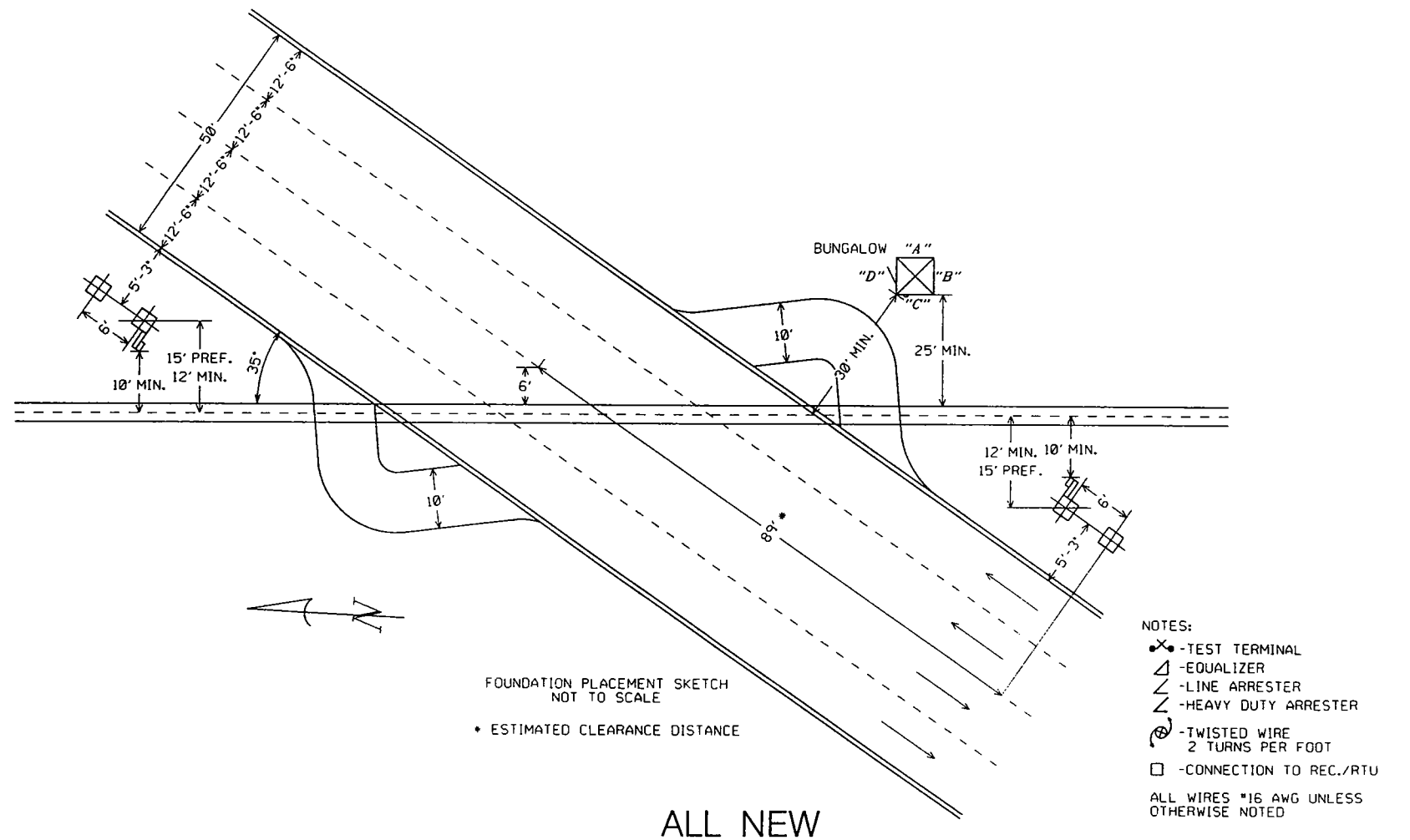
PORT OF PASCO
Economic Development and Transportation

HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
TRACK 400
SHEET LAYOUT

CONTRACT NO.
DRAWING NO.
REVISION
SHEET NO. 400–2
3/27/2006





FOUNDATION PLACEMENT SKETCH
NOT TO SCALE

* ESTIMATED CLEARANCE DISTANCE

NOTES:
- -TEST TERMINAL
- -EQUALIZER
- -LINE ARRESTER
- -HEAVY DUTY ARRESTER
- -TWISTED WIRE 2 TURNS PER FOOT
- -CONNECTION TO REC./RTU

ALL WIRES #16 AWG UNLESS OTHERWISE NOTED

CONSTRUCTION NOTE:

APPLY DC WHETTING CIRCUIT TO TRACK VIA HXP/PMD-3R2 TRANSMIT WIRES.
FREQUENCY OF CROSSING TO BE DETERMINED AFTER BNSF MAINLINE FREQUENCIES HAVE BEEN IDENTIFIED.

NOTES:

EQUIPMENT IS DESIGNED FOR 20 SECONDS MINIMUM WARNING TIME AT 10 MPH.
APPROACHES WERE LENGTHENED 6 SECOND(S) FOR WIDE OR ANGLED CROSSING (CT).
APPROACHES WERE LENGTHENED 5 SECONDS FOR SPEED VARIANCE AND BALLAST CHANGES (BT).
APPROACHES WERE LENGTHENED 4 SECONDS FOR EQUIPMENT RESPONSE TIME (ERT).
ALL LAMPS TO BE LED
GATE LENGTH SHOWN IS MEASURED FROM MAST C/L TO GATE TIP.

ALL NEW

p:\c009_17\x01c..dgn

DESIGNED BY	TCS
DRAWN BY	TCS
CHECKED BY	ACE
APPROVED BY	

PORT OF PASCO
Economic Development and Transportation

TCS RAILROAD SIGNAL DESIGN

HDR ENGINEERING INC.

BIG PASCO INDUSTRIAL CENTER
HUB DEVELOPMENT
STATE ROUTE 397 AND TRACK 400 CROSSING
CROSSING LAYOUT SHEET

90% SUBMITTAL - NOT FOR CONSTRUCTION

CONTRACT NO.	
DRAWING NO.	SG1
REVISION	SHEET NO
	02/15/06

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section. Measurement and payment for wood railroad ties will be included as an incidental item in Section 02451, Trackwork and Section 02459 Grade Crossings.

END OF SECTION

SECTION 13200
GRADE CROSSING SIGNAL SYSTEM CONSTRUCTION

PART 1 – GENERAL

1.01 SUMMARY

The work of this section shall consist of the design, provide and install of the all new highway-railroad crossing warning system at State Route 397, Pasco, WA. The Work includes, but is not limited to: design and creation of complete circuit plans, procure all material, assemble and install new crossing gates, cantilevers, lights, signal instrument house, underground conduit and wire, aligning signal lights, calibration of all electronics, procuring commercial power, and trackwork bonding and special trackwork insulating components. Insulated rail joints will be installed as shown in the Contract Plans and will be paid under Section 02451, Trackwork.

A. It shall be the Contractor's responsibility to design, provide and install a complete turnkey system, including final inspection and placement of the system in service, and including manufacturers recommended training as described in other Sections.

1.02 REFERENCES

A. AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION (AREMA)

1. Manual for Railway Engineering (AREMA Manual)

2. Portfolio of Trackwork Plans (AREMA Portfolio)

B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

C. AMERICAN ASSOCIATION OF RAILROADS (AAR)

D. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1. National Electrical Code

E. FEDERAL HIGHWAY ADMINISTRATION

1. Manual on Uniform Traffic Control Devices

F. FEDERAL RAILWAY ADMINISTRATION (FRA)

1. Rules and Regulations Governing Railroad Signal and Train Control Systems

2. Track Safety Standards

G. WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT)

1. Washington State Utilities and Transportation Commission – Washington Administrative Code

2. Standard Specifications

H. RELATED WORK

Section 01000	Special Provisions Roadway
Section 02000	Special Provisions Railroad

1.03 SUBMITTALS

A. The Contractor shall submit to the Engineer copies of the Manufacturer's Catalog Data and/or Certificates of Compliance for each item furnished by the Contractor that does not follow the description listed herein under for acceptance of exceptions.

1. Contractor shall prepare, design and submit two (2) sets of signal circuit plans to Engineer for approval prior to construction. Submitted plans will be reviewed by the Engineer and marked for changes. Within 20 days, one (1) set will be returned to the contractor for corrections. Construction may begin following submittal of two (2) sets of corrected plans to the Engineer. Once construction is complete, and the crossing is in service, Contractor shall provide one (1) set of field as-installed plans marked with RED=IN and YELLOW=OUT showing any changes or additions made in the field during construction to the Engineer. Contractor will correct the plans per the field markups and provide three (3) sets of as-installed clear plans to the Engineer. If the Engineer finds any errors in the as-installed plans within one year of the in-service date, the Contractor is obligated to correct the plans and provide three (3) sets of revised clear plans to the Engineer.

2. Contractor will place completed installation into service and provide completed forms for all required federal, state and Railroad inspections and tests.

PART 2 – PRODUCTS

2.01 GENERAL

A. All material shall be new and shall be guaranteed against defects in material and workmanship, damage caused by normal wear and tear excluded, for a period of one (1) year from date of final acceptance. Electronic crossing motion sensor shall be purchased with a 5-year warranty.

B. Contractor shall purchase, in Port's name, an extended 5-year warranty for the Highway crossing motion sensor. Proof of warranty will be submitted to Engineer.

2.02 SIGNAL MATERIAL

The Contractor shall install the following materials:

A. Crossing warning detection equipment - Provide (1) HXP/PMD-3R2 two track redundant unit with (4) TRM, (2) 8K-RSI islands, (1) RMM and (1) IDK.

B. Surge protection - Provide MDSA-2A surge and lightning protection using TTA-3 arrestors for HXP/PMD-3R2 unit.

C. DC whetting circuit – A DC whetting circuit must be applied to the track to enhance shunting. The circuit will consist of a GE/Harmon 2TC track driver; both track outputs wired in series, connected to the HXP/PMD transmit leads on the equipment side of the MDSA-2A. The positive side of the circuit will contain a 6.3 ohm adjustable track resistor and a track battery reactor, GE PN 250141-001 or approved equivalent.

D. DC whetting circuit isolation - A minimum of one insulated joint will be installed at the termination point of the crossing approaches to isolate the DC whetting circuit.

E. External event recorder - Provide external event recorder HCA-1 or approved equivalent.

F. Light out detection - Provide and record light out detection using LOD-1 or approved equivalent.

G. Radio transmit unit - Provide Radio Transmit Unit RTU-6/2ANA with radome antenna and activation fee, config_rtu software kit and with 10 yrs pre-paid health checks.

H. Batteries - Provide NiCad railroad battery, SPL or approved equivalent for 72-hour backup protection of constant warning equipment, and 8-hour backup protection of gates and flashers. One set of 9 cells of battery with a 20-amp charger to be provided for the PMD/HXP equipment (MB12), and one set of 10 cells of battery with a 40-amp charger (XB) for the gates and lights. The MB12 battery must power the RTU. The XB battery must power the event recorder. Batteries are to be mounted on battery trays coated with acid resistant paint, or tiered battery racks

I. Bonds – Contractor shall install Cadwell (or approved equal) tab style 6 1/2-in by 3/16-in or head free style 7-in by 3/16-in railhead joint bonds and powder.

J. Web Bonds – Contractor shall install Cadwell (or approved equal) track connectors (Part No. SBTBBU4A) or 1-in sleeves, powder, and 3/16-in Bondstrand for web welded track connections and joint bonds.

K. Conduit – Contractor shall install 4-in steel rigid conduit, elbows, sleeves, and threaded couplers for cabling under roadways and track.

L. Cable – Contractor shall install Okonite 5C#6 (Part No. 206-11-6245), 7C#14 (Part No. 206-11-6887) and 2C#6 twisted pair track wire(Part No. 113-12-3933) or approved equal solid coated copper cable which meets AAR insulation requirements for underground wire. Tinned, 3/16-in Bondstrand with heavy insulation (National Electric Part No. 133664P) shall be used.

M. Mast Wire – Mast wire to gate mounted flashers and cantilever mounted flashers to be 5C#10 stranded type TC, Okonite PN 202-10-3505, DWG DL 05

N. Case wire - Case wire to be Okonite nylon braid case wire, except #6 AWG wire for battery circuits.

O. Battery circuit wire - Battery circuit wires to be 6 AWG copper stranded. Red w/nylon jacket for positive battery, black w/nylon jacket for negative battery and green w/nylon jacket for ground.

P. Eyelets – Contractor shall supply ¼-in ring eyelets for #6, #9, #10 and #16 wire.

Q. Cantilevers – Cantilevers shall be walkout type with aluminum mast and base junction box. Cantilever length to be specified in the contract drawings. Cantilevers to be

supplied with FLX-2000 (or approved equal) 2-way tip lights, 2-way lane lights, and 1-way mast lights. All lights to be 12" LED. Cantilever to be supplied with crossbuck sign with high intensity sheeting and mounting hardware.

R. Signal Gates – Gates to be US&S Model 95 with electronic controller, or approved equivalent and shall consist of:

1. Gate mechanism (or approved equal), with mounting hardware, counter weights, and gate arm supports.

2. Aluminum mast of approximately 16-ft high x 5-in diameter with aluminum base assembly.

3. FLX-2000 (or approved equal) 1-way flashing light assembly with L.E.D. Lights, and aluminum hoods and backgrounds.

4. Electronic bell – One General Signal #EB 3 360 5, or approved equivalent.

5. High wind support bracket.

S. Gate arms - Gate arms will be EZ-Gate (or approved equal) with High Wind Profile extendable roadway arm with lens encapsulated high intensity red and white sheeting and 4-ft sleeve. Gate arms to be equipped with LED gate lights. Gate will be attached to gate mechanism with conversion bracket with National Electric Gate Co, fabricated adapter. (or approved equal) (Part No. 385102-175-2SL).

T. Gate and cantilever foundations to be concrete. Foundations for cantilever to be Dixie Pre-cast, and sized according to cantilever requirements.

U. Shunts – Contractor shall supply NBS-1 narrow band shunts or, WBS for termination of motion frequency, if applicable.

V. Shunt enclosures - Provide and install shunt enclosures, Signal Masters, Inc. #23-173-BN for each termination or joint coupler used.

W. Shunt signs - Provide and install shunt signs with posts at termination locations.

X. Bootlegs – Contractor shall supply rubber hose bootlegs.

Y. Gravel – Contractor shall provide for the delivery of fill gravel as needed.

Z. Sealing Compound – Contractor shall provide sealing grout and/or duct seal. Foam Sealant is not to be used.

2.03 SIGNAL HOUSE

A. Provide PTMW instrument house, 6'X6' for highway crossing, standard w/o options per BNSF SKR101 latest revisions, without Faraday cage.

B. Front door of Bungalow shall be stenciled with "IN EMERGENCY CALL 1-800-XXX-XXXX, DOT# XXX XXX X, M.P. X, STATE ROUTE 397 / OREGON AVE." (fields to be determined) in 2" black block letters.

C. Wire ties are to be kept to a minimum. Internal wiring shall run in plastic wireways or wireways integral to the house, such as, upper raceways for overhead wires.

D. All wiring and electronic components shall be labeled with printed tags to conform with 49 CFR 234.

E. The floor shall be covered with rubber matting. If the doorway entrance has a raised lip, an exterior grade plywood sub-floor will be screwed to the floor to allow for a flat entrance.

F. A light switch with 110 V 15A duplex outlet shall be mounted by the main access door. Another 110 V 15A duplex shall be mounted on the opposite wall. Two four-foot florescent lights shall be mounted to the ceiling.

G. Instrument house foundations shall be constructed of galvanized steel. Foundations shall be minimum 3-ft tall and provide leveling bolts or telescoping legs.

H. A wall mounted legal size file pocket will be provided for storage of test documents.

I. Details for house and component layout are to conform to signal plans. Easytest links will be used where shown.

J. Instrument house wire shall conform to section 2.2: Signal Material.

K. All wires shall be terminated using molded terminal blocks per AAR Signal Manual Part 14.1.5.

L. All stranded wiring connections are to be made with AMP insulated compression eyelets. The attached terminal will have no bare wire showing, nor will the insulation on the terminal be cracked or broken. The terminal will be tightly attached to the wire so that it can not be pulled off without damaging the terminal.

M. Each end of a wiring circuit is to be identified by a sleeve tag on the wire bearing the name of the circuit and the location it is connecting to.

N. Each track wire pair will be protected with HD track arrestors and equalizer. Each used wire in underground cable shall be terminated on the terminal board and protected with a line arrestor.

O. The instrument house shall be equipped with a thermostatically controlled vent fan. The fan shall be mounted high in the wall or in the ceiling and vented to the outside in such a manner so that rain will not enter.

P. Power off indicator light, monitoring power to flasher/gate battery power, is to be mounted on trackside of bungalow near front door

Q. A Square D (or approved equal) circuit breaker box shall be installed to conform with the circuit plans.

2.04 POWER SERVICE

At each signal house, the Contractor shall furnish a new 220V, 100 amp Square D, or approved equal, power service complete with pole, meter base, breaker panel and necessary attachments. A minimum of two 30 amp breakers, wired to 220V NEMA twist lock receptacles, two near the ceiling on each side of the bungalow, will be provided for battery charging circuits. Each 30 amp breaker will provide power to the NEMA receptacles on one side of the bungalow. The Contractor shall provide and connect the power service to the instrument case. Conduit will run from the breaker panel on the service pole to the breaker panel in the signal house.

PART 3 - EXECUTION

3.01 GENERAL

A. Signal construction shall conform to the requirements of the American Association of Railroads, except as modified herein.

B. The Contractor shall give the Engineer a minimum of ten (10) working days notice prior to the date work is to begin. The Contractor shall, in the interim before work is begun, meet at the site with the Engineer or his representative. Authorized representative(s) shall resolve all questions with regard to the layout of equipment to be installed and installation procedures.

C. The Contractor shall be responsible for correcting any defects or malfunctions in the highway crossing protection installation, resulting from poor or faulty installation, workmanship or deviation from specified standards for a period of one (1) year from the date of final acceptance.

D. The Contractor shall be responsible for any loss or damage to equipment of material prior to date of acceptance.

E. The Contractor shall, where necessary, replace any deficient insulated track components with the proper insulated components as required per signal acceptance tests and final inspection.

F. Excavation for the installation of any subsurface equipment, including but not limited to foundations, conduits, wiring will be performed so that new track work is undermined. Open cuts will not be made after track is constructed.

G. The Contractor shall not disturb the ballast line while working in the area. If the ballast line is disturbed, the Contractor shall be responsible for returning the ballast line back to its original state.

3.02 LOCATION OF INSTRUMENT HOUSE

Instrument house will be located parallel to the tracks with the entrance door facing the roadway. House to be located no closer than 25' from the nearest rail and 30' from the nearest edge of roadway.

3.03 LOCATION OF SIGNALS

Centerline of gate foundations will be located no closer than 12' from the centerline of track, and preferably 15' from the centerline of track. Gate arm counterweights will extend no closer than 10' from centerline of track. Centerline of cantilever foundations will be located 6' from centerline of gate foundations, parallel to roadway. Centerline of gate and cantilever foundations will be located no closer than 5'-3" from inside edge of curb.

3.04 ENGINEERING

Engineering of crossing control system to provide for an approach length which includes 20 seconds for minimum warning time, 5 seconds for ballast and accelerating train time, 6 seconds for wide time and 4 seconds for unit reaction time, for a total of 35 seconds at 10 MPH

3.05 SEQUENCE OF WORK

A. The Contractor shall coordinate all Work with the road authority, the Railroad, affected utility companies and any other Contractors working in or adjacent to the Project area.

B. The Contractor is not obligated to perform work in any particular sequence, but should be prepared to explain reasons for work sequencing in any given portion of the Contract.

3.06 EXISTING FACILITIES

A. The Contractor shall conduct signal construction operations to avoid damage to existing ditches, drainage structures, fences, utilities, buildings and other structures (except where designated for removal in the Contract Drawings). All damage to existing facilities shall be repaired by the Contractor at the Contractor's expense.

B. All utilities are to be located and avoided. If necessary, a hole will be bored down through the roadway to identify the exact location of any possible conflict.

3.07 QUALITY CONTROL AND TESTING

A. The Contractor shall make and record such tests as may be necessary to demonstrate to the satisfaction of the Engineer or authorized representative, that the apparatus, as installed, is in accordance with requirements of these specifications. All tests shall satisfy the requirements of 49 CFR 234 and the component manufacturer.

B. If, in order to complete the requirements of this contract, it is necessary to effect changes to another signal location, the Contractor shall be responsible to ensure proper operation of that location, including testing and observing train movements.

C. Grounds – Each circuit shall be kept free of any ground or combination of grounds which will permit a flow of current equal to or in excess of 75 percent of the release value of any relay or other electromagnetic device in the circuit, except circuits which include any track relay.

D. Protection of insulated wire – Insulated wire shall be protected from mechanical injury. The insulation shall not be punctured for test purposes. Splices in underground wire shall have insulation resistance at least equal to the wire spliced. Splices are only allowed with approval of the Signal Supervisor.

E. Tagging of wires – Each wire shall be tagged or otherwise so marked that in can be identified at each terminal. Tags and other marks of identification shall be made of insulating material and so arranged that tags and wires do not interfere with moving parts of apparatus.

F. Insulation resistance tests – Insulation resistance of wires and cables, except wires connected directly to track rails, shall be tested when wires, cables and insulation are dry. Insulation resistance tests shall be made between all conductors and ground, and between conductors in each multiple conductor cable, and between conductors in trunking, when wires or cables are installed. Insulation resistance of wire or cable must be higher than 10 Megohm.

G. Relays – Relays shall be tested following recommended instructions in AREMA part 6.4.5 before they are put in service. The resulting values will be recorded on appropriate FRA test documents

H. Gate arms are to be counterbalanced to conform with manufacturer's specifications.

I. Mast and lane lights will be aligned to conform with AREMA crossing signal alignment instructions part 3.3.5.

J. Crossing electronics will be calibrated to manufacturer's specifications in accordance with circuit plan parameters and in conjunction with Signal Supervisor.

3.08 PROCEDURES

A. Provide relay control of lights and gates. Use XR, XGR, ER and EOR relays to control gate and light circuits. Do not use resistors in lighting circuits

B. Size and number of conductors to be determined from circuit plans.

C. All cut ends of conduit will be reamed and filed to prevent damage to insulation.

D. The length of the cable runs will provide for ten extra feet at the control house. The conductors will be taped together as they leave the conduit and be placed in a neat and orderly manner up the wall and suspend from the ceiling, back down and put through the appropriate hole in the backboard.

E. All stranded conductors to be connected in the signal house using insulated ¼-in ring eyelets, crimped with an appropriate tool.

F. All wire terminal posts to be double nutted with washers under and over eyelets.

G. All openings around pipe, conductors and cable wells are to be sealed with concrete grout.

H. All conductors entering the house to be labeled with permanently typed vinyl tags. Labels to conform to circuit plans.

I. Wiring pattern in signal junction base to conform with typical drawing on circuit plans.

J. Foundation bolts will include leveling nuts and conduit will connect to junction box on signal mast.

K. Gate mechanism and hardware will be installed in such a manner that when completed, the gate can be twisted 90 degrees without disconnecting the flex conduit from the base.

L. All exterior steel hardware and components shall be painted with oil base aluminum color paint applied by brush where needed.

M. Signal hoods and backgrounds are to have an additional coat of oil base flat black paint applied by brush

N. Signal house shall be located level with top of ties, parallel to tracks, setback at least 30 feet from inside edge of curb, or edge of street and at least 25 feet from nearest rail. Entry door shall face roadway. Fill material will be kept off of signal house.

O. Direct buried Bondstrand will be used for track wires. Track wire runs across the street will utilize an additional pair of #6 conductors twisted together and pulled in the conduit with the gate control conductors.

P. Track wires will be made up of twisted pairs. Wire will be twisted together from signal house to base of bootlegs with at least one twist per foot.

Q. Bootlegs and track connections will conform to BNSF Standard guidelines.

R. Track wires are to be direct buried at least 18 inches below grade and will enter the signal house through a 4-in PVC riser pipe.

S. Conduit shall be buried 18 inches or more below and at least 30 inches below the top of ties, under the track.

T. All rail joints to be weld bonded on the head of the rail with a Cadweld (or approved equal) rail head bond.

U. All track wires to be welded to the rail with a Cadweld (or approved equal) web bond.

V. Backfill gravel will be distributed in such a manner as to provide parking for a maintenance vehicle, as well as fill around the signal structures to conform with contract drawings. Grade will be maintained to allow adequate room to walk around all structures. A retaining wall or culvert may be necessary to maintain drainage.

3.09 DEMOLITION

Demolition shall be performed in accordance with Section 02225, Trackwork and Signal Removal.

3.10 TOOLS

The following tools, or approved equals, are required to be used while performing the work of this Section. Approved equals may be substituted with the prior approval of the Engineer.

A. Cadweld Joint Bond Welders: Cat. No. SBTB-T6-B or SBTB-T7-B (in case of head free rail Cat. No. SBHF-T6-A or SBHF-T7-E).

B. Cadweld Web Welders: Cat. No. SBTB-T21-C.

C. Cadweld Hammer Die: Cat. No. SBD-50.

D. Rail Grinder compatible with Cadweld bonding systems, such as Cadweld Cat. No. SBG145.

E. Crimping tool adequate to crimp insulated eyelets on #6 and smaller wire, such as HiLine Part No. RC6220.

F. Crimping tool adequate to crimp "J groove" sleeves and non-insulated eyelets on #6 wire, such as a Nicopress 31-DJ crimping tool.

G. Crimping tool adequate to crimp insulated, non-insulated and flag terminals on #18 to #10 wire.

H. Wire labeling machine (see Item C under TESTING).

I. Megohmmeter insulation tested (see Item D under TESTING).

J. Relay test box (see Item E under TESTING).

3.11 TOOLS TO BE LEFT IN THE SIGNAL HOUSE

A. Safetran No Oxide Grease, Part No. 32-401X.

B. Safetran Low Temperature Gear Grease, Part No. 32-403X.

C. Safetran Extractor Tool, Part No. 32-619-25X.

D. Safetran RACO Wrench, Part No. 032-619-5X.

E. US&S Kit tool torque wrench, Part No. X46700003.

F. 0.06 ohm Test Shunt.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

There will be no measurement of crossing signal system installation. The design, providing and installation of crossing signal system components as required to construct the crossing signal system in accordance with the plans shown in the Contract Drawings shall be considered a single lump sum unit.

4.02 PAYMENT

A. There will be no separate payment for head and web bond installation, narrow band shunt installation, and special trackwork insulation. These are considered incidental to the work specified in this Section.

B. The contract price for these items will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the work specified.

C. Payment for the proper installation of grade crossing signal systems shall be made at the lump sum price for the various items stated on the bid form and as stated above.

END OF SECTION