

Accounts Payable (1) cert.
Transportation (3) cert.

STATE OF ILLINOIS)
)
COUNTY OF LAKE)

COUNTY BOARD, LAKE COUNTY, ILLINOIS
ADJOURNED REGULAR SEPTEMBER, A.D. 2007 SESSION
DECEMBER 11, A.D., 2007

MADAM CHAIR AND MEMBERS OF THE COUNTY BOARD:

Joint Resolution authorizing the Chair of the County Board, the County Clerk, and the County Engineer to execute an agreement between Lake County and the Union Pacific Railroad Company (UP RR) providing the terms and conditions by which said railroad will grant easements and allow the placement of a tunnel underpass to carry the Skokie Valley Bike Path beneath the railroad southerly of IL Rte. 176. This resolution also appropriates \$210,000 in Motor Fuel Tax funds for payment of the portion of the project to be done by the UP RR and designated as Section 94-00241-00-BT.

WE RECOMMEND adoption of this Resolution.

	Aye	Nay		Aye	Nay
<u>Sharon O'Kelly</u> Chair	✓	_____	<u>[Signature]</u> Chair	x	_____
<u>[Signature]</u> Vice-Chair	✓	_____	<u>[Signature]</u> Vice-Chair	✓	_____
<u>Ann B. Mune</u>	✓	_____	<u>[Signature]</u>	✓	_____
<u>Michael A. Albott</u>	✓	_____	<u>[Signature]</u>	x	_____
<u>Verica Douglas</u>	✓	_____	<u>[Signature]</u>	✓	_____
<u>[Signature]</u>	✓	_____	_____	_____	_____
<u>[Signature]</u>	✓	_____	_____	_____	_____
Public Works and Transportation Committee			Financial and Administrative Committee		

RESOLUTION

WHEREAS, the right-of-way of the former Chicago North Shore and Milwaukee Railroad currently owned by the Commonwealth Edison Company from south of IL Rte. 176 to the county line of Lake County/Cook County is being developed into a bike path named the Skokie Valley Bike Path; and

WHEREAS, the said Skokie Valley Bike Path has been constructed by Lake County from the county line of Lake County/Cook County to Laurel Avenue in Lake Forest; and

WHEREAS, Lake County proposes to have constructed that portion of said bike path from Laurel Avenue in the City of Lake Forest, extending northerly to the North Shore Bike Path at IL Rte. 176, and including a tunnel crossing of the Union Pacific Railroad; and

WHEREAS, Lake County and the Union Pacific Railroad Company are desirous of entering into an agreement stating the terms and condition by which said railroad will grant easements and allow the placement of a tunnel underpass to carry the Skokie Valley Bike Path beneath the railroad southerly of IL Rte. 176, a draft copy of said agreement is attached hereto.

NOW, THEREFORE BE IT RESOLVED BY this County Board of Lake County, Illinois, that the Chair of the County Board, the County Clerk, the County Engineer of Lake County, be authorized and are hereby directed to execute an agreement regarding the terms and condition by which the Union Pacific Railroad will grant easements and allow the placement of a tunnel underpass to carry the Skokie Valley Bike Path beneath the railroad southerly of IL Rte. 176. The County Engineer shall transmit in writing the final agreement to be executed by the Chair of the Lake County Board and the County Clerk.

BE IT FURTHER RESOLVED, that there is hereby appropriated \$210,000.00 of Motor Fuel Tax funds for the portion of the project to be performed by the Union Pacific Railroad and designated as Section 94-00241.00-BT.

County Engineer
On behalf of IDOT pursuant to Agreement
of Understanding dated January 22, 2003

Dated at Waukegan, Illinois
this 11th day of December 2007

NEW PEDESTRIAN CROSSING
GRADE SEPARATION AGREEMENT

BETWEEN

UNION PACIFIC RAILROAD COMPANY

AND THE

LAKE COUNTY DEPARTMENT OF
TRANSPORTATION

COVERING

THE SKOKIE VALLEY BIKE PATH

AT

RAILROAD MILE POST 29.95 – ON THE LAKE SUBDIVISION

AT OR NEAR

LAKE BLUFF,
LAKE COUNTY,
ILLINOIS

UPRR Folder No.: 2477-64

Agreement No. _____

NEW PEDESTRIAN CROSSING GRADE SEPARATION AGREEMENT

Skokie Valley Bike Path
Mile Post 29.95 – Lake Subdivision
Lake Bluff, Lake County, Illinois

THIS AGREEMENT is made this _____ day of _____, 200____, by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware Corporation ("Railroad") and the **LAKE COUNTY DEPARTMENT OF TRANSPORTATION**, a municipal corporation/political subdivision of the State of Illinois ("Licensee").

IT IS AGREED as follows:

Section 1. **RIGHT GRANTED.**

- A. In consideration of a one time licensee fee in the sum of **TWENTY FOUR THOUSAND THREE HUNDRED TEN DOLLARS AND 00/100 (\$24,310.00)** to be paid by Licensee to Railroad, upon the execution and delivery of this Agreement, the payment of the costs and expenses to be incurred by Railroad and/or Licensee pursuant to this Agreement, and subject to the terms and conditions of this Agreement, Railroad hereby grants to Licensee, its successors and assigns, a license to construct, maintain, use, repair, renew and reconstruct a public pedestrian and bicycle trail on, along and under Railroad's right-of-way and tracks at the Railroad's Mile Post 29.95 on the Railroad's Lake Subdivision in or near Lake Bluff, Lake County, Illinois, in the general location shown on the print dated November 6, 2007, marked **Exhibit A**, the detail print marked **Exhibit A-1**, and as described in the legal description marked **Exhibit A-2**, with each exhibit being attached hereto and hereby made a part hereof (hereinafter the "Trail" or the "Property"). The Trail shall also consist of a galvanized chain link fence at least six (6) feet high along both sides of the Trail as the Trail traverses on, under and across the Railroad's right of way land.
- B. Licensee, at its sole cost and expense, will construct, maintain, repair, renew and reconstruct the Trail and all other necessary facilities, structures, appurtenances, warning signs, stop signs, fencing and concrete encasement protection covers on the Property, and/or on adjacent Railroad right-of-way or Licensee's adjacent property, in compliance with all design and construction specifications and plans that have been reviewed and approved by Railroad.

- C. Licensee, at its sole expense, agrees to patrol, or cause the Trail to be patrolled by police officers with lawful citation authority, and to vigorously enforce the prohibition against trespass of Railroad's adjacent right-of-way.
- D. Licensee, at its sole expense, shall promptly remove any graffiti that the Trail users may paint or place on Railroad's bridge structure or other property.
- E. Licensee will comply with all federal, state and local laws, ordinances, rules and regulations which are applicable to the use, management and maintenance of the Trail.
- F. The rights granted herein are made subject to and subordinate to the prior and continuing right and obligation of Railroad, its successors and assigns, to use all of the tracks and property underlying and above the Trail in the performance of its duty as a common carrier, and there is reserved unto Railroad, and its successors and assigns, the right (consistent with the rights granted herein to Licensee) to construct, reconstruct, maintain, repair, use and operate existing or future additional railroad tracks, track appurtenances, fiber optic or signal lines and facilities, pipe, and wire lines over, under and across the Property.
- G. The rights granted herein are granted only insofar as Railroad may lawfully grant the same and Railroad makes no covenant or warranty of title, or for quiet possession or against encumbrances. No damages shall be recoverable from Railroad because of any dispossession of Licensee or because of failure of, or defect, in Railroad's title to the Property. The rights granted herein are also subject to any and all outstanding or existing licenses, leases, easements, restrictions, conditions, covenants, claims of title and other rights (whether public or private and whether recorded or unrecorded) including, but not limited to, those for communication, pipeline and wire line facilities and also to any and all extensions and renewals thereof. The Licensee shall not damage, destroy or interfere with the property or right of nonparties in, upon or relating to the Property, unless Licensee at its sole expense, settles with and obtains a release from such nonparties on mutually satisfactory terms.
- H. Licensee, by virtue of this grant, shall not encroach upon, or occupy or use any other property of Railroad, except as required for the construction of the Trail, and emplacement and maintenance of the fencing, concrete protective covers and other items as herein required.
- I. Railroad grants to Licensee only the right for the purposes aforesaid and Licensee shall not use or permit use of the Property for any other purpose.
- J. To enable Railroad to perform construction, operation or maintenance work on its tracks, track appurtenances, right of way, bridge, embankments, or other improvements on the Property, from time to time as Railroad, in its sole discretion may deem necessary or convenient, Railroad may temporarily close the Trail after reasonable notice to Licensee, unless such work is an emergency nature in which event Railroad may close the Trail

without prior notice to Licensee. In the event of such an emergency, Railroad will immediately notify Licensee.

- K. If the right granted herein shall result in a substantial operational or safety problem for Railroad, then the parties shall negotiate in good faith to resolve such problem to the mutual satisfaction of the parties.
- L. Fiber optic cable systems may be buried on Railroad's right-of-way. Protection of the fiber optic cable system is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. Licensee, or its contractors, shall telephone Railroad during normal business hours (7:00 a.m. to 9:00 p.m., Central Time, Monday through Friday, except for holidays) at 1-800-336-9193 (also a 24-hour seven day number for emergency calls) to determine if fiber optic cable is buried anywhere on the right-of-way to be used by Licensee. If it is, Licensee, or its contractors, will telephone the telecommunications company(ies) involved, arrange for a cable locator, and make arrangements for relocation or other protection of the fiber optic cable prior to beginning any work on the right-of-way.

Section 2. **CONTRACTOR'S RIGHT OF ENTRY AGREEMENT; FLAGGING.**

- 12-4-07
PST
- A. The Licensee confirms that all work described herein, will be performed by a contractor or contractors hired by the Licensee. The Licensee agrees to require each of its contractors, (and their respective subcontractors), to execute Railroad's form of Contractor's Right of Entry Agreement that is marked **Exhibit B**, hereto attached and hereby made a part hereof, and to provide Railroad the insurance binders or certificates set forth in Exhibit ~~A~~^C of the Contractor's Right of Entry Agreement before commencing any work on any Railroad property.
- B. The Licensee shall also require its contractors/subcontractors to perform their construction work in such a manner so as not to endanger or delay the movement of trains, engines or cars of Railroad, and so as not to injure or endanger Railroad's officers, agents, employees or damage their property. The Licensee shall also require its contractors/subcontractors to give precedence to the movement of trains, engines and cars of Railroad, over the movement of vehicles or equipment or construction activities of the Licensee's contractors/subcontractors.
- C. If at any time during the construction of the Trail, Railroad deems it necessary that flagging protection is necessary, such flagging shall be provided by Railroad at no cost to Railroad as set forth in the Contractor's Right of Entry Agreement described in Section 2A above.

Section 3. **LIABILITY.**

To the extent permitted by Illinois law, Licensee shall save, protect, defend, indemnify and hold harmless Railroad, and its respective affiliates, and their respective officers, agents and employees, against and from any and all liability, loss, damages, claims, demands, costs and

expenses, fines and penalties of whatsoever nature, including court costs and attorney's fees, arising from and growing out of any injury or death of persons whomsoever (including officers, agents and employees of Railroad or the Licensee and of any contractor as well as other persons) or loss of or damage to property whatsoever (including property of or in the custody of Railroad, the Licensee or any contractor as well as other property). Licensee's obligation to indemnify shall accrue when such injury, death, loss or damage occurs or arises from Licensee's or the general public's use of the Property and Trail, or a breach of this Agreement, or any use or misuse of the Property and Trail, including situations when individuals used such Property and Trail to obtain access to any other right-of-way or property of Railroad.

Section 4. **TERMINATION; WAIVER OF BREACH; TERM.**

- A. Railroad may terminate this Agreement by giving Licensee notice of termination if Licensee defaults under any obligation of Licensee under this license and, if after written notice is given by Railroad to Licensee specifying the default, Licensee fails either to immediately begin to cure the default, or to complete the cure expeditiously but in any event within thirty (30) days after the default notice is given. A waiver by Railroad of a breach of Licensee of any covenant or condition of this Agreement shall not impair the right of Railroad to avail itself of any subsequent breach thereof.
- B. Railroad may also terminate this Agreement by giving written notice to Licensee if safety and operational needs of Railroad are materially affected or impaired by Licensee's use of the Property, and Railroad and Licensee cannot come to any mutual agreement or understanding as to how Licensee, at Licensee's sole cost and expense, will eliminate such material effect or impairment.
- C. This Agreement and the license and permission herein granted shall be effective as of the date first herein written, and shall remain in full force and effect until terminated as herein provided, or until the Property and Trail are abandoned as set forth in Section 5 below.

Section 5. **ABANDONMENT.**

If Licensee, its successors and assigns, shall abandon the Trail and Property, or any portion thereof, for the purpose set forth herein for a continuous period of twelve (12) months, then this Agreement and the rights granted herein shall cease automatically and terminate with respect to the portion of the Property so abandoned.

Section 6. **REMOVAL OF TRAIL UPON
TERMINATION OR ABANDONMENT.**

Within ninety (90) days after termination of this Agreement or Licensee's abandonment of the Trail and/or Property, the Licensee, at its sole cost and expense, shall remove all of the Trail improvements from the Property or adjacent Railroad right-of-way and restore the Property and such right-of-way to its original condition, failing in which Railroad may perform such activities at the expense of Licensee.

Section 7. PLANS.

- A. The Licensee, at its expense, shall prepare, or cause to be prepared by others, the detailed plans and specifications and submit such plans and specifications to the Railroad's Assistant Vice President Engineering – Design, or his authorized representative, for review and approval. The plans and specifications shall include all Roadway layout specifications, cross sections and elevations, associated drainage, and other appurtenances.
- B. The final one hundred percent (100%) completed plans that are approved in writing by the Railroad's Assistant Vice President Engineering–Design, or his authorized representative, are hereinafter referred to as the "Plans". The Plans are hereby made a part of this Agreement by reference.
- C. No changes in the Plans shall be made unless the Railroad has consented to such changes in writing.
- D. Notwithstanding the Railroad's approval of the Plans, the Railroad shall not be responsible for the permitting, design, details or construction of the Roadway.

Section 8. NOTICES.

Any notices required or desired to be given under this Agreement shall be in writing and personally served, given by overnight express delivery, or given by mail. Telecopy notices shall be deemed valid only to the extent they are (a) actually received by the individual to whom addressed, and (b) followed by delivery of actual notice in the manner described above within three (3) business days thereafter. Any notice given by mail shall be sent, postage prepaid, by certified mail, return receipt requested, addressed to the party to receive at the following address or at such other address as the party may from time to time direct in writing:

RAILROAD: *Union Pacific Railroad Company
ATTN: Jan R. Bornholdt
Senior Manager Signboards & Special Contracts
Real Estate Department
1400 Douglas Street MS1690
Omaha, Nebraska 68179-1690
Facsimile: (402) 501-0340*

LICENSEE: *Lake County Department of Transportation
ATTN: Paula Trigg
Director of Planning and Programming
600 West Winchester Road
Libertyville Il 60048
Phone Number: (847) 377 7400*

Express delivery notices shall be deemed to be given upon receipt. Postal notices shall be deemed to be given three (3) days after deposit with the United States Postal Service.

Section 9. **GRAFFITI REMOVAL.**

Notwithstanding the provisions of this agreement, the parties specifically agree that graffiti removal or over-painting from all component surfaces of the overall project, and including without limitation the Underpass substructure and superstructure (above and below the bridge seats), shall be the responsibility of the Licensee in their sole and exclusive discretion, and Railroad shall have no obligations whatsoever with regard to graffiti removal. Before entering upon the track area of the Underpass superstructure to perform graffiti removal or over-painting, the Licensee shall notify Railroad sufficiently in advance and Railroad shall provide a flagman at the Licensee sole expense as reasonably required for the safety of workers and trains.

Section 10. **DEFERRED SEASONING**

The Railroad and Licensee acknowledge that conditions inherent in the construction of the underpass grade separation structure may cause the complete stabilization of Railroad's trackage supported by new cuts or fills to be deferred beyond the construction period, and that Railroad's operation over the roadbed during the seasoning period will impose extraordinary maintenance costs in the event of caving, sliding, slipping, sinking or settling, including damage to rip-rapping or protective work in connection therewith, as well as settlement and consolidation of tracks and ballast, until the seasoning period is complete. Therefore, the Licensee will pay to the Railroad, as a part of the consideration for this Agreement, all that part of the cost and expense of extraordinary maintenance (hereinafter referred to as "Deferred Seasoning") associated with the Project which can be attributed to failure of sub-grade, settlement, and consolidation of sub-ballast, or roadbed, or any combination thereof, which are incurred during the period commencing immediately following completion of the work on the underpass by the Licensee or its contractor and ending one (1) year thereafter. The Deferred Seasoning costs aforesaid shall include reimbursement of the extra cost, in excess of normal maintenance costs, of maintaining embankments and that portion of said tracks above sub-grade in accordance with acceptable maintenance standards, and will include cost of maintaining proper alignment, proper surface and use of ballast and other necessary materials. The work of such Deferred Seasoning shall normally be performed by the Railroad either with its own forces or through responsible contractors employed by Railroad. In the event major construction is required for Deferred Seasoning, the Licensee, at its expense, may accomplish such major items by contract, subject to approval and inspection by the Railroad.

Section 11. **WORK TO BE PERFORMED BY THE RAILROAD.**

- A. The work to be performed by the Railroad, at the Licensee's sole cost and expense, consists of, but not limited to, Engineering, Flagging, Remove and Install 250 track feet of track, welding, and all other Track work. Also, the re-routing of trains and train crews for a minimum of 30 hours, as described in more detail in the Railroad's Material and Force Account Estimate dated October 18, 2007, and the Train Crew Costs estimate dated November 12, 2007, each marked **Exhibit A-3**, attached hereto and hereby made a

part hereof (collectively the "Estimate"). As set forth in the Estimate, the Railroad's combined estimated cost for the Railroad's work associated with the Project is **ONE HUNDRED FOURTEEN THOUSAND TWO HUNDRED NINE AND 00/100 DOLLARS (\$114,209.00)**.

- B. The Railroad, if it so elects, may recalculate and update the Estimate submitted to the Licensee in the event the Licensee does not commence construction on the portion of the Project located on the Railroad's property within six (6) months from the date of the Estimate.
- C. The Licensee acknowledges that the Estimate does include an estimate of flagging or other protective service costs that are to be paid by the Licensee or the Contractor in connection with flagging or other protective services provided by the Railroad in connection with the Project. All of such costs incurred by the Railroad are to be paid by the Licensee or the Contractor as determined by the Railroad and the Licensee. If it is determined that the Railroad will be billing the Contractor directly for such costs, the Licensee agrees that it will pay the Railroad for any flagging costs that have not been paid by any Contractor within thirty (30) days of the Contractor's receipt of billing.
- D. The Licensee agrees to reimburse the Railroad for one hundred percent (100%) of all actual costs incurred by the Railroad in connection with the Project including, but not limited to, closing and removing the track for a minimum of 30 hours, train delays, train re-routing, train crews re-routing, actual costs of preliminary engineering review, construction inspection, procurement of materials, equipment rental, manpower and deliveries to the job site and all of the Railroad's normal and customary additives (which shall include direct and indirect overhead costs) associated therewith.

Section 12. SUCCESSORS AND ASSIGNS.

This Agreement shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns, but Licensee shall not assign this Agreement or any rights herein to any party without the prior written consent of Railroad.



IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in duplicate as of the day and year first above written.

UNION PACIFIC RAIROAD COMPANY
(Federal Tax ID #94-6001323)

By _____
JAN R. BORNHOLDT
Senior Manager Signboards & Special Contracts

WITNESS:

**LAKE COUNTY DEPARTMENT OF
TRANSPORTATION**

By _____

By _____

Title: _____

(Seal)

Pursuant to Authority Provided in City:

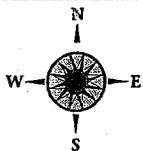
Resolution No. _____

dated _____

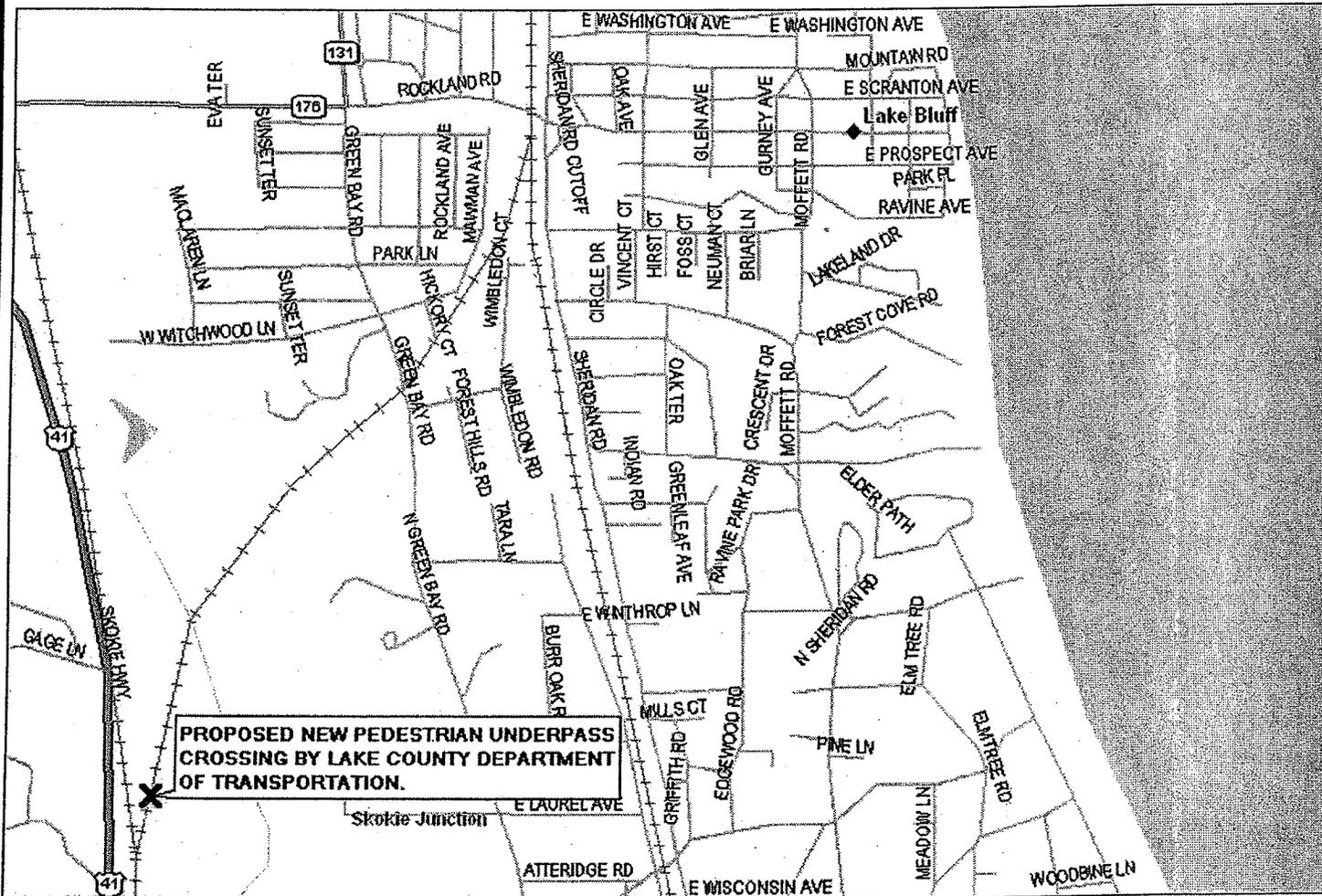
EXHIBIT A

To New Pedestrian Crossing Grade Separation
Agreement

General Location Print

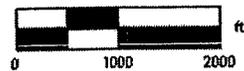


GENERAL LOCATION PRINT TO ACCOMPANY THE PEDESTRIAN CROSSING GRADE SEPARATION AGREEMENT



DE LORME

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 www.delorme.com



Data Zoom 13-0

RAILROAD WORK TO BE PERFORMED:

1. Flagging.
2. Engineering
3. Remove track and other track materials for open cut
4. Install Track and other track materials for open cut
5. Re-routing of trains and crew for a minimum of 30 hours.

EXHIBIT "A" UNION PACIFIC RAILROAD COMPANY

LAKE SUBDIVISION
 MILE POST 29.95
 GPS: N 42°, 15.596"; W 87°, 51.686"
 LAKE BLUFF, LAKE COUNTY, ILLINOIS.

To accompany Pedestrian Crossing Agreement with
Lake County Department of Transportation
 for the Skokie Valley Bike Path. Folder No. 2477-64

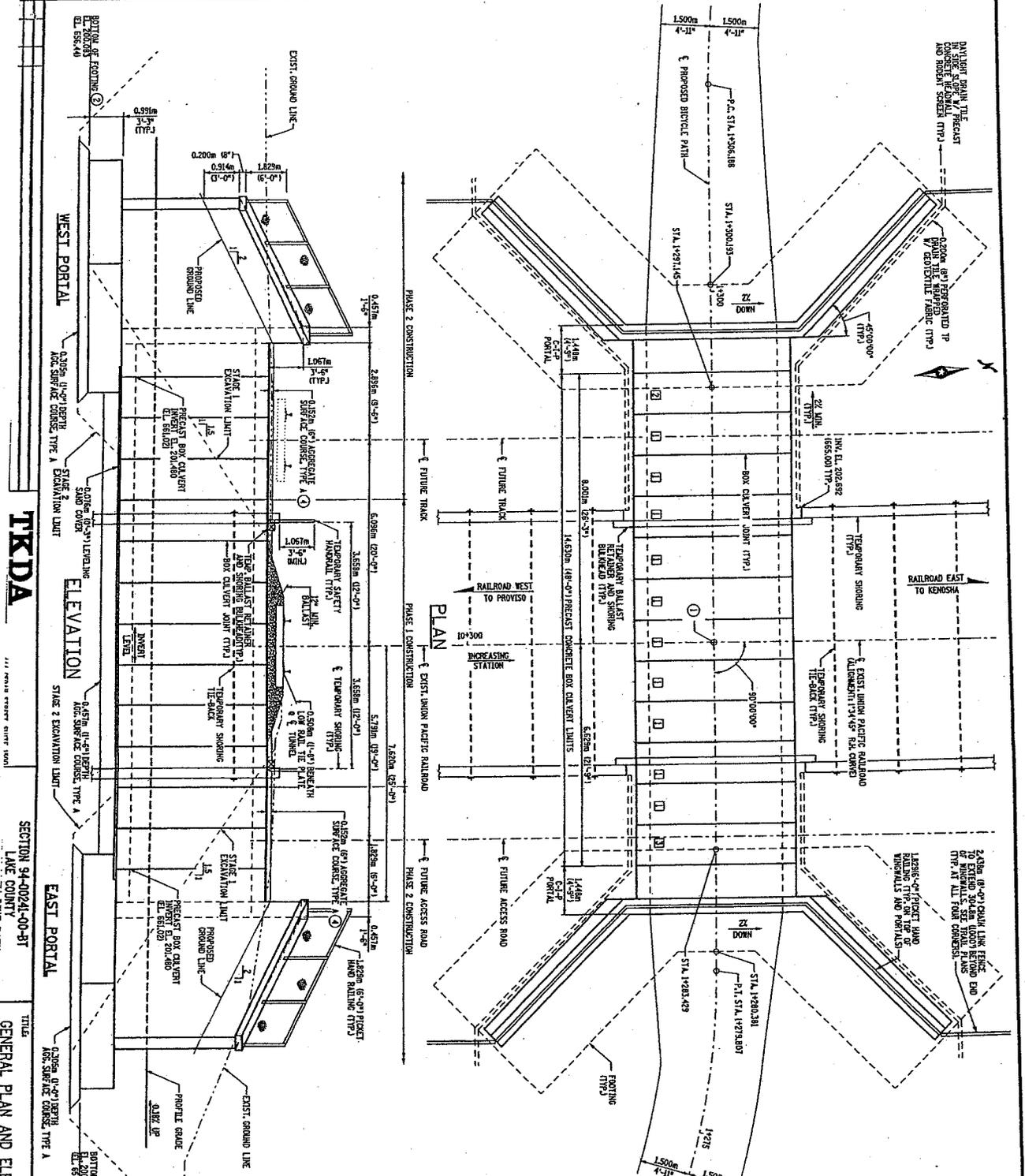
Date: November 6, 2007

IN ALL OCCASIONS, U.P. COMMUNICATIONS DEPARTMENT MUST BE CONTACTED IN ADVANCE OF ANY WORK TO DETERMINE EXISTENCE AND LOCATION OF FIBER OPTIC CABLE. PHONE: 1-(800) 336-9193

EXHIBIT A-1

To Pedestrian Crossing Grade Separation Agreement

Cover Sheet for the Detailed/Specification Print(s)
(See Recital)

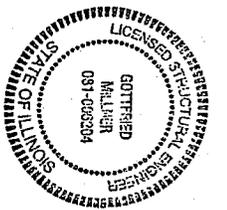


TKDA

SECTION 94-02-41-00-81
 LAKE COUNTY

TITLE
 GENERAL PLAN AND ELEVATION

DESIGNER: [Signature]
 CHECKED: [Signature]
 DATE: 12/22/06
 APPROVED: [Signature]
 DATE: 12/22/06
 LANE SUBDIVISION



DESIGN SPECIFICATIONS:
 ASHRA 2006 MANUAL FOR RAILWAY ENGINEERING PROFESSIONAL UNDERPASS
LOADING COOPER EM860 (E80) PLUS DIESEL IMPACT
DESIGN STRESSES:
 1. 420 MPa (60 ksi) - REINFORCING STEEL
 2. 44 MPa (6.0 ksi) - PRECAST CONCRETE
 3. 216 MPa (30 ksi) - CAST-IN-PLACE CONCRETE
 MAX. ALLOWABLE SOIL PRESSURE UNDER FOOTING = 110 MPa (15 ksi)

GENERAL NOTES:
 1. RAILROAD REVIEW AND APPROVAL OF DESIGN AND SHOP DRAWINGS IS REQUIRED.
 2. ALL BRIDGE STRUCTURE SHALL BE DESIGNED AND CONSTRUCTED PER CURRENT UNDERPASS RAILROADS GUIDELINES FOR TEMPORARY BRIDGES.
 3. MINIMUM CONSTRUCTION CLEARANCE OVERPASS OF 6.4 M (21 FEET) VERTICAL ABOVE THE PLANE OF TOP OF RAIL AND 3.7 M (12 FEET) HORIZONTAL AT RIGHT HAND SIDE FROM CENTERLINE OF TRACK SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
 4. THE PROPOSED GRADE SEPARATION PROJECT SHALL NOT CHANGE THE QUANTITY AND/OR CHARACTERISTICS OF THE FLOW IN THE RAILROAD OFFICES AND/OR CHANNEL STRUCTURES.
 5. THE ELEVATION OF THE EXISTING TOP-OF-RAIL PROFILE SHALL BE VERIFIED BEFORE BEGINNING CONSTRUCTION.
 6. FOR RAILROAD OPERATIONAL PLEASE REFER TO THE RAILROAD UNDERPASS REQUIREMENTS AS PART OF THE SPECIAL PROVISIONS.
 7. PRECAST UNITS SHALL BE PRE-CAST AND DAMPPROOFED PRIOR TO WORK WINDOW.
 8. STOCKPILE ALL MATERIAL PRIOR TO WORK WINDOW.
 9. CONTRACTOR RESPONSIBLE FOR COORDINATING ALL RAILROAD TRUCKING A PROTECTIVE SERVICES.

CONSTRUCTION NOTES:
 1. 4" UPR-200 TYPE 1 BICYCLE PATH STA. 14283.801 TO STA. 14283.807
 2. 4" UPR-200 TYPE 1 BICYCLE PATH STA. 14283.807 TO STA. 14283.807
 3. 4" UPR-200 TYPE 1 BICYCLE PATH STA. 14283.807 TO STA. 14283.807
 4. REFER TO SHEET 11" FOR TOTAL BILL OF MATERIAL.
 5. TRANSITION ASSEMBLY SPECIFICATIONS TO EXISTING GRADE.
 6. DENOTES PRECAST CONCRETE BOX CULVERT TYPE.

NOT TO BE USED FOR CONSTRUCTION

SUMMARY OF QUANTITIES			
ITEM	UNIT	TOTAL	
CONCRETE BOX CULVERTS	L.SUM	1	
REINFORCEMENT BARS, POLY COATED	KG	15,522	
PRECAST CONCRETE BOX CULVERT, 3.582M X 3.582M	L.SUM	1	
LIGHTING SYSTEM COMPLETE	L.SUM	1	

SUGGESTED CONSTRUCTION SEQUENCE

PRIOR TO 30 HOUR WORK WINDOW

1. CONTRACTOR SUBMITS PROPOSED CONSTRUCTION MEANS AND METHODS AND SCHEDULE AND REQUEST CALCULATIONS AND SHOP DRAWINGS FOR TEMPORARY SAFETY RAILING, SAFETY FLAGGING, PROTECTIVE SERVICES, AND PRECAST CONCRETE CULVERT LIMITS TO THE OWNER, ENGINEER, AND RAILROAD FOR APPROVAL. CONTRACTOR COORDINATES PRECONSTRUCTION REVIEW MEETINGS WITH THE OWNER, ENGINEER, AND RAILROAD.
2. RAILROAD FORCES CUT AND BOLT RAIL AND DOUBLE SPINE TIES APPROXIMATELY 46 METERS (150 FEET) CENTERED ABOUT THE CENTERLINE OF THE PROPOSED TUNNEL.
3. CONTRACTOR DRIVES TEMPORARY SHORING ON EAST AND WEST SIDE OF TRACK UP TO THE LINE THAT REPRESENTS THE EXTERIOR FACE OF EACH SIDE OF THE PROPOSED BOX CULVERT AND EXCAVATE TO THE STAGE 1 EXCAVATION LIMITS (PERIOD DURING SERVICES TO BE PROVIDED BY THE RAILROAD).

DURING 30 HOUR WORK WINDOW

1. CONTRACTOR COORDINATES RAILROAD SAFETY BRIEFINGS AND FLAGGING AND PROTECTIVE SERVICES TO BE PROVIDED BY THE RAILROAD DURING THE 30 HOUR TRACK CLOSURE.
2. RAILROAD FORCES URGENT AND REMOVE PREVIOUSLY CUT TRACK WITHIN THE WORK WINDOW EXCAVATION LIMITS APPROXIMATELY 1 HOUR.
3. CONTRACTOR EXCAVATES THE MATERIALS BENEATH THE TRACK AND WITHIN THE WORK WINDOW AND STAGE 1 EXCAVATION LIMITS APPROXIMATELY 6 HOURS.
4. CONTRACTOR INSTALLS THE ANCHOR GEORGD, PLACES AND COMPACTS THE AGGREGATE SURFACE COURSE AND LEVELING SAND COVER. EFFECTS THE PRECAST CONCRETE BOX CULVERT SEGMENTS WITHIN THE STAGE 1 EXCAVATION LIMITS. FASTENS JOINT PANELS TOGETHER AND PROVIDES PROTECTIVE ASPHALT FINISH AND PROTECTIVE ASPHALT PANELS TO PROTECT THE REMAINING PRECAST CONCRETE BOX CULVERT SEGMENTS. FASTENS JOINT PANELS AND INSTALLS TEMPORARY SHORING, THE-BACK SYSTEM BALLAST RETAINER, SHORING, BULKHEAD, AND SAFETY HORIZONTAL APPROXIMATELY 8 HOURS.
5. CONTRACTOR BACKFILLS BETWEEN THE TEMPORARY SHORING SYSTEM AND UP TO THE TOP OF THE PRECAST BOX CULVERT WITH CONTROLLED DENSITY FLOWABLE FILL (APPROXIMATELY 12 HOURS).
6. RAILROAD FORCES PLACE BALLAST REINSTALL TRACK SECTION AND OPEN TRACK TO TRAFFIC (APPROXIMATELY 3 HOURS).
7. THE TIME ALLOTTED FOR EACH WORK WINDOW TASK HAS BEEN ESTIMATED. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT THEIR FINAL SCHEDULE PRIOR TO PERFORMING ANY WORK.

AFTER 30 HOUR WORK WINDOW

1. SUGGESTED CONSTRUCTION SEQUENCE PRIOR TO WORK WINDOW SUGGESTED CONSTRUCTION SEQUENCE (AFTER 30 HOUR WORK WINDOW)
2. CONTRACTOR COORDINATES RAILROAD SAFETY BRIEFINGS AND FLAGGING AND PROTECTIVE SERVICES TO BE PROVIDED BY THE RAILROAD.
3. CONTRACTOR EXCAVATES TO THE STAGE 2 EXCAVATION LIMITS. INSTALLS THE AGGREGATE SURFACE COURSE AND THEN CONSTRUCTS THE FOOTINGS FOR THE EAST AND WEST PORTAL AND MINIWALLS.
4. CONTRACTOR INSTALLS THE ANCHOR GEORGD, PLACES AND COMPACTS THE AGGREGATE SURFACE COURSE AND LEVELING SAND COVER. EFFECTS THE REMAINING PRECAST CONCRETE BOX CULVERT SEGMENTS. JOINT THE BOXES AND GROUTS BOX CULVERT JOINTS AND LIFTING DEPRESSIONS.
5. CONTRACTOR CONSTRUCTS THE EAST AND WEST TUNNEL PORTALS, MINIWALLS, AND CAST-IN-PLACE BOX CULVERT SEGMENTS.
6. CONTRACTOR APPLIES DAMPROOFING, JOINT WATER PROOFING, WATERPROOFING PROTECTIVE PANELS, AND PROTECTIVE ASPHALT PANELS.
7. CONTRACTOR INSTALLS DRAIN TILE AND BACKFILLS FRONT SIDE OF PORTAL AND MINIWALLS TO SUB GRADE ELEVATION WITH POROUS GRANULAR EMBALLMENT AND THEN ON THE BACK SIDE OF THE WALL UP TO THE LEVEL OF THE TEMPORARY SHORING THE-BACK SYSTEM.
8. CONTRACTOR REMOVES SHORING THE-BACK SYSTEM AND CONTINUES TO BACKFILL WITH POROUS GRANULAR EMBALLMENT FROM REMOVED TEMPORARY BALLAST RETAINER, SHORING BULKHEAD, SAFETY RAILING, AND SHORING.
9. CONTRACTOR INSTALLS AGGREGATE SURFACE COURSE ADJACENT TO RAILROAD TRACKS, CULVERT TUNNEL, JOINTS, AND THE MINIWALL SYSTEM. EFFECTS CONCRETE AND TUNNEL SURFACES, SAFETY RAILING, AND SAFETY FLAGGING. AND THE MINIWALL SYSTEM AND THEN PLACES PORT AND GROUT CONCRETE FILLMENT IN TUNNEL.

TOTAL BILL OF MATERIAL FOR TUNNEL

NOTE NO.	DESCRIPTION	UNIT	QUANTITY
1	MOBILIZATION	L. SUM	1
2	LIGHTING SYSTEM COMPLETE	L. SUM	1
3	REINFORCEMENT BARS EPOXY COATED	KG	13460
4	CONCRETE BOX CULVERTS	CU M	234
5	FOCC PAVEMENT	CU M	39
6	PRECAST CONCRETE BOX CULVERT 3.562 M X 3.569 M	M	1463
7	POROUS GRANULAR EMBALLMENT, SPECIAL (CV)	CU M	1300
8	GEORGD	CU M	124
9	AGGREGATE SURFACE COURSE, TYPE A (CV)	CU M	130
10	CONTROL DENSITY FILL	CU M	335
11	STRUCTURAL EXCAVATION	L. SUM	1
12	CONCRETE FORM LINER	CU M	77
13	ARCHITECTURAL FINISH	CU M	287
14	SAND COVER (CV)	CU M	7
15	DAMP PROOFING	CU M	300
16	PROTECTIVE ASPHALT PANELS (12 MM THICK)	CU M	160
17	JOINT WATERPROOFING	M	206
18	200 MM Ø PIPERATED TP PIPE DRAIN	M	60
19	PICKET HAND RAILING	M	34
20	TEMPORARY SHORING	L. SUM	1
21	RAILROAD COORDINATION	L. SUM	1

QUANTITY NOTES:

1. TRACING, HARDBARE, CONCRETE PAD, AND ALL OTHER MISCELLANEOUS ELECTRICAL ITEMS INCIDENTAL. DOES NOT INCLUDE HOOR-UP TO POWER.
2. INCLUDES REINFORCEMENT FOR ALL CAST-IN-PLACE CONCRETE CULVERTS, TUNNEL FOOTINGS, PORTALS, AND MINIWALLS.
3. INCLUDES ALL CAST-IN-PLACE CONCRETE CULVERTS, TUNNEL FOOTINGS, PORTALS, AND MINIWALLS.
4. PRECASTING AND JOINT PREPARATION, TIE BOLTS, JOINT SEALANT, JOINT PROTECTIVE PANELS, JOINT CALLING, AND GROUTING INCIDENTAL.
5. INCLUDES ENTIRE LIMITS OF FILL REQUIRED BEYOND CONTROL DENSITY FILL AREA, INCLUDING BOTH SIDES OF MINIWALLS UP TO RR AND/OR TRAIL SUBGRADE.
6. STRUCTURAL GEORGD BALLASTED FROM TENSAR CORPORATION OR APPROVED EQUAL.
7. INCLUDES RAIL/ROAD BED AND BASE MATERIAL BELOW PRECAST CONCRETE BOX CULVERT AND CAST-IN-PLACE CONCRETE FOOTINGS.
8. VARYING LIMITS DUE TO CONTRACTOR'S ACTUAL EXCAVATION LIMITS INCIDENTAL.
9. CLEARING AND GRUBBING, TOPSOIL SALVAGE AND REMOVAL OF BALLAST AND SUBBALLAST INCIDENTAL.
10. INCLUDES CONCRETE STAINING, SAMPLE PIECE FOR OWNER'S APPROVAL, OF STAIN INCIDENTAL.
11. INCLUDES ALL EXPOSED PRECAST AND CAST-IN-PLACE CONCRETE SURFACES NOT RECEIVING CONCRETE FORM LINER.
12. REQUIRED ON ALL BURIED PRECAST AND CAST-IN-PLACE CONCRETE EXCEPT FOOTINGS AND BOTTOM OF BOX CULVERT UNITS.
13. JOINT WATERPROOFING REQUIRED AT ALL PRECAST CONCRETE JOINTS AND CAST-IN-PLACE CONCRETE CONSTRUCTION JOINTS.
14. HARDBARE, GEOTEXTILE FABRIC SOAK, PRECAST CONCRETE HEADWALL AND ROBERT SCREEN INCIDENTAL.
15. DESIGN AND SHOP DRAWINGS INCIDENTAL.
16. DESIGN SHOP DRAWINGS TEMPORARY SAFETY RAILING, THE-BACK SYSTEM, BALLAST RETAINER, AND SHORING BULKHEAD INCIDENTAL.
17. RAILROAD WORK AND PROTECTIVE SERVICES WILL BE BILLED DIRECTLY TO THE COUNTY. CONTRACTOR BY THE RAILROAD.

NOT TO BE USED FOR CONSTRUCTION

TKDA

444 07113 STREET, SUITE 1000

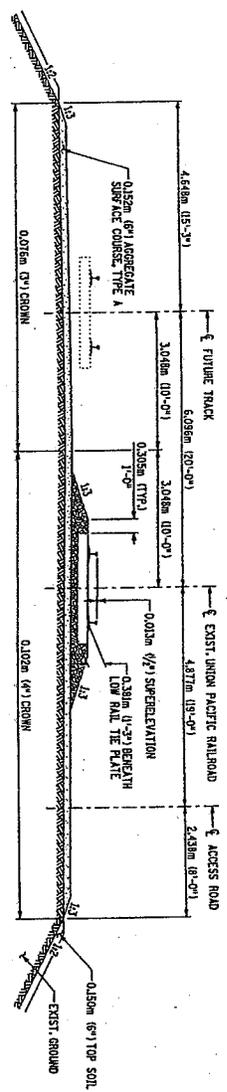
SECTION 94-00241-00-B1

NOTES AND QUANTITIES

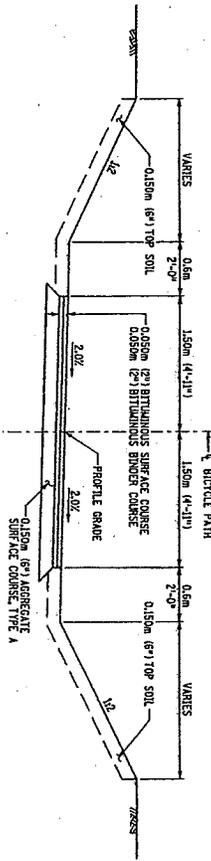
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M.P. 20.06

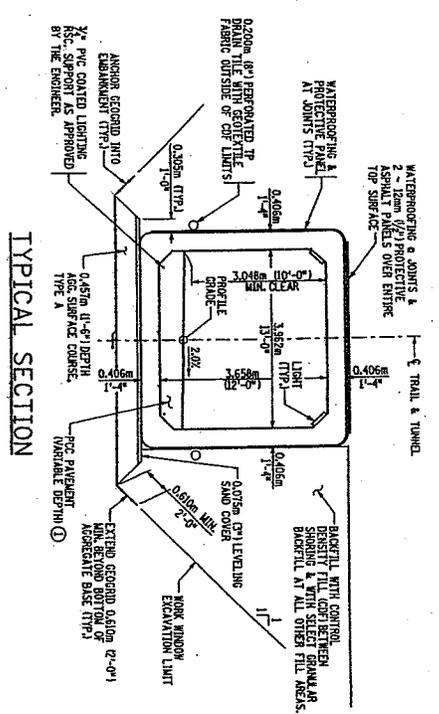
LAKE SUBDIVISION



ROADBED SECTION APPROACHING BOX CULVERT
 LOOKING EAST TOWARD KENOSHA
 FOR INFORMATION ONLY



TYPICAL SECTION APPROACHING BOX CULVERT
 LOOKING WESTWARD
 FOR INFORMATION ONLY



TYPICAL SECTION

CONSTRUCTION NOTES:
 ① PROVIDE TOWERED JOINT IN PCC PAVEMENT AT ALL BOX CULVERT JOINT LOCATIONS. EXTENTS OF PAVEMENT IS FROM END OF TUNNEL TO END OF TUNNEL.

**NOT TO BE USED
 FOR CONSTRUCTION**

TKDA
 444 COAR STREET, SUITE 1000

SECTION 94-00241-00-BT
 LAKE COUNTY
 DRAWN: 11/11/11 BY: DIVE: 0174

TITLE
 ROADBED SECTION

DESIGN	DATE	APPROVED
CHK: GJ/BU	08/11/11	
CHK: GJ/BU	08/11/11	

MP 30.06
 LAKE SUBDIVISION

EXISTING TRACK

7.620m (25'-0"1 EAST)
8.992m (29'-6"1 WEST)

3.867m
12'-8"1/2

0.991m (3'-3")
C-1-P BOX

0.858m
2'-8"

6.969m
22'-10"1/2

EXISTING PATH

3.283m
10'-9"1/2

1.981m
6'-6"

STA. 1+281.145 (WEST FOOTING)
STA. 1+283.429 (EAST FOOTING)

0.457m
1'-6"

STA. 1+300.133 (WEST FOOTING)
STA. 1+280.381 (EAST FOOTING)

3.896m
12'-9"1/2

2.291m
7'-6"

LIGHT HOUSING, SEE WINGWALL SHEET FOR LOCATION

FOOTING

5.487m
18'-0"1/2

WINGWALL PLAN

NOT TO BE USED FOR CONSTRUCTION

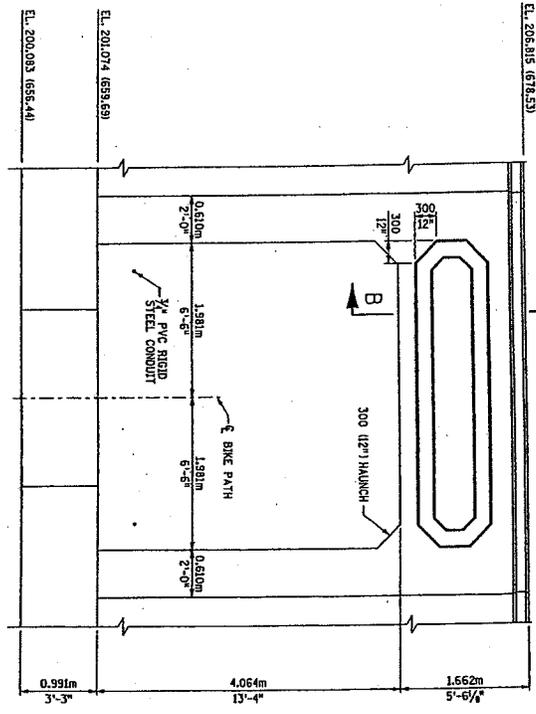
- GENERAL NOTES:**
1. DETAILS SYMMETRIC ABOUT CENTERLINE OF PATH.
 2. PLAN SHOW DEPICTS THE EAST PORTAL, THE WEST PORTAL IS SIMILAR OPPOSITE HAND.

TKDA

SECTION 94-002-41-00-8T
LAKE COUNTY

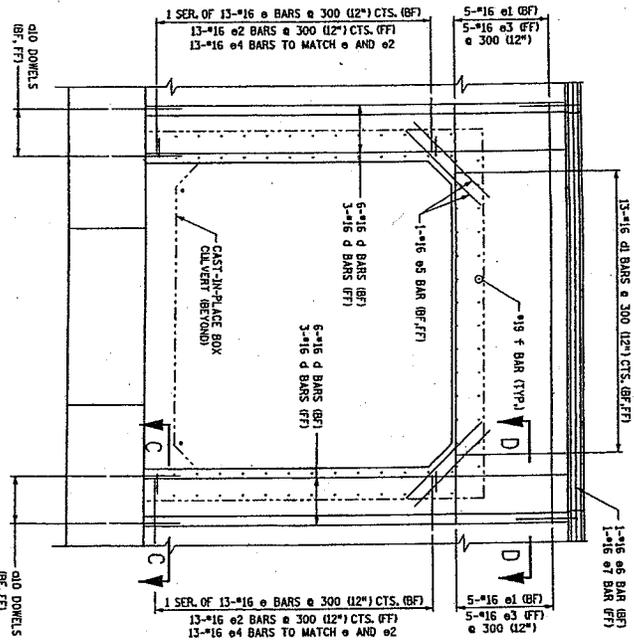
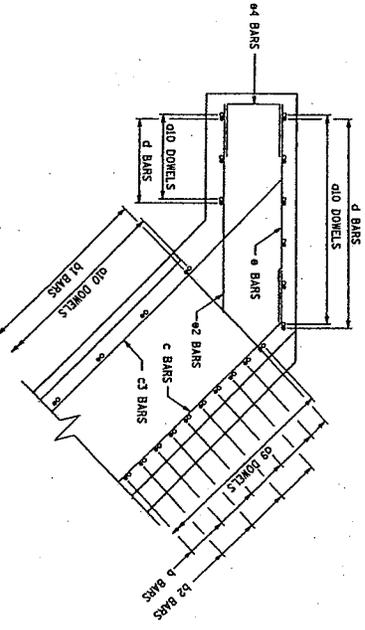
TITLE
WINGWALL PLAN

DES	MD	DR	MD	APPROVED	M.P. 30.06 AFF. SURVEYING
CHK	CU/BUF	CHK	CU/BUF		



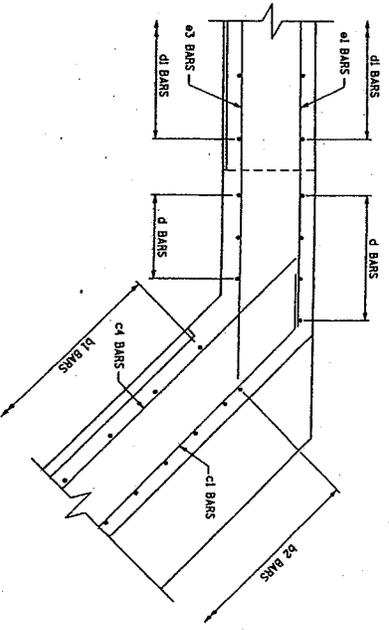
TYPICAL HEADWALL ELEVATION

SECTION C-C

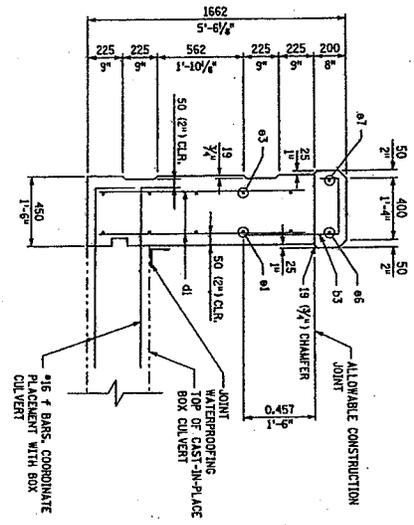


TYPICAL HEADWALL REINFORCEMENT

SECTION D-D



SECTION B-B



- GENERAL NOTES:**
1. TYPICAL FOR BOTH ENDS OF TUNNEL.
 2. SEE SHEET T11 FOR RAILING ANCHOR DETAILS.
 3. SEE SHEET T6 FOR BAR LIST AND LAP SPLICES NOT SHOWN HERE.

NOT TO BE USED FOR CONSTRUCTION

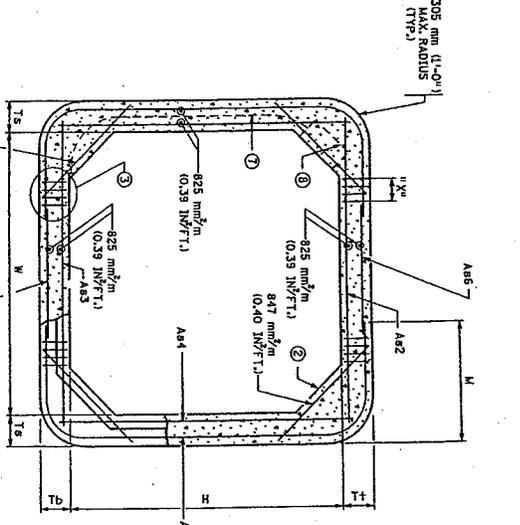
TKDA

444 GRAND STREET, SUITE 1000
LAKE COUNTY, ILLINOIS 60057

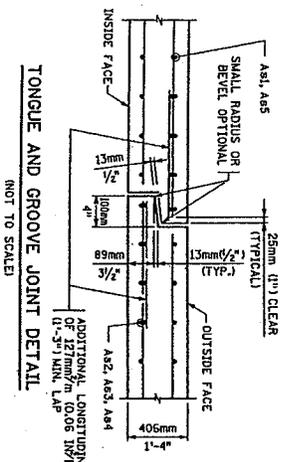
SECTION 94-00241-00-BT
LAKE COUNTY

TITLE
HEADWALL ELEVATION AND REINFORCEMENT

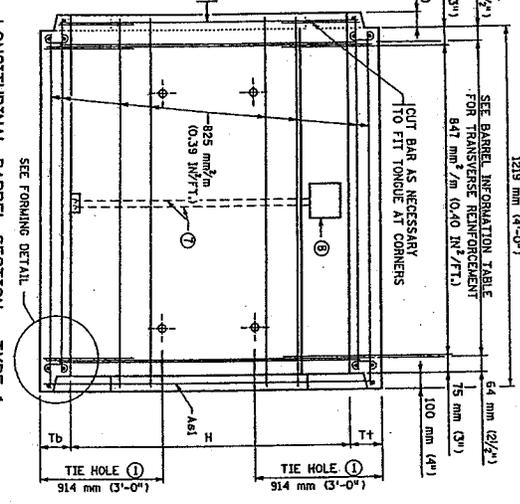
DES.	LD	DR	LD	APPROVED
CHK.	GL/BUF	CHK.	GL/BUF	MP 70.05
				1. APT. CADD SYSTEM



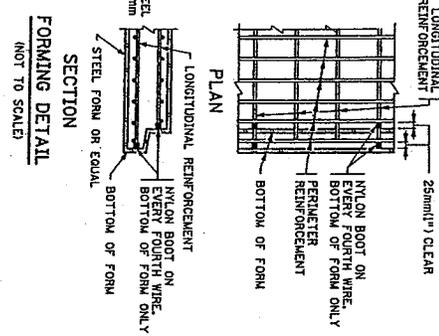
TRANSVERSE BARREL SECTION
(NOT TO SCALE)



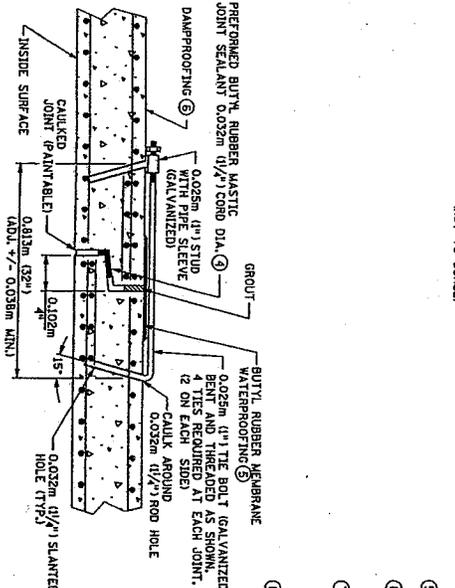
TONGUE AND GROOVE JOINT DETAIL
(NOT TO SCALE)



LONGITUDINAL BARREL SECTION - TYPE 1
(NOT TO SCALE)



FORMING DETAIL
(NOT TO SCALE)



TIE DETAIL

PRECAST BOX CULVERT BARREL INFORMATION

LOCATION	SIZE	OVERALL LIMITS	DIMENSIONS						WEIGHT	STEEL REINFORCEMENT															
			W	H	T ₁	T ₂	T ₃	T ₄		AS1	AS2	AS3	AS4	AS5											
TYPE 1,2,3	1219mm	414 MPa	2,352mm	3,962mm	3,653mm	406mm	406mm	406mm	16,682 kg/m	3006 mm ² /m	7,824m	1,177m	3831 mm ² /m	4,267m	3,577 mm ² /m	4,267m	3,577 mm ² /m	3,952m	2,604 mm ² /m	4,115m	2,604 mm ² /m	4,115m	148 mm ² /m	102 mm	305 mm
TYPE 1,2,3	41	5 KSI	7,75"	33"	12"	16"	16"	16"	11,210 lb/ft	1,42 in ² /ft	25,67'	6,83'	1,81 in ² /ft	14,00'	1,69 in ² /ft	14,00'	1,69 in ² /ft	13,00'	1,23 in ² /ft	13,50'	1,23 in ² /ft	0,07 in ² /ft	4"	12"	

NOT TO BE USED FOR CONSTRUCTION

GENERAL NOTES:

- CULVERTS TO BE CONSTRUCTED AS PER AREA.M.A. CHAPTER 8, PARTS 1 & 16 EXCEPT AS NOTED.
- THE SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO AREA.M.A. REQUIREMENTS OF ASTM A618, GRADE 50 (ASTM A36 IN AREA), WHICH IS EQUIVALENT TO A36 IN AREA, AND SHALL BE PROVIDED IN ALL DIRECTIONS. THE MINIMUM TENSILE STRENGTH OF BARS SHALL BE 60,000 PSI (414 MPa).
- 50 mm (2") MIN. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR AREA DESIGN SPECIFICATIONS, COOPER ETD LOADING OR ALTERNATE 105 KIP LOAD.
- REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH THE LATEST REINFORCEMENT DEVELOPMENT TABLE.
- WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS.
- WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO MAINTAIN THE FULL STRENGTH OF THE CUT MEMBER.
- THE MINIMUM CONCRETE STRENGTH OF CONCRETE SHALL BE 414 MPa (6 KSI) WITH NO CALCULUS APPROVAL IS REQUIRED BY THE ENGINEER AND TALLROAD.
- SHOP DRAWING APPROVAL IS REQUIRED BY THE ENGINEER AND TALLROAD.
- WEIGHT IS BASED ON 2,400 kg/m³ (150 PCF).
- ALL REINFORCEMENT LENGTHS AND AREAS ARE MINIMUM REQUIREMENTS.
- BOTTOM, SIDES & TOP JOINTS IN BOX CULVERTS SHALL BE WATERPROOFED WITH BUTYL RUBBER MEMBRANE (INCIDENTAL).
- PRECAST BOX CULVERTS WILL BE INCLUDED IN THE QUANTITIES FOR PRECAST CONCRETE BOX CULVERT, 3,962m x 3,653m PAYMENT.
- LIFTING LUGS SHALL NOT PENETRATE THROUGH CULVERT WALL. RECESSED LIFTING PINS SHALL BE FILLED WITH GROUT AFTER SETTING UNITS.

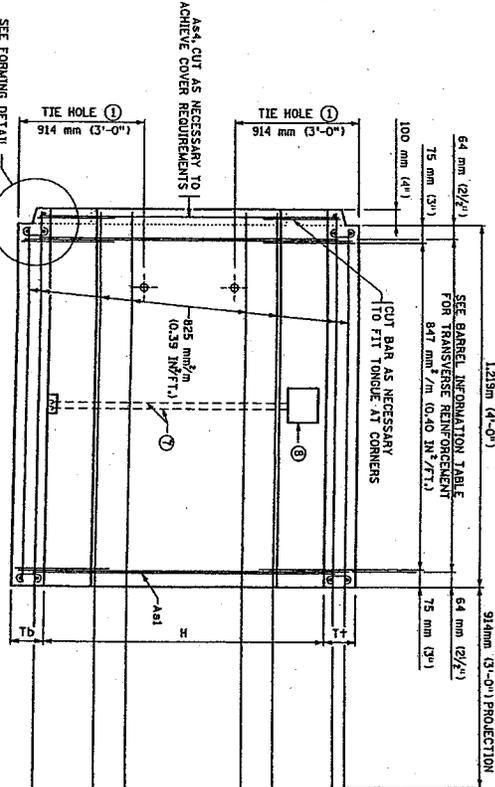
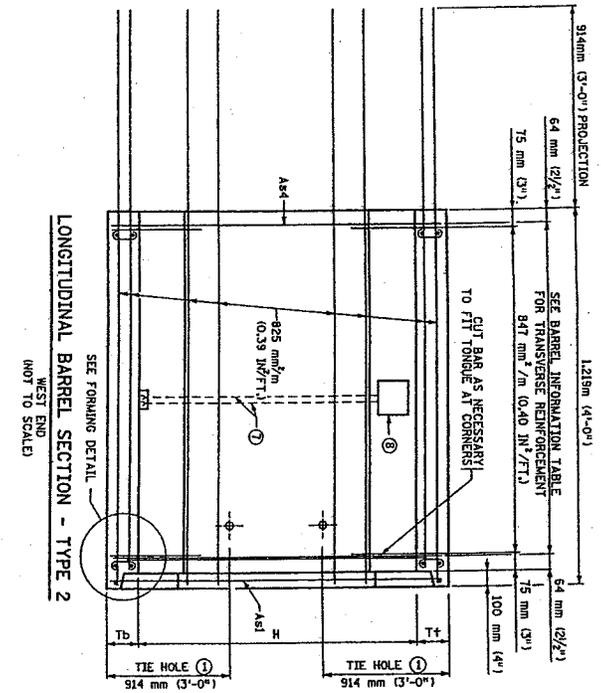
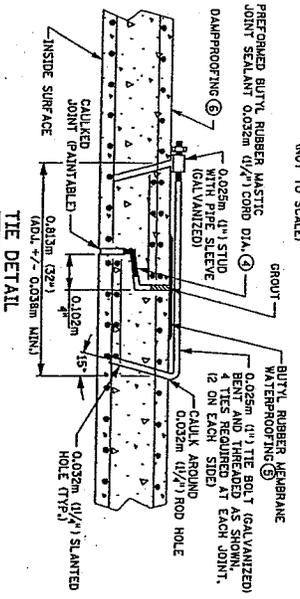
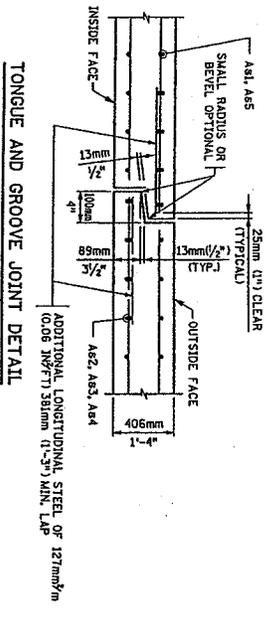
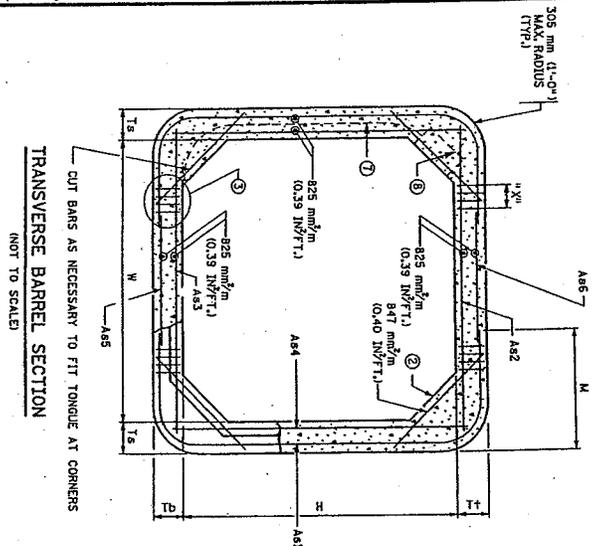
CONSTRUCTION NOTES:

- CULVERT TIES ARE TO BE 25 mm (1") DIAMETER RODS, EACH JOINT SHALL BE WELDED TO THE FACE OF THE BOX CULVERT INCLUDING SHEAR CONNECTION TO EACH END OF THE JOINT.
- 305 mm (12") HANDBOOK SIZE.
- THE MAXIMUM SHEAR REINFORCEMENT SPACING IN THE LONGITUDINAL DIRECTION SHALL BE 150 mm (6").
- 31 mm (1 1/4") DIA. PERFORMED BUTYL RUBBER MASTIC JOINT SEALANT SHALL BE PLACED ON BOTTOM SIDES & TOP OF BOX CULVERT & ALL JOINT LOCATIONS (INCIDENTAL).
- BOTTOM, SIDE, AND TOP JOINTS OF ALL PRECAST & CAST-IN-PLACE UNITS SHALL BE WATERPROOFED WITH BUTYL RUBBER MEMBRANE (INCIDENTAL).
- EACH PRECAST UNIT SHALL BE DAMPROOFED ON THE OUTSIDE FACE OF THE TOP AND BOTH SIDES. DAMPROOFING SHALL NOT BE WITHIN THE LIMITS OF THE JOINT MEMBRANE (INCIDENTAL).
- 19 mm (3/4") SCH. 40 PVC COATED RIGID STEEL CONDUIT CAST IN CULVERT WALL, ELBOW JOINT AT HANDBOOK FLOOR LINE. PROVIDE 50 mm (2") OF CLEARANCE ABOVE CULVERT FLOOR. PROVIDE BLOW-OUT AND FRESH MOUNTED PLUGGED CONDUIT COUPLINGS AT THAT LOCATION.
- LIGHT BACKBOX INTO HANDBOOK COORDINATE PLACEMENT WITH ELECTRICAL. BACKBOX SHALL BE CENTERED IN HANDBOOK IN BOTH THE VERTICAL AND LONGITUDINAL DIRECTIONS (SEE SHEET T11 FOR LIGHTING DETAILS).

TRKDA

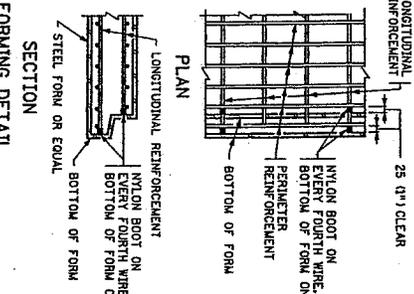
SECTION 94-02241-00-B1
LAKE COUNTY

PRECAST BOX CULVERT DETAILS
MP 30.05
LAKE COUNTY



GENERAL NOTES:

- SEE PRECAST BOX CULVERT DETAILS - TYPE 1 SHEET FOR GENERAL AND SECTION NOTES, BARREL DIMENSIONS, AND REINFORCEMENT INFORMATION.
- BAR COUPLERS MAY BE USED INSTEAD OF REBAR PROJECTION IF APPROVED DETAIL SUPPLIED BY CONTRACTOR IS APPROVED BY THE ENGINEER.



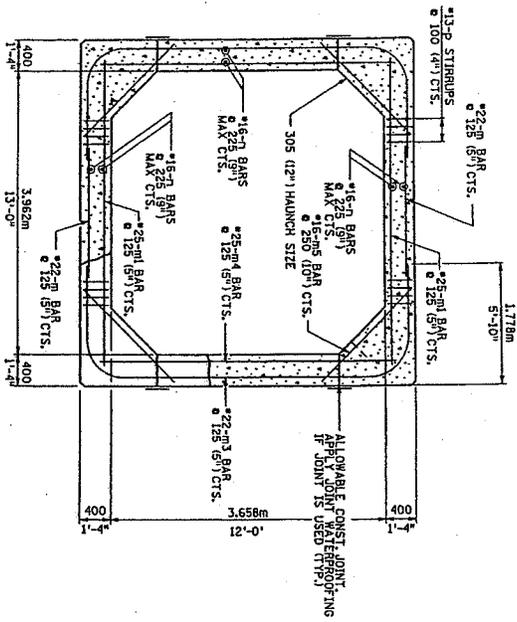
NOT TO BE USED FOR CONSTRUCTION

TKDA

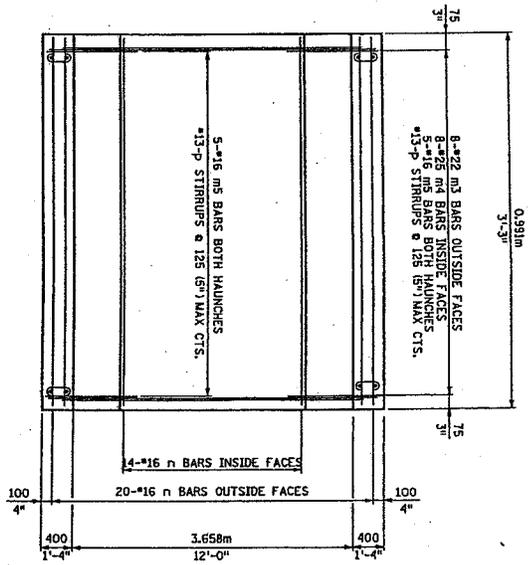
SECTION 94-00241-00-BT
LAKE COUNTY

PRECAST BOX CULVERT DETAILS

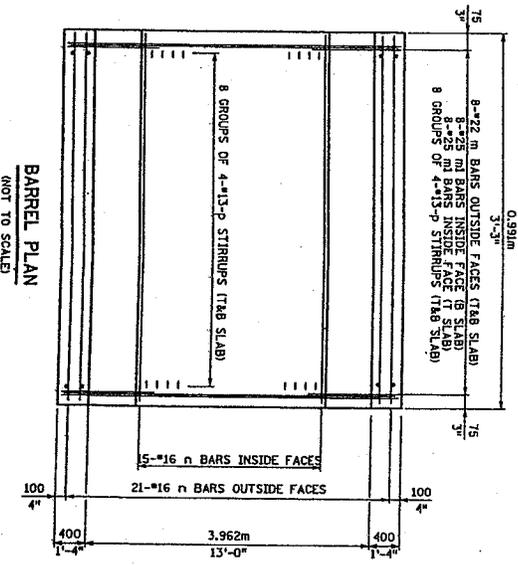
DESIGN	DATE	BY	CHKD	APP'D
	04/10/05	W.B. JOHNSON		



TRANSVERSE BARREL SECTION
(NOT TO SCALE)



LONGITUDINAL BARREL SECTION
(NOT TO SCALE)

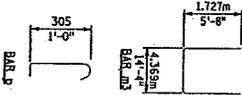


BARREL PLAN
(NOT TO SCALE)

BILL OF REINFORCEMENT

BAR	NO.	SIZE	LENGTH (m)	LENGTH (FT)	SHAPE
n	16	#22	4,674	15'-4"	
m	16	#25	4,674	15'-4"	
m3	16	#22	7,823	25'-8"	
m4	16	#25	4,358	14'-4"	
m5	20	#16	1,321	4'-4"	
n	140	#16	0,888	2'-11"	
p	128	#13	0,533	1'-9"	

TOTAL WEIGHT PER CAST-IN-PLACE BOX = 3450 KG (1607 LBS)

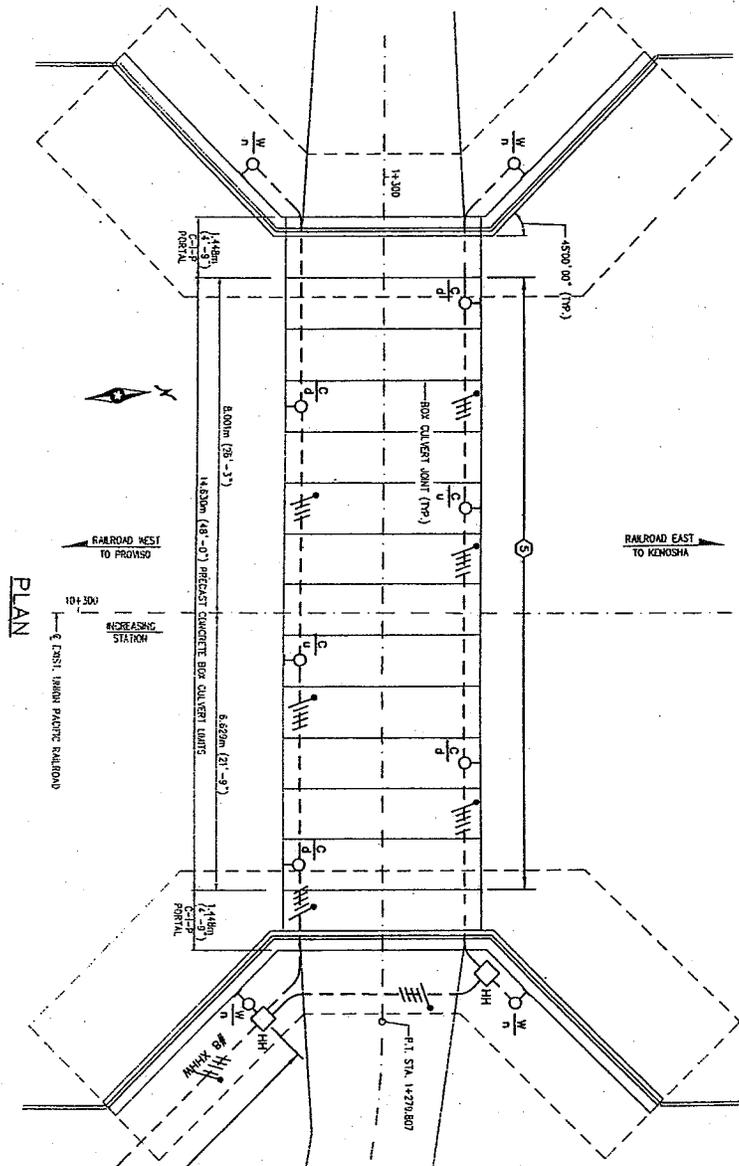


BAR D

NOTE: BILL OF REINFORCEMENT IS FOR ONE SECTION OF CAST-IN-PLACE BOX CULVERT (2 REQUIRED).
ALL REINFORCEMENT BARS TO BE EPOXY COATED.

- GENERAL NOTES:**
1. THE SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO A578 AND A615. THE REINFORCEMENT SHALL CONFORM TO ASTM A631M (ASTM A631) WITH AN ALLOWABLE TENSILE STRESS OF 166 MPA (24,000 PSI).
 2. SLEEVES FOR CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT.
 3. THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH THE LATEST AEMMA DESIGN SPECIFICATIONS, COOPER E80 LOADING ON ALTERNATE 100 KIP LOAD.
 4. THE MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 41.4 MPA (6 KSI) AT 28 DAYS WITH NO CALCIUM CHLORIDE ALLOWED.
 5. SIDE & TOP JOINTS SHALL BE WATERPROOFED WITH BUTYL RUBBER MEMBRANE, (UNDERSTALL).

NOT TO BE USED FOR CONSTRUCTION



NOT TO BE USED FOR CONSTRUCTION

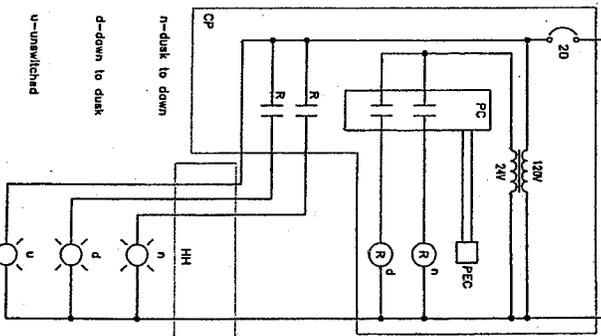
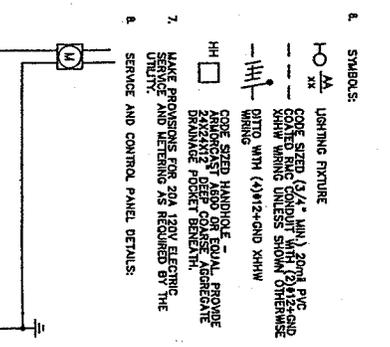
PLAN

LIGHTING SYSTEM BILL OF MATERIAL

ITEM	UNIT	QUANTITY
ELECTRIC SERVICE AND WIRING	EA	1
CONTROL PANEL	EA	1
FRENCH AND BASKET	m	60
1" PVC COATED RIG	m	60
3/4" PVC COATED RIG	m	50
LIGHTING FIXTURE AND LAMP	EA	10
412 XHHW	m	250
8 XHHW	m	300
HANDHOLE	EA	2

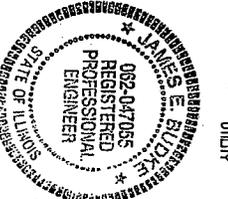
QUANTITIES LISTED ABOVE ARE FOR INFORMATIONAL PURPOSES. LUMP CHANGE IN QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO COMPENSATION. PAYMENT INCLUDED IN THE LUMP SUM PRICE BID FOR "LIGHTING SYSTEM COMPLETE".

- GENERAL NOTES:**
- LIGHTING FIXTURE TYPES C AND W ARE TO BE USED UNLESS OTHERWISE SPECIFIED. ALL FIXTURES SHALL BE INSTALLED WITH PROTECTIVE LENSES OF THE CASE MINIMUM HOUSING SHALL BE UL94V-0. HANCO EM94 OR EQUAL.
 - SHIP BACKLOGS FOR TYPE C FIXTURES TO THE PRECASTER FOR INSTALLATION WITHIN THE TUNNEL BOX CULVERT HANDS. INSTALL THE TYPE W FIXTURES FLUSH IN THE PRECASTER CONSTRUCTION.
 - ELECTRICAL WORK SHALL BE COMPLETE WITH EQUIPMENT AND CONDUIT FITTINGS, WIRING AND CABLES TO BE SHOWN OR REFERENCED TO ANY OTHER WORK NECESSARY FOR OR BECAUSE OF INSTALLATION SHALL NOT BE CONSIDERED AS RELAYING THE CONTRACTOR FROM PROVIDING SUCH ITEMS OR WORK.
 - VERTICAL R/F CONDUIT WILL BE PROVIDED BY THE PRECASTER. THE LIGHTING FIXTURE PRECASTER SHALL PROVIDE THE PRECASTER WITHIN THE PRECASTER TUNNEL BOX CULVERT SECTIONS.



TKDA

SECTION 94-0224-00-B1
 LAKE COUNTY
 ELECTRICAL PLAN AND DETAILS



DATE: JED
 DRAWN: JED
 CHECKED: JED
 APPROVED: JED
 M.P. 30.08

EXHIBIT A-2

To Pedestrian Crossing Grade Separation
Agreement

Cover Sheet for the Metes and Bounds Legal Description And
Print

PERMANENT RIGHTS AREA

That part of the West Half of Section 29, Township 44 North, Range 12 East of the Third Principal Meridian, described as follows:

Commencing at the most westerly corner of Clay Judson Subdivision, recorded July 7, 1953, as Document No. 795553 in the Recorder's Office of Lake County, Illinois, said corner being on the easterly right-of-way line of the Union Pacific Railroad Company (formerly the Chicago & Northwestern Railway Company, known as the "Lake Bluff Cut-off"); thence northerly on an assumed bearing of North 16 degrees 37 minutes 40 seconds West, 55.60 feet on said easterly right-of-way line; thence southerly, 169.74 feet on said easterly right-of-way line, being a curve to the left having a radius of 4,473.44 feet, the chord of said curve bears South 11 degrees 19 minutes 52 seconds West, 169.73 feet for the Point of Beginning; thence North 84 degrees 05 minutes 23 seconds West, 65.99 feet; thence South 5 degrees 54 minutes 37 seconds West, 14.30 feet; thence North 84 degrees 05 minutes 23 seconds West, 10.63 feet; thence northwesterly, 73.41 feet on a curve to the right having a radius of 91.43 feet, the chord of said curve bears North 61 degrees 05 minutes 12 seconds West, 71.45 feet to the south line of the land conveyed to Commonwealth Edison Company by special warranty deed, Exhibit "A" Parcel 21.29, recorded June 28, 1966, as Document No. 1308462 in the aforesaid Recorder's Office of Lake County, Illinois; thence South 88 degrees 21 minutes 25 seconds West, 16.81 feet on said south line; thence southeasterly, 94.65 feet on a curve to the left having a radius of 105.43 feet, the chord of said curve bears South 58 degrees 22 minutes 08 seconds East, 91.51 feet; thence South 84 degrees 05 minutes 23 seconds East, 10.63 feet; thence South 5 degrees 54 minutes 37 seconds West, 14.30 feet; thence South 84 degrees 05 minutes 23 seconds East, 62.97 feet to the easterly right-of-way line of the Union Pacific Railroad Company (formerly the Chicago & Northwestern Railway Company, known as the "Lake Bluff Cut-off"); thence northerly, 42.71 feet on said easterly right-of-way line, being a curve to the right having a radius of 4,473.44 feet, the chord of said curve bears North 9 degrees 58 minutes 14 seconds East, 42.71 feet to the Point of Beginning in Lake County, Illinois.

Said Permanent Rights Area Contains 0.094 acres, more or less

TEMPORARY RIGHTS AREA

That part of the West Half of Section 29, Township 44 North, Range 12 East of the Third Principal Meridian, described as follows:

Commencing at the most westerly corner of Clay Judson Subdivision, recorded July 7, 1953, as Document No. 795553 in the Recorder's Office of Lake County, Illinois, said corner being on the easterly right-of-way line of the Union Pacific Railroad Company (formerly the Chicago & Northwestern Railway Company, known as the "Lake Bluff Cut-off"); thence northerly on an assumed bearing of North 16 degrees 37 minutes 40 seconds West, 55.60 feet on said easterly right-of-way line for the Point of Beginning; thence North 77 degrees 34 minutes 55 seconds West, 10.00 feet to a point normally distant westerly of said easterly right-of-way line; thence southerly, 139.27 feet on a curve to the left having a radius of 4,483.44 feet, said curve being 10.00 feet westerly of and concentric with said easterly right-of-way line, the chord of said curve bears South 11 degrees 31 minutes 42 seconds West, 139.26 feet; thence South 88 degrees 21 minutes 25 seconds West, 81.84 feet to a point 10.00 feet normally distant easterly of the westerly right-of-way line of the Union Pacific Railway Company (formerly the Chicago & Northwestern Railway Company, known as the "Lake Bluff Cut-off"); thence northerly, 341.04 feet on a curve to the right having a radius of 4,563.44 feet, said curve being 10.00 feet easterly of and concentric with said westerly right-of-way line, the chord of said curve bears North 12 degrees 33 minutes 39 seconds East, 340.96 feet; thence North 75 degrees 17 minutes 54 seconds West, 10.00 feet to said westerly right-of-way line; thence southerly, 343.92 feet on said westerly right-of-way line, being a curve to the left having a radius of 4,573.44 feet, the chord of said curve bears South 12 degrees 32 minutes 50 seconds West, 343.84 feet to the south line of the land conveyed to Commonwealth Edison company by special warranty deed, Exhibit "A" Parcel 21.29, recorded June 28, 1966, as Document No. 1308462 in the aforesaid Recorder's Office of Lake County, Illinois; thence South 88 degrees 21 minutes 25 seconds West, 103.87 feet on said south line to the easterly right-of-way line of Union Pacific Railroad Company (formerly the Chicago & Northwestern Railway Company); thence northerly, 302.87 feet on said easterly right-of-way line, being a curve to the left having a radius of 11,509.19 feet, the chord of said curve bears North 9 degrees 58 minutes 29 seconds West, 302.86 feet; thence South 79 degrees 16 minutes 17 seconds West, 10.00 feet to a point normally distant westerly of said easterly right-of-way line; thence southerly, 301.28 feet on a curve to the right having a radius of 11,499.19 feet, said curve being 10.00 feet westerly of and concentric with said easterly right-of-way line, the chord of said curve bears South 9 degrees 58 minutes 41 seconds East, 301.27 feet; thence South 16 degrees 08 minutes 04 seconds East, 91.41 feet; thence South 1 degree 38 minutes 35 seconds East, 168.00 feet; thence North 88 degrees 21 minutes 25 seconds East, 100.00 feet; thence North 1 degree 38 minutes 35 seconds West, 168.00 feet; thence North 88 degrees 21 minutes 25 seconds East, 75.01 feet to the easterly right-of-way line of the Union Pacific Railroad Company (formerly the Chicago & Northwestern Railway Company, known as the "Lake Bluff Cut-off"); thence northerly, 227.17 feet on said easterly right-of-way line, being a curve to the right having a radius of 4,473.44 feet, the chord of said curve bears North 10 degrees 57 minutes 48 seconds East, 227.15 feet to the Point of Beginning in Lake County, Illinois.

Said Temporary Rights Area Contains 0.962 acres, more or less

EXHIBIT A-3

To Pedestrian Crossing Grade Separation Agreement

Cover Sheet for the
Estimate(s) of Material and Force Account Work
(See Article 11)

Material And Force Account Estimate Lake County

Estimate Number: 33943 Version: 1

Standard Rates: Labor Additive = 231.84% WT Labor Additive = 173.3% Inflation Additive = 0.00%

Estimate Good for 6 Months Until 04/18/08

Location: LAKE SUB, CONN, 29.62-31.71

Description of Work: Track removal for open cut precast concrete box installation MP 30.1
Lake Subdivision

COMMENTS	FACILITY	Description	QTY	UOM	UCST	LABOR	MATERIAL	TOTAL
ENGINEERING								
		ENGINEERING	1	LS	20,000.00	20,000	0	20,000
		FLAGGING	10	MD	660.00	6,600	0	6,600
Sub-Total =						26,600	0	26,600
TRACK CONSTRUCTION - COMPANY								
	TRACK	SHIFT TRACK: M.L. 30% TIES - SHIFT BACK	250	TF	39.20	6,289	3,510	9,799
	CONTINGENCIES	LABOR AND MATERIAL	20	%	53.93	681	397	1,079
	FLDWLD	FIELD WELD	4	EA	856.03	3,155	270	3,424
	CONTINGENCIES	LABOR AND MATERIAL	20	%	34.24	631	54	685
		MOBILIZATION: COMPANY	2	DA	20,450.00	0	40,900	40,900
Sub-Total =						10,756	45,131	55,887
HOMELINE FREIGHT								
		HOMELINE FREIGHT	197	Per Ton	8.74	0	1,723	1,723
Sub-Total =						0	1,723	1,723
Totals =						37,356	46,854	84,209

Total Wgt. in Tons = 197

Grand Total = **\$84,209**

Preliminary

**Estimate of Re Roughing of Trains
By The
Union Pacific Railroad Company
For the
City of Lake Bluff IL**

Description of Work: Cost associated with 30 hours of train crew re-routing associated for this project. There will be 3 trains involved in the re roughing at \$10,000.00 per train.

IL. Lake Bluff

Skokie Valley Bike Path

RR Crossing NO. 921079U

MP. 29.95 Lake Sub

<u>Description</u>	<u>Labor</u>	<u>Material</u>	<u>State Total</u>
<u>Re roughing</u>			
3 trains	\$10,000.00 –per train		\$30,000.00
Existing Reusable Material	None		
Salvage Nonusable Material	None		
Total Estimated Cost of Project Less Credits			\$30,000.00

The above figures are estimates only and subject to fluctuation. In the event of an increase or decrease in the cost of amount of material or labor required, the state will be billed for actual construction cost at the current rates effective thereof

EXHIBIT B

To New Pedestrian Crossing Grade Separation
Agreement

Contractor's Right of Entry Agreement



UNION PACIFIC RAILROAD COMPANY

Real Estate Department
 1400 Douglas Street, MS 1690
 Omaha, NE 68179-1690
 (402) 544-8620

November 6, 2007

UPRR Folder No.: 2477-64

To the Contractor:

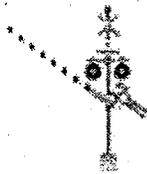
Before Union Pacific Railroad Company can permit you to perform work on its property for the Skokie Valley Bike Path Project, it will be necessary for you to complete and execute two originals of the enclosed Contractor's Right of Entry Agreement. Please:

1. Fill in the complete legal name of the contractor in the space provided on Page 1 of the Contractor's Right of Entry Agreement. If a corporation, give the state of incorporation. If a partnership, give the names of all partners.
2. Fill in the date construction will begin and be completed in Article 5, Paragraph A.
3. Fill in the name of the contractor in the space provided in the signature block at the end of the Contractor's Right of Entry Agreement. If the contractor is a corporation, the person signing on its behalf must be an elected corporate officer.
4. Execute and return all copies of the Contractor's Right of Entry Agreement together with your Certificate of Insurance as required in Exhibit B, in the attached, self-addressed envelope.
5. Include a check made payable to the Union Pacific Railroad Company in the amount of \$500.00. If you require formal billing, you may consider this letter as a formal bill. In compliance with the Internal Revenue Services' new policy regarding their Form 1099, I certify that 94-6001323 is the Railroad Company's correct Federal Taxpayer Identification Number and that Union Pacific Railroad Company is doing business as a corporation.

Under Exhibit B of the enclosed Contractor's Right of Entry Agreement, you are required to procure Railroad Protective Liability Insurance (RPLI) for the duration of this project. As a service to you, Union Pacific is making this coverage available to you. If you decide that acquiring this coverage from the Railroad is of benefit to you, please contact Mr. Mike McGrade of Marsh USA @ 800-729-7001, e-mail: michael.mcgrade@marsh.com.

This agreement will not be accepted by the Railroad Company until you have returned all of the following to the undersigned at Union Pacific Railroad Company:

1. Executed, unaltered duplicate original counterparts of the Contractor's Right of Entry Agreement;
2. Your check in the amount of \$500.00 to pay the required balance due of the required Contractor's Right of Entry fee. (The Folder Number 2477-64 and the name "Jan R. Bornholdt" should be written on the check to insure proper credit).
3. If you require formal billing, you may consider this letter as a formal bill;



4. Copies of all of your up-to-date General Liability, Auto Liability & Workman's Compensation Insurance Certificates (*yours and all contractors'*), naming Union Pacific Railroad Company as additional insured;
4. Copy of your up-to-date Railroad Protective Liability Insurance Certificate (*yours and all contractors'*), naming Union Pacific Railroad Company as additional insured.

**RETURN ALL OF THESE REQUIRED ITEMS TOGETHER IN ONE ENVELOPE.
DO NOT MAIL ANY ITEM SEPARATELY.**

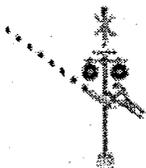
If you have any questions concerning this agreement, please contact me as noted below. Have a safe day!

Jan R. Bornholdt

Senior Manager Contracts

Phone: (402) 544-8549

e-mail: jrbornho@up.com





CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

THIS AGREEMENT is made and entered into as of the _____ day of _____, 200____, by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation ("Railroad"); and

(NAME OF CONTRACTOR)
a _____ corporation ("Contractor").
(State of Corporation)

RECITALS:

Contractor has been hired by *the Lake County Department of Transportation* to perform work relating to the Skokie Valley Bike Path (the "work"), with all or a portion of such work to be performed on property of Railroad in the vicinity of the Railroad's Mile Post 29.95 on the Railroad's Lake Subdivision in or near Lake Bluff, Lake County, Illinois, as such location is in the general location shown on the Railroad Location Print marked **Exhibit A**, attached hereto and hereby made a part hereof, which work is the subject of a contract dated _____ between Railroad and Lake County Department of Transportation. (Date of C&M Agreement)

The Railroad is willing to permit the Contractor to perform the work described above at the location described above subject to the terms and conditions contained in this Agreement

AGREEMENT:

NOW, THEREFORE, it is mutually agreed by and between Railroad and Contractor, as follows:

ARTICLE 1 - DEFINITION OF CONTRACTOR.

For purposes of this Agreement, all references in this agreement to Contractor shall include Contractor's contractors, subcontractors, officers, agents and employees, and others acting under its or their authority.

ARTICLE 2 - RIGHT GRANTED; PURPOSE.

Railroad hereby grants to Contractor the right, during the term hereinafter stated and upon and subject to each and all of the terms, provisions and conditions herein contained, to enter upon and have ingress to and egress from the property described in the Recitals for the purpose of performing the work described in the Recitals above. The right herein granted to Contractor is limited to those portions of Railroad's property specifically described herein, or as designated by the Railroad Representative named in Article 4.



ARTICLE 3 - TERMS AND CONDITIONS CONTAINED IN EXHIBITS B, C & D.

The terms and conditions contained in **Exhibit B, Exhibit C and Exhibit D**, attached hereto, are hereby made a part of this Agreement.

ARTICLE 4 - ALL EXPENSES TO BE BORNE BY CONTRACTOR; RAILROAD REPRESENTATIVE.

- A. Contractor shall bear any and all costs and expenses associated with any work performed by Contractor, or any costs or expenses incurred by Railroad relating to this Agreement.
- B. Contractor shall coordinate all of its work with the following Railroad representative or his or her duly authorized representative (the "Railroad Representative"):

James Fisher
Manager of Track Maintenance
4823 North 119th Street Room 122
Milwaukee, Wisconsin 53225

Phone: (414) 267 4219
Fax: (414) 267 4156

Brian Millerschoen
Manager of Signal Maintenance
4823 North 119th Street
Room 138
Milwaukee, Wi 53225

Phone: (414) 267 4168
Fax: (414) 267 4150

- C. Contractor, at its own expense, shall adequately police and supervise all work to be performed by Contractor and shall ensure that such work is performed in a safe manner as set forth in Section 7 of **Exhibit B**. The responsibility of Contractor for safe conduct and adequate policing and supervision of Contractor's work shall not be lessened or otherwise affected by Railroad's approval of plans and specifications involving the work, or by Railroad's collaboration in performance of any work, or by the presence at the work site of a Railroad Representative, or by compliance by Contractor with any requests or recommendations made by Railroad Representative.

ARTICLE 5 - TERM; TERMINATION.

- A. The grant of right herein made to Contractor shall commence on the date of this Agreement, and continue until _____, unless sooner terminated as herein provided, or
(Expiration Date)
at such time as Contractor has completed its work on Railroad's property, whichever is earlier. Contractor agrees to notify the Railroad Representative in writing when it has completed its work on Railroad's property.
- B. This Agreement may be terminated by either party on ten (10) days written notice to the other party.

ARTICLE 6 - CERTIFICATE OF INSURANCE.

- A. Before commencing any work, Contractor will provide Railroad with the (i) insurance binders, policies, certificates and endorsements set forth in **Exhibit C** of this Agreement, and (ii) the



insurance endorsements obtained by each subcontractor as required under Section 12 of **Exhibit B** of this Agreement.

B. All insurance correspondence, binders, policies, certificates and endorsements shall be sent to:

*Union Pacific Railroad Company
Attn: Jan R. Bornholdt
Real Estate Department
1400 Douglas Street, MS 1690
Omaha, NE 68179-1690
UPRR Folder No.: 2477-64*

ARTICLE 7 - DISMISSAL OF CONTRACTOR'S EMPLOYEE.

At the request of Railroad, Contractor shall remove from Railroad's property any employee of Contractor who fails to conform to the instructions of the Railroad Representative in connection with the work on Railroad's property, and any right of Contractor shall be suspended until such removal has occurred. Contractor shall indemnify Railroad against any claims arising from the removal of any such employee from Railroad's property.

ARTICLE 8 - ADMINISTRATIVE FEE.

Upon the execution and delivery of this Agreement, Contractor shall pay to Railroad **FIVE HUNDRED DOLLARS (\$500.00)** as reimbursement for clerical, administrative and handling expenses in connection with the processing of this Agreement.

ARTICLE 9 - CROSSINGS.

No additional vehicular crossings (including temporary haul roads) or pedestrian crossings over Railroad's trackage shall be installed or used by Contractor without the prior written permission of Railroad.

ARTICLE 10.- EXPLOSIVES.

Explosives or other highly flammable substances shall not be stored on Railroad's property without the prior written approval of Railroad.

IN WITNESS WHEREOF, the parties hereto have duly executed this agreement in duplicate as of the date first herein written.

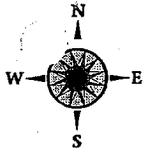
UNION PACIFIC RAILROAD COMPANY
(Federal Tax ID #94-6001323)

By: _____
JAN R. BORNHOLDT
Senior Manager Signboards & Special Contracts

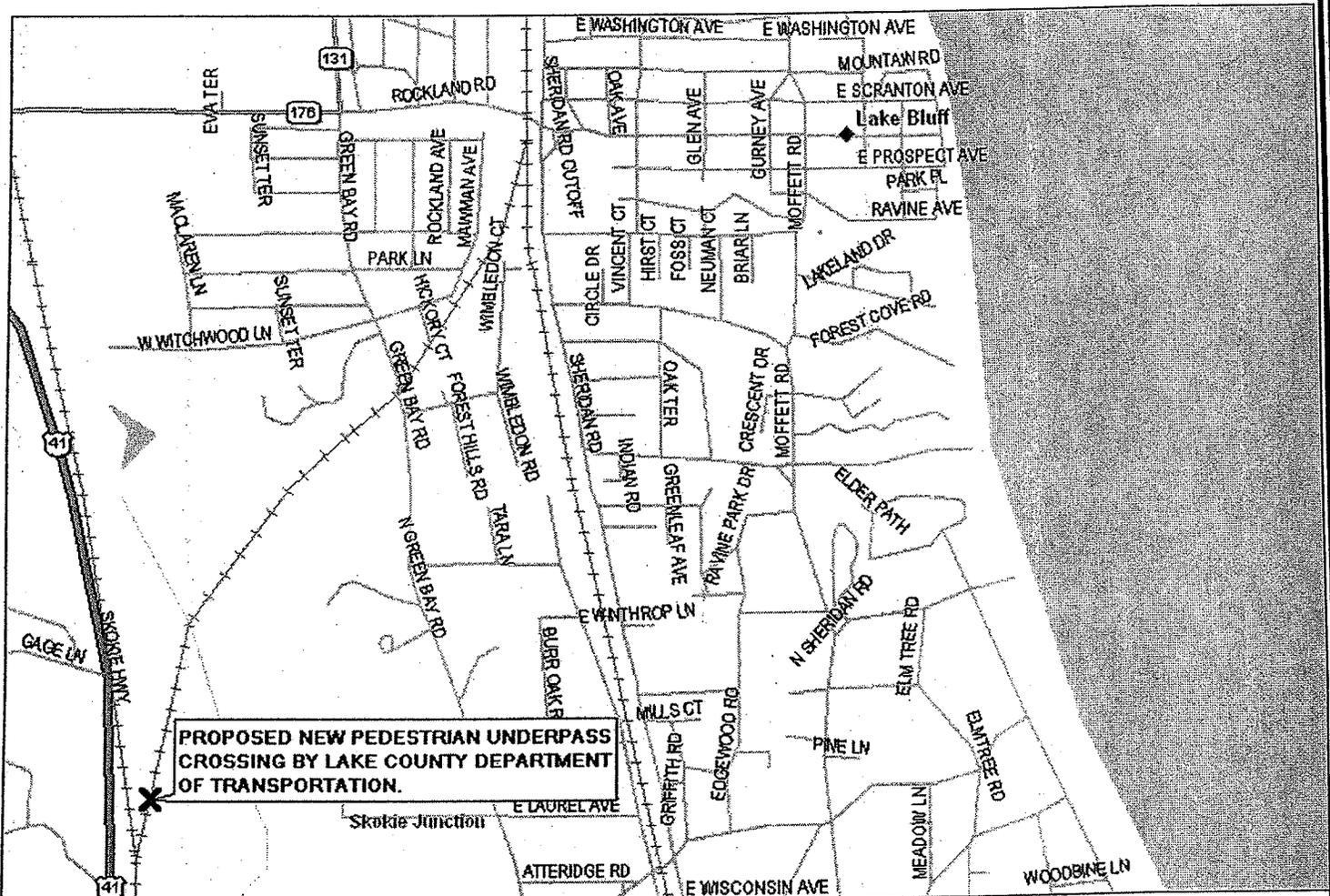
(Name of Contractor)

By: _____

Title: _____



GENERAL LOCATION PRINT TO ACCOMPANY THE PEDESTRIAN CROSSING GRADE SEPARATION AGREEMENT



DeLORME
 Data use subject to license.
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 www.delorme.com

MN (3.2" VV)
 0 1000 2000 ft
 Data Zoom 13-0

- RAILROAD WORK TO BE PERFORMED:**
1. Flagging.
 2. Engineering
 3. Remove track and other track materials for open cut
 4. Install Track and other track materials for open cut
 5. Re-routing of trains and crew for a minimum of 30 hours.

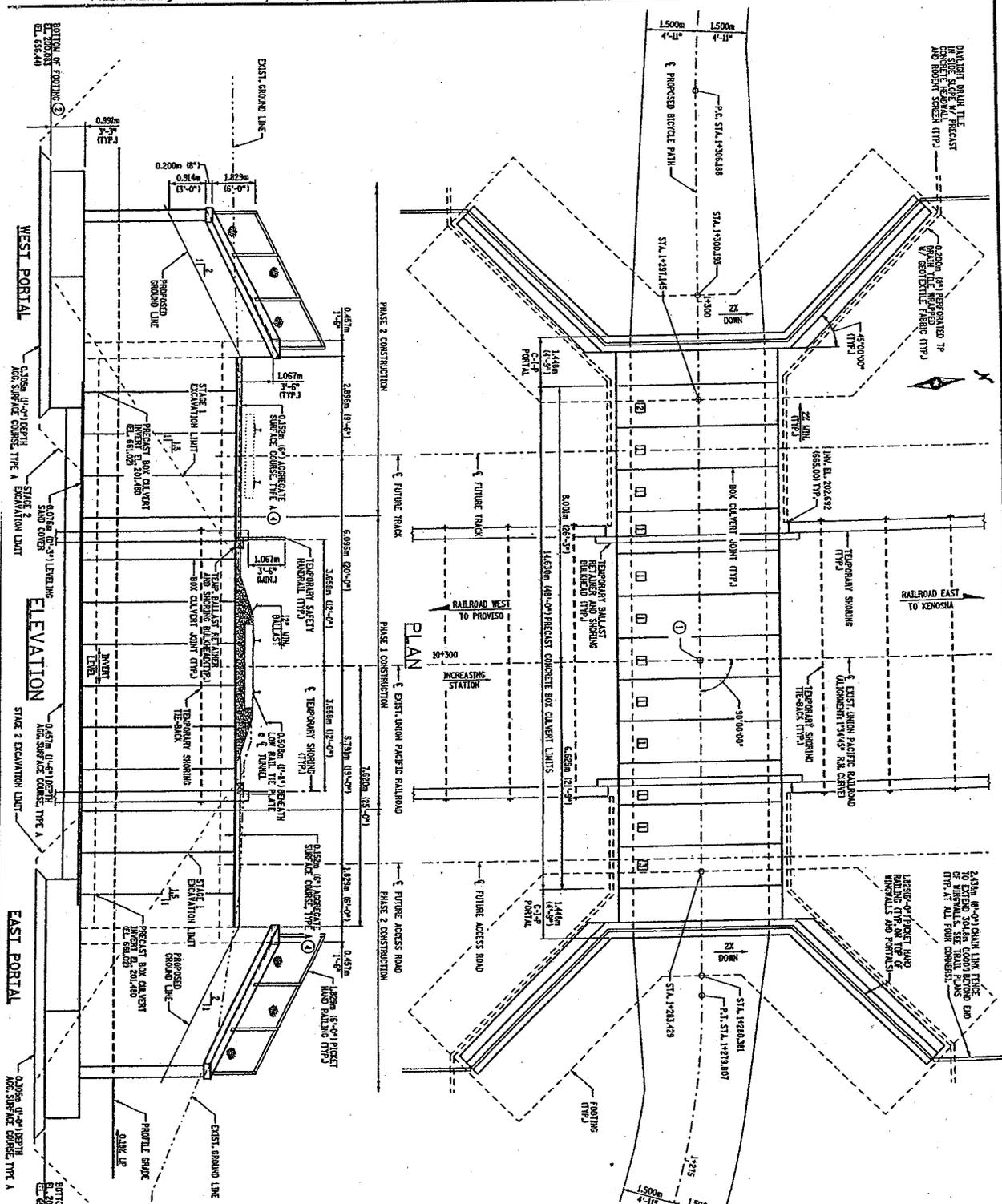
EXHIBIT "A"
UNION PACIFIC RAILROAD COMPANY

LAKE SUBDIVISION
 MILE POST 29.95
 GPS: N 42°, 15.596'; W 87°, 51.686'
 LAKE BLUFF, LAKE COUNTY, ILLINOIS.

To accompany Pedestrian Crossing Agreement with
Lake County Department of Transportation
 for the Skokie Valley Bike Path. Folder No. 2477-64

Date: November 6, 2007

IN ALL OCCASIONS, U.P. COMMUNICATIONS DEPARTMENT MUST BE CONTACTED IN ADVANCE OF ANY WORK TO DETERMINE EXISTENCE AND LOCATION OF FIBER OPTIC CABLE. PHONE: 1-(800) 336-9193



**NOT TO BE USED
FOR CONSTRUCTION**

SUMMARY OF QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BOX CULVERTS	L. SQA	1
REINFORCEMENT BARS, EPWY COATED	LB	15,522
PRECAST CONCRETE BOX CULVERT, 3350mm x 3350mm	L. SQA	1
LIGHTING SYSTEM CONCRETE	L. SQA	1

- CONSTRUCTION NOTES**
1. USE PRECAST CONCRETE BOX CULVERTS.
 2. ALL SHORING SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT RAILROAD LOADS AND TO BE REMOVED AFTER CONSTRUCTION.
 3. ALL SHORING SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT RAILROAD LOADS AND TO BE REMOVED AFTER CONSTRUCTION.
 4. REFER TO SHEET 117 FOR TOTAL BILL OF MATERIALS.
 5. TRANSITION AGGREGATE SURFACES TO EXISTING GRADE.
 6. REMOVE PRECAST CONCRETE BOX CULVERT TYPE A.

GENERAL NOTES:

1. RAILROAD REVIEW AND APPROVAL OF DESIGN AND SHOP DRAWINGS IS REQUIRED.
 2. ALL SHORING SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT RAILROAD LOADS AND TO BE REMOVED AFTER CONSTRUCTION.
 3. ALL SHORING SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT RAILROAD LOADS AND TO BE REMOVED AFTER CONSTRUCTION.
 4. THE PROPOSED BRIDGE SEPARATION PROJECT SHALL NOT CHANGE THE QUANTITY AND/OR CHARACTERISTICS OF THE FLOW IN THE RAILROAD DITCHES AND/OR BALANCE STRUCTURES.
 5. THE ELEVATION OF THE EXISTING TO-OF-AIL PROFILE SHALL BE VERIFIED BEFORE CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE RAILROAD PRIOR TO CONSTRUCTION.
 6. FOR RAILROAD COORDINATION, PLEASE REFER TO THE RAILROAD VOLUMES REQUIREMENTS AS PART OF THE SPECIAL PROVISIONS.
 7. PRECAST UNITS SHALL BE PRE-CAST AND DIMENSIONED PRIOR TO WORK BEGINS.
 8. STRENGTHEN ALL MATERIAL PRIOR TO WORK BEGINS.
 9. CONTRACTOR RESPONSIBLE FOR COORDINATING ALL RAILROAD PLACING & PROTECTIVE SERVICES.
- DESIGN SPECIFICATIONS:**
 AASHTO ROAD BUILDING FOR RAILROAD BRIDGES (SEE SPECIAL PROVISIONS)
LOADING COOPER EM360 (800) PLUS DIESEL IMPACT
- DESIGN STRESSES:**
 1. 40% OF 60,000 PSI FOR MAIN REINFORCING STEEL
 2. 40% OF 60,000 PSI FOR PRECAST CONCRETE
 3. 216 PSI (150 KSI) FOR CAST-IN-PLACE CONCRETE
 MAX. ALLOWABLE SOIL PRESSURE UNDER FOOTING = 110 KSI (7.5 MPa)



SUGGESTED CONSTRUCTION SEQUENCE

PRIOR TO 30 HOUR WORK WINDOW

1. CONTRACTOR SUBMIT PROPOSED CONSTRUCTION MEANS AND METHODS AND SCHEDULE AND DESIGN CALCULATIONS AND SHOP DRAWINGS TO THE OWNER AND THE COUNTY ENGINEER FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL PROVIDE A TEMPORARY SAFETY RAILING SYSTEM, TEMPORARY SAFETY FENCING, AND PRECAST CONCRETE BOX CULVERT UNITS TO THE OWNER, ENGINEER, AND RAILROAD FOR APPROVAL. CONTRACTOR COORDINATES PRECONSTRUCTION REVIEW MEETINGS WITH THE OWNER, ENGINEER AND RAILROAD.
2. RAILROAD FORCES CUT AND BOLT RAIL AND DOUBLE SPIKE TIES APPROXIMATELY 46 METERS (150 FEET) CENTERED ABOUT THE CENTERLINE OF THE PROPOSED TUNNEL.
3. CONTRACTOR DRIVES TEMPORARY SHORING ON EAST AND WEST SIDE OF TRACK UP TO THE LINE THAT REPRESENTS THE EXTERIOR FACE OF EACH SIDE OF THE PROPOSED BOX CULVERT AND EXCAVATE TO THE STAGE 1 CONSTRUCTION LIMITS. TEMPORARY SHORING SHALL BE PROVIDED BY THE RAILROAD.

DURING 30 HOUR WORK WINDOW

1. CONTRACTOR COORDINATES RAILROAD SAFETY BRIEFINGS AND FLAGGING AND PROTECTIVE SERVICES TO BE PROVIDED BY THE RAILROAD DURING THE 30 HOUR TRACK CLOSURE.
2. RAILROAD FORCES UPROOT AND REMOVE PREVIOUSLY CUT TRACK WITHIN THE WORK WINDOW EXCAVATION LIMITS APPROXIMATELY 1 HOUR.
3. EXCAVATION EMPLOYS THE MATERIALS BEYOND THE TRACK AND WITHIN THE WORK WINDOW AND STAGE 1 EXCAVATION LIMITS APPROXIMATELY 6 HOURS.
4. CONTRACTOR INSTALLS THE ANCHOR GEOROD PLATES AND COMPACTS THE AGGREGATE SURFACE COURSE AND CONSTRUCTION LIMITS. THE ANCHOR GEOROD CONCRETE BOX CULVERT SEGMENTS WITHIN THE STAGE 1 CONSTRUCTION LIMITS, FASTENERS, JOINT BOLTS, GROUTS BOX CULVERT JOINTS AND LIFTING DEPRESSIONS, APPLIES JOINT WATER PROOFING, WATERPROOF AND PROTECTIVE MEMBRANE, AND STAIN PREVENTER AND STAIN RESISTANT APPROXIMATELY 8 HOURS.
5. CONTRACTOR ARGUMENTS BETWEEN THE TEMPORARY SHORING SYSTEM AND UP TO THE TOP OF THE PRECAST BOX CULVERT WITH CONTROLLED DENSITY GLOWMETER FALL APPROXIMATELY 12 HOURS.
6. RAILROAD FORCES PLACE BALLAST, REINSTALL TRACK SECTION AND OPEN TRACK TO TRAFFIC APPROXIMATELY 3 HOURS.
8. THE TIME ALLOTTED FOR EACH WORK WINDOW TASK HAS BEEN ESTIMATED. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A MORE DETAILED SCHEDULE FROM TO THE RAILROAD AND AASHTO.

AFTER 30 HOUR WORK WINDOW

1. SUGGESTED CONSTRUCTION SEQUENCE (PRIOR TO WORK WINDOW) SUGGESTED CONSTRUCTION SEQUENCE (AFTER 30 HOUR WORK WINDOW)
2. CONTRACTOR COORDINATES RAILROAD SAFETY BRIEFINGS AND FLAGGING AND PROTECTIVE SERVICES TO BE PROVIDED BY THE RAILROAD.
3. CONTRACTOR EXCAVATES TO THE STAGE 2 EXCAVATION LIMITS, INSTALLS THE AGGREGATE SURFACE COURSE AND THEN CONSTRUCTS THE FOOTINGS FOR THE EAST AND WEST PORTAL AND MINOWALLS.
4. CONTRACTOR INSTALLS THE ANCHOR GEOROD PLATES AND COMPACTS THE AGGREGATE SURFACE COURSE AND THE BOLTS AND GROUTS BOX CULVERT JOINTS AND LIFTING DEPRESSIONS.
5. CONTRACTOR CONSTRUCTS THE EAST AND WEST TUNNEL PORTALS, MINOWALLS, AND CAST-IN-PLACE BOX CULVERT SEGMENTS.
6. CONTRACTOR APPLIES DAMPROOFING, JOINT WATER PROOFING, WATERPROOFING PROTECTIVE PANELS, AND PROTECTIVE ASPHALT PANELS.
7. CONTRACTOR INSTALLS DRAIN TILE AND BACKFILLS FRONT SIDE OF PORTAL AND MINOWALLS TO SUB GRADE ELEVATION WITH FORMS GRANULAR EMBALLMENT AND THEN ON THE BACK SIDE OF THE WALL UP TO THE LEVEL OF THE TENDON SHEATH THE-BACK SYSTEM.
8. CONTRACTOR REMOVES SHORING THE-BACK SYSTEM AND CONTINUES TO BACKFILL WITH PROBUS GRANULAR EMBALLMENT THEN REMOVES TEMPORARY BALLAST REMAINING BALLAST SAFETY RAILINGS AND SHORING.
9. CONTRACTOR INSTALLS AGGREGATE SURFACE COURSE ADJACENT TO RAILROAD TRACKS, CURBS, PICKET HAND RAILING, AND LIGHTING SYSTEM, AND THEN APPLIES PORTAL CURBS AND CONCRETE PAVEMENT IN TUNNEL.

TOTAL BILL OF MATERIAL FOR TUNNEL

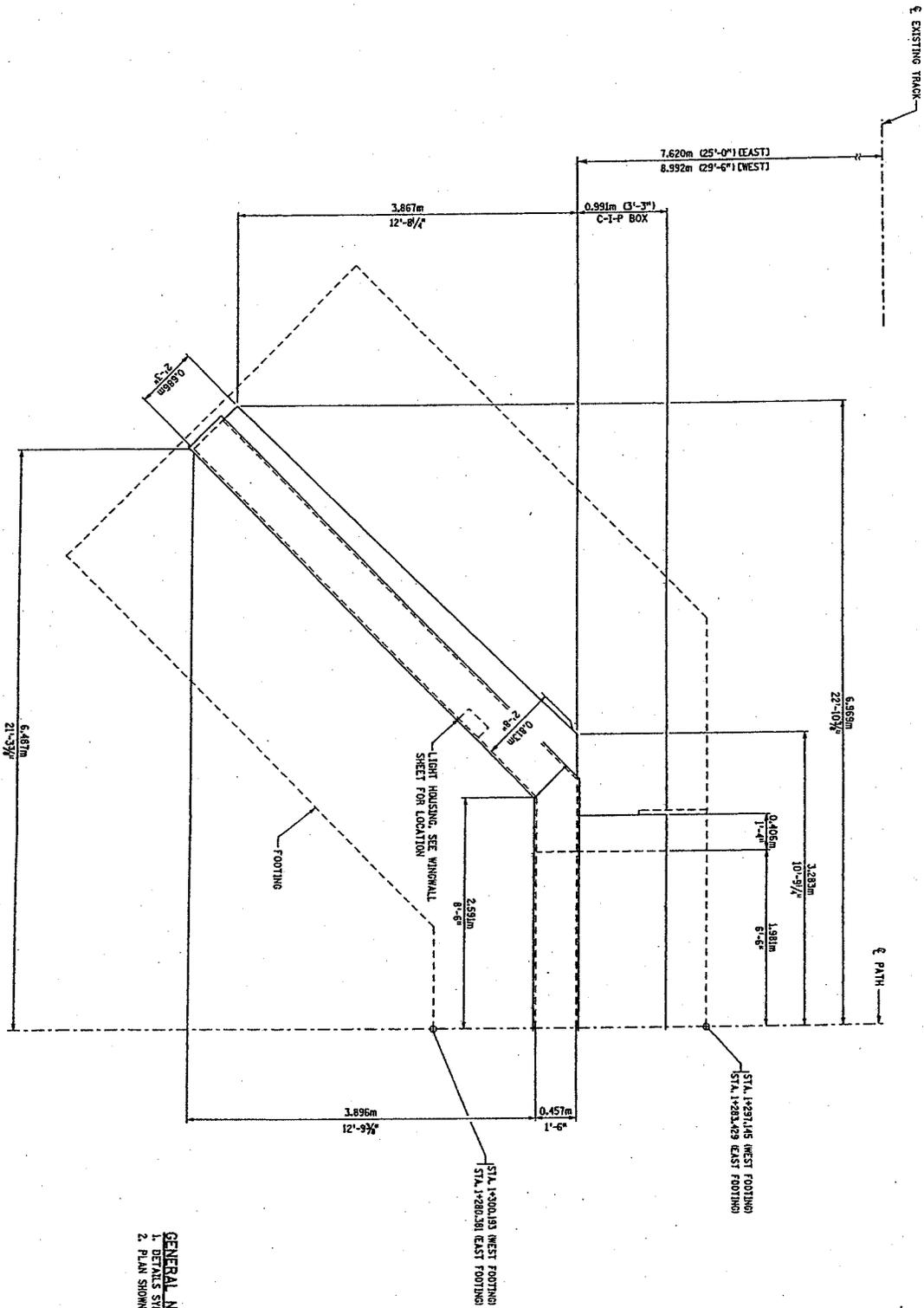
NOTE NO.	DESCRIPTION	UNIT	QUANTITY
1	MOBILIZATION	L SUM	1
2	LIGHTING SYSTEM COMPLETE	KG	19460
3	REINFORCEMENT BARS, EPOXY COATED	CU M	234
4	CONCRETE BOX CULVERTS	CU M	39
5	PCC PAVEMENT	M	1463
6	PRECAST CONCRETE BOX CULVERT 3.362 M X 3.658 M	CU M	1300
7	PROBUS GRANULAR EMBALLMENT, SPECIAL (CV)	CU M	124
8	GEOROD	CU M	130
9	AGGREGATE SURFACE COURSE, TYPE A (CV)	CU M	325
10	CONTROL DENSITY FILL	L SUM	1
11	STRUCTURAL EXCAVATION	L SUM	1
12	CONCRETE FORM LINER	CU M	281
13	SAND OVER (CV)	CU M	7
14	DAMP PROOFING	CU M	300
15	PROTECTIVE ASPHALT PANELS (2 MM THICK)	CU M	160
16	JOINT WATERPROOFING	M	206
17	200 MM Ø PERFORATED TP PIPE DRAIN	M	60
18	PICKET HAND RAILING	M	34
19	TEMPORARY SHORING	L SUM	1
20	RAILROAD COORDINATION	L SUM	1

QUANTITY NOTES:

1. TENDERING HARDWARE CONCRETE PAD AND ALL OTHER MISCELLANEOUS ELECTRICAL ITEMS INCIDENTAL. DOES NOT INCLUDE WORK-UP TO POWER.
2. INCLUDES REINFORCEMENT FOR ALL CAST-IN-PLACE CONCRETE CULVERTS, TUNNEL FOOTINGS, PORTALS AND MINOWALLS.
3. INCLUDES ALL CAST-IN-PLACE CONCRETE CULVERTS, TUNNEL FOOTINGS, PORTALS, AND MINOWALLS.
4. PRETTING AND JOINT PREPARATION, THE BOLTS, JOINT SEALANT, JOINT PROTECTIVE PANELS, JOINT CHALKING, AND PROTECTIVE INCIDENTAL.
5. INCLUDES ENTIRE LIMITS OF FILL REQUIRED BEYOND CONTROL DENSITY FILL AREA, INCLUDING BOTH SIDES OF MINOWALLS UP TO RR AND/OR TRAIL SUBGRADE.
6. STRUCTURAL GEOROD PROVIDED FROM TENSAR CORPORATION OR APPROVED EQUAL.
7. INCLUDES BALL, GROUT BED AND PAST MATERIAL BELOW PRECAST CONCRETE BOX CULVERT AND CAST-IN-PLACE CONCRETE FOOTINGS.
8. VARIING LIMITS DUE TO CONTRACTOR'S ACTUAL EXCAVATION LIMITS INCIDENTAL.
9. CLEANING AND GRUBBING, TOPSOIL SALVAGE, AND REMOVAL OF BALLAST AND SUBBALLAST INCIDENTAL.
10. INCLUDES CONCRETE STAINING, SAMPLE PIECE FOR OWNER'S APPROVAL, OF STAIN INCIDENTAL.
11. INCLUDES ALL EXPOSED PRECAST AND CAST-IN-PLACE CONCRETE SURFACES NOT RECEIVING PROTECTIVE FORM LINER.
12. REQUIRED ON ALL EXPOSED PRECAST AND CAST-IN-PLACE CONCRETE EXCEPT FOOTINGS AND BOTTOM OF BOX CULVERT UNITS.
13. JOINT WATERPROOFING REQUIRED AT ALL PRECAST CONCRETE JOINTS AND CAST-IN-PLACE CONCRETE CONSTRUCTION JOINTS.
14. HARDWARE, GEOTEXTILE FABRIC SOCK, PRECAST CONCRETE HEADWALL AND ROBERT SCREEN INCIDENTAL.
15. DESIGN AND SHOP DRAWINGS INCIDENTAL.
16. DESIGN SHOP DRAWINGS TEMPORARY SAFETY HANDRAIL, THE-BACK SYSTEM BALLAST RETAINERS, AND SHORING BEHIND INCIDENTAL.
17. RAILROAD WORK AND PROTECTIVE SERVICES WILL BE BILLED DIRECTLY TO THE COUNTY CONTRACTOR BY THE RAILROAD. ALL RAILROAD PROTECTIVE SERVICES, REVIEWS, MEETINGS, AND WORK PERFORMED

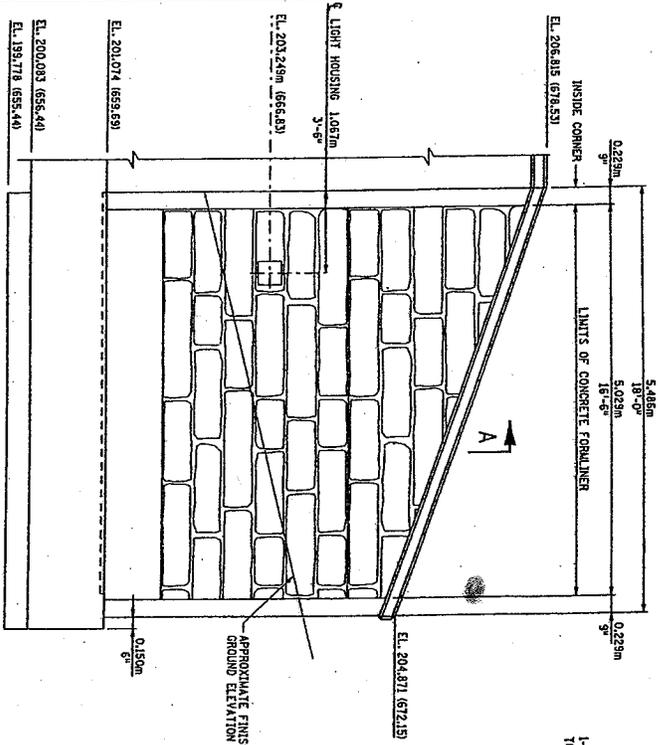
NOT TO BE USED FOR CONSTRUCTION

WINGWALL PLAN



GENERAL NOTES:
 1. DETAILS SYMMETRIC ABOUT CENTERLINE OF PATH.
 2. PLAN SHOWN DEPICTS THE EAST PORTAL, THE WEST PORTAL IS SIMILAR, OPPOSITE HAND.

NOT TO BE USED
 FOR CONSTRUCTION

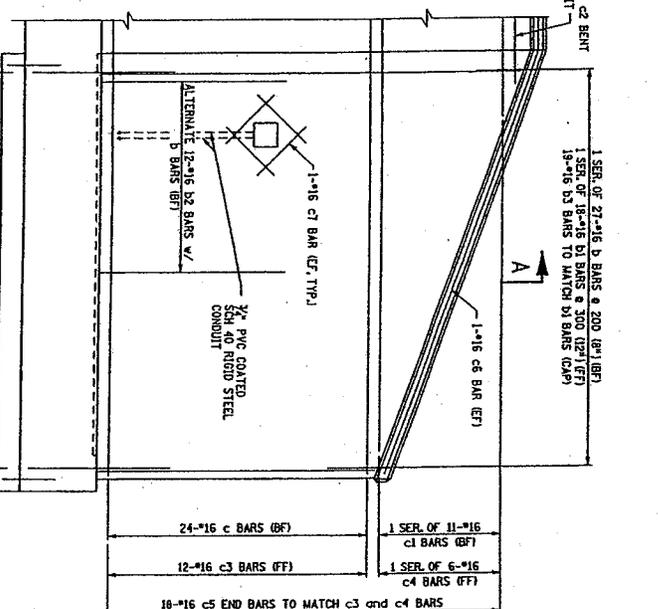


TYPICAL, INSIDE WINGWALL ELEVATION

BILL OF REINFORCEMENT (CON'T.)

BAR	NO.	SIZE	LENGTH (m)	LENGTH (FT)	SHAPE
d	38	#16	0.864	2'-10"	
d1	2	#16	5.486	18'-0"	
d2	56	#19	6.326	20'-8"	
d3	4	#19	5.716	18'-8"	
d4	2	2 SER. #19	3.251	10'-8"	
d5	OF 14	#19	8.939	29'-0"	
d6	14	#22	4.420	14'-6"	
d7	14	#19	4.280	14'-0"	
d8	1 SER. #16	#16	0.940	3'-0"	
d9	1 SER. #16	#16	0.940	3'-0"	
d10	1 SER. #16	#16	0.940	3'-0"	
d11	2 SER. #16	#16	1.880	6'-0"	
d12	2 SER. #16	#16	1.880	6'-0"	
d13	2 SER. #16	#16	1.880	6'-0"	
d14	2 SER. #16	#16	1.880	6'-0"	
d15	2 SER. #16	#16	1.880	6'-0"	
d16	2 SER. #16	#16	1.880	6'-0"	
d17	2 SER. #16	#16	1.880	6'-0"	
d18	2 SER. #16	#16	1.880	6'-0"	
d19	2 SER. #16	#16	1.880	6'-0"	
d20	2 SER. #16	#16	1.880	6'-0"	
d21	2 SER. #16	#16	1.880	6'-0"	
d22	2 SER. #16	#16	1.880	6'-0"	
d23	2 SER. #16	#16	1.880	6'-0"	
d24	2 SER. #16	#16	1.880	6'-0"	
d25	2 SER. #16	#16	1.880	6'-0"	
d26	2 SER. #16	#16	1.880	6'-0"	
d27	2 SER. #16	#16	1.880	6'-0"	
d28	2 SER. #16	#16	1.880	6'-0"	
d29	2 SER. #16	#16	1.880	6'-0"	
d30	2 SER. #16	#16	1.880	6'-0"	
d31	2 SER. #16	#16	1.880	6'-0"	
d32	2 SER. #16	#16	1.880	6'-0"	
d33	2 SER. #16	#16	1.880	6'-0"	
d34	2 SER. #16	#16	1.880	6'-0"	
d35	2 SER. #16	#16	1.880	6'-0"	

NOTE:
BILL OF REINFORCEMENT IS FOR ONE END OF TUNNEL ONLY.
THIS END IS THE HEADWALL.
ALL REINFORCEMENT BARS TO BE EPOXY COATED.

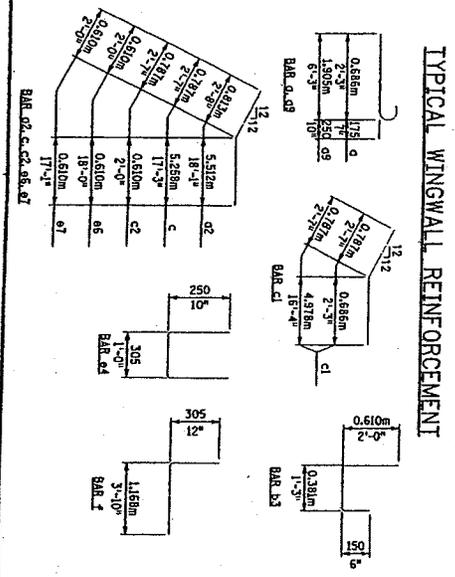


TYPICAL WINGWALL REINFORCEMENT

BILL OF REINFORCEMENT (CON'T.)

BAR	NO.	SIZE	LENGTH (m)	LENGTH (FT)	SHAPE
c	48	#16	6.045	19'-10"	
c1	2 SER. #16	#16	1.473	4'-10"	
c2	2	#16	5.786	18'-11"	
c3	24	#16	5.842	19'-2"	
c4	2 SER. #16	#16	0.838	2'-8"	
c5	36	#16	1.486	4'-10"	
c6	4	#16	5.765	18'-11"	
c7	16	#16	0.914	3'-0"	
c8	16	#16	1.372	4'-6"	
c9	2 SER. #16	#16	0.713	2'-4"	
c10	2 SER. #16	#16	0.713	2'-4"	
c11	2 SER. #16	#16	0.713	2'-4"	
c12	2 SER. #16	#16	0.713	2'-4"	
c13	2 SER. #16	#16	0.713	2'-4"	
c14	2 SER. #16	#16	0.713	2'-4"	
c15	2 SER. #16	#16	0.713	2'-4"	
c16	2 SER. #16	#16	0.713	2'-4"	
c17	2 SER. #16	#16	0.713	2'-4"	
c18	2 SER. #16	#16	0.713	2'-4"	
c19	2 SER. #16	#16	0.713	2'-4"	
c20	2 SER. #16	#16	0.713	2'-4"	
c21	2 SER. #16	#16	0.713	2'-4"	
c22	2 SER. #16	#16	0.713	2'-4"	
c23	2 SER. #16	#16	0.713	2'-4"	
c24	2 SER. #16	#16	0.713	2'-4"	
c25	2 SER. #16	#16	0.713	2'-4"	
c26	2 SER. #16	#16	0.713	2'-4"	
c27	2 SER. #16	#16	0.713	2'-4"	
c28	2 SER. #16	#16	0.713	2'-4"	
c29	2 SER. #16	#16	0.713	2'-4"	
c30	2 SER. #16	#16	0.713	2'-4"	
c31	2 SER. #16	#16	0.713	2'-4"	
c32	2 SER. #16	#16	0.713	2'-4"	
c33	2 SER. #16	#16	0.713	2'-4"	
c34	2 SER. #16	#16	0.713	2'-4"	
c35	2 SER. #16	#16	0.713	2'-4"	
c36	2 SER. #16	#16	0.713	2'-4"	
c37	2 SER. #16	#16	0.713	2'-4"	
c38	2 SER. #16	#16	0.713	2'-4"	
c39	2 SER. #16	#16	0.713	2'-4"	
c40	2 SER. #16	#16	0.713	2'-4"	
c41	2 SER. #16	#16	0.713	2'-4"	
c42	2 SER. #16	#16	0.713	2'-4"	
c43	2 SER. #16	#16	0.713	2'-4"	
c44	2 SER. #16	#16	0.713	2'-4"	
c45	2 SER. #16	#16	0.713	2'-4"	
c46	2 SER. #16	#16	0.713	2'-4"	
c47	2 SER. #16	#16	0.713	2'-4"	
c48	2 SER. #16	#16	0.713	2'-4"	
c49	2 SER. #16	#16	0.713	2'-4"	
c50	2 SER. #16	#16	0.713	2'-4"	
c51	2 SER. #16	#16	0.713	2'-4"	
c52	2 SER. #16	#16	0.713	2'-4"	
c53	2 SER. #16	#16	0.713	2'-4"	
c54	2 SER. #16	#16	0.713	2'-4"	
c55	2 SER. #16	#16	0.713	2'-4"	
c56	2 SER. #16	#16	0.713	2'-4"	
c57	2 SER. #16	#16	0.713	2'-4"	
c58	2 SER. #16	#16	0.713	2'-4"	
c59	2 SER. #16	#16	0.713	2'-4"	
c60	2 SER. #16	#16	0.713	2'-4"	
c61	2 SER. #16	#16	0.713	2'-4"	
c62	2 SER. #16	#16	0.713	2'-4"	
c63	2 SER. #16	#16	0.713	2'-4"	
c64	2 SER. #16	#16	0.713	2'-4"	
c65	2 SER. #16	#16	0.713	2'-4"	
c66	2 SER. #16	#16	0.713	2'-4"	
c67	2 SER. #16	#16	0.713	2'-4"	
c68	2 SER. #16	#16	0.713	2'-4"	
c69	2 SER. #16	#16	0.713	2'-4"	
c70	2 SER. #16	#16	0.713	2'-4"	
c71	2 SER. #16	#16	0.713	2'-4"	
c72	2 SER. #16	#16	0.713	2'-4"	
c73	2 SER. #16	#16	0.713	2'-4"	
c74	2 SER. #16	#16	0.713	2'-4"	
c75	2 SER. #16	#16	0.713	2'-4"	
c76	2 SER. #16	#16	0.713	2'-4"	
c77	2 SER. #16	#16	0.713	2'-4"	
c78	2 SER. #16	#16	0.713	2'-4"	
c79	2 SER. #16	#16	0.713	2'-4"	
c80	2 SER. #16	#16	0.713	2'-4"	

NOTE:
BILL OF REINFORCEMENT IS FOR ONE END OF TUNNEL ONLY.
THIS END IS THE HEADWALL.
ALL REINFORCEMENT BARS TO BE EPOXY COATED.

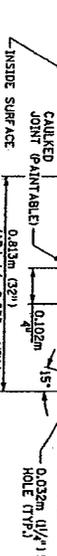
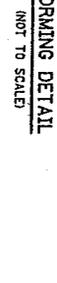
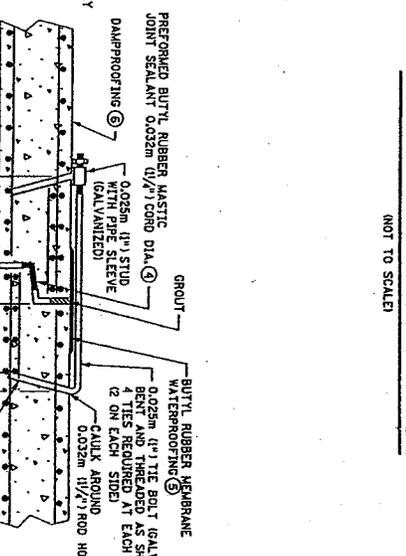
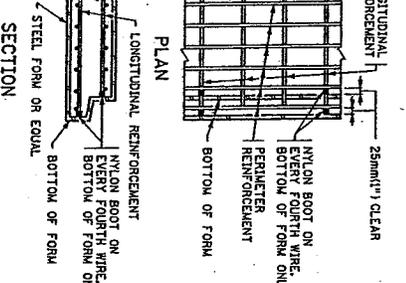
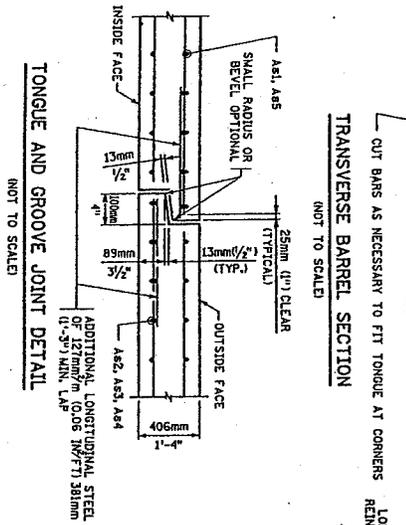
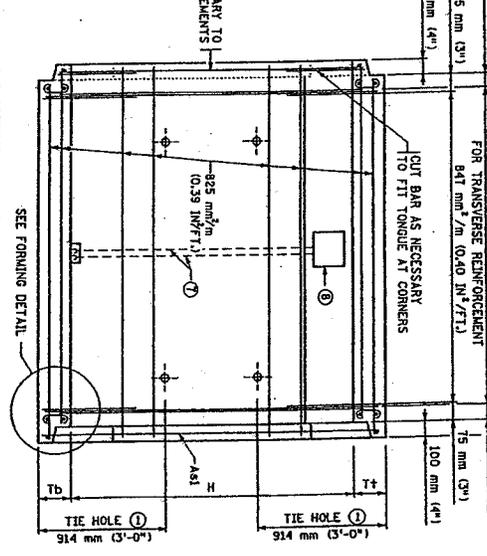
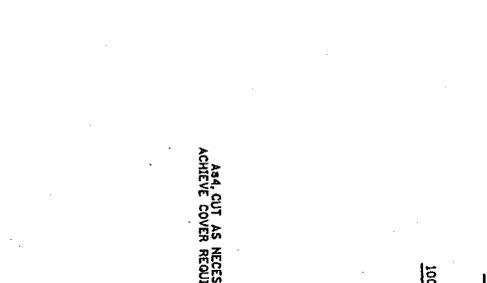
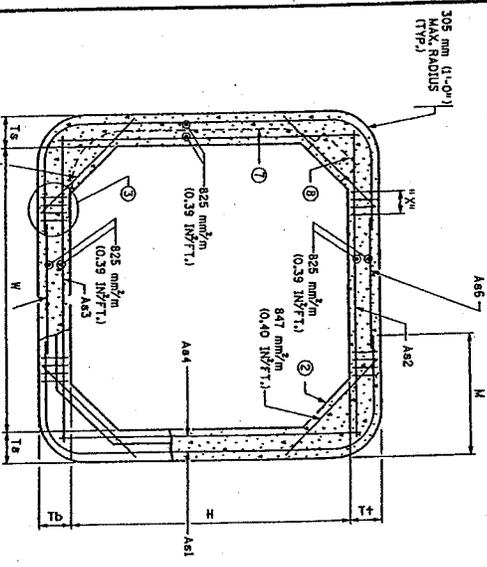


TYPICAL WINGWALL REINFORCEMENT

SECTION A-A

- GENERAL NOTES:
1. CONCRETE FORMLINER TO PROJECT A MINIMUM OF 2" BELOW FINISHED GROUND ELEVATION.
 2. LIGHT HOUSING MAY BE SHIFTED SLIGHTLY TO ACCOMMODATE FORMLINER PATTERN.
 3. TYPICAL FOR ALL 4 WINGWALLS.
 4. SEE SHEET T11 FOR RAILING ANCHOR DETAILS.

NOT TO BE USED FOR CONSTRUCTION



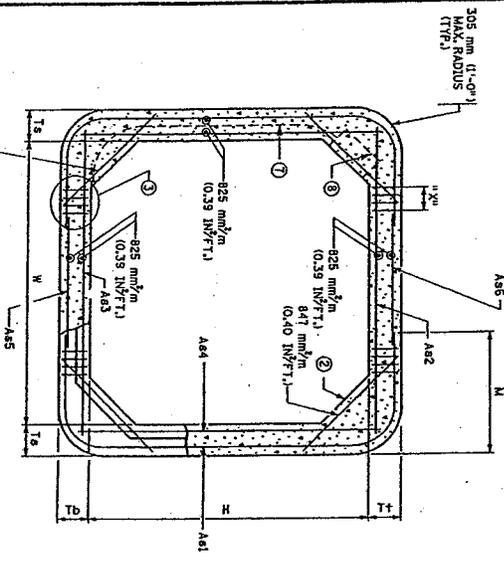
PRECAST BOX CULVERT BARREL INFORMATION

LOCATION	SIZE	F/C	OVERFILL LIMITS	DIMENSIONS						WEIGHT												
				W	H	Tf	Td	Ts	W	H	Tf	Td	Ts									
TYPE 12.3	1219mm	41.4 MPa	2.362m	3362mm	3559mm	406mm	406mm	406mm	16,682 kg/m	3006 mm ² /m	7,824m	1,177m	3831 mm ² /m	1,81 in/ft	14,00'	1,89 in/ft	14,00'	1,89 in/ft	13,00'	1,23 in/ft	13,50'	1,23 in/ft
TYPE 12.3	41	6 KSI	7.75'	13'	12'	16"	16"	16"	11,210 lb/ft	1,42 in ² /ft	25,67'	5,83'	1,81 in ² /ft	14,00'	1,89 in/ft	14,00'	1,89 in/ft	13,00'	1,23 in/ft	13,50'	1,23 in/ft	

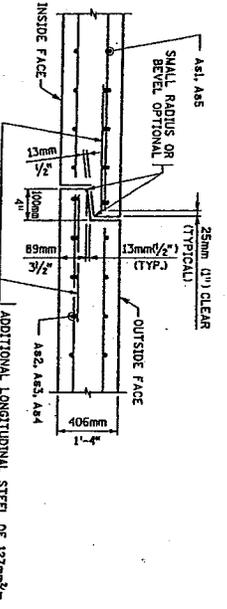
NOT TO BE USED FOR CONSTRUCTION

- GENERAL NOTES:**
- CULVERTS TO BE CONSTRUCTED AS PER AREA.MA CHAPTER 8, PARTS 1 & 16 EXCEPT AS NOTED.
 - THE SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO AREA.MA REQUIREMENTS OF ASTM A618, GRADE 40 (ASTM A618, GRADE 60). WELDED STEEL WIRE FABRIC SHALL CONFORM TO ASTM A976 (ASTM A976) WITH AN ALLOWABLE TENSILE STRESS OF 169 MPa (24,000 PSI).
 - SOLO AND (2) MIN. CONCRETE FLOORING OR AND BRIDGE DECKING, INCLUDING SHEAR REINFORCEMENT, SHALL BE DEVELOPED IN ACCORDANCE WITH THE LATEST AREA DESIGN SPECIFICATIONS, COVERED EGG LOADING OR ALTERNATE LOAD.
 - THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH THE LATEST AREA DESIGN SPECIFICATIONS, COVERED EGG LOADING OR ALTERNATE LOAD.
 - WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS.
 - WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.
 - THE MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 41.4 MPa (6 KSI) WITH NO CALCIUM CHLORIDE ALLOWED.
 - SHOP DRAWING APPROVAL IS REQUIRED BY THE ENGINEER AND RAILROAD.
 - WEIGHT IS BASED ON 2,400 kg/m³ (150 PCF).
 - ALL REINFORCEMENT LENGTHS AND AREAS ARE MINIMUM REQUIREMENTS.
 - BOTTOM, SIDES & TOP JOINTS IN BOX CULVERTS SHALL BE WATERPROOFED WITH BUTYL RUBBER MEMBRANE (INCIDENTAL).
 - PRECAST BOX CULVERTS WILL BE INCLUDED IN THE QUANTITIES FOR PRECAST CONCRETE BOX CULVERT, 1,829m x 3,569m PAYMENT.
 - LIFTING LUGS SHALL NOT PENETRATE THROUGH CULVERT WALL. RECESSED LIFTING PINS SHALL BE FILLED WITH GROUT AFTER SETTING UNITS.

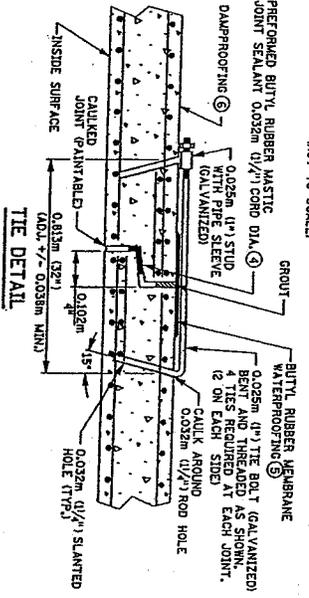
- CONSTRUCTION NOTES:**
- CULVERT TIES ARE TO BE 38 mm (1 1/2) DIAMETER ROBE FOR JOINT TIES. EACH END OF EACH TIE SHALL HAVE FOUR TIES AND ON EACH SIDE OF THE BOX CUT TIE INCLUDING CONNECTION TO CAST-IN-PLACE CLOSURE SEGMENT (INCIDENTAL).
 - 305 mm (12") HANCHOK SIZE.
 - THE MAXIMUM SHEAR REINFORCEMENT SPACING IN THE LONGITUDINAL DIRECTION SHALL BE 150 mm (6").
 - 31 mm (1 1/4) DIA. PERFORMED BUTYL RUBBER MASTIC JOINT SEALANT SHALL BE PLACED ON BOTTOM, SIDES & TOP OF BOX CULVERT & ALL JOINT LOCATIONS (INCIDENTAL).
 - BOTTOM, SIDE AND TOP JOINTS OF ALL PRECAST & CAST-IN-PLACE UNITS SHALL BE WATERPROOFED WITH BUTYL RUBBER MEMBRANE (INCIDENTAL). EACH PRECAST UNIT SHALL BE DAMPROOFED ON THE OUTSIDE FACE OF THE TOP AND BOTH SIDES. DAMPROOFING SHALL NOT BE WITHIN THE LIMITS OF THE JOINT MEMBRANE (INCIDENTAL).
 - 19 mm (3/4) SCH 40 PIG COATED RIBD STEEL CONDUIT CAST IN CULVERT WALL. ELBOW OUT AT HANCHOK FLOOR LINE. PROVIDE 50 mm (2") OF CLEARANCE ABOVE CULVERT FLOOR. PROVIDE BLOCK-OUT AND FLUSH MOUNTED PIGGED CONDUIT COUPLINGS AT THAT LOCATION.
 - LIGHT BACKBOX INTO HANCHOK, COORDINATE PLACEMENT WITH ELECTRICAL. BACKBOX SHALL BE CENTERED IN HANCHOK IN BOTH THE VERTICAL AND LONGITUDINAL DIRECTIONS (SEE SHEET T11 FOR LIGHTING DETAILS).



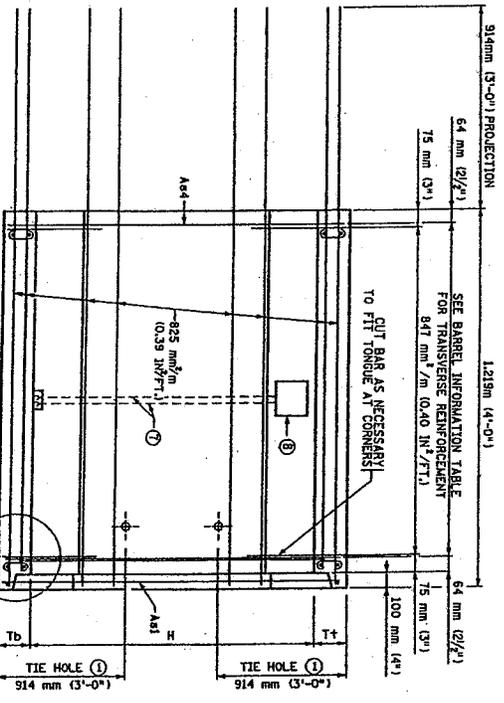
TRANSVERSE BARREL SECTION
 (NOT TO SCALE)



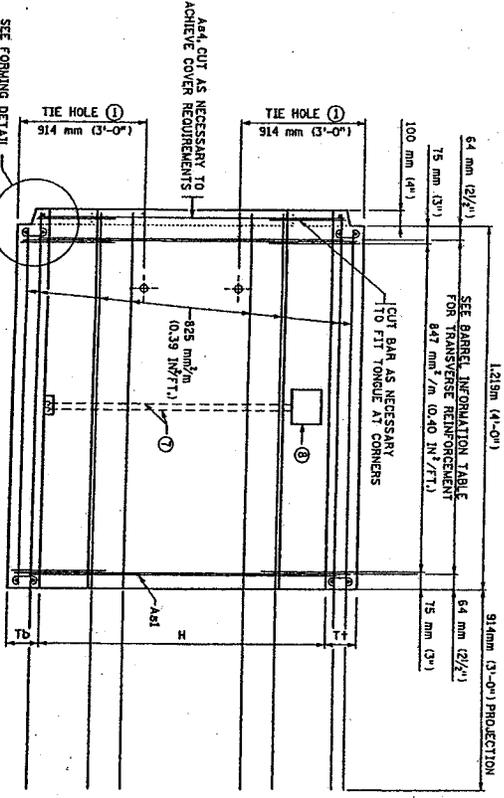
TONGUE AND GROOVE JOINT DETAIL
 (NOT TO SCALE)



TIE HOLE DETAIL
 (NOT TO SCALE)

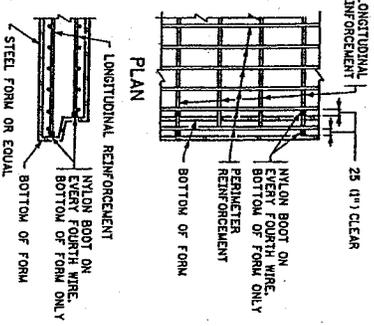


LONGITUDINAL BARREL SECTION - TYPE 2
 (NOT TO SCALE)



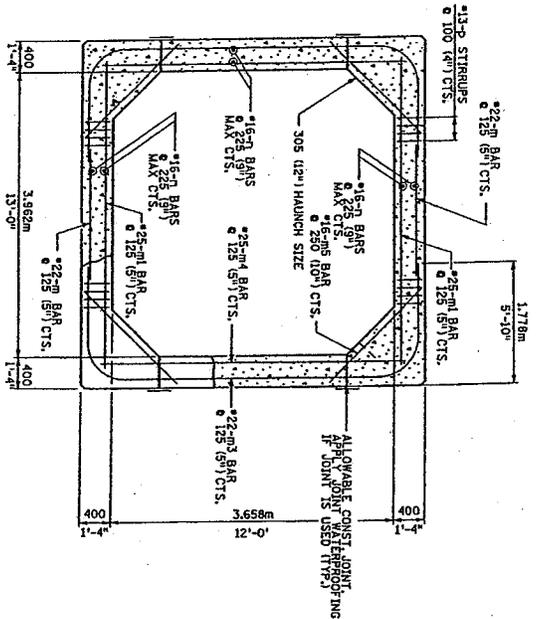
LONGITUDINAL BARREL SECTION - TYPE 3
 (NOT TO SCALE)

- GENERAL NOTES:**
1. SEE PRECAST BOX CURVERT DETAILS - TYPE 1 SHEET FOR GENERAL AND CONSTRUCTION NOTES, BARREL DIMENSIONS AND REINFORCEMENT INFORMATION.
 2. BAR COUPLERS MAY BE USED INSTEAD OF REBAR PROTECTION IF APPROVED. DETAIL SUPPLIED BY CONTRACTOR IS APPROVED BY THE ENGINEER.

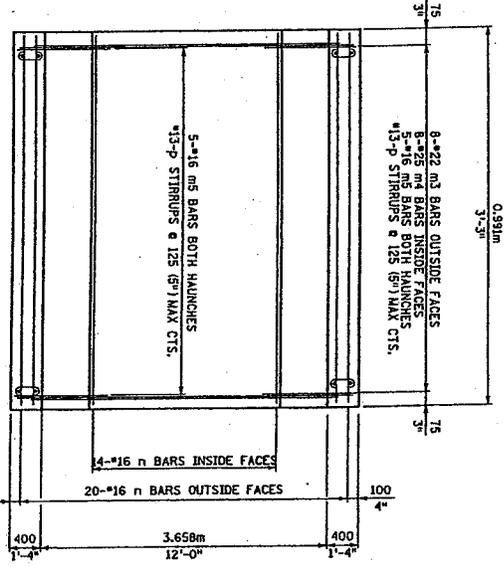


FORMING DETAIL
 (NOT TO SCALE)

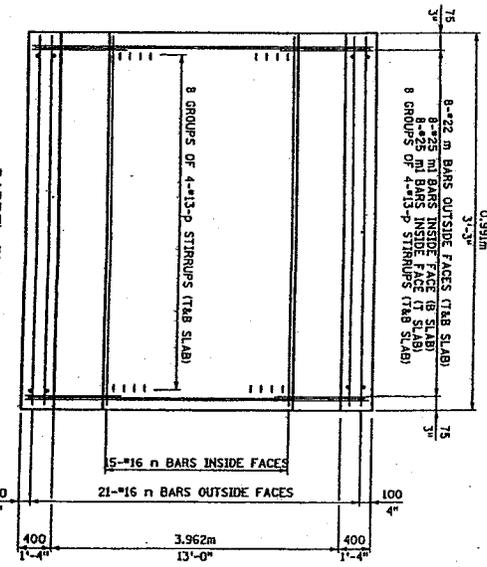
NOT TO BE USED FOR CONSTRUCTION



TRANSVERSE BARREL SECTION
 (NOT TO SCALE)



LONGITUDINAL BARREL SECTION
 (NOT TO SCALE)

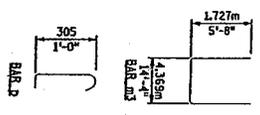


BARREL PLAN
 (NOT TO SCALE)

BILL OF REINFORCEMENT

BAR	NO.	SIZE	LENGTH (m)	LENGTH (FT)	SHARE
m	16	#22	4.674	15'-4"	
m	16	#25	4.674	15'-4"	
n3	16	#22	7.823	25'-8"	
m4	16	#25	4.369	14'-4"	
m5	20	#16	1.321	4'-4"	
n	140	#16	0.889	2'-11"	
p	128	#13	0.533	1'-9"	
TOTAL WEIGHT PER CAST-IN-PLACE BOX = 1450 KG (3207 LB)					

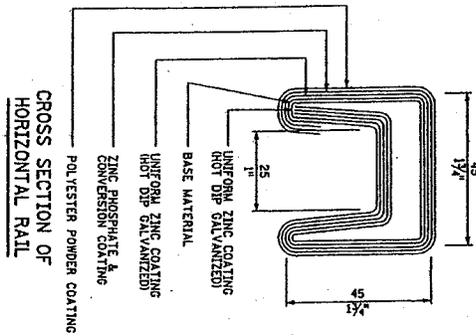
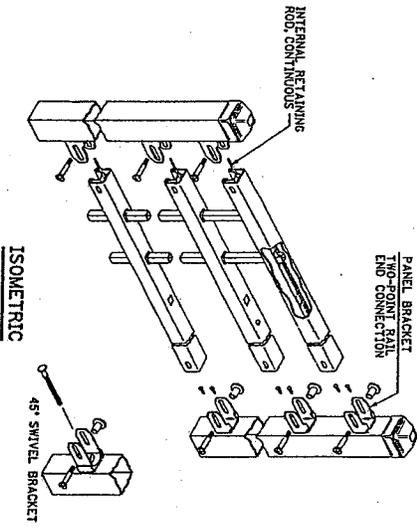
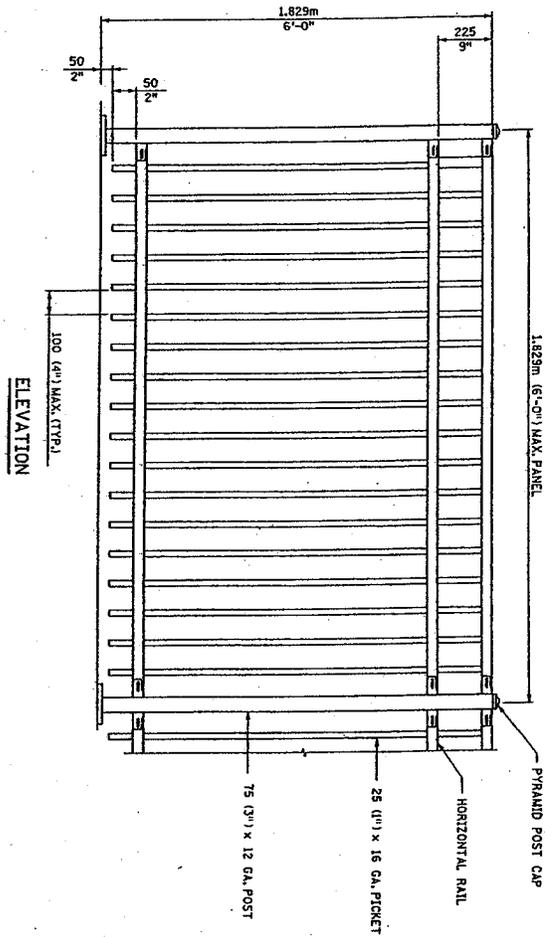
NOTE: BILL OF REINFORCEMENT IS FOR ONE SECTION OF CAST-IN-PLACE BOX CULVERT (2 REQUIRED).
 ALL REINFORCEMENT BARS TO BE EPOXY COATED.



GENERAL NOTES:

1. THE SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF ASTM A618, GRADE 420 (ASTM 615, GRADE 60), WITH AN ALLOWABLE TENSILE STRESS OF 108 MPa (15,400 PSI).
2. SILENT (2") MIN. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT.
3. THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH THE LATEST AREA DESIGN SPECIFICATIONS, COOPER E80 LOADING OR ALTERNATE 100 KIP LOAD.
4. THE MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 41.4 MPa (6 KSI) AT 28 DAYS WITH NO CALCULUM CHLORIDE ALLOWED.
5. SIDE & TOP JOINTS SHALL BE WATERPROOFED WITH BUTYL RUBBER MEMBRANE (INCIDENTAL).

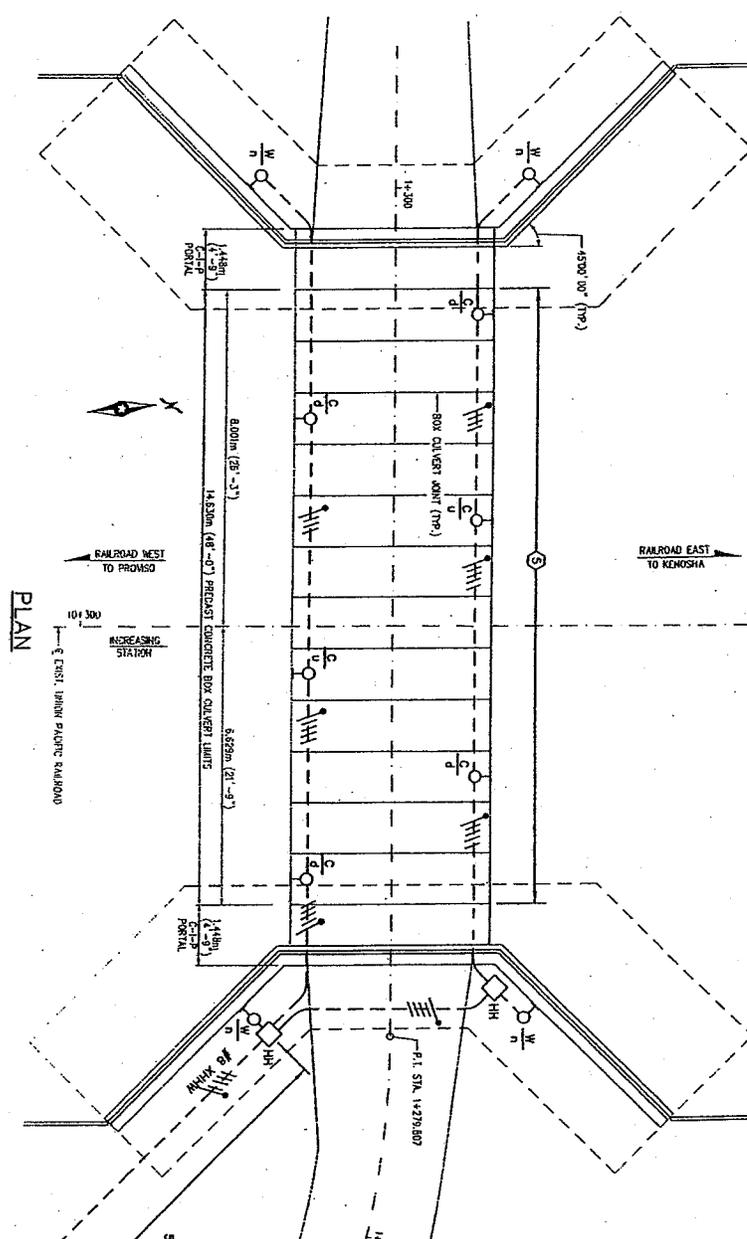
**NOT TO BE USED
 FOR CONSTRUCTION**



CROSS SECTION OF HORIZONTAL RAIL

- GENERAL NOTES:**
1. SUBMIT DESIGN AND SHOP DRAWINGS FOR ENGINEER APPROVAL.
 2. BASE PLATE AND ANCHOR BOLTS TO BE DESIGNED BY RINGE MANUFACTURER AND APPROVED BY THE ENGINEER. EXPANSION ANCHORS WILL NOT BE ALLOWED.
 3. RAILING COLOR SHALL BE BLACK, INCLUDING BASE PLATE AND ALL EXPOSED HARDWARE.
 4. RAIL POSTS AND PICKETS SHALL BE VERTICAL.
 5. HORIZONTAL RAIL TO FOLLOW SLOPE OF CONCRETE WALLS.
 6. RAILING INCLUDED IN PRICE BID FOR OTHER ITEMS INCIDENTALLY, RAILING TO BE MERCHANT METALS GUARDSMAN OR APPROVED EQUAL.

NOT TO BE USED
FOR CONSTRUCTION



NOT TO BE USED FOR CONSTRUCTION

PLAN

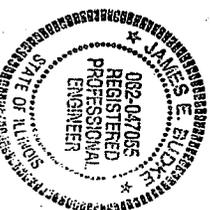
LIGHTING SYSTEM BILL OF MATERIAL

ITEM	UNIT	QUANTITY
ELECTRIC SERVICE AND WIRING	EA	1
CONTROL PANEL	EA	1
TRENCH AND BACKFILL	m	60
1" PVC COATED RIG	m	60
3/4" PVC COATED RIG	m	50
LIGHTING FIXTURE AND LAMP	EA	10
# 8 XHW	m	250
# 8 XHW	m	300
HANDHOLE	EA	2

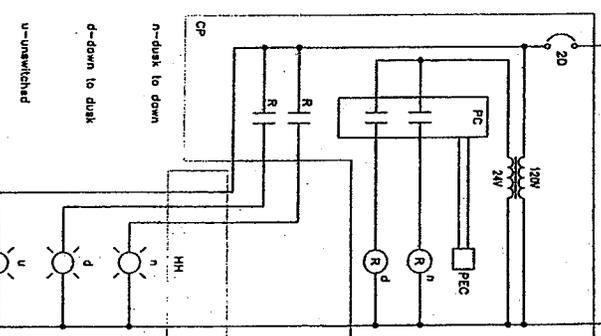
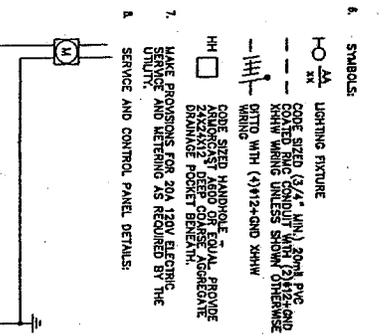
QUANTITIES LISTED ABOVE ARE FOR INFORMATIONAL PURPOSES. ANY CHANGES IN QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO COMPENSATION. PAYMENT INCLUDED IN THE LUMP SUM PRICE BID FOR "LIGHTING SYSTEM COMPLETE".

GENERAL NOTES:

- LIGHTING FIXTURES TYPES C AND W ARE IDENTICAL. PRESSION AND FLOOD LIGHTS WITH SPECIFIC ATTACHMENT AND HOUSING SUITABLE FOR CONCRETE POUR MOUNTING AND (ILLU) LAMP. HADDO EMB4 OR EQUAL.
- SHIP BACKLOGS FOR TYPE C FIXTURES TO BE INSTALLED IN THE PRECAST CONCRETE WITHIN THE TUNNEL BOX COLLECTOR HANDHOLES. INSTALL THE TYPE W FIXTURES FLUSH IN THE ORIGINAL FORMED CONCRETE CONSTRUCTION PER WINDOW PLANS.
- ELECTRICAL WORK SHALL BE COMPLETE WITH DOCUMENTATION DURING CONSTRUCTION. REQUIRED. THE PERMISSION OF EXPRESS REPRESENTATIVE TO ANY REPAIRS OR MODIFICATIONS TO A COMPLETE INSTALLATION SHALL NOT BE CONSIDERED AS RELINQUISHING ITEMS OF WORK.
- VERTICAL 3/4" CONDUIT WILL BE PROVIDED WITHIN THE PRECAST COLLECTOR'S BY THE CONTRACTOR. THE PRECAST FOR FLUSH INSTALLATION WITHIN THE PRECAST COLLECTOR'S.



PANEL LOCATION TO BE DETERMINED BY THE FIELD ENGINEER.



CP - CONTROL PANEL, SS NEMA 3R WITH LEXAN WINDOW FOR PROTECTING CONTROLLER
 DEEP COLLECTOR FOR CONCRETE POUR MOUNTING AND (ILLU) LAMP. HADDO EMB4 OR EQUAL.
 SUB-BASE WITH #4 BARS 12" OC BOTH SIDES
 HH - HANDHOLE, 2" DIA. XHW
 H - 1" RIGID PVC CONDUIT WITH 10 TO 10000 FC RANGE AND ADJUSTABLE DEAD END
 PC - CONTROL PANEL, SS NEMA 3R WITH LEXAN WINDOW FOR PROTECTING CONTROLLER
 PCE - POWER CONTROL ELEMENT, SS NEMA 3R WITH LEXAN WINDOW FOR PROTECTING CONTROLLER
 R - 2 WIRE 20A RELAY - DOUGLAS WR 6181
 DOUGLAS NUMBERS ARE USED ON ALL OR EQUAL.



EXHIBIT B

TO CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

TERMS AND CONDITIONS

Section 1. NOTICE OF COMMENCEMENT OF WORK - FLAGGING.

- A. Contractor agrees to notify the Railroad Representative at least ten (10) working days in advance of Contractor commencing its work and at least ten (10) working days in advance of proposed performance of any work by Contractor in which any person or equipment will be within twenty-five (25) feet of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) will reach to within twenty-five (25) feet of any track. No work of any kind shall be performed, and no person, equipment, machinery, tool(s), material(s), vehicle(s), or thing(s) shall be located, operated, placed, or stored within twenty-five (25) feet of any of Railroad's track(s) at any time, for any reason, unless and until a Railroad flagman is provided to watch for trains. Upon receipt of such ten (10)-day notice, the Railroad Representative will determine and inform Contractor whether a flagman need be present and whether Contractor needs to implement any special protective or safety measures. If flagging or other special protective or safety measures are performed by Railroad, Railroad will bill Contractor for such expenses incurred by Railroad, unless Railroad and a federal, state or local governmental entity have agreed that Railroad is to bill such expenses to the federal, state or local governmental entity. If Railroad will be sending the bills to Contractor, Contractor shall pay such bills within thirty (30) days of Contractor's receipt of billing. If Railroad performs any flagging, or other special protective or safety measures are performed by Railroad, Contractor agrees that Contractor is not relieved of any of its responsibilities or liabilities set forth in this Agreement.
- B. The rate of pay per hour for each flagman will be the prevailing hourly rate in effect for an eight-hour day for the class of flagmen used during regularly assigned hours and overtime in accordance with Labor Agreements and Schedules in effect at the time the work is performed. In addition to the cost of such labor, a composite charge for vacation, holiday, health and welfare, supplemental sickness, Railroad Retirement and unemployment compensation, supplemental pension, Employees Liability and Property Damage and Administration will be included, computed on actual payroll. The composite charge will be the prevailing composite charge in effect at the time the work is performed. One and one-half times the current hourly rate is paid for overtime, Saturdays and Sundays, and two and one-half times current hourly rate for holidays. Wage rates are subject to change, at any time, by law or by agreement between Railroad and its employees, and may be retroactive as a result of negotiations or a ruling of an authorized governmental agency. Additional charges on labor are also subject to change. If the wage rate or additional charges are changed, Contractor (or the governmental entity, as applicable) shall pay on the basis of the new rates and charges.
- C. Reimbursement to Railroad will be required covering the full eight-hour day during which any flagman is furnished, unless the flagman can be assigned to other Railroad work during a portion of such day, in which event reimbursement will not be required for the portion of the day during which the flagman is engaged in other Railroad work. Reimbursement will also be required for any day not actually worked by the flagman following the flagman's assignment to work on the project for which Railroad is required to pay the flagman and which could not reasonably be avoided by Railroad by assignment of such flagman to other work, even though Contractor may not be working during such time. When it becomes necessary for Railroad to bulletin and assign an employee to a flagging position in compliance with union collective bargaining agreements, Contractor must provide Railroad a minimum of five (5) days notice prior to the cessation of the need for a flagman. If five (5) days notice of cessation is not given, Contractor will still be required to pay flagging charges for the five (5) day notice period required by union agreement to be given to the employee, even though flagging is not required for that period. An additional ten (10) days notice must then be given to Railroad if flagging services are needed again after such five day cessation notice has been given to Railroad.

Section 2. LIMITATION AND SUBORDINATION OF RIGHTS GRANTED

- A. The foregoing grant of right is subject and subordinate to the prior and continuing right and obligation of the Railroad to use and maintain its entire property including the right and power of Railroad to construct, maintain, repair, renew, use, operate, change, modify or relocate railroad tracks, roadways, signal, communication, fiber optics, or other wirelines, pipelines and other facilities upon, along or across any or all parts of its property, all or any of which may be freely done at any time or times by Railroad without liability to Contractor or to any other party for compensation or damages.
- B. The foregoing grant is also subject to all outstanding superior rights (including those in favor of licensees and lessees of Railroad's property, and others) and the right of Railroad to renew and extend the same, and is made without covenant of title or for quiet enjoyment.

Section 3. NO INTERFERENCE WITH OPERATIONS OF RAILROAD AND ITS TENANTS.

- A. Contractor shall conduct its operations so as not to interfere with the continuous and uninterrupted use and operation of the railroad tracks and property of Railroad, including without limitation, the operations of Railroad's lessees, licensees 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 Railroad's nearest track, and there shall be no vehicular crossings of Railroad's tracks except at existing open public crossings.

- B. Operations of Railroad and work performed by Railroad personnel and delays in the work to be performed by Contractor caused by such railroad operations and work are expected by Contractor, and Contractor agrees that Railroad shall have no liability to Contractor, or any other person or entity for any such delays. The Contractor shall coordinate its activities with those of Railroad and third parties so as to avoid interference with railroad operations. The safe operation of Railroad train movements and other activities by Railroad takes precedence over any work to be performed by Contractor.

Section 4. LIENS.

Contractor shall pay in full all persons who perform labor or provide materials for the work to be performed by Contractor. Contractor shall not create, permit or suffer any mechanic's or materialmen's liens of any kind or nature to be created or enforced against any property of Railroad for any such work performed. Contractor shall indemnify and hold harmless Railroad from and against any and all liens, claims, demands, costs or expenses of whatsoever nature in any way connected with or growing out of such work done, labor performed, or materials furnished. If Contractor fails to promptly cause any lien to be released of record, Railroad may, at its election, discharge the lien or claim of lien at Contractor's expense.

Section 5. PROTECTION OF FIBER OPTIC CABLE SYSTEMS.

- A. Fiber optic cable systems may be buried on Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. Contractor shall telephone Railroad during normal business hours (7:00 a.m. to 9:00 p.m. Central Time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, 7-day number for emergency calls) to determine if fiber optic cable is buried anywhere on Railroad's property to be used by Contractor. If it is, Contractor will telephone the telecommunications company(ies) involved, make arrangements for a cable locator and, if applicable, for relocation or other protection of the fiber optic cable. Contractor shall not commence any work until all such protection or relocation (if applicable) has been accomplished.
- B. In addition to other indemnity provisions in this Agreement, Contractor shall indemnify, defend and hold Railroad harmless from and against all costs, liability and expense whatsoever (including, without limitation, attorneys' fees, court costs and expenses) arising out of any act or omission of Contractor, its agents and/or employees, that causes or contributes to (1) any damage to or destruction of any telecommunications system on Railroad's property, and/or (2) any injury to or death of any person employed by or on behalf of any telecommunications company, and/or its contractor, agents and/or employees, on Railroad's property. Contractor shall not have or seek recourse against Railroad for any claim or cause of action for alleged loss of profits or revenue or loss of service or other consequential damage to a telecommunication company using Railroad's property or a customer or user of services of the fiber optic cable on Railroad's property.

Section 6. PERMITS - COMPLIANCE WITH LAWS.

In the prosecution of the work covered by this Agreement, Contractor shall secure any and all necessary permits and shall comply with all applicable federal, state and local laws, regulations and enactments affecting the work including, without limitation, all applicable Federal Railroad Administration regulations.

Section 7. SAFETY.

- A. Safety of personnel, property, rail operations and the public is of paramount importance in the prosecution of the work performed by Contractor. Contractor shall be responsible for initiating, maintaining and supervising all safety, operations and programs in connection with the work. Contractor shall at a minimum comply with Railroad's safety standards listed in **Exhibit C**, hereto attached, to ensure uniformity with the safety standards followed by Railroad's own forces. As a part of Contractor's safety responsibilities, Contractor shall notify Railroad if Contractor determines that any of Railroad's safety standards are contrary to good safety practices. Contractor shall furnish copies of **Exhibit D** to each of its employees before they enter the job site.
- B. Without limitation of the provisions of paragraph A above, Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job.
- C. Contractor shall have proper first aid supplies available on the job site so that prompt first aid services may be provided to any person injured on the job site. Contractor shall promptly notify Railroad of any U.S. Occupational Safety and Health Administration reportable injuries. Contractor shall have a nondelegable duty to control its employees while they are on the job site or any other property of Railroad, and to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, drug or other substance that may inhibit the safe performance of any work.
- D. If and when requested by Railroad, Contractor shall deliver to Railroad a copy of Contractor's safety plan for conducting the work (the "Safety Plan"). Railroad shall have the right, but not the obligation, to require Contractor to correct any deficiencies in the Safety Plan. The terms of this Agreement shall control if there are any inconsistencies between this Agreement and the Safety Plan.



Section 8. INDEMNITY.

- A. To the extent not prohibited by applicable statute, Contractor shall indemnify, defend and hold harmless Railroad, its affiliates, and its and their officers, agents and employees ("Indemnified Parties") from and against any and all loss, damage, injury, liability, claim, demand, cost or expense (including, without limitation, attorney's, consultant's and expert's fees, and court costs), fine or penalty (collectively, "loss") incurred by any person (including, without limitation, any indemnified party, contractor, or any employee of contractor or of any indemnified party) arising out of or in any manner connected with (i) any work performed by Contractor, or (ii) any act or omission of Contractor, its officers, agents or employees, or (iii) any breach of this Agreement by Contractor.
- B. The right to indemnity under this Section 8 shall accrue upon occurrence of the event giving rise to the loss, and shall apply regardless of any negligence or strict liability of any indemnified party, except where the loss is caused by the sole active negligence of an indemnified party as established by the final judgment of a court of competent jurisdiction. The sole active negligence of any indemnified party shall not bar the recovery of any other indemnified party.
- C. Contractor expressly and specifically assumes potential liability under this Section 8 for claims or actions brought by Contractor's own employees. Contractor waives any immunity it may have under worker's compensation or industrial insurance acts to indemnify Railroad under this Section 8. Contractor acknowledges that this waiver was mutually negotiated by the parties hereto.
- D. No court or jury findings in any employee's suit pursuant to any worker's compensation act or the federal employers' liability act against a party to this Agreement may be relied upon or used by Contractor in any attempt to assert liability against Railroad.
- E. The provisions of this Section 8 shall survive the completion of any work performed by Contractor or the termination or expiration of this Agreement. In no event shall this Section 8 or any other provision of this Agreement be deemed to limit any liability Contractor may have to any indemnified party by statute or under common law.

Section 9. RESTORATION OF PROPERTY.

In the event Railroad authorizes Contractor to take down any fence of Railroad or in any manner move or disturb any of the other property of Railroad in connection with the work to be performed by Contractor, then in that event Contractor shall, as soon as possible and at Contractor's sole expense, restore such fence and other property to the same condition as the same were in before such fence was taken down or such other property was moved or disturbed. Contractor shall remove all of Contractor's tools, equipment, rubbish and other materials from Railroad's property promptly upon completion of the work, restoring Railroad's property to the same state and condition as when Contractor entered thereon.

Section 10. WAIVER OF DEFAULT.

Waiver by Railroad of any breach or default of any condition, covenant or agreement herein contained to be kept, observed and performed by Contractor shall in no way impair the right of Railroad to avail itself of any remedy for any subsequent breach or default.

Section 11. MODIFICATION - ENTIRE AGREEMENT.

No modification of this Agreement shall be effective unless made in writing and signed by Contractor and Railroad. This Agreement and the exhibits attached hereto and made a part hereof constitute the entire understanding between Contractor and Railroad and cancel and supersede any prior negotiations, understandings or agreements, whether written or oral, with respect to the work to be performed by Contractor.

Section 12. ASSIGNMENT - SUBCONTRACTING.

Contractor shall not assign or subcontract this Agreement, or any interest therein, without the written consent of the Railroad. Contractor shall be responsible for the acts and omissions of all subcontractors. Before Contractor commences any work, the Contractor shall, except to the extent prohibited by law; (1) require each of its subcontractors to include the Contractor as "Additional Insured" in the subcontractor's Commercial General Liability policy and Business Automobile policies with respect to all liabilities arising out of the subcontractor's performance of work on behalf of the Contractor by endorsing these policies with ISO Additional Insured Endorsements CG 20 26, and CA 20 48 (or substitute forms providing equivalent coverage); (2) require each of its subcontractors to endorse their Commercial General Liability Policy with "Contractual Liability Railroads" ISO Form CG 24 17 10 01 (or a substitute form providing equivalent coverage) for the job site; and (3) require each of its subcontractors to endorse their Business Automobile Policy with "Coverage For Certain Operations In Connection With Railroads" ISO Form CA 20 70 10 01 (or a substitute form providing equivalent coverage) for the job site.



EXHIBIT C

TO CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

INSURANCE PROVISIONS

Contractor shall, at its sole cost and expense, procure and maintain during the course of the Project and until all Project work on Railroad's property has been completed and the Contractor has removed all equipment and materials from Railroad's property and has cleaned and restored Railroad's property to Railroad's satisfaction, the following insurance coverage:

- A. Commercial General Liability Insurance.** Commercial general liability (CGL) with a limit of not less than \$5,000,000 each occurrence and an aggregate limit of not less than \$10,000,000. CGL insurance must be written on ISO occurrence form CG 00 01 12 04 (or a substitute form providing equivalent coverage).

The policy must also contain the following endorsement, which must be stated on the certificate of insurance:

- Contractual Liability Railroads ISO form CG 24 17 10 01 (or a substitute form providing equivalent coverage) showing "Union Pacific Railroad Company Property" as the Designated Job Site.

- B. Business Automobile Coverage Insurance.** Business auto coverage written on ISO form CA 00 01 10 01 (or a substitute form providing equivalent liability coverage) with a combined single limit of not less \$5,000,000 for each accident and coverage must include liability arising out of any auto (including owned, hired and non-owned autos).

The policy must contain the following endorsements, which must be stated on the certificate of insurance:

- Coverage For Certain Operations In Connection With Railroads ISO form CA 20 70 10 01 (or a substitute form providing equivalent coverage) showing "Union Pacific Property" as the Designated Job Site.
- Motor Carrier Act Endorsement - Hazardous materials clean up (MCS-90) if required by law.

- C. Workers' Compensation and Employers' Liability Insurance.** Coverage must include but not be limited to:
- Contractor's statutory liability under the workers' compensation laws of the state where the work is being performed.
 - Employers' Liability (Part B) with limits of at least \$500,000 each accident, \$500,000 disease policy limit \$500,000 each employee.

If Contractor is self-insured, evidence of state approval and excess workers compensation coverage must be provided. Coverage must include liability arising out of the U. S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

The policy must contain the following endorsement, which must be stated on the certificate of insurance:

- Alternate Employer endorsement ISO form WC 00 03 01 A (or a substitute form providing equivalent coverage) showing Railroad in the schedule as the alternate employer (or a substitute form providing equivalent coverage).

- D. Railroad Protective Liability Insurance.** Contractor must maintain Railroad Protective Liability insurance written on ISO occurrence form CG 00 35 12 04 (or a substitute form providing equivalent coverage) on behalf of Railroad as named insured, with a limit of not less than \$2,000,000 per occurrence and an aggregate of \$6,000,000. A binder stating the policy is in place must be submitted to Railroad before the work may be commenced and until the original policy is forwarded to Railroad.

- E. Umbrella or Excess Insurance.** If Contractor utilizes umbrella or excess policies, these policies must "follow form" and afford no less coverage than the primary policy.

- F. Pollution Liability Insurance.** Pollution liability coverage must be written on ISO form Pollution Liability Coverage Form Designated Sites CG 00 39 12 04 (or a substitute form providing equivalent liability coverage), with limits of at least \$5,000,000 per occurrence and an aggregate limit of \$10,000,000.

If the scope of work as defined in this Agreement includes the disposal of any hazardous or non-hazardous materials from the job site, Contractor must furnish to Railroad evidence of pollution legal liability insurance maintained by the disposal site operator for losses arising from the insured facility accepting the materials, with coverage in minimum amounts of \$1,000,000 per loss, and an annual aggregate of \$2,000,000.

Other Requirements

- G.** All policy(ies) required above (except worker's compensation and employers liability) must include Railroad as "Additional Insured" using ISO Additional Insured Endorsements CG 20 26, and CA 20 48 (or substitute forms providing equivalent



coverage). The coverage provided to Railroad as additional insured shall, to the extent provided under ISO Additional Insured Endorsement CG 20 26, and CA 20 48 provide coverage for Railroad's negligence whether sole or partial, active or passive, and shall not be limited by Contractor's liability under the indemnity provisions of this Agreement.

- H. Punitive damages exclusion, if any, must be deleted (and the deletion indicated on the certificate of insurance), unless the law governing this Agreement prohibits all punitive damages that might arise under this Agreement.
- I. Contractor waives all rights of recovery, and its insurers also waive all rights of subrogation of damages against Railroad and its agents, officers, directors and employees. This waiver must be stated on the certificate of insurance.
- J. Prior to commencing the work, Contractor shall furnish Railroad with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements in this Agreement.
- K. All insurance policies must be written by a reputable insurance company acceptable to Railroad or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the state where the work is being performed.
- L. The fact that insurance is obtained by Contractor or by Railroad on behalf of Contractor will not be deemed to release or diminish the liability of Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by Railroad from Contractor or any third party will not be limited by the amount of the required insurance coverage.



EXHIBIT D

TO CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

MINIMUM SAFETY REQUIREMENTS

The term "employees" as used herein refer to all employees of Contractor as well as all employees of any subcontractor or agent of Contractor.

I. Clothing

A. All employees of Contractor will be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing, or free use of their hands or feet.

Specifically, Contractor's employees must wear:

- (i) Waist-length shirts with sleeves.
 - (ii) Trousers that cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching.
 - (iii) Footwear that covers their ankles and has a defined heel. Employees working on bridges are required to wear safety-toed footwear that conforms to the American National Standards Institute (ANSI) and FRA footwear requirements.
- B. Employees shall not wear boots (other than work boots), sandals, canvas-type shoes, or other shoes that have thin soles or heels that are higher than normal.
- C. Employees must not wear loose or ragged clothing, neckties, finger rings, or other loose jewelry while operating or working on machinery.

II. Personal Protective Equipment

Contractor shall require its employees to wear personal protective equipment as specified by Railroad rules, regulations, or recommended or requested by the Railroad Representative.

- (i) Hard hat that meets the American National Standard (ANSI) Z89.1 – latest revision. Hard hats should be affixed with Contractor's company logo or name.
- (ii) Eye protection that meets American National Standard (ANSI) for occupational and educational eye and face protection, Z87.1 – latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, etc.
- (iii) Hearing protection, which affords enough attenuation to give protection from noise levels that will be occurring on the job site. Hearing protection, in the form of plugs or muffs, must be worn when employees are within:
 - 100 feet of a locomotive or roadway/work equipment
 - 15 feet of power operated tools
 - 150 feet of jet blowers or pile drivers
 - 150 feet of retarders in use (when within 10 feet, employees must wear dual ear protection – plugs and muffs)
- (iv) Other types of personal protective equipment, such as respirators, fall protection equipment, and face shields, must be worn as recommended or requested by the Railroad Representative.

III. On Track Safety

Contractor is responsible for compliance with the Federal Railroad Administration's Roadway Worker Protection regulations – 49CFR214, Subpart C and Railroad's On-Track Safety rules. Under 49CFR214, Subpart C, railroad contractors are responsible for the training of their employees on such regulations. In addition to the instructions contained in Roadway Worker Protection regulations, all employees must:

- (i) Maintain a distance of twenty-five (25) feet to any track unless the Railroad Representative is present to authorize movements.
- (ii) Wear an orange, reflectorized workwear approved by the Railroad Representative.
- (iii) Participate in a job briefing that will specify the type of On-Track Safety for the type of work being performed. Contractor must take special note of limits of track authority, which tracks may or may not be fouled, and clearing the track. Contractor will also receive special instructions relating to the work zone around machines and minimum distances between machines while working or traveling.

IV. Equipment

A. It is the responsibility of Contractor to ensure that all equipment is in a safe condition to operate. If, in the opinion of the Railroad Representative, any of Contractor's equipment is unsafe for use, Contractor shall remove such equipment from Railroad's

property. In addition, Contractor must ensure that the operators of all equipment are properly trained and competent in the safe operation of the equipment. In addition, operators must be:

- Familiar and comply with Railroad's rules on lockout/tagout of equipment.
 - Trained in and comply with the applicable operating rules if operating any hy-rail equipment on-track.
 - Trained in and comply with the applicable air brake rules if operating any equipment that moves rail cars or any other railbound equipment.
- B. All self-propelled equipment must be equipped with a first-aid kit, fire extinguisher, and audible back-up warning device.
- C. Unless otherwise authorized by the Railroad Representative, all equipment must be parked a minimum of twenty-five (25) feet from any track. Before leaving any equipment unattended, the operator must stop the engine and properly secure the equipment against movement.
- D. Cranes must be equipped with three orange cones that will be used to mark the working area of the crane and the minimum clearances to overhead powerlines.

V. General Safety Requirements

- A. Contractor shall ensure that all waste is properly disposed of in accordance with applicable federal and state regulations.
- B. Contractor shall ensure that all employees participate in and comply with a job briefing conducted by the Railroad Representative, if applicable. During this briefing, the Railroad Representative will specify safe work procedures, (including On-Track Safety) and the potential hazards of the job. If any employee has any questions or concerns about the work, the employee must voice them during the job briefing. Additional job briefings will be conducted during the work as conditions, work procedures, or personnel change.
- C. All track work performed by Contractor meets the minimum safety requirements established by the Federal Railroad Administration's Track Safety Standards 49CFR213.
- D. All employees comply with the following safety procedures when working around any railroad track:
- (i) Always be on the alert for moving equipment. Employees must always expect movement on any track, at any time, in either direction.
 - (ii) Do not step or walk on the top of the rail, frog, switches, guard rails, or other track components.
 - (iii) In passing around the ends of standing cars, engines, roadway machines or work equipment, leave at least 20 feet between yourself and the end of the equipment. Do not go between pieces of equipment of the opening is less than one car length (50 feet).
 - (iv) Avoid walking or standing on a track unless so authorized by the employee in charge.
 - (v) Before stepping over or crossing tracks, look in both directions first.
 - (vi) Do not sit on, lie under, or cross between cars except as required in the performance of your duties and only when track and equipment have been protected against movement.
- E. All employees must comply with all federal and state regulations concerning workplace safety.