Pierce County
Public Works and Utilities

Brian J. Ziegler, P.E.
Director
Brian.Ziegler@co.pierce.wa.us

2702 South 42nd Street, Suite 201
Tacoma, Washington 98409-7322
(253) 798-7250 • Fax (253) 798-2740

August 24, 2012

Kathy Hunter, Deputy Assistant Director
Transportation Safety Washington Utilities
and Transportation Commission
1300 S. Evergreen Park Dr. SW
PO Box 47250
Olympia, WA 98504-7250

Re: Petition for Canyon Road East Traffic Signal Inter-tie with USDOT Crossing 397-135D

Dear Ms. Hunter:

Please find attached, a completed Petition form requesting a new traffic signal inter-tie with an existing rail crossing pre-emption system located on Canyon Road East in Pierce County. The existing rail crossing is currently fitted with overhead warning beacons and is owned by Tacoma Rail Mountain Division. Contact information for the rail company has been provided on the Petition.

Thank you for all of your help in this matter. If you have any questions or concerns regarding the enclosed Petition, please contact Steve Winter at (253) 798-2246 or me at (253) 798-2275.

Sincerely,

Rory D. Grindley, P.E., PTOE
County Traffic Engineer

RDG:SW
Enclosure

cc: Jeff Kidston, Pierce County Planning and Land Services
Traffic File

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Pierce County Public Works & Utilities Petitioner, vs. Tacoma Rail Mountain Division Respondent	DOCKET NO. TR- PETITION TO INSTALL AN INTER-TIE BETWEEN A HIGHWAY SIGNAL AND A RAILROAD CROSSING SIGNAL SYSTEM USDOT CROSSING NO.: 397-135 D

The Petitioner asks the Washington Utilities and Transportation Commission to approve installation of an inter-tie between a highway signal and a railroad crossing signal system.

Section 1 – Petitioner's Information

Pierce County Public Works & Utilities
Petitioner

Signature

4301 South Pine Street, Suite 446
Street Address

Tacoma, Washington 98409-7207
City, State and Zip Code

Mailing Address, if different than the street address

Rory Grindley, P.E., P.T.O.E., Pierce County Traffic Engineer
Contact Person Name

253-798-2275 Rory.Grindley@co.pierce.wa.us
Contact Phone Number and E-mail Address

Section 2 – Respondent's Information

Tacoma Rail Mountain Division (TRMW)
Respondent

2601 SR 509 North Frontage Road
Street Address

Tacoma, Washington 98421
City, State and Zip Code

Mailing Address, if different than the street address

Alan Matheson
Contact Person Name

253-502-8934 alan.matheson@cityoftacoma.org
Contact Phone Number and E-mail Address

Section 3 – Crossing Location

1. Existing highway/roadway Canyon Road East
2. Existing railroad Tacoma Rail Mountain Division (TRMW)
3. USDOT Crossing No. 397-135D
4. Located in the SW 1/4 of the NW 1/4 of Sec. 31, Twp. 19N, Range 4E W.M.
5. GPS location, if known
7. Railroad mile post (nearest tenth) 0013.20C
8. City Graham County Pierce

Section 4 – Vehicle Traffic

1. Type of public road at the crossing ☐ State ☒ County ☐ City

☐ Port ☐ State Park ☐ Other _____

2. Name of public road Canyon Road East

3. Road authority Pierce County

4. Average daily vehicle traffic over the crossing 18,500 Vehicle speed limit 45 MPH

5. Number of lanes each way Two (2)

6. Trucks (commercial vehicles) are what percent of average daily traffic 10.5

7. Number of school buses over the crossing each day not known

Section 5 – Railroad Traffic

1.. Name of railroad(s) operating at crossing

Tacoma Rail Mountain Division (TRMW)

9. Type of railroad at crossing ☐ Common Carrier ☐ Logging ☒ Industrial

☐ Passenger ☐ Excursion

10. Type of tracks at crossing ☐ Main Line ☒ Siding or Spur

11. Number of tracks at crossing One (1)

12. Average daily train traffic, freight One (1)

Authorized freight train speed 7-10 MPH Operated freight train speed 5-10 MPH

13. Average daily train traffic, passenger 0

Authorized passenger train speed Operated passenger train speed

Section 6 – Current Warning Devices

1. Provide a complete description of the warning devices currently located at the crossing, including signs, gates, lights, train detection circuitry and any other warning devices.

Tacoma Rail currently provides cantilevered dual face flashing red warning beacons over the roadway (4 beacons per direction). Pierce County currently provides stop lines, railroad crossing symbols (2 on each approach to the track crossing per the MUTCD), and 2 railroad warning disc signs per approach on Canyon Road East.

Railroad detection provides 28 seconds advanced detection for activation of overhead flashing red beacons.

Section 7 – Description of Proposed Changes

1. Describe in detail the proposed changes, including train detection circuitry, sequencing and advanced preemption time, justification for the changes and its effects on current warning devices and warning times for drivers.

The Petitioner proposes to construct a traffic signal system on Canyon Road East approximately 200 feet north of the rail crossing. The traffic signal controller will be wired with a relay switch directly to a dead load switch provided within the existing railroad detection control cabinet (located adjacent to the rail crossing on Tacoma Rail property). This powered 120 volt connection between controllers will provide failsafe assurance that train pre-emption will be activated within the traffic controller upon train advanced detection from the rail controller or if power is lost within the railroad detection control unit.

Currently, Tacoma rail provides 28 seconds of advanced detection for triggering the start of their flashing beacons. Pierce County will work with Tacoma Rail to increase advanced detection to 32 seconds per calculations attached. This timing will provide the time necessary for the traffic signal to operate in RR pre-emption phase for clearing rail crossing on Canyon Road for NB direction. SB Canyon Road traffic will be stopped with red indication immediately upon RR pre-emption activation.

Current Tacoma Rail warning beacon operation would remain unchanged from current activation sequencing (other than an increase in advanced train detection mentioned above).

Section 8 – Illustration of Current and Proposed Layout

Attach a detailed diagram, drawing, map or other illustration showing the current and proposed layout of the road, crossing surface and railway in the vicinity of the crossing, including shoulders, sidewalks, lanes of travel, bike lanes, warning devices and any other applicable crossing conditions.

Section 9 – Traffic Signal Preemption

Complete the attached Guide for Determining Time Requirements for Traffic Signal Preemption at Highway-Rail Grade Crossings.

1. Specify simultaneous or advance preemption requested.

Total advanced detection time requested is 32 seconds.

If advance preemption, what is the preemption time.

Current 28 seconds is provided w/ 4 additional seconds requested for the 32 second total.

Section 10 – Waiver of Hearing by Respondent

Waiver of Hearing

The undersigned represents the Respondent in the petition to install an inter-tie between the highway signal and the railroad crossing signal system at the following crossing.

USDOT Crossing No. 397-135 D

We have investigated the conditions at the crossing. We are satisfied the conditions are the same as described by the Petitioner in this docket. We agree the inter-tire should be installed and consent to a decision by the commission without a hearing.

Dated at Tacoma, Washington, on the 21ST day of August, 20 12.

Alan Matheson, for Tacoma Rail Mountian Division

Printed name of Respondent

Alan Matheson

Signature of Respondent's Representative

Roadmaster

Title

(253) 502-8934 alan.matheson@cityoftacoma.org

Phone number and e-mail address

2601 SR 509 N. Frontage Road

Tacoma, WA 98421

Mailing address

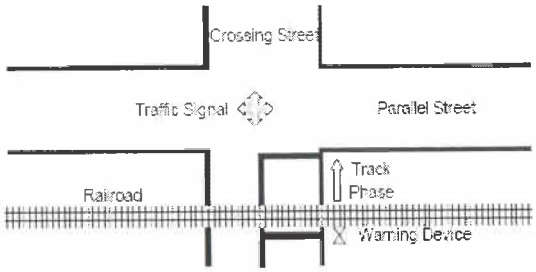
UTC
UTILITIES AND TRANSPORTATION COMMISSION

GUIDE FOR DETERMINING TIME REQUIREMENTS FOR TRAFFIC SIGNAL PREEMPTION AT HIGHWAY-RAIL GRADE CROSSINGS

City: Graham
County: Pierce
District:

Date: 8/15/12
Completed by: S. Moeller
District Approval:

Show North Arrow



Parallel Street Name: Boeing Entrance Road
Crossing Street Name: Canyon Road East

Railroad: Tacoma Rail Mountain Division
Crossing DOT#: 396691E USDOT# 397-135D

Railroad Contact: Alan Matheson
Phone: (253) 502-8934

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

			Remarks
1. Preempt delay time (seconds)	1.	0	
2. Controller response time to preempt (seconds)	2.	0	Controller type: Econolite ASC3
3. Preempt verification and response time (seconds): add lines 1 and 2	3.	0	

Worst-case conflicting vehicle time

			Remarks
4. Worst-case conflicting vehicle phase number	4.	5	
5. Minimum green time during right-of-way transfer (seconds)	5.	0	
6. Other green time during right-of-way transfer (seconds)	6.	0	
7. Yellow change time (seconds)	7.	3.5	
8. Red clearance time (seconds)	8.	1.0	
9. Worst-case conflicting vehicle time (seconds): add lines 5 through 8	9.	4.5	

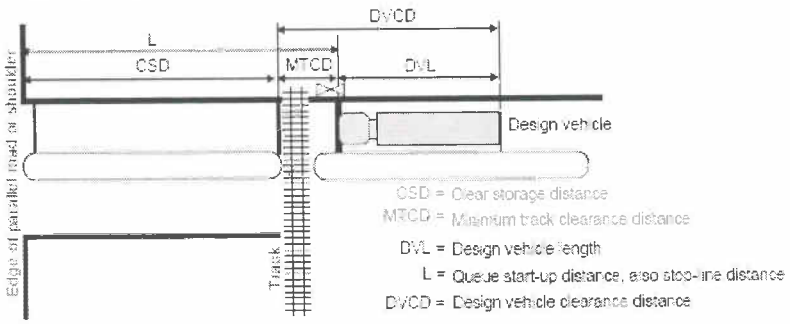
Worst-case conflicting pedestrian time

			Remarks
10. Worst-case conflicting pedestrian phase number	10.		
11. Minimum walk time during right-of-way transfer (seconds)	11.	0	
12. Pedestrian clearance time during right-of-way transfer (seconds)	12.	0	
13. Vehicle yellow change time, if not included on line 12 (seconds)	13.	4.0	
14. Vehicle red clearance time, if not included on line 12 (seconds)	14.	1.0	
15. Worst-case conflicting pedestrian time (seconds): add lines 11 through 14	15.	5.0	

Worst-case conflicting vehicle or pedestrian time

16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15	16.	5.0
17. Right-of-way transfer time (seconds): add lines 3 and 16	17.	5.0

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



			Remarks
18. Clear storage distance (CSD, feet)	18.	80	
19. Minimum track clearance distance (MTCD, feet)	19.	35	
20. Design vehicle length (DVL, feet)	20.	65	Design vehicle type: WB-60
21. Queue start-up distance, L (feet): add lines 18 and 19	21.	115	
22. Time required for design vehicle to start moving (seconds): calculate as 2+(L÷20)	22.	7.8	Remarks
23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 20	23.	100	
24. Time for design vehicle to accelerate through the DVCD (seconds)	24.	15.0	Read from Figure 2 in Instructions.
25. **Queue clearance time (seconds): add lines 22 and 24**	25.	22.8	

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

			Remarks
26. Right-of-way transfer time (seconds): line 17	26.	5.0	
27. Queue clearance time (seconds): line 25	27.	22.8	
28. Desired minimum separation time (seconds)	28.	4.0	
29. **Maximum preemption time (seconds): add lines 26 through 28**	29.	31.8	

SECTION 4: SUFFICIENT WARNING TIME CHECK

			Remarks
30. Required minimum time, MT (seconds): per regulations	30.	15.0	
31. Clearance time, CT (seconds): get from railroad	31.	5.0	
32. Minimum warning time, MWT (seconds): add lines 30 and 31	32.	20.0	Excludes buffer time (BT)
33. Advance preemption time, APT, if provided (seconds): get from railroad	33.	0.0	
34. Warning time provided by the railroad (seconds): add lines 32 and 33	34.	20.0	
35. **Additional warning time required from railroad (seconds): subtract line 34 from line 29, round up to nearest full second, enter 0 if less than 0**	35.	12.0	

If the additional warning time required (line 35) is greater than zero, additional warning time has to be requested from the railroad. Alternatively, the maximum preemption time (line 29) may be decreased after performing an engineering study to investigate the possibility of reducing the values on lines 1, 5, 6, 7, 8, 11, 12, 13 and 14.

Remarks: _____

CountyView Web Map

Map Legend

Roads

- Interstate
- Limited Access State Routes
- Other State Routes
- Ramps
- Major Arterial
- Collector
- Local Access

County - 2011 - Ortho

0 65 130 ft.

Printed: 8/16/12 4:13 PM

Pierce County
Geographic Information Services

CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

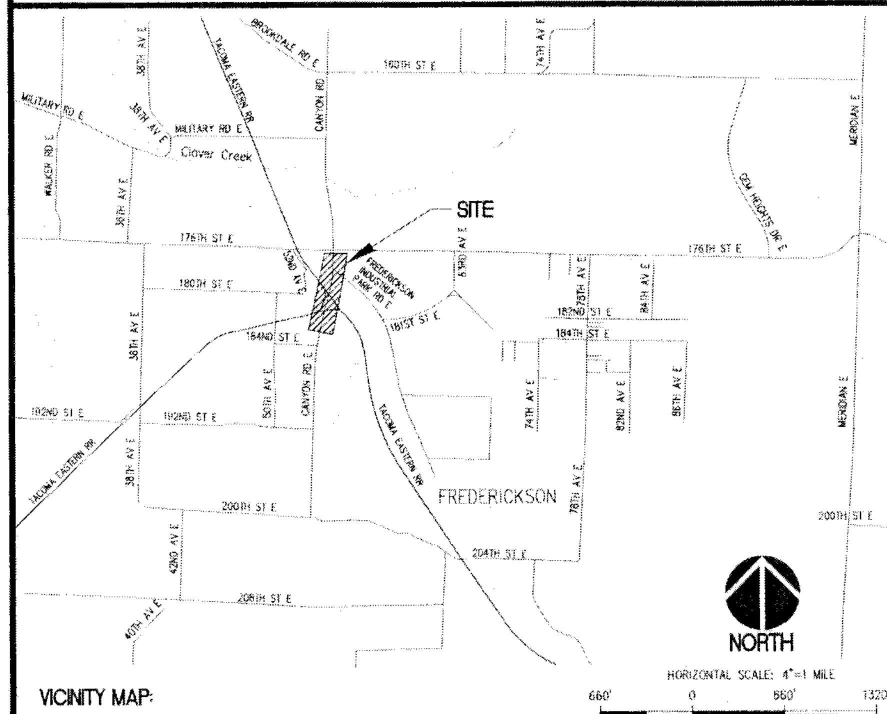
A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON

PUBLIC IMPROVEMENTS

PUBLIC WORKS DIRECTOR — DATE

PIERCE COUNTY ORDINANCE NUMBER(S) 2008-59S

PCDE No: 27-921 B
APP(S) No: 735230



VICINITY MAP:

PREPARED FOR:

THE BOEING COMPANY
PO BOX 3707 M/C: 53-10
SEATTLE, WA 98124
CONTACT: DENNIS KINNE
PHONE: (253) 208-2985

PREPARED BY:

SITTS & HILL ENGINEERS, INC.
CIVIL • STRUCTURAL • SURVEYING
4815 CENTER ST. TACOMA, WA. 98409 (253) 474-9449 FAX (253) 474-0153
CONTACT: RICK HAND, P.E.

INDEX OF DRAWINGS:

DRAWING No.	TITLE - DESCRIPTION
T1.0	TITLE SHEET
C0.1	LEGEND, ABBREVIATIONS, AND CONSTRUCTION SEQUENCE
C1.1	CANYON ROAD EAST DEMOLITION AND EROSION CONTROL PLAN
C1.2	CANYON ROAD EAST DEMOLITION AND EROSION CONTROL PLAN
C1.3	DEMOLITION AND EROSION CONTROL NOTES AND DETAILS
C2.1	CANYON ROAD EAST GRADING AND DRAINAGE PLAN AND PROFILE
C2.2	CANYON ROAD EAST GRADING AND DRAINAGE PLAN AND PROFILE
C2.3	CANYON ROAD RAILROAD CROSSING ENLARGED PLAN
C2.4	CANYON ROAD RAILROAD CROSSING DETAILS
C2.5	CANYON ROAD AND INDUSTRIAL PARK ROAD INTERSECTION PLAN AND PROFILE
C4.1	GRADING AND DRAINAGE DETAILS
C4.2	GRADING AND DRAINAGE NOTES
C5.1	ROADWAY SECTIONS
C5.2	ROADWAY SECTIONS
C5.3	SURFACING DETAILS
C5.4	SURFACING DETAILS
C5.5	SURFACING DETAILS
C5.6	SURFACING DETAILS
C6.1	CANYON ROAD EAST CHANNELIZATION AND SIGNING PLAN
C6.2	CHANNELIZATION DETAILS
C6.3	CHANNELIZATION DETAILS

PROJECT INFORMATION:

PROJECT DESCRIPTION:

ROADWAY IMPROVEMENTS FOR SIGNALIZATION AND LEFT TURN LANES AT THE INTERSECTION OF CANYON ROAD AND FREDERICKSON INDUSTRIAL PARK ROAD. IN CONJUNCTION WITH THIS PROJECT IS THE CORRESPONDING CHANNELIZATION AND ROADWAY IMPROVEMENTS IN CANYON ROAD AND INDUSTRIAL PARK ROAD.

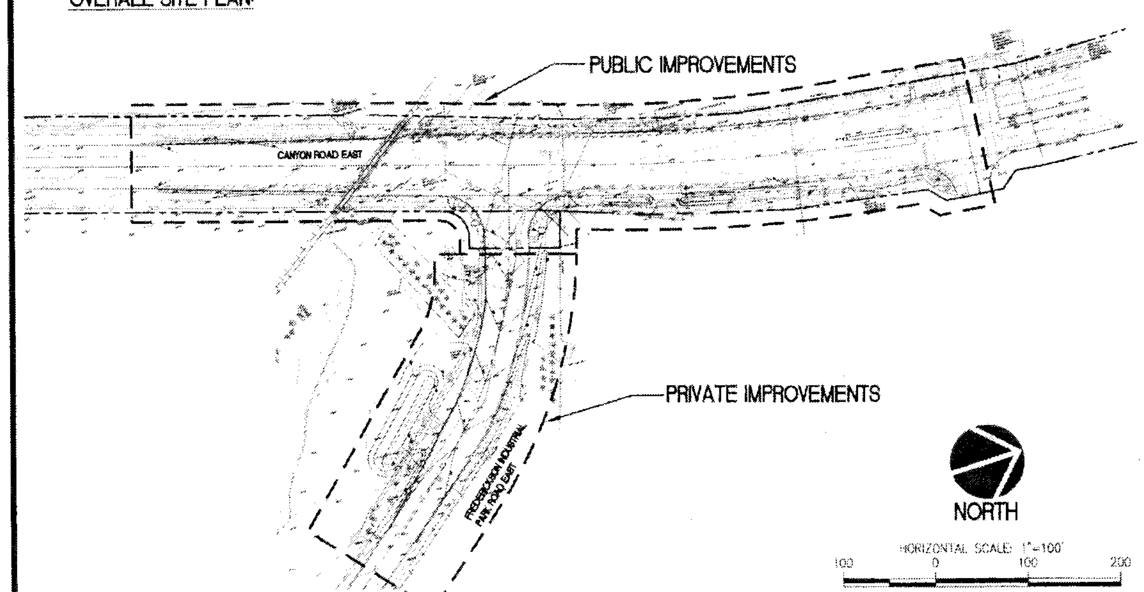
SCOPE OF WORK:

SAWCUT AND REMOVE DESIGNATED EXISTING CONCRETE CURB, GUTTER AND SIDEWALK, ROADWAY ASPHALTIC PAVEMENTS. GRIND EXISTING ROADWAY AS DIRECTED ON DEMOLITION AND EROSION CONTROL PLAN. PREPARE SUBGRADE AS REQUIRED FOR PROPOSED CONCRETE CURB, GUTTER AND ASPHALT CLOSURE STRIP. PROVIDE CONCRETE CURB AND GUTTER AT NEW ALIGNMENT AS SHOWN ON GRADING PLAN AND PROFILE. PLACE HMA CLOSURE STRIP BETWEEN EXISTING ASPHALT EDGE AND PROPOSED GUTTER/EDGE OF PAVEMENT. PLACE REINFORCEMENT FABRIC AT JOINT BETWEEN EXISTING AND PROPOSED PAVEMENT AND PLACE HMA OVERLAY TO EXTENTS SHOWN ON GRADING AND DRAINAGE PLAN. PROVIDE SIGNALIZATION AND ILLUMINATION AND ELECTRICAL AT LOCATIONS SHOWN ON THE PLANS.

DEMOLISH EXISTING INFILTRATION TRENCH AND BIOFILTRATION SWALE AS DIRECTED ON THE DEMOLITION AND EROSION CONTROL PLAN. INSTALL NEW INFILTRATION TRENCHES AND CONSTRUCT RAINGARDEN FACILITIES PER GRADING AND DRAINAGE PLAN. PROVIDE REQUIRED UTILITY RELOCATION WORK SHOWN ON THE PLANS. PROVIDE REQUIRED LANDSCAPING SHOWN ON THE PLANS.

COORDINATE WITH PIERCE COUNTY TRAFFIC OPERATIONS CENTER TO PROVIDE REVISED ROADWAY STRIPING.

OVERALL SITE PLAN:



SURVEY INFORMATION:

HORIZONTAL DATUM:

NAD 83/91 PER PIERCE COUNTY CONTROL POINTS:

036: 3" SURFACE BRASS CAP AT THE INTERSECTION OF CANYON ROAD EAST AND 176TH STREET EAST

316: 3" SURFACE BRASS CAP AT THE INTERSECTION OF CANYON ROAD EAST AND 184TH STREET EAST

VERTICAL DATUM:

NGVD 29 PER PIERCE COUNTY BENCHMARK BM 152-8

TOP SOUTHEAST BOLT AT THE SOUTH EAST CORNER OF CONCRETE PAD FOR RAILROAD CROSSING ARM 36' WEST OF THE CENTERLINE OF CANYON ROAD EAST AND 125' SOUTH OF WEST BOEING ACCESS ROAD 0.25 MILES SOUTH OF 176TH STREET EAST

ELEV= 391.40

SURVEY NOTES:

FIELD WORK PERFORMED JUNE 2012.

STATIONING PER PIERCE COUNTY RIGHT OF WAY PLANS--CRP 5657, CANYON ROAD EAST/176TH STREET EAST INTERSECTION, DATED MAR 31 2004

RICHARD C. HAND — PROFESSIONAL ENGINEER — 08/09/12

SHEET NO. T1.0
PROJECT NO. 15280

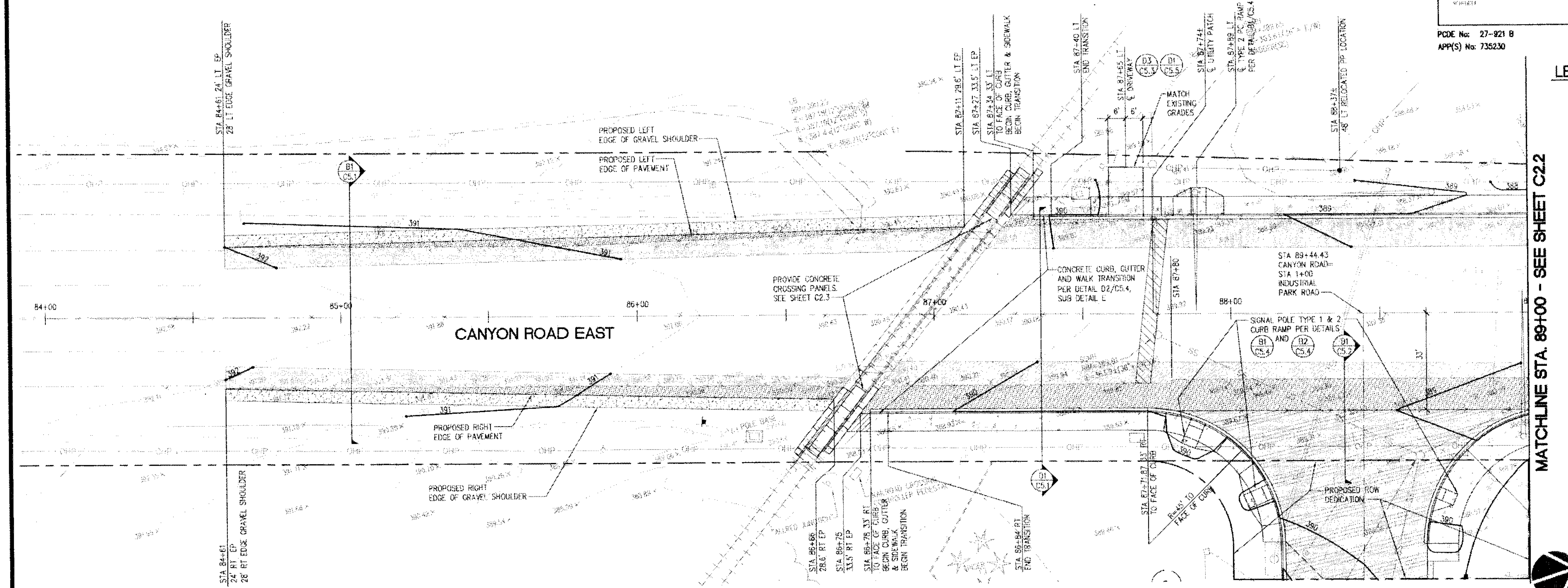
CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON

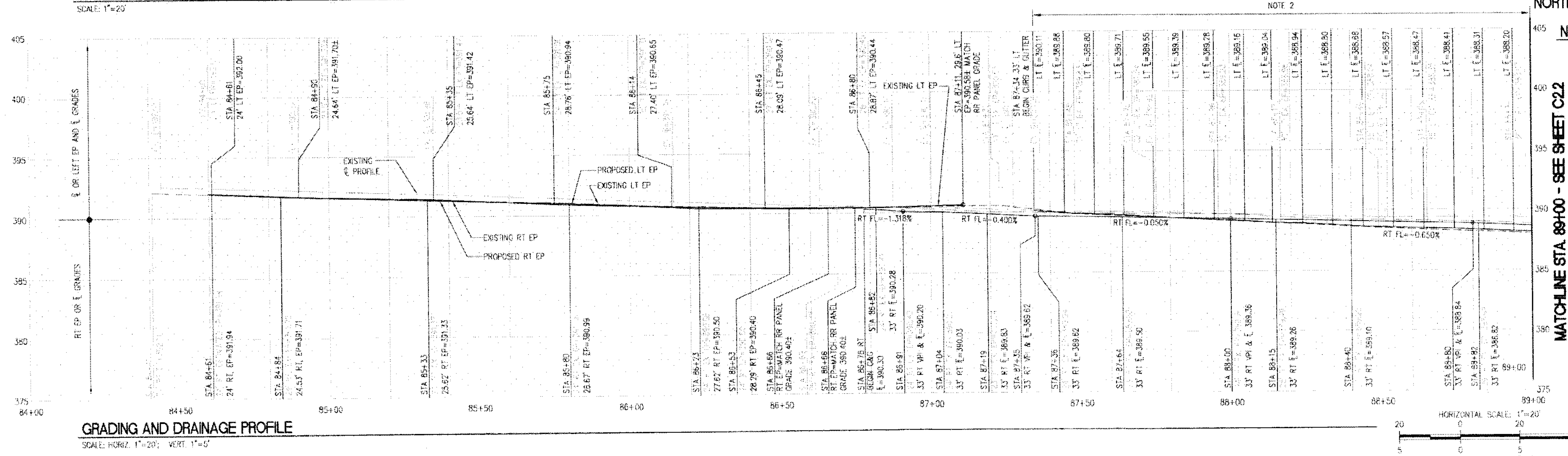
PUBLIC IMPROVEMENTS

2008-59S

PCDE No: 27-921 B
APP(S) No: 735230



GRADING AND DRAINAGE PLAN
SCALE: 1"=20'



GRADING AND DRAINAGE PROFILE
SCALE: HORIZ. 1"=20'; VERT. 1"=5'

LEGEND

- ASPHALT CLOSURE STRIP (B1/C5.3)
- ASPHALT OVERLAY (C1/C5.3)
- CONCRETE SURFACING
- INDUSTRIAL PARK ROAD PAVEMENT SECTION (A2/C5.3)
- AC WALK (B2/C5.3)
- DRIVEWAY AC SECTION (A3/C5.3)
- QUARRY SPALL PAD (A3/C4.1)
- RAINGARDEN BOTTOM AREA
- GRAVEL SHOULDER (D1/C5.3)
- UTILITY PATCH (B1/C5.5)
- PERFORATED CPEP PIPE
- TYPE 1L CATCH BASIN
- TYPE 2 CATCH BASIN (C3/C4.1)
- THROUGH CURB INLET (D2/C5.3)
- RELOCATED STREET LIGHT
- RELOCATED SIGN
- SIGNAL POLE WITH PUSH BUTTON LOCATION
- PEDESTRIAN PUSH BUTTON AND POLE
- TRAFFIC CONTROLLER

NOTES:

1. ADJUST RIMS OF ALL EXISTING UTILITY STRUCTURES WITHIN THE PROPOSED IMPROVED ASPHALT PAVEMENT, GRAVEL SURFACING, RAINGARDEN, AND BIOFILTRATION SWALE LIMITS TO MATCH PROPOSED FINISH GRADE.
2. LEFT FLOWLINE ELEVATIONS ARE PROVIDED AT 10' INTERVALS UNLESS OTHERWISE NOTED.

CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

THE BURIED UTILITIES ON THIS PROJECT ARE SHOWN IN THEIR APPROXIMATE LOCATION WHERE KNOWN. OTHER EXISTING BURIED UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND HAVE THEIR LOCATION MARKED ON THE GROUND PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL PROTECT, OR IMMEDIATELY REPAIR, ANY DAMAGED UTILITY "DISCOVERED" ON THIS PROJECT WITHOUT ADDITIONAL COSTS.

DESIGNED	R.C.H.
DRAWN	J.M.W.
CHECKED	R.H.
DATE	05-15-2012
SCALE	AS NOTED

PREPARED BY: **SITTS & HILL ENGINEERS, INC.**
CIVIL • STRUCTURAL • SURVEYING
4815 CENTER STREET | TACOMA, WA 98409
PHONE: (253) 474-9449 | FAX: (253) 474-0153
http://www.sitts-hill-engineers.com/

PREPARED FOR: THE BOEING COMPANY
P.O. BOX 3707
SEATTLE WA 98124-2207

PROJECT: CANYON ROAD SIGNALIZATION AT FREDERICKSON INDUSTRIAL PARK

SHEET TITLE: CANYON ROAD EAST GRADING AND DRAINAGE PLAN AND PROFILE

SHEET NO. C2.1

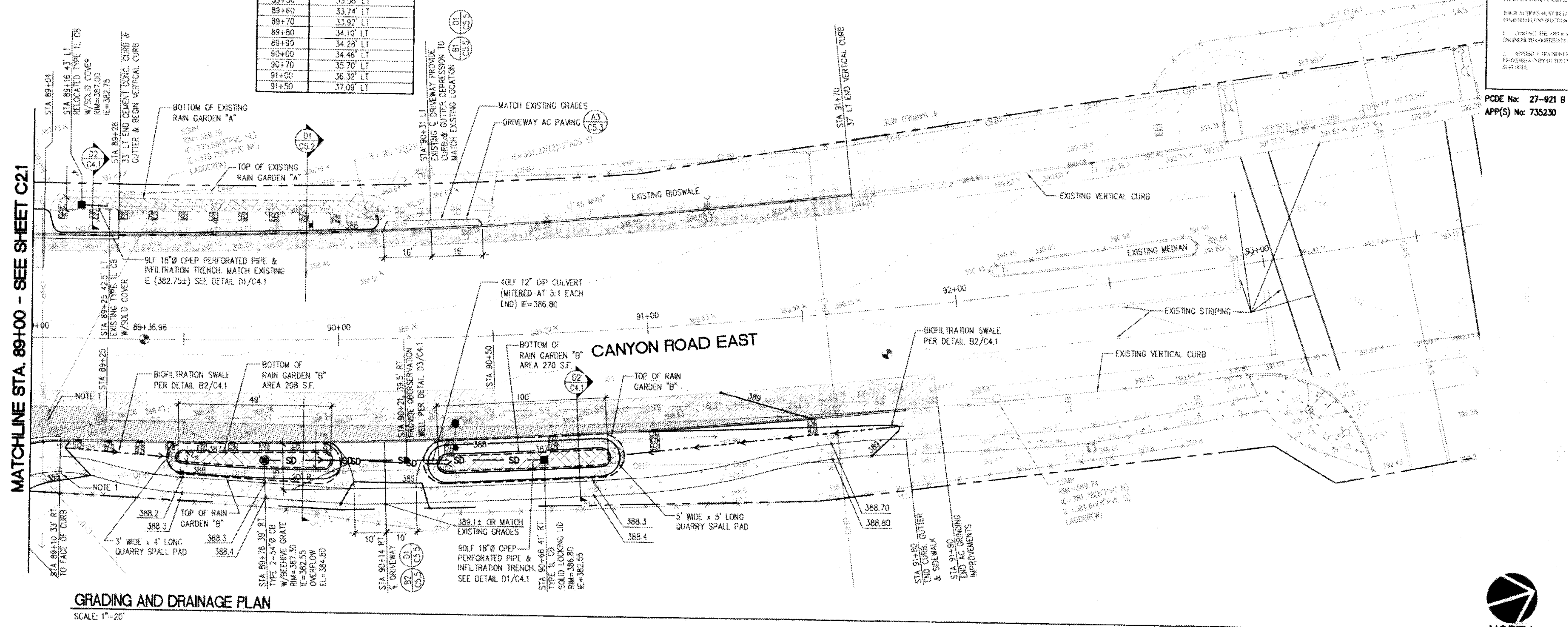
PROJECT NO. 15280

CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON

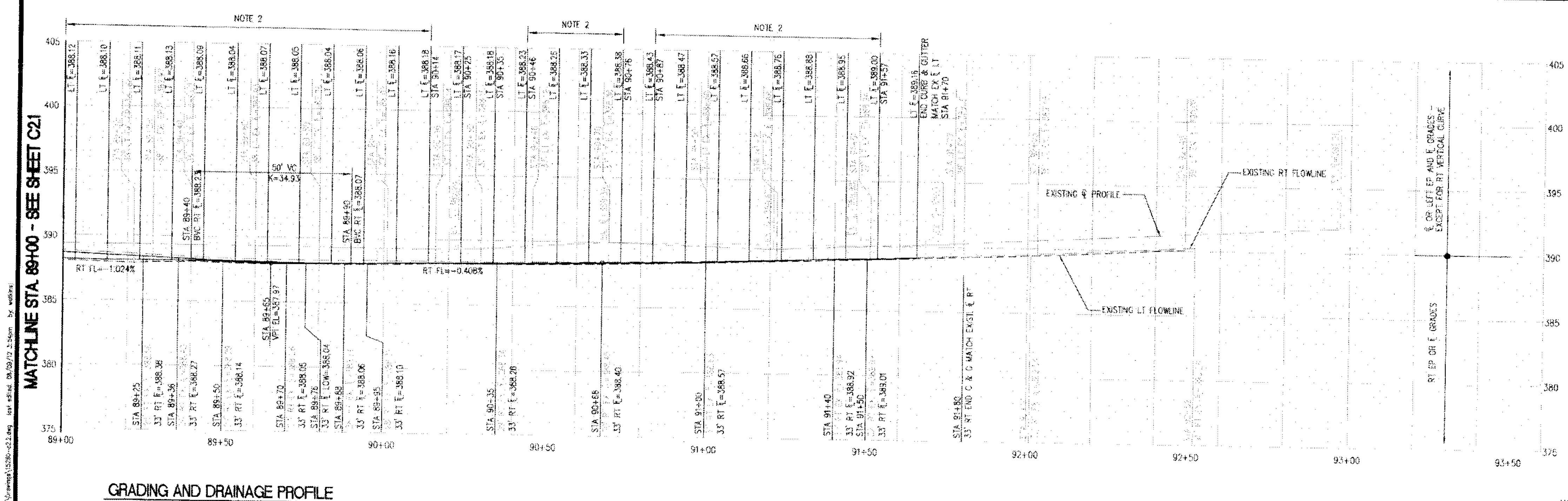
CURB INLET LOCATIONS

STA.	OFFSET TO FACE OF CURB
89+10	33.03' LT
89+20	33.07' LT
89+30	33.21' LT
89+40	33.39' LT
89+50	33.56' LT
89+60	33.74' LT
89+70	33.92' LT
89+80	34.10' LT
89+90	34.28' LT
90+00	34.46' LT
90+70	35.70' LT
91+00	36.32' LT
91+50	37.09' LT



GRADING AND DRAINAGE PLAN

SCALE: 1"=20'



GRADING AND DRAINAGE PROFILE

SCALE: HORIZ. 1"=20'; VERT. 1"=5'

PUBLIC IMPROVEMENTS

PUBLIC WORKS DIRECTOR ... DATE

PIERCE COUNTY ORDINANCE NUMBER(S): 2008-59S

BILL PETERSON

PCDE No: 27-921 B

APP(S) No: 735230

LEGEND

- ASPHALT CLOSURE STRIP (B1/C5.3)
- ASPHALT OVERLAY (C1/C5.3)
- CONCRETE SURFACING
- INDUSTRIAL PARK ROAD PAVEMENT SECTION (A2/C5.3)
- AC WALK (B2/C5.3)
- DRIVEWAY AC SECTION (A3/C5.3)
- QUARRY SPALL PAD (A3/C4.1)
- RAINGARDEN BOTTOM AREA
- GRAVEL SHOULDER (D1/C5.3)
- UTILITY PATCH (B1/C5.6)
- PERFORATED CPEP PIPE
- TYPE 1L CATCH BASIN
- TYPE 2 CATCH BASIN (C3/C4.1)
- THROUGH CURB INLET (D2/C5.3)
- RELOCATED STREET LIGHT
- RELOCATED SIGN
- SIGNAL POLE WITH PUSH BUTTON LOCATION
- PEDESTRIAN PUSH BUTTON AND POLE
- TRAFFIC CONTROLLER

NORTH

NOTES:

1. ADJUST RIMS OF ALL EXISTING UTILITY STRUCTURES WITHIN THE PROPOSED IMPROVED ASPHALT PAVEMENT, GRAVEL SURFACING, RAINGARDEN, AND BIOFILTRATION SWALE LIMITS TO MATCH PROPOSED FINISH GRADE.
2. LEFT FLOWLINE ELEVATIONS ARE PROVIDED AT 10' INTERVALS UNLESS OTHERWISE NOTED.

CURB INLET LOCATIONS

STA.	OFFSET TO FACE OF CURB
91+50	33' RT
91+00	33' RT
90+68	33' RT
90+35	33' RT
89+96	33' RT
89+70	33' RT
89+66	33' RT
89+56	33' RT
89+46	33' RT
89+36	33' RT
89+26	33' RT
89+16	33' RT

CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

THE BURIED UTILITIES ON THIS PROJECT ARE SHOWN IN THEIR APPROXIMATE LOCATION WHERE KNOWN. OTHER EXISTING BURIED UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND HAVE THEIR LOCATION MARKED ON THE GROUND PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL PROTECT, OR IMMEDIATELY REPAIR, ANY DAMAGED UTILITY "DISCOVERED" ON THIS PROJECT WITHOUT ADDITIONAL COSTS.

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=5'

APPROVALS: DESIGNED R.C.H. · DRAWN J.M.W. · CHECKED R.H. · DATE 08-08-2012 · SCALE AS NOTED

REVISIONS

SEAL: RICHARD C. HILL, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 08/09/12

PREPARED BY: SITTS & HILL ENGINEERS, INC.
CIVIL • STRUCTURAL • SURVEYING
4815 CENTER STREET | TACOMA, WA 98409
PHONE: (253) 474-9449 | FAX: (253) 474-0153
http://www.sitts-hill-engineers.com/

PREPARED FOR: THE BOEING COMPANY
P.O. BOX 3707
SEATTLE WA 98124-2207

PROJECT: CANYON ROAD SIGNALIZATION AT FREDERICKSON INDUSTRIAL PARK

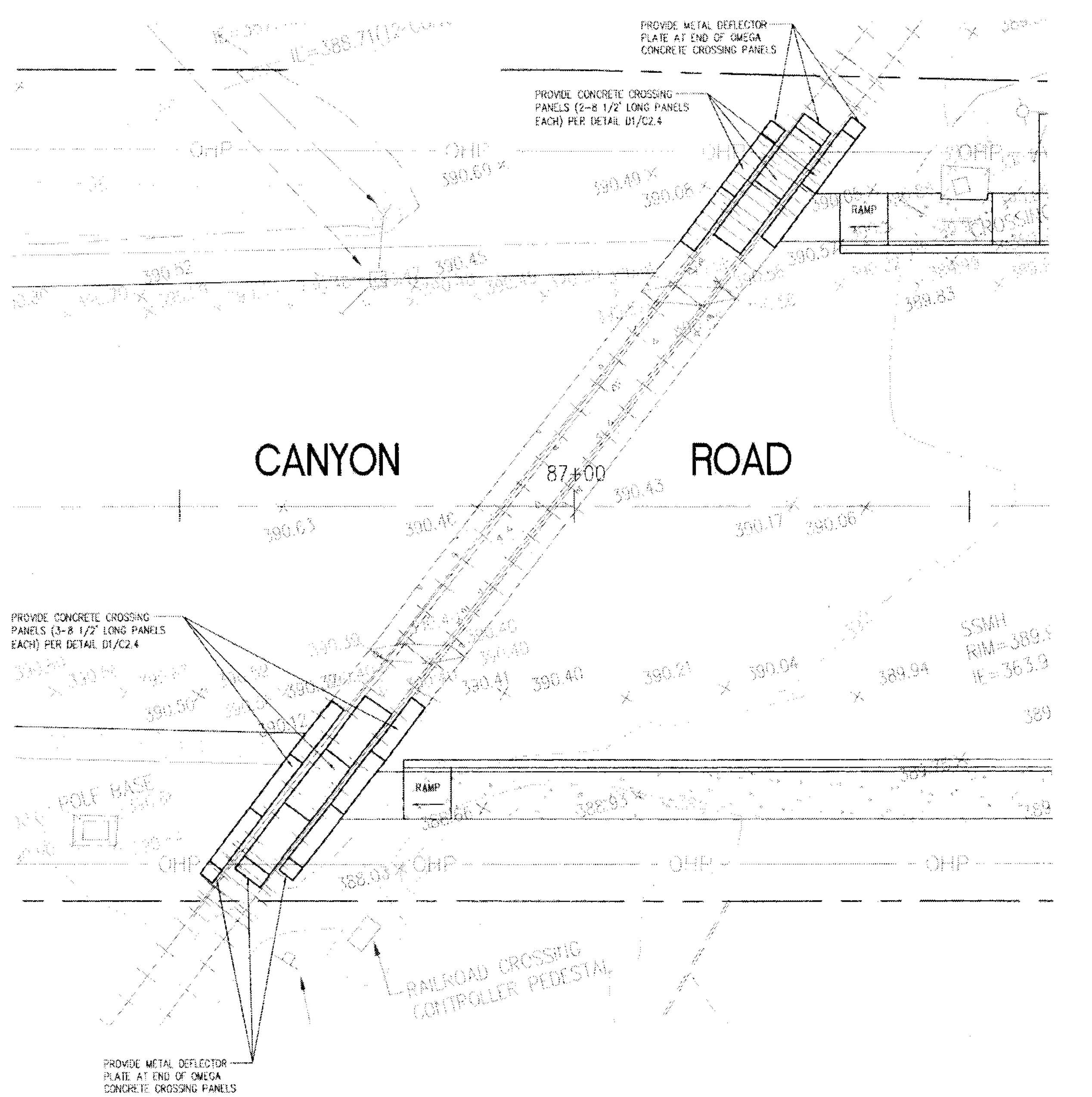
SHEET TITLE: CANYON ROAD EAST GRADING AND DRAINAGE PLAN AND PROFILE

SHEET NO. C2.2

PROJECT NO. 15280

CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON



RAILROAD CROSSING ENLARGED PLAN
SCALE: 1"=10'

PUBLIC IMPROVEMENTS

DATE: 2008-59S

BILL PETERSON

PCDE No: 27-921 B
APP(S) No: 735230

RAILROAD CROSSING NOTES

1. RAILROAD CROSSING PANELS NEED TO BEAR ON 10'-0" LONG TIMBER TIES PLACED AT 19 1/2" CENTERS. REPLACE EXISTING TIES LESS THAN 10'-0" AS NECESSARY PRIOR TO INSTALLATION OF THE NEW CONCRETE CROSSING PANELS.
2. FINAL ELEVATION AND GRADE OF RAILROAD CROSSING PANELS ARE DEPENDENT ON GRADE OF THE RAILROAD. ALL PROPOSED SURFACES ADJACENT TO THE CROSSING PANELS (ASPHALT PAVEMENT, CRUSHED SURFACING SHOULDER) SHALL MATCH ELEVATION AND GRADE OF THE EXISTING AND NEW CONCRETE CROSSING PANELS.
3. INSTALL ONE NEW SET OF OMEGA INDUSTRIES 8'-1 1/2" LONG "BNSF-UPRR COMMON STANDARD LAYOUT FOR CONCRETE PANELS ON 10 FT WOOD TIES, 115 RE RAIL" WITH STEEL END DEFLECTOR PLATES PER DETAIL D1/C2.4. ALSO SEE NOTE 5.
4. PROTECT EXISTING RAILROAD CROSSING OVERHEAD FLASHING LIGHT SIGNAL. UPON COMPLETION OF STRIPING, COORDINATE RELOCATION OF OVERHEAD FLASHING LIGHT UNITS WITH TACOMA RAIL. UPON COMPLETION OF PROJECT, OVERHEAD FLASHING LIGHT UNITS SHOULD BE CENTERED ON THROUGH LANES BELOW.
5. DUE TO THE ORIENTATION OF RAILROAD RELATIVE TO ROADWAY, FIELD PANELS ARE EACH STAGGERED BY 3'-3" FROM THE GAUGE PANEL (OR THE DISTANCE ACROSS TWO TIES SPACED AT 19 1/2"). PROPOSED PANELS SHALL MAINTAIN THIS SAME STAGGERING, AND MATCH THE EDGE OF THE EXISTING PANELS.
6. COORDINATE RAILROAD WORK WITH TACOMA RAIL, KYLE KELLUM, 253-502-8819 OR 253-377-3554.
7. CONTRACTOR SHALL EXECUTE TACOMA RAIL AGREEMENT PRIOR TO COMMENCING RAIL WORK.
8. CONTRACTOR SHALL CONTRACT WITH BOEING AND TACOMA RAIL APPROVED RAIL CONTRACTORS TO PERFORM THE RAIL WORK.

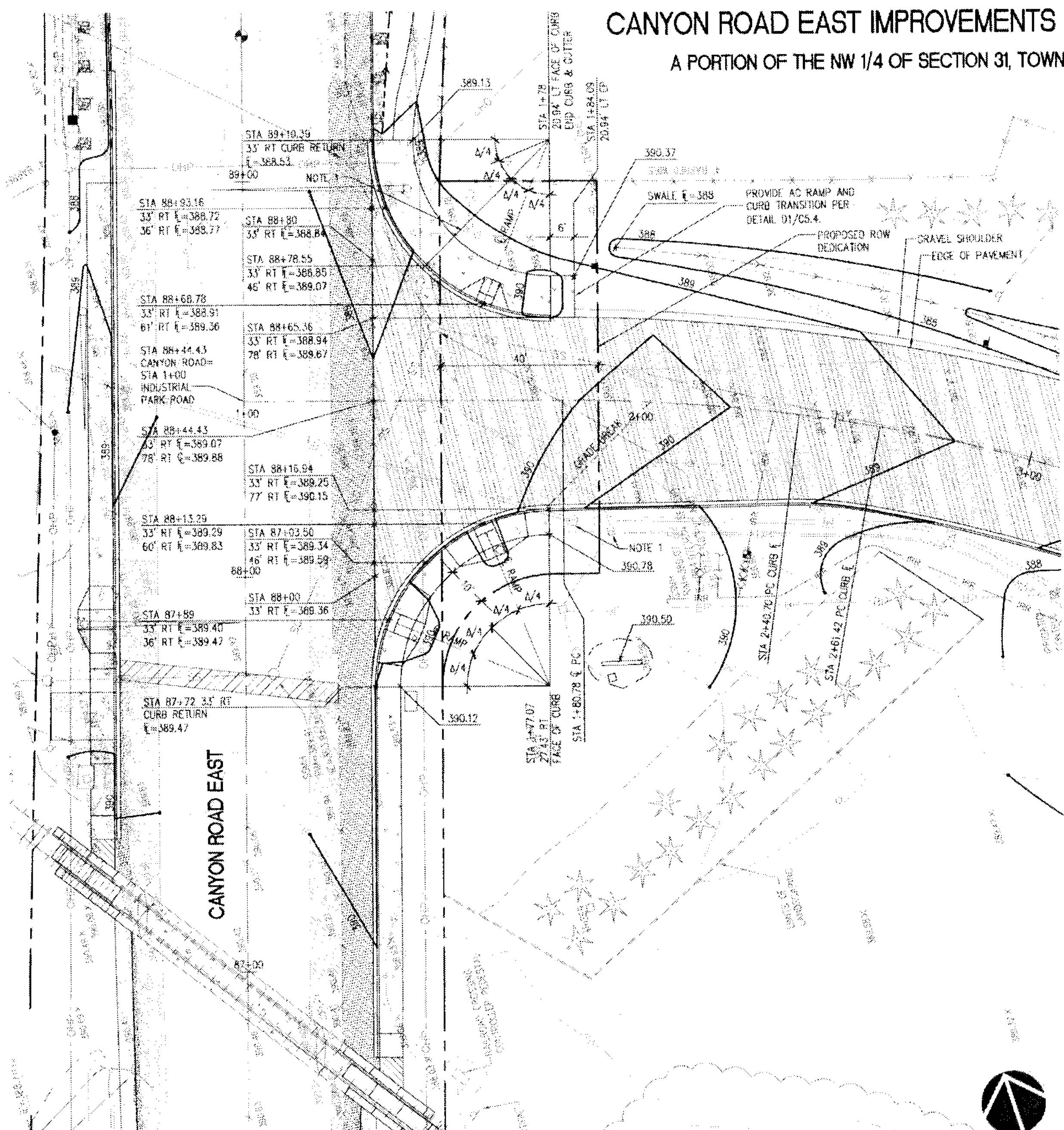
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

THE BURIED UTILITIES ON THIS PROJECT ARE SHOWN IN THEIR APPROXIMATE LOCATION WHERE KNOWN. OTHER EXISTING BURIED UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND HAVE THEIR LOCATION MARKED ON THE GROUND PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL PROTECT, OR IMMEDIATELY REPAIR, ANY DAMAGED UTILITY "DISCOVERED" ON THIS PROJECT WITHOUT ADDITIONAL COSTS.

REVISIONS	
APPROVALS	DESIGNED R.C.H.; DRAWN J.M.W.; CHECKED R.H.; DATE 08-08-2012; SCALE AS NOTED
SEAL	RICHARD C. HAN, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 08/09/12
PREPARED BY	SITTS & HILL ENGINEERS, INC. CIVIL • STRUCTURAL • SURVEYING; 4815 CENTER STREET, TACOMA, WA. 98409; PHONE: (253) 474-9449, FAX: (253) 474-0153; http://www.sitts-hill-engineers.com/
PREPARED FOR	THE BOEING COMPANY, P.O. BOX 3707, SEATTLE WA 98124-2207
PROJECT	CANYON ROAD SIGNALIZATION AT FREDERICKSON INDUSTRIAL PARK
SHEET TITLE	RAILROAD CROSSING ENLARGED PLAN AND DETAILS
SHEET NO.	C2.3
PROJECT NO.	15280

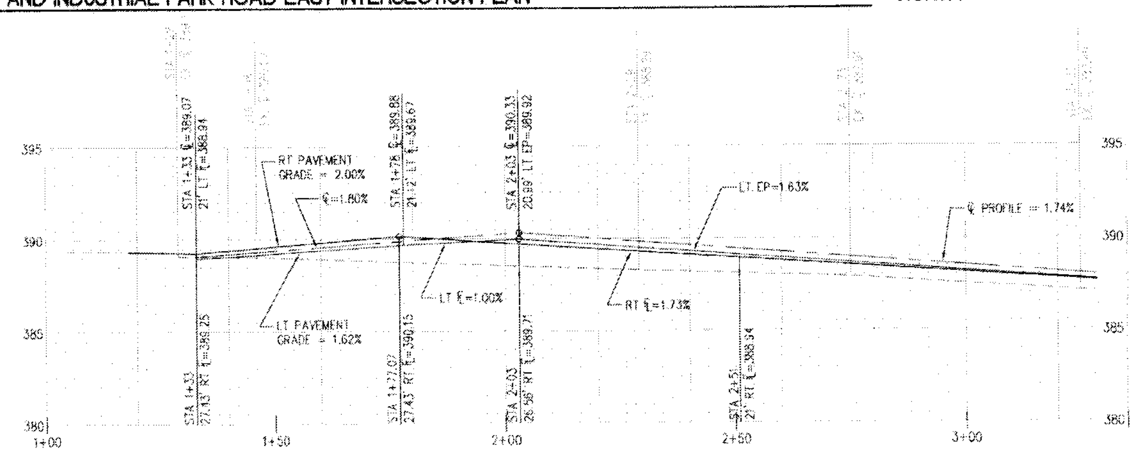
CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON



CANYON ROAD AND INDUSTRIAL PARK ROAD EAST INTERSECTION PLAN

SCALE: 1"=20'



CANYON ROAD AND INDUSTRIAL PARK ROAD EAST INTERSECTION PROFILE

SCALE: HORIZ. 1"=20', VERT. 1"=5'

PUBLIC IMPROVEMENTS

2008-59S

BILL PETERSON

PCDE No: 27-921 B
APP(S) No: 735230

LEGEND

- ASPHALT CLOSURE STRIP (B1/C5.3)
- ASPHALT OVERLAY (C1/C5.3)
- CONCRETE SURFACING
- INDUSTRIAL PARK ROAD PAVEMENT SECTION (A2/C5.3)
- QUARRY SPALL PAD (A3/C4.1)
- RAINGARDEN BOTTOM AREA
- GRAVEL SHOULDER (D1/C5.3)
- UTILITY PATCH (B1/C5.6)
- THROUGH CURB INLET (D2/C5.3)
- RELOCATED STREET LIGHT
- RELOCATED SIGN
- SIGNAL POLE WITH PUSH BUTTON LOCATION
- PEDESTRIAN PUSH BUTTON AND POLE
- TRAFFIC CONTROLLER

NOTES:

1. ADJUST RIMS OF ALL EXISTING UTILITY STRUCTURES WITHIN THE PROPOSED IMPROVED ASPHALT PAVEMENT, GRAVEL SURFACING, RAINGARDEN, AND BIOFILTRATION SWALE LIMITS TO MATCH PROPOSED FINISH GRADE.

DESIGNED	R.C.H.
DRAWN	J.M.W.
CHECKED	R.H.
DATE	08-08-2012
SCALE	AS NOTED

REVISIONS

SEAL: RICHARD C. HAN, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER

PREPARED BY: SITTS & HILL ENGINEERS, INC.
CIVIL • STRUCTURAL • SURVEYING
4815 CENTER STREET | TACOMA, WA. 98409
PHONE: (253) 474-9449 | FAX: (253) 474-0153
http://www.sitts-hill-engineers.com/

PREPARED FOR: THE BOEING COMPANY
P.O. BOX 3707
SEATTLE WA 98124-2207

PROJECT: CANYON ROAD SIGNALIZATION AT FREDERICKSON INDUSTRIAL PARK

SHEET TITLE: CANYON ROAD AND INDUSTRIAL PARK ROAD EAST INTERSECTION PLAN AND PROFILE

SHEET NO. C2.5

PROJECT NO. 15280

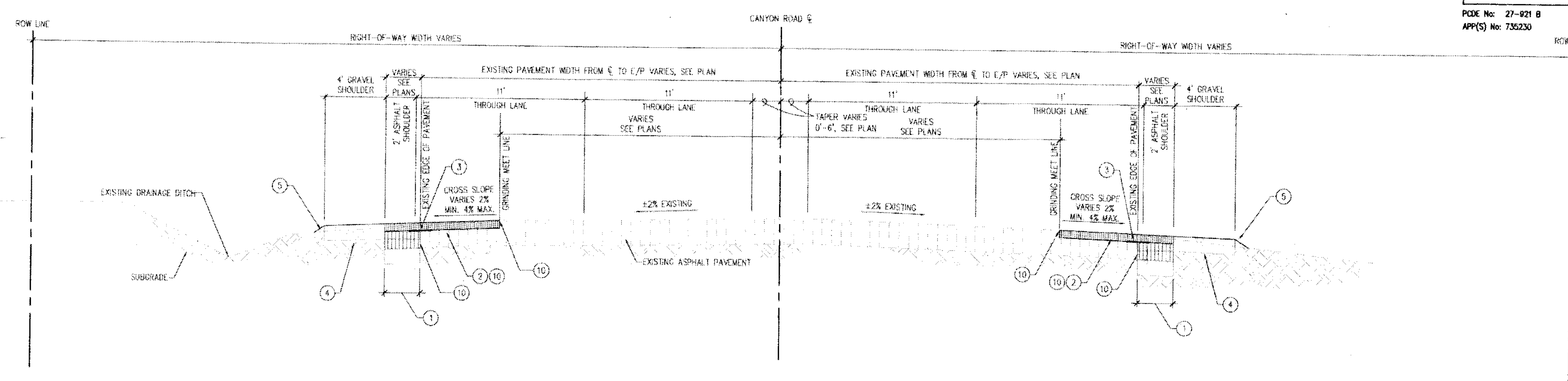
CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON

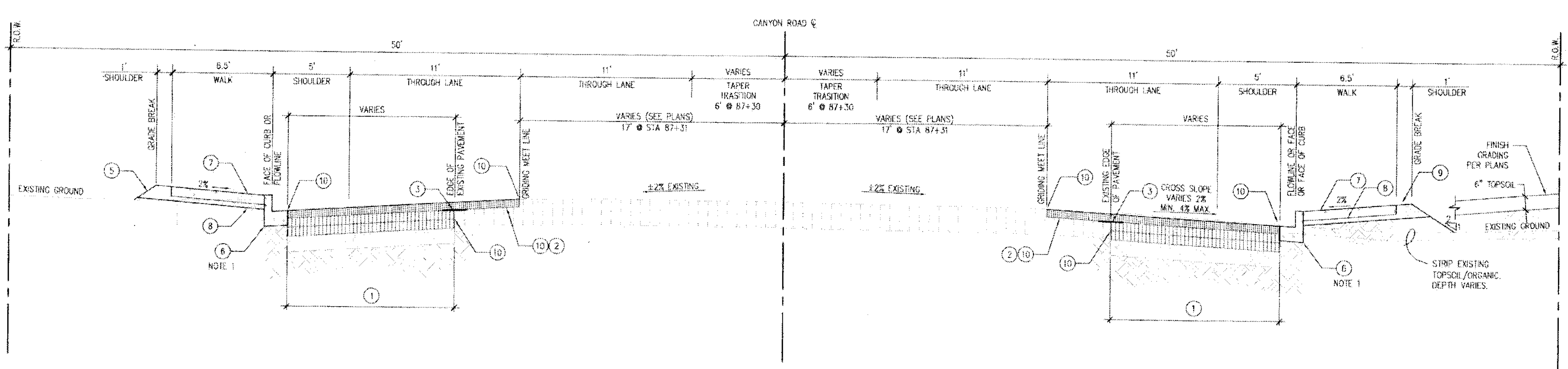
PUBLIC IMPROVEMENTS

2008-59S

PCDE No: 27-921 B
APP(S) No: 735230



B1 TYPICAL CANYON ROAD SECTION WITH OPEN DRAINAGE - STATION 84+61 TO STATION 87+11± LT/ 86+66± RT
SCALE: 1" = 4' HORIZONTAL 1" = 2' VERTICAL



D1 TYPICAL CANYON ROAD SECTION WITH CURB AND GUTTER - STATION 87+27± LT TO STATION 89+28± LT AND STATIONS 86+78± RT TO STATION 89+10± RT
SCALE: N.T.S.

LEGEND

1. PROVIDE ASPHALT PAVEMENT CLOSURE STRIP PER SECTION B1/C5.3. TOP OF PROPOSED CLOSURE STRIP PAVEMENT SHALL BE 3" BELOW FINISH GRADE TO ACCOMMODATE 3" PROPOSED OVERLAY.
2. 3" NOMINAL THICKNESS ASPHALT OVERLAY. ASPHALT THICKNESS MAY VARY ACROSS SECTION. SEE PROFILES AND DETAIL C1/C5.3.
3. PETROMAT SYSTEM OR APPROVED EQUAL. SEE DETAIL G1/C5.3.
4. PROVIDE CRUSHED SURFACING SHOULDER PER SECTION D1/C5.3.
5. FEATHER ADDITIONAL CRUSHED SURFACING AT 2H:1V MAX TO MATCH INTO EXISTING GRADES.
6. PROVIDE CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER DETAIL D2/C5.5.
7. PROVIDE CEMENT CONCRETE SIDEWALK PER DETAIL B1/C5.5.
8. PROVIDE 2" DEPTH CRUSHED SURFACING TOP COURSE.
9. PROVIDE 6" DEPTH CRUSHED SURFACING TOP COURSE.
10. ASPHALTIC TACK COAT MEET LINES/SEAMS PRIOR TO AC PLACEMENT PER DETAIL A1/C5.3.
11. INDUSTRIAL PARK AC SECTION PER DETAIL A2/C5.3.
12. VERTICAL CEMENT CONCRETE TRAFFIC CURB PER DETAIL D4/C5.5. CURB INLETS AT PLAN LOCATIONS PER DETAIL D2/C5.3.

NOTES:

1. PROVIDE CURB AND GUTTER AT PLAN LOCATIONS.
2. PROVIDE VERTICAL CURB AT PLAN LOCATIONS.
3. PROVIDE SAWCUT AND AC WIDENING BETWEEN STATIONS 89+10 AND 89+25 PER PLANS. SAWCUT ENDS AT STATION 89+25 PER PLANS.

DESIGNED	R.C.H.
DRAWN	J.M.W.
CHECKED	R.C.H.
DATE	08-08-2012
SCALE	AS NOTED

PREPARED BY: SITTS & HILL ENGINEERS, INC.
CIVIL • STRUCTURAL • SURVEYING
4815 CENTER STREET | TACOMA, WA 98409
PHONE: (253) 474-9449 | FAX: (253) 474-0153
http://www.sitts-hill-engineers.com/

PREPARED FOR: THE BOEING COMPANY
P.O. BOX 3707
SEATTLE WA 98124-2207

PROJECT: CANYON ROAD SIGNALIZATION AT FREDERICKSON INDUSTRIAL PARK

SHEET TITLE: ROADWAY SECTIONS AND DETAILS

SHEET NO: C5.1

PROJECT NO: 15280

CANYON ROAD EAST IMPROVEMENTS AT FREDERICKSON INDUSTRIAL PARK ROAD EAST

A PORTION OF THE NW 1/4 OF SECTION 31, TOWNSHIP 19 NORTH, RANGE 4 EAST, W.M. PIERCE COUNTY, WASHINGTON

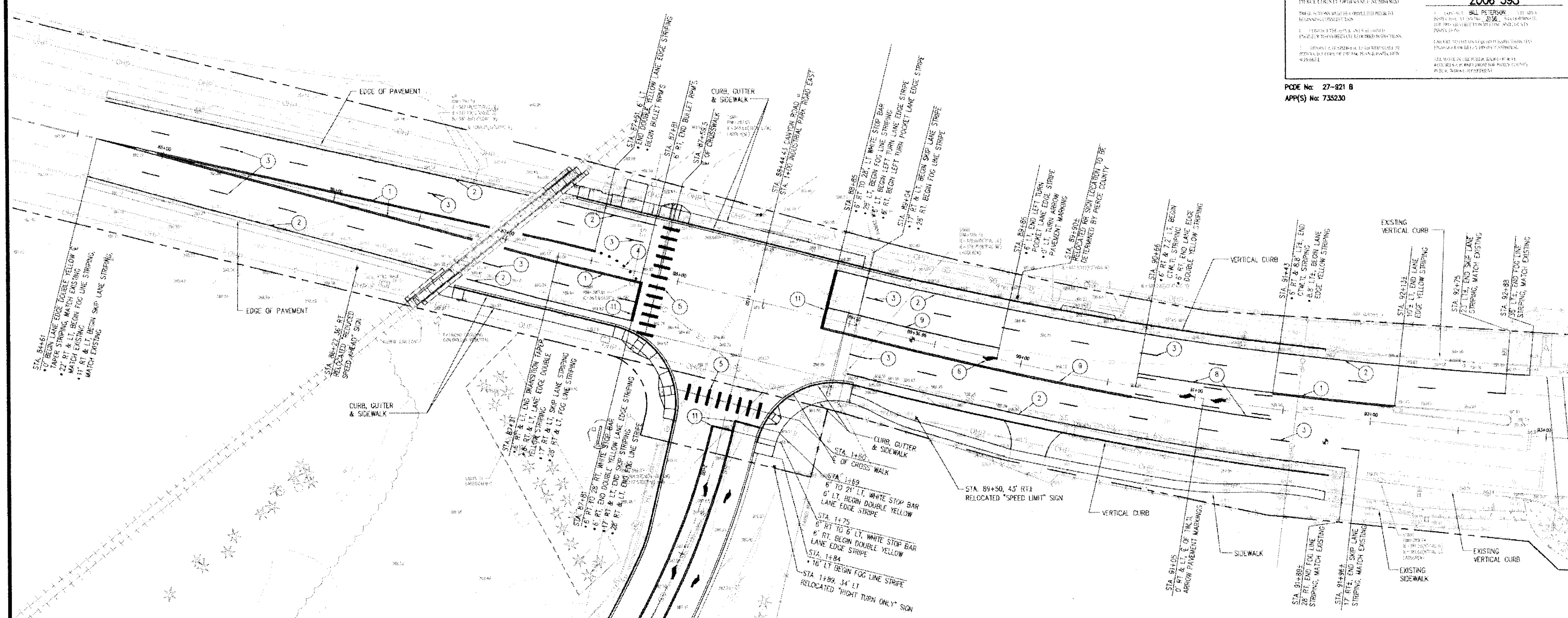
PUBLIC IMPROVEMENTS

PUBLIC WORKS DIRECTOR — DATE

PIERCE COUNTY ORDINANCE NUMBER(S) 2008-59S

CONTACT BILL PETERSON ... 3156

PCDE No: 27-821 B
APP(S) No: 735230



STRIPING AND SIGNAGE GENERAL NOTES:

1. PIERCE COUNTY TRAFFIC OPERATIONS CENTER WILL PERFORM ALL PAVEMENT MARKINGS AND SIGNAGE ON A REIMBURSABLE BASIS FOR ALL PUBLIC ROAD IMPROVEMENTS AND NEW PUBLIC ROAD CONSTRUCTION. CONTRACTOR SHALL CONTACT THEIR PALS INSPECTOR WHEN THE ROADWAY IS READY FOR STRIPING AND/OR SIGNAGE BY THE COUNTY. AT THIS TIME, THE CONTRACTOR SHALL CONFIRM THAT THEIR PALS INSPECTOR HAS THE NEEDED CONTACT AND BILLING INFORMATION. THE PALS INSPECTOR WILL THEN CONFIRM THE ROADWAY HAS BEEN BUILT PER APPROVED PLAN(S), TEMPORARY STRIPING TAPE IS IN-PLACE, CONFLICTING STRIPING HAS BEEN OBLITERATED AND THE ROAD IS READY FOR STRIPING. THE PALS INSPECTOR WILL THEN NOTIFY PIERCE COUNTY TRAFFIC OPERATION CENTER (TOC) WITH THE PROJECT NAME, APPLICATION NUMBER, PROJECT LOCATION, CONTRACTOR'S BILLING INFORMATION, AND CONTACT NAME AND PHONE NUMBER. OCCASIONALLY, TOC MAY DECIDE NOT TO PERFORM THE WORK BASED ON UNIQUE CIRCUMSTANCES. ON THESE OCCASIONS, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL WORK SHOWN ON THE APPROVED CHANNELIZATION PLAN(S) AND ASSOCIATED SIGNAGE THAT MAY OR MAY NOT BE SHOWN ON THE PLANS, AS MAY BE DIRECTED BY THE COUNTY ENGINEER.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, PLACING AND MAINTAINING TEMPORARY STRIPING TAPE AFTER PAVING AND PRIOR TO FIRST PAINT STRIPING BY THE COUNTY'S TOC. THE TEMPORARY STRIPING TAPE SHALL MATCH THE INTENT OF THE CHANNELIZATION PLAN AND MEET STANDARD SPECIFICATION 8-23. ALL TEMPORARY STRIPING TAPE ON THE FINAL PAVEMENT LIFT SHALL BE REMOVABLE TEMPORARY TAPE.
3. THE CONTRACTOR SHALL PROVIDE STATIONING ALONG THE CONSTRUCTION CENTERLINE AT 100 FOOT INTERVALS ON TANGENTS, 50 INTERVALS ON CURVES, AND ALL PC STATIONS, PT STATIONS AND ANGLE POINT STATIONS. STATIONING MARKS SHALL BE LAID OUT USING SILVER COLOR LAYOUT PAINT WITH MARKS KEPT TO A MINIMUM OF SIZE.
4. AFTER THE COUNTY'S TOC HAS PERFORMED THE FIRST STRIPING PASS, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY STRIPING TAPE WITHIN FIVE WORKING DAYS AND NOTIFY TRAFFIC OPERATIONS CENTER, RICK BUTNER, SUPERVISOR 253-531-6990, THAT THE PROJECT IS READY FOR THE FINAL STRIPING, RAISED PAVEMENT MARKERS, PAVEMENT LEGENDS AND ANY REMAINING SIGNAGE.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ANY EXISTING TRAFFIC CONTROL SIGNS WITHIN THE PROJECT LIMITS DURING THE COURSE OF THEIR WORK.

KEYNOTE LEGEND

(1) 4" DOUBLE YELLOW LANE EDGE OR Ⱡ STRIPING AND RPM'S PER DETAIL D1/C6.2.
(2) 4" WHITE FOG LINE STRIPING.
(3) 4" WHITE SKIP LANE STRIPING AND RPM'S PER DETAIL D1/C6.2.
(4) BULLET RPM MARKINGS PER DETAIL D1/C6.2.
(5) STANDARD 9' LONG WHITE CROSSWALK MARKINGS PER DETAIL D2/C6.2.
(6) ARROW PAVEMENT MARKINGS PER DETAIL B1/C6.3.
(7) CTWLTL ARROW PAVEMENT MARKINGS PER DETAILS B2/C6.2 AND B1/C6.3.
(8) CTWLTL STRIPING AND RPM'S PER DETAILS B1/C6.2 AND D1/C6.2.
(9) LEFT TURN POCKET STRIPING PER DETAILS B1/C6.2 AND D1/C6.2.
(10) "ONLY" PAVEMENT MARKINGS PER DETAIL B1/C6.3.
(11) "STOP" BAR PER DETAIL B2/C6.3.
(12) STRIPING PER DETAILS B1 AND D1/C6.2.

NOTES:

1. ALL PAVEMENT MARKINGS, RPM'S & STRIPING SHALL CONFORM TO DETAIL B2/C6.3 & DETAIL D1/C6.3.
2. TEMPORARY PAVEMENT MARKINGS SHALL CONFORM TO DETAIL D2/C6.3.

CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

THE BURIED UTILITIES ON THIS PROJECT ARE SHOWN IN THEIR APPROXIMATE LOCATION WHERE KNOWN. OTHER EXISTING BURIED UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND HAVE THEIR LOCATION MARKED ON THE GROUND PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL PROTECT, OR IMMEDIATELY REPAIR, ANY DAMAGED UTILITY "DISCOVERED" ON THIS PROJECT WITHOUT ADDITIONAL COSTS.

NORTH
HORIZONTAL SCALE: 1"=30'
30 0 30 60

CHANNELIZATION PLAN
SCALE: 1"=30'

PROJECT	CANYON ROAD SIGNALIZATION AT FREDERICKSON INDUSTRIAL PARK
SHEET TITLE	CHANNELIZATION PLAN
SHEET NO.	C6.1
PROJECT NO.	15280
PREPARED FOR	THE BOEING COMPANY, P.O. BOX 3707, SEATTLE WA 98124-2207
PREPARED BY	SITTS & HILL ENGINEERS, INC. CIVIL • STRUCTURAL • SURVEYING. 4815 CENTER STREET, TACOMA, WA. 98409. PHONE: (253) 474-9449, FAX: (253) 474-0153. http://www.sitts-hill-engineers.com/
SEAL	RICHARD C. HAWK, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 08/17/12
APPROVALS	DESIGNED D.D.; DRAWN K.L.K.; CHECKED R.H.; DATE 08-15-2012; SCALE AS NOTED
REVISIONS	